HARMONY

TOON BOOM HARMONY 12.1
- Essentials Edition -
Paperless Animation Guide

Legal Notices

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Chapter 1: Paperless Animation - An Introduction

Harmony is a high-performance animation software which not only offers a wide range of features, but also handles more than one animation type and workflow. In this guide, you will learn how to perform tasks related to the cut-out animation workflow from start to finish using Harmony.

Before reading this guide, be sure to take some time to familiarize yourself with the basic concepts in the Fundamentals Guide. Each chapter is self-contained. so you can concentrate only on the chapter pertaining to your task. You do not need to read the entire guide, but you should read the whole chapter before starting to work.

Topics in this section:

- [Design and Drawing Tools](#)
- *[Colour Styling and Colour Models](#)* on page 101
- *[Timing](#)* on page 137

Chapter 2: Design and Drawing Tools

Another important step in the project creation is the character, prop and location design. This determines the style and models to follow for the entire project.

This is also the step where you will need to use most of Harmony's drawing tools.

The design can be created on paper and scanned in or it can be created digitally. You can draw and even create the colours entirely on paper, while others like to design on paper and scan the drawings to create the colour model in a software program. The most popular method is to design directly in Harmony.

To save paper and time and avoid having to recreate colour palettes, Harmony gives you the ability to design all elements directly in the application. This keeps all your work within the same software, avoids using a lot of paper and losing time scanning in elements and importing them.

The character and prop design process is divided in three steps:

- *Preparation* on page 11
- *Sketching the Model* on page 13
- *Cleaning and Inking the Model* on page 25

Harmony has an extensive set of drawing tools that can be used to design your characters. You can learn more about this in the following topic:

- *Drawing Tasks* on page 27

Each drawing tool has a series of options to customize its behaviour and drawing style. You can learn more about them in the following section:

- *Drawing Tool References* on page 63

Preparation

To prepare for the design task, you will need to go through a few steps:

- *Getting References* on page 12
- *Using the Workspace* on page 12

Getting References
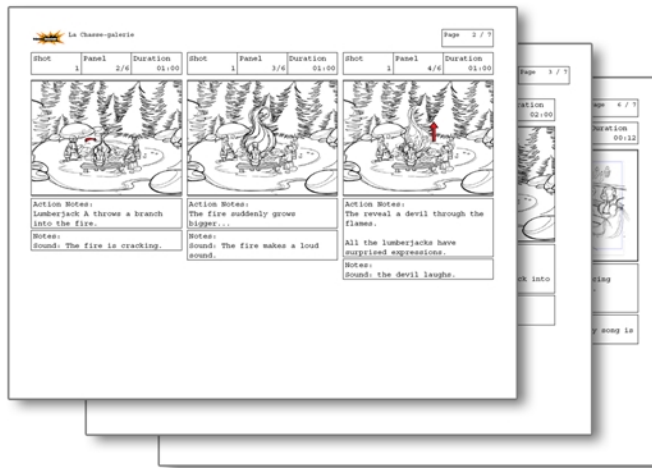
Creating models requires two main reference sources, the script and the storyboard. Once you have the script in hand, you can learn about the characters and their personalities, the props, the ambiances, and so on. This will be your main reference, so it is very important to read it carefully.

The storyboard is the second reference source and it can be quite useful as well. Although it will not yet be the final version of the storyboard, it will show you what the character is doing and what props need to be designed.

Using the Workspace

Once your scene is created, you can open it and set your workspace.

To sketch the characters, props or locations directly in Harmony, you will mostly use the Camera or Drawing views along with the Colour, Timeline and Tool Properties views.

Sketching the Model

Now that your references and scene are created, you can start designing. To draw your characters, props and key locations, you will need to learn the following:

Drawing with the Brush or Pencil Tool
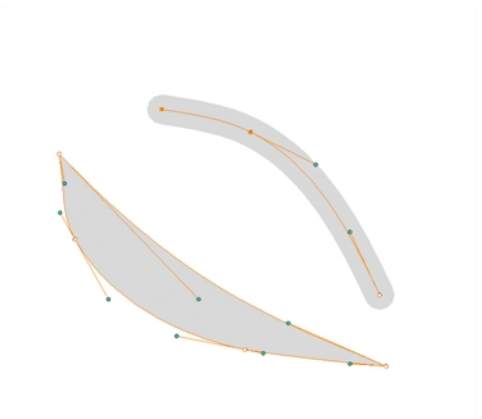
The Brush ✏ tool takes account of pressure sensitivity, allowing you to create lines with variable thicknesses when using a pen tablet, creating a contour vector shape. You can set different parameters, such as the size and smoothness of the Brush tool in the Tool Properties view. If you draw with the Brush tool and want to modify the thickness variation, use the Contour Editor ▷ tool.

The Pencil ✏ , Polyline and Shape tools let you create a central vector line of uniform thickness. Pressure sensitivity is not supported with pencil lines. You can set different parameters, such as the size and smoothness of the Pencil tool in the Tool Properties view.

Override Tool

The Override tool lets you increase productivity by rapidly switching between tools used for short tasks and your previous tool. Most drawing tool shortcuts are accessed using the Alt key followed by another key, such as the Eraser tool which is accessed by pressing Alt + E.

If you are drawing with the Brush tool and need to briefly switch to the Eraser before continuing, hold down the E key while you are erasing. Once you are done, release the E key to return to the previous tool; in this case, the Brush tool. You can do the same for most drawing tools that have a shortcut composed of Alt followed by another key.

Selected tool

	42%	Drawing-1	Brush	Fr 1	

	42%	Drawing-1	Eraser	Fr 1	Black

Override tool
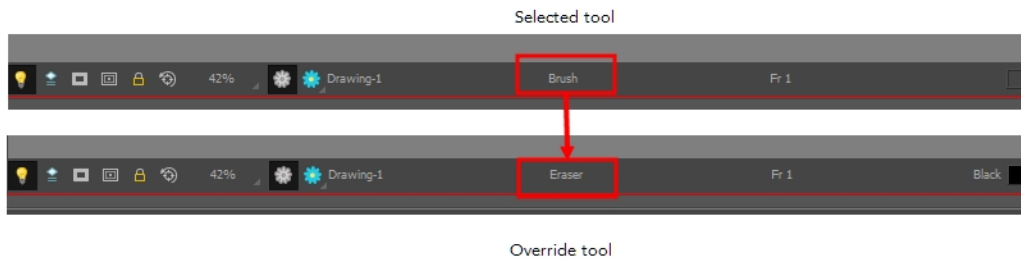
Relative Size

The size relation between the props, characters and backgrounds is very important in maintaining consistency and structure throughout the project.

A production can contain many characters and props. It is not unusual for these to be created by different people. If there is no size control implemented, the characters and elements created by different artists can vary greatly. When this occurs, the characters that are placed together in a scene will be out of proportion. The animator or person doing the scene setup will then have to scale them to the correct size.

When a character or prop is scaled down, the outline will become increasingly thinner. By the time the element is scaled to its proper size, the outline may be so thin that a difference between one character's outline and the one beside it will not look very good.

Here are a few tips you can use to create a suitable size relation.

Line Up
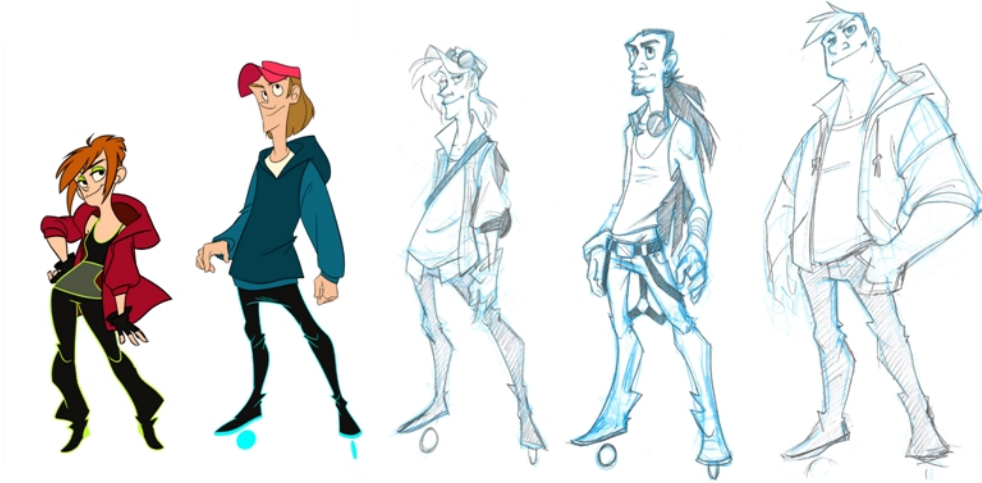
A line up consists of copying and pasting all your character designs into the same drawing and then scaling them to the correct proportion in relation to the other characters. This line up is very important and should be handed to any animator, layout and posing artist or scene setup person working on the project.

For the prop design, it is recommended that you paste one of the main character's hands or even the full body beside the prop. This enables the animator to know what size to draw the prop.

In your character design scene, it is a good idea to create a column for the character line up. The line up is usually done during the character design step. When the character builder imports the model to the breakdown scene, the size relation should be correct.

Field Chart
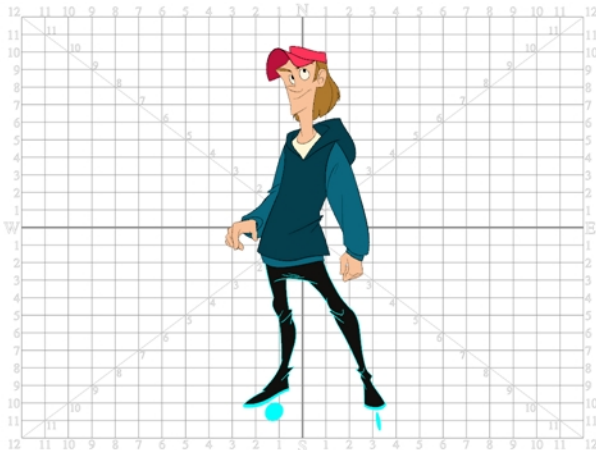
Harmony includes a field chart in its Drawing and Camera views. This tool is very useful in setting the characters' and props' heights.

It is recommended that you keep the character design and breakdown inside the 12 field size. This ensures that it fits the default camera size and the template thumbnails. If some parts were drawn too big or too far apart, you can use the Reposition All Drawings tool and reposition, scale or rotate multiple drawings from different layers all at once.

Use the Show Grid option to display a grid in the Drawing or Camera views.

Name	Button	Description	Keyboard Shortcut
Show Grid	⊞	Displays the grid.	**View > Grid > Show Grid** Press Ctrl + ' (Windows/Linux) or ⌘ + ' (Mac OS X).
Grid Outline Only		Displays the outline of the grid only.	**View > Grid > Grid Outline Only**
Square	⊞	Displays a standard square grid.	**View > Grid > Square**
12 Field Grid	12	Displays a 12-field size grid.	**View > Grid > 12 Field Grid**
16 Field Grid	16	Displays a 16-field size grid.	**View > Grid > 16 Field Grid**
Underlay		Displays the grid under the drawing elements.	**View > Grid > Underlay**
Overlay		Displays the grid over the drawing elements.	**View > Grid > Overlay**

How to reposition all drawings

1. In the Tools toolbar from the Select drop-down menu, select the Reposition All Drawings tool. This also automatically selects every stroke in your drawing in the Drawing and Camera views.

2. To deform or reposition a selection:

   ‣ To reposition, click and drag your selection to a new area.
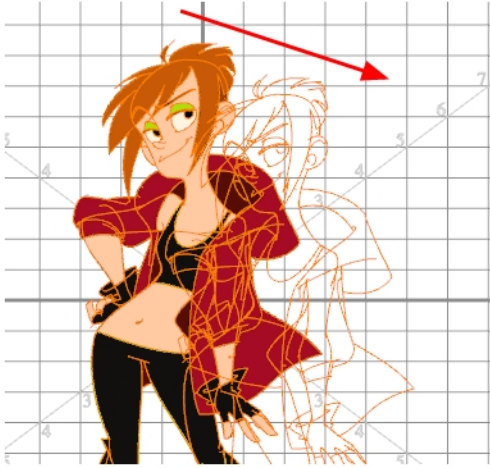
‣ To scale, pull or push on the top, side, bottom or corner control points. Hold down Shift to lock the selection's ratio.
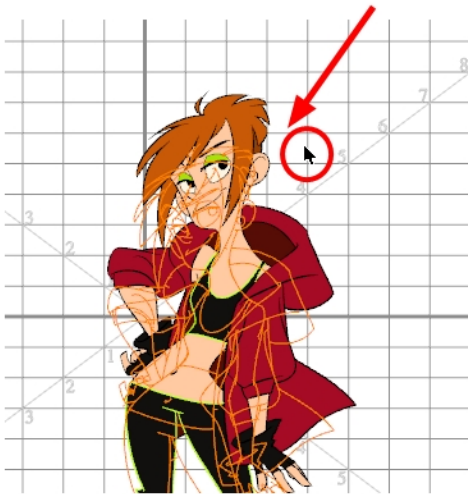
3. When you release your cursor, every drawing contained in the drawing layer you repositioned, scaled, rotated or skewed will follow the same transformation.

Brush Size

Harmony provides a variety of pens and brushes and also allows you to create and save your own through creating a tool preset.

It is a good idea to create and save pens with precise sizes and parameters to trace and design your models and breakdowns.

Palettes and Colours

Harmony has an integrated palette system. Each character, prop or background can have its own set of colours and each colour in the palette can be associated to colour fill zones on a drawing. You can create as many palettes and colours as you need.
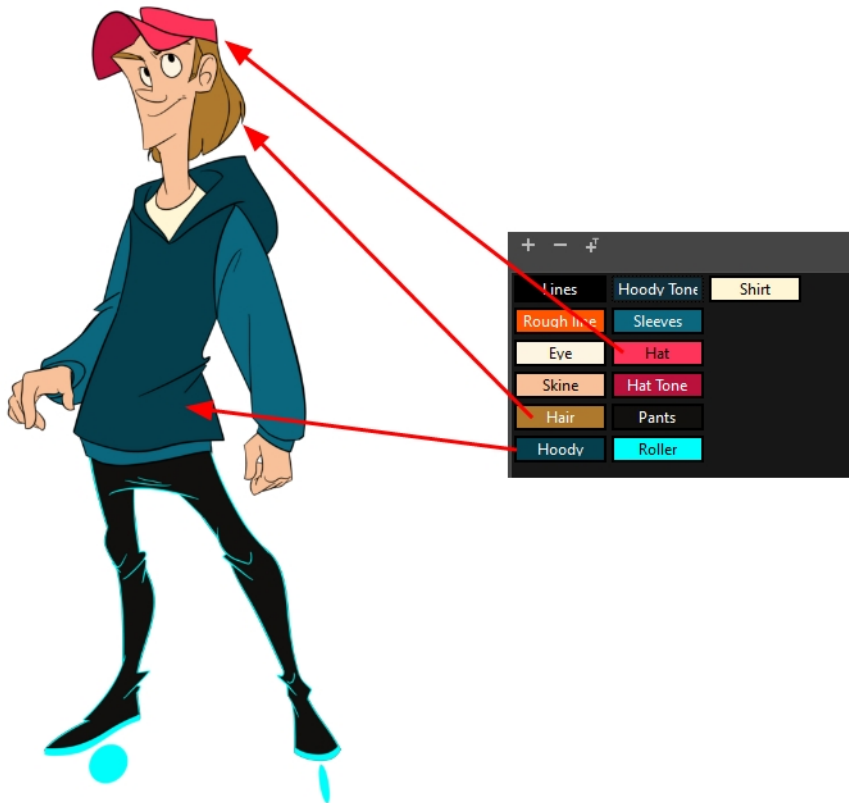
Each scene created in Harmony includes a default colour palette which contains a standard set of colours for sketching and painting.

You can sketch and design using the default palette without any problem. However, it is not recommended that you use the default palette for the colour models. A different colour palette should be created for each colour model.

To sketch and design with a different colour swatch or create a palette for each character, prop or key location, you will need to learn how to manage the Harmony palettes.

How to create a new palette (Basic Palette Lists mode)

1. From the Colour View menu, select **Palettes** > **New** or click the New Palette ✛ button.

   The Create Palette window opens.

2. Enter the palette name according to the model.

3. Click **OK**.

   The palette appears in the drawing element's palette list.

How to create a palette from the Advanced Palette Lists mode

1. In the Timeline or Xsheet view, select the drawing that requires a palette.

2. In the Colour view, click the **Show Palette List View** button to display the palette list.

3. Do one of the following:
   ‣ From the Colour view menu, select **Palettes > New.**
   ‣ Click the Create Palette ➕ button.

   The Palette Browser: Create Palette dialog box opens.

4. Select the level to store the palette file.
   ‣ **Environment**: The palette-library folder is stored in the scene's parent environment folder.
   ‣ **Job**: The palette-library folder is stored in the scene's parent job folder.
   ‣ **Scene**: The palette-library folder is stored directly in the scene folder.
   ‣ **Element**: The palette-library folder is stored directly in the drawing element folder.

When you select a level that has a palette stored in it, the palette names are displayed in the Palette field.

5. Name the palette. There is no need to add the suffix "palette" to the name as it is always recognized as a palette file.

New Palette Name: New

6. Select a Palette List option.

Palette List
Scene Palette List
Element Palette List

‣ The Scene Palette List is mainly used with cut-out animation. A cut-out character will often be divided in twenty to thirty different drawing elements that use the character's master palette.

The palette list is stored at the scene level instead of the Element directory. This way, all palettes linked to this list will appear in every drawing element created in the scene. There is no need to manually load the palette in each element.

‣ The Element Palette List is mainly used with traditional and paperless animation. Unlike cut-out animation, all columns (drawing elements) contain different characters, props, backgrounds and effects. The Element Palette List is used because you do not necessarily want all of the palettes for all of your elements linked in every column.

The palette list is stored in the drawing element's directory instead of directly in the Scene level. This ensures that the links to the palettes appear only in the appropriate element. If you prefer to access a global palette list, link your palettes to the Scene Palette List.

7. Click **OK**.

The new palette appears in the palette list.

How to add or modify a solid colour swatch

1. In the Colour view, click the Add Colour ╋ button.

2. From the Colour View menu, select **Colours** > **Edit** or double-click on the colour swatch.

The Colour Picker window opens.
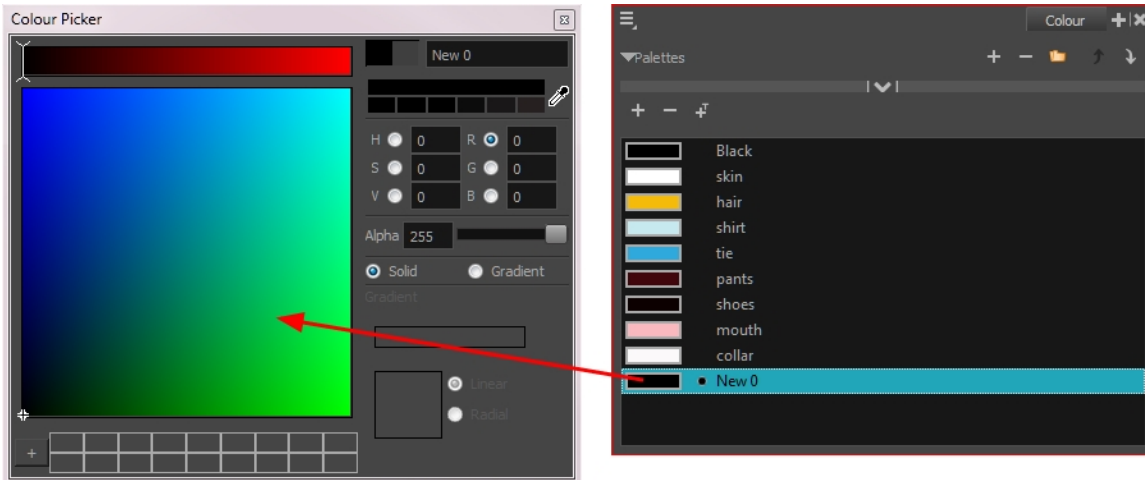
3. To set your colour, do one of the following:

    ‣ In the colour wheel, select a colour.

    ‣ Enter the HSV or RGB values in the corresponding fields. Select the **R,G,B,H,S** or **V** options to change the look of the colour picking area.

    ‣ Hold down the Dropper 🖌 button as you move along the desktop to preview colours, then release to select the colour. It can be from the Toon Boom Harmony interface, your operating system or any other open application.

NOTE: If the Sticky Eye Dropper option in the Preferences dialog box (Drawing tab > Options section) is selected, the dropper will not have this behaviour.
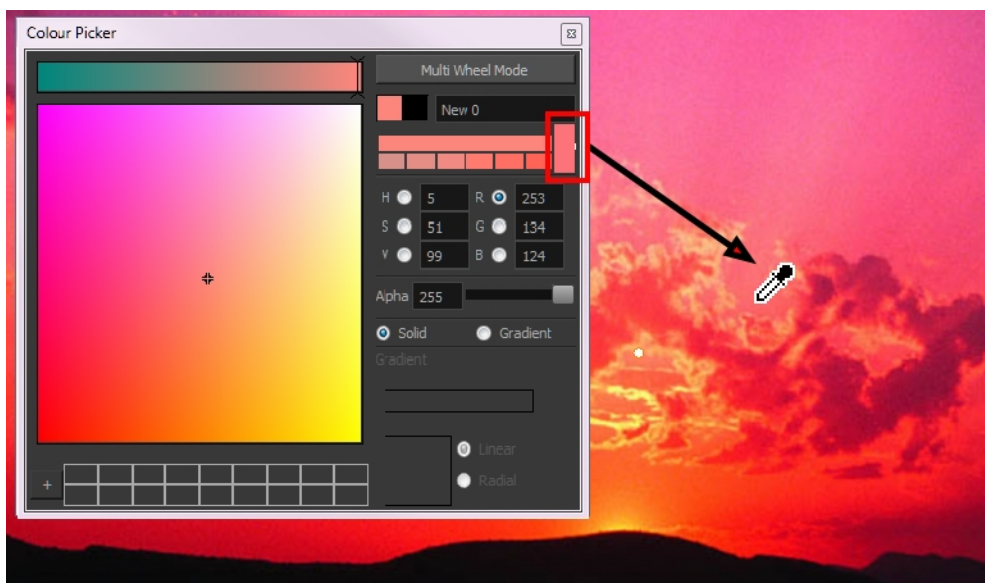
You can also click **Multi Wheel Mode** to open the Multiwheel Colour dialog box. This displays all the picking area styles together and also contains a picking undo list. To return to the regular Colour Picker window, click **Single Wheel Mode**.
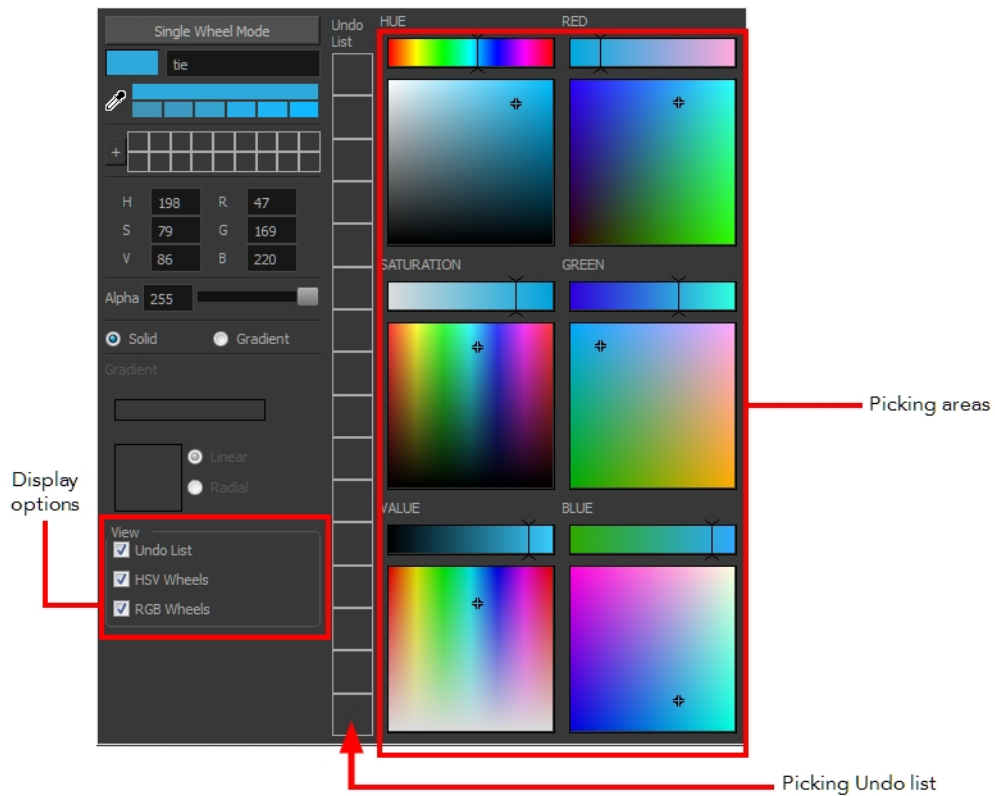
4. Click on the Shade Scale swatches to modify the shade of the selected colour.

5. Adjust the desired level of transparency with the Alpha slider, or type the value directly in the Alpha field.

6. Click the **Add** button to add the current selected colour to the Colour Storage Library, so you can quickly access it later.

7. You can rename the colour swatch in the Colour Picker window or directly in the colour list by double-clicking on its name.
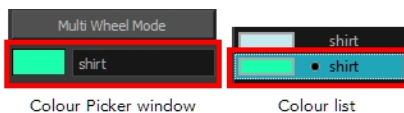
Sketching the Character

You are now ready to sketch your models. There are two tasks to perform in order to draw your characters:

- Add a drawing layer
- Sketch the model

You have the choice to sketch your model as a bitmap or vector drawing. If you like the feel of drawing with bitmap lines, you can set your layer as bitmap. If you like drawing with vectors, you can set your layer as vector. If you use vector, you will be able to enlarge your drawing and zoom into it without losing quality or resolution. You can also use the Contour Editor and Select tools to resize and modify lines. If you draw with bitmap, you will not be able to scale the drawing beyond 100% of its resolution without encountering pixelization issues.

How to add a drawing layer

1. In the Timeline view, click the Add Drawing Layer ⚕ button or press Ctrl + R (Windows/Linux) or ⌘ + R (Mac OS X).

   The Add Drawing Layer window opens.
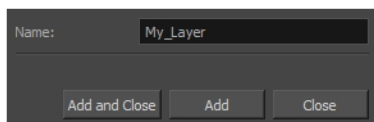
2. In the Name field, name your new layer.

3. Do one of the following:

   ‣ Click **Add** to add a first layer and keep the window open to add more layers.
   ‣ Click **Add and Close** to add a new layer and close the window.

A new drawing layer is added to the Timeline view.

How to sketch a model

1. In the Tools toolbar, select the Brush ✏ tool or press Alt + B.

2. In the Tool Properties view, select a brush preset and adjust its parameters.
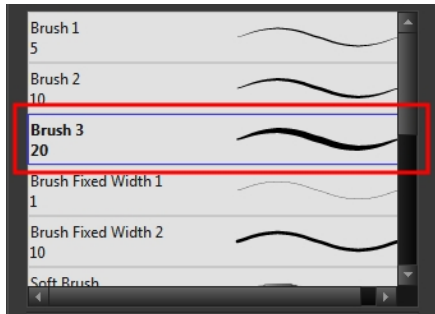
3. In the Timeline or Xsheet view, click in the first cell of the drawing layer.

4. In the Drawing or Camera view, enable the Grid (Field Chart). You can press Ctrl + ' (Windows/Linux) or ⌘ + ' (Mac OS X).

   ‣ Make sure the Drawing or Camera view is the active view while using the keyboard shortcut.

5. In the Drawing or Camera view, start drawing.
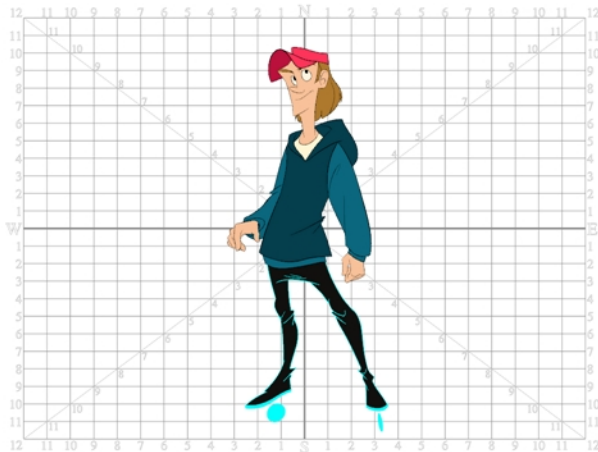
6. To select a different colour, in the Colour view, select a different colour swatch. Double-click on the colour swatch to open the Colour Picker window and modify the colour. Remember that anything already painted with that colour swatch will update to the new colour.
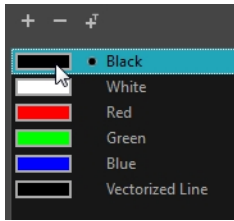
7. In the Camera or Drawing view, use the Rotary Table ⬭ to rotate your workspace. You can press Ctrl+Alt (Windows/Linux) or Ctrl+⌘ (Mac OS X).

    ‣ The default keyboard shortcut to reset the workspace rotation is Shift + X.

8. If you decide to draw in the next cell and need to see your previous drawing, enable the Onion Skin by pressing Alt + O.

Cleaning and Inking the Model

When your rough models are ready, it is time to clean and ink them. You can still use the default palette and colours to do so, especially if you are not the one doing the colour styling. If you have already created a palette for your model, you can add new colours for tracing.

If you want to keep your roughs and sketches, add a new drawing layer and trace in it using the Light Table. This is the equivalent of adding a sheet of paper and tracing over the rough using the animation disk light table. You only need to disable the rough layer to prevent it from appearing in the final scene render.

How to trace your character in a new layer

1. In the Timeline view, add a new drawing layer and name it: `clean`.

2. If you work in the Drawing view, enable the Light Table 💡 or press Shift + L.

3. Do one of the following:
   ‣ In the Tools toolbar, select a drawing tool.
   ‣ From the top menu, select **Drawing > Drawing Tools > *desired tool***.

4. In the Timeline or Xsheet view, select the cell in which you want to draw.

5. Trace the model.

6. To make perfect points and corners, you can intersect the two strokes to create a point. Using the Cutter ✏ tool, you can automatically trim the excess portion. In the Tool Properties view, enable the Lasso 🔵 selection type. Make sure the Use Mouse Gesture ✳ button is enabled. In this mode, you can automatically delete any extra sections of line in your artwork by simply clicking, holding and dragging your mouse over it. The intersection will not work well with the Pencil tool. It is recommended to use the Brush tool.

Drawing Tasks

Harmony has a wide variety of drawing tools for all kinds of drawing tasks. This section covers how to use these tools. For the complete details on their options in the Tool Properties view, see *Drawing Tool References* on page 63.

In this topic, you will learn about:

-

Current Drawing on Top

In Harmony, when you draw on a layer, the artwork is displayed in the correct order. For example, if the layer on which you are drawing is located behind an object on another layer, the lines you are drawing will be hidden behind that object.
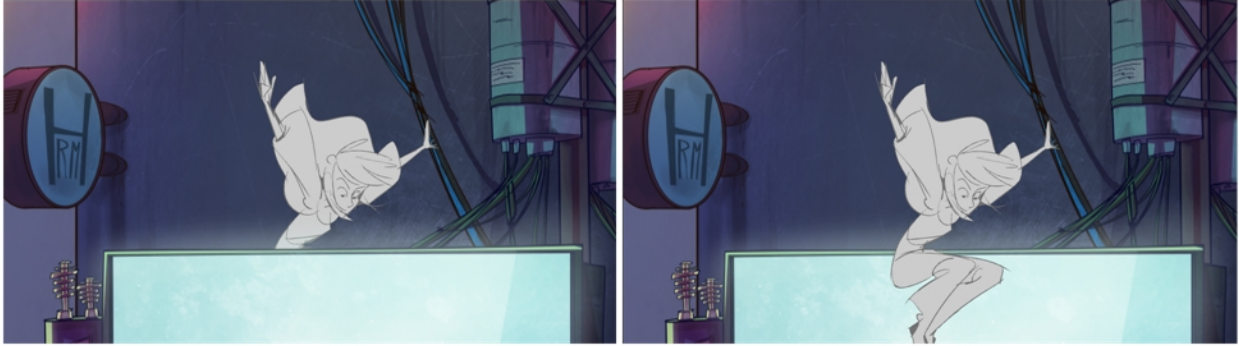
This lets you display the selected drawing on top of everything while you draw. By enabling this option, each time you select a drawing tool, the selected drawing is displayed in front of everything in the Camera view. The Timeline view ordering remain unchanged.

The Current Drawing on Top status (enabled or disabled) is remembered when you exit Harmony. When you restart the application, the last status will be used.

You only need to enable this option once, it is not necessary to do it each time you select a drawing tool.

How to display the drawing on top

1. Do one of the following:

   ‣ From the top menu, select **View > Show > Current Drawing on Top**.

   ‣ In the Camera bottom toolbar, click the Current Drawing on Top ⬦ button.

2. In the Tools toolbar, select a drawing tool.

3. In the Camera view, start drawing.

Drawing with the Pencil Tool

The Pencil tool is for drawing the final images, such as character nodes, cut-out puppet and clean animation. The pencil creates a central vector shape.

How to draw with the Pencil tool

1. In the Timeline view, select the cell on which you want to draw.

2. In the Tools toolbar, select the Pencil ✏ tool or press Alt + /.

3. In the Colour view, click a colour swatch to select a colour.
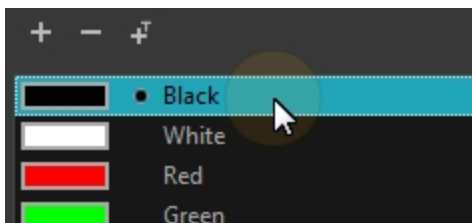
4. In the Drawing or Camera view, start drawing.

   ‣ When you get close to an existing pencil line, hold Alt to draw and connect your stroke to the existing one. Pencil lines are central vector lines and you might think your line is connected, but in fact, only the contour is touching the other one. Also, make sure the central vector crosses the other one.
   To connect the start or end of your stroke, hold Alt when you start or finish drawing a line.

   ‣ To draw a straight line, press Shift + Alt as you draw.
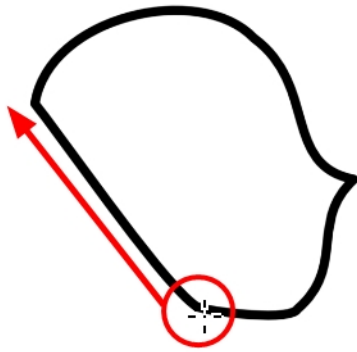
Working with Pencil Presets

A pencil preset is a pencil with specific properties.

Regular pencil presets allow you to set the size and smoothing of a pencil line, or the size of a shape.

How to select a pencil preset

1. In the Tools toolbar, select the Pencil ✏, Line ╱ , Ellipse ◯ , or Rectangle ▢ tool.

2. In the Tool Properties view, use the Presets menu to select a pencil preset.

3. In the Drawing or Camera view, draw your pencil line or shape.
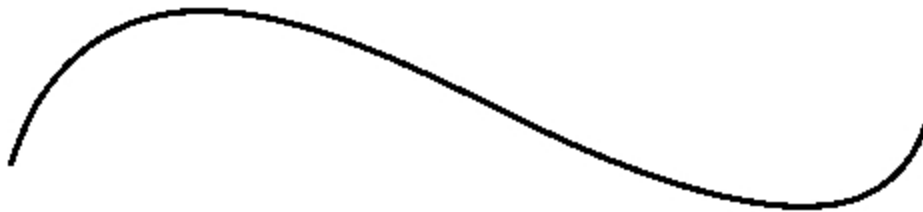
How to create a pencil preset

1. In the Tools toolbar, select the Pencil ✏ , Line ╱ , Ellipse ◯ , or Rectangle ▭ tool.

2. In the Tool Properties view, adjust your pencil settings.

3. In the Tool Properties view, click the New Brush ✏ button.

   The New Preset dialog box opens.

Name
My_Preset
OK   Cancel
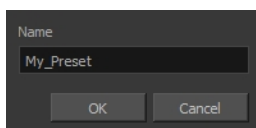
4. Type in a name for your new pencil thickness stencil and click **OK**.

5. Start drawing in the Drawing or Camera view.

How to rename a pencil preset

1. In the Tools toolbar, select the Pencil ✏ , Line ╱ , Ellipse ◯ , or Rectangle ▭ tool.

2. In the Presets menu, select the preset you want to rename.

3. From the Brush menu ☰ , select **Rename Brush**.

   The Rename Preset dialog box opens.

Name
Pencil 1
OK   Cancel
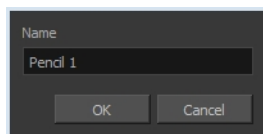
4. In the Name field, type in the new name.

5. Click **OK**.

How to delete a thickness stencil or pencil preset

1. In the Tools toolbar, select the Pencil ✏ tool.

2. In the Presets menu, select the thickness stencil or preset to delete.

3. Click the Delete Preset ✎ button.

How to import pencils, brushes and erasers

1. From the Brush menu ▤ , select **Import Brushes**.

2. In the browser window that appears, navigate to and select the `.xml` file.

3. Click **Open.**

4. In the Import Brushes dialog box, select the brushes brushes and erasers you want to import. You can also import pencils at the same time.

5. Click **Import**.

   The imported brush, eraser and pencil styles will appear in the presets library. You can reuse any of the imported tips to create other brush, eraser and pencil style presets.

How to export pencils, brushes and erasers

1. From the Brush menu, select **Export**.

2. In the Export Brushes dialog box, select the vector brushes and erasers to export, as well as any pencils.

3. Click **Export**.

4. In the Export Brushes window that appears, browse to the location where you want to save the .xml file and give it a name.

5. Click **Save**.

How to change the Presets Library thumbnail display

1. From the Brush menu, select one of the following:

Parameter	Description
Small Thumbnail	Reduces the size of the thumbnails in order to view more at the same time. Displays an image of the tool's tip and its maximum size.
Large Thumbnail	Increases the size of the thumbnails in order to see the images more clearly. Displays an image of the tool's tip, its maximum size and its name.
Stroke View	Displays the tool's name, maximum size and stroke preview.

Drawing with the Brush Tool

The Brush tool is pressure sensitive and lets you create a contour shape with a thick and thin line effect, as if it was created with a paint brush.

With the Brush tool, you can draw as vector or bitmap, depending on your preference. When you add a drawing layer, you can simply select the vector or bitmap option. If you draw with vector, you can enlarge your drawing and zoom into it without losing quality or resolution. You can also use the Contour Editor and Select tools to resize and modify lines. If you draw with bitmap, you will not be able to scale your drawing beyond 100% of its resolution without encountering pixelization issues.

You can create your own brush styles. A variety of brush styles are provided allowing you to create and save your own. This way you can create brushes with precise sizes and parameters and save them so you can draw and design with them. Renaming a brush can make it easier to identify and access the brushes you use most frequently.

A dynamic brush can be created for drawing using patterns created from your artwork. Create a new dynamic brush to copy a pattern you have drawn to reproduce it quickly. You can create dynamic brushes using a single or multiple patterns that automatically switch through the patterns as you draw.

How to draw with the Brush tool

1. In the Timeline view, click the Add Drawing Layer 🖼 button or press Ctrl + R (Windows/Linux) or ⌘ + R (Mac OS X).

   The Add Drawing Layer window opens.
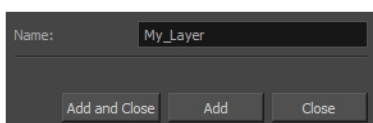
2. In the Name field, name your new layer.

3. Do one of the following:

    ‣ Click **Add** to add a first layer and keep the window open to add more layers.

    ‣ Click **Add and Close** to add a new layer and close the window.

    A new drawing layer is added to the Timeline view.

4. In the Timeline view, select the cell on which you want to draw.

5. In the Tools toolbar, select the Brush tool or press Alt + B.

6. In the Colour view, click a colour swatch to select a colour.
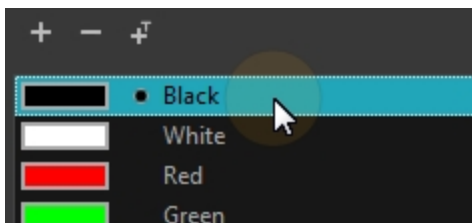
7. In the Drawing or Camera view, start drawing.

    ‣ Hold Ctrl (Windows/Linux) or ⌘ (Mac OS X) to force a line to join the start and end of the shape while drawing.
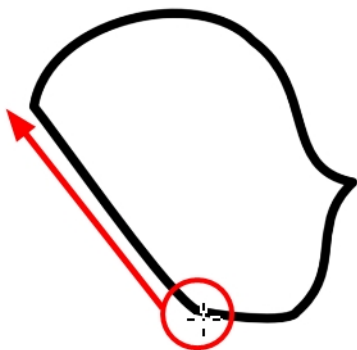
How to select a brush style

1. In the Tools toolbar, select the Brush tool or press Alt + B.

2. In the Tool Properties view, select a brush style from the Presets section.

How to modify the brush settings
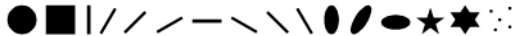
1. In the Tools toolbar, select the Brush tool or press Alt + B.

2. In the Tool Properties view, the preview area displays the stroke that will be produced after you customize the different parameters. Click the arrow button.
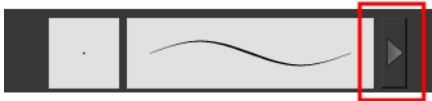
The Brush Properties window opens.

This is where you set the minimum and maximum sizes of your drawing tool which will produce the thick and thin effect on your stroke. This works with the pressure sensitivity of a pen tablet.

Parameter	Description
Size and Smoothness	
Maximum Size	Sets the maximum width of the line.
Minimum Size	Sets the minimum width of the line in relation to the maximum size.
Smoothness	Lets you modify the central line smoothness of the line. This parameter smooths the initial movement of your line. Increasing the value will result in a smoother line with fewer control points.
Contour Smoothness	Optimizes the contour line smoothness of the line. This parameter smooths the contour of the line once it has been traced. The higher the value, the fewer control points will compose your line.
Tip Shape	Lets you select a tip shape—from round and square ones to star shaped. This option is disabled when using a textured brush.

How to create a brush preset

1. Make sure your current brush has the settings you want in the preset you will create.

2. In the Tool Properties view, do one of the following:

   ‣ Click the arrow button to display the Brush Properties window and click the New Brush 🖌 button in the upper-right corner.
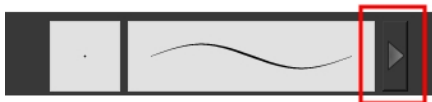
   ‣ Click the New Brush 🖌 button.

   ‣ From the Brush 📄 menu, select **New Brush Preset**.

3. In the New Preset window, type a name for your new brush preset.

   The new brush is added to the end of the list of brush presets.

How to update a brush preset

1. Select the brush preset to update and click the arrow button to display the Brush Properties window.
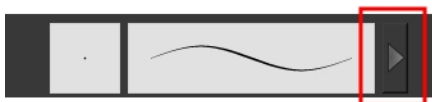
2. Change the brush settings and click the Update Brush Preset ![icon] button in the upper-right corner.

How to rename a brush

1. In the Tool Properties view, select a brush to rename.

2. From the Brush ![icon] menu, select **Rename Brush**.

3. Type in a new name for the brush and click **OK**.

How to delete a brush preset

1. In the Tool Properties view, select the brush preset you want to delete.

2. Do one of the following:

   ‣ Click the Delete Brush ![icon] button.

   ‣ From the Brush ![icon] menu , select **Delete Brush**.

Viewing the Final Lines as You Draw

Everything you draw in Harmony is vector-based, unless you purposely elected to draw as bitmap. Although, when you draw in the Drawing or Camera view, notice that your lines may appear jagged. This is caused by the fast real-time display called OpenGL. If you prefer to see smooth lines as you draw, you can enable the antialiasing preference.

Full Scene Antialiasing

Full scene antialiasing is generated by your computer's graphics card. This antialiasing will not only antialias your drawings, but all your different views in the interface. Full scene antialiasing is an option you can turn on and off; by default, it is disabled.

There is no need to modify your graphic card settings.

> **NOTE:** Full Scene Antialiasing parameters are only valid while you work in your scene. The scene will be rendered to 100% of its resolution regardless of your preference settings or graphic card panel.

How to customize the full scene antialiasing parameters

> **NOTE:** You must restart Harmony after you change the parameters.

1. Do one of the following:

   ‣ From the top menu, select **Edit > Preferences** (Windows/Linux) or **Stage Essentials > Preferences** (Mac OS X).

   ‣ Press Ctrl + U (Windows/Linux) or ⌘ + U (Mac OS X).

   The Preferences dialog box opens.

2. In the OpenGL tab, go to the Full Scene Antialiasing section.
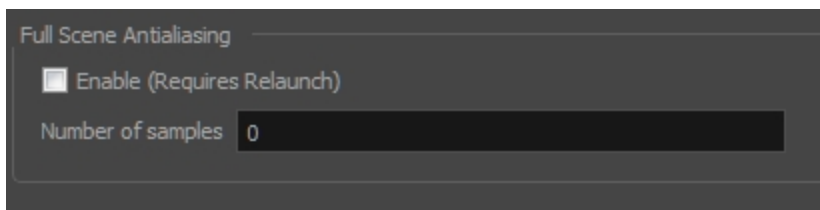
   ‣ **Enable:** Select this option to enable/disable the Full Scene Antialiasing.

3. **Number or samples**: Enter the number of samples you want to be used for the antialiasing process. The number of samples is basically equivalent to the amount of times a pixel will be enlarged to calculate the antialiasing. This technique is called *supersampling*. The higher the number of samples, the better the anti-aliasing quality will be, but the longer it will take to calculate.

4. Restart Harmony.

Selecting Drawing Objects
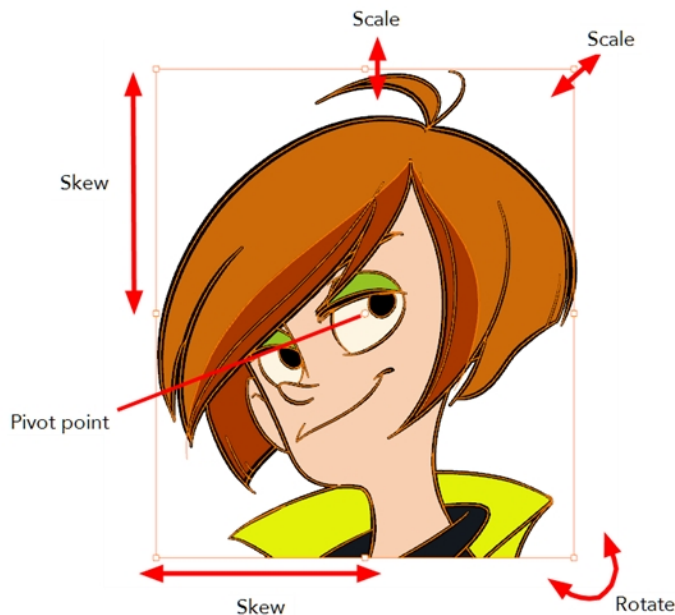
The Select tool is used to select strokes in both the Drawing and Camera views, and apply basic transformations, such as repositioning, rotating, scaling or skewing using the different handles of the bounding box.

Sometimes, when you want to select multiple objects while leaving one unselected, it can be handy to select only the stroke or line that you do not want included in your selection. Then, you can invert the selection so that everything else becomes selected. This can be quite a time saver.

By default, when you draw a selection box, the Select tool will select only the drawing strokes of the current drawing. If you prefer the Select tool to select all the strokes on all layers, you can disable the Works on Single Drawing option in the Tool Properties view or the Select Tool Works on Single Drawing option in the Preferences dialog box.

Some of the transformations, such as rotation, scale, skew, and flip are done relative to the position of the pivot point. You can temporarily reposition this pivot point for a transformation using the Select tool.

How to select with the Select tool

1. In the Timeline view, select the cell on which you want to select drawing objects.

2. In the Tools toolbar, select the Select ▸ tool or press Alt + S.

3. In the Camera view, select the drawing objects.

   ‣ You can select all the drawing objects in a drawing by using **Edit > Select All** or by pressing Ctrl + A (Windows/Linux) or ⌘ + A (Mac OS X).

4. To deform or reposition a selection:

   ‣ To reposition, click the selected drawing object and drag the selection to a new area.
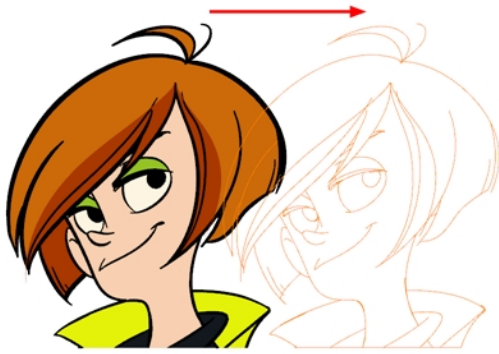
‣ To rotate, grab the selection box handle and rotate it.
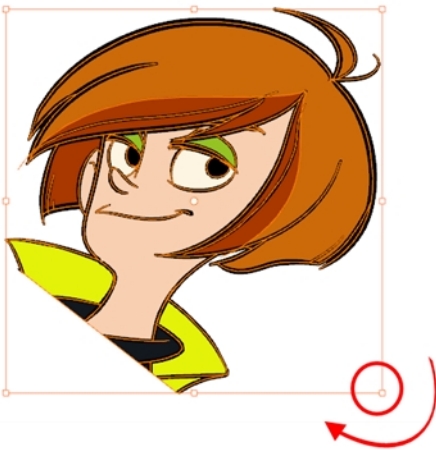
‣ To scale, pull or push on the top, side, bottom or corner control point. Hold down Shift to lock the selection's ratio.

‣ To skew, drag sideways or up and down the sides or top and bottom segments, between the control points.
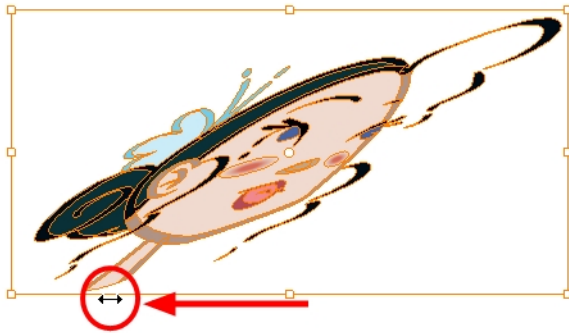
How to invert a selection

1. From the top menu, select **Edit > Invert Selection** or press Ctrl + Shift + I.

How to enable and disable the Select Tool Works on Single Drawing preference

1. In the Tools toolbar, select the Select ⬉ tool or press Alt + S.

2. Do one of the followings:

    ‣ From the top menu, select **Edit > Preferences** (Windows/Linux) or **Stage Essentials > Preferences** (Mac OS X). In the Camera tab, go to the Tools section and select or deselect the **Select Tool Works on Single Drawing** option and click **OK**.

    ‣ In the Tool Properties view, disable the Works on Single Drawing ⬤ option.

3. In the Camera view, make your selection. It is possible that you will have to restart Harmony depending on your system.

How to temporarily reposition the pivot point

1. In the Camera or Drawing view, select the drawing object you want to transform.

    The pivot point appears in the middle of your selection.

2. Click the pivot point and drag it to a new position.

   This becomes the new position of the pivot point for the current transformation and will remain there until you make a new selection.
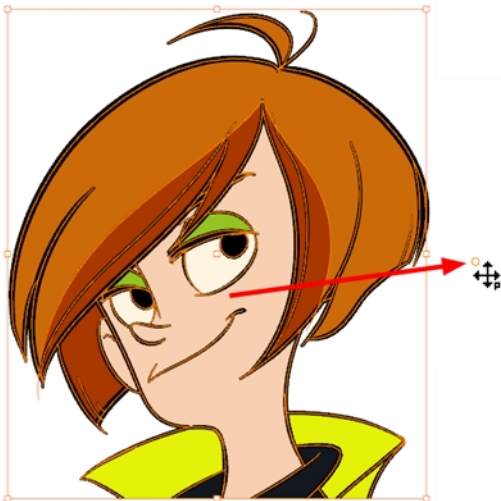
Erasing Parts of a Drawing

The Eraser tool is pressure sensitive, like the Brush tool, giving you more precision when erasing parts of a drawing. You can also use the Select tool to select drawing objects and delete them instead of erasing.

It is a good idea to create and save erasers with precise sizes and parameters in order to save time when drawing and designing. There are two icons located at the top, right corner of the Eraser Properties window. One is to create a new preset, while the other is to update the currently selected preset. Use them after you have set all the parameters for the new eraser preset.
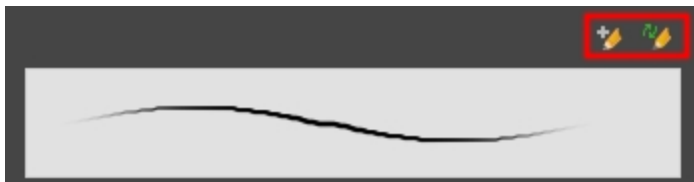
‣ **New Brush Preset**: Click on this button to create a new eraser brush style. The new eraser style will appear at the bottom of the list in the Presets section of the Tool Properties window. All the values and selected options in the Eraser Properties window will be attributed to this new style.

‣ **Update Preset:** Click on this button to update the selected eraser preset with any changes made in the Eraser Properties window. If you make changes and do not click on the Update Preset button, then all the changes made will only be applied to the selected eraser preset temporarily. The moment you switch to another eraser preset or to another drawing tool, these modifications to the eraser preset will disappear.

How to erase with the Eraser tool

1. In the Timeline or Xsheet view, select the cell that contains objects you want to erase.

2. In the Tools toolbar, select the Eraser 🖍 tool or press Alt + E.

3. In the Camera or Drawing view, start erasing.

How to modify the eraser settings

1. In the Tools toolbar, select the Eraser 🖌 tool .

2. In the Tool Properties view, the preview area displays the stroke that will be produced after you customize the different parameters in the Eraser Properties view. Click the arrow button.
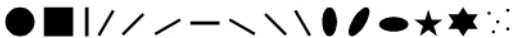
The Eraser Properties window opens.
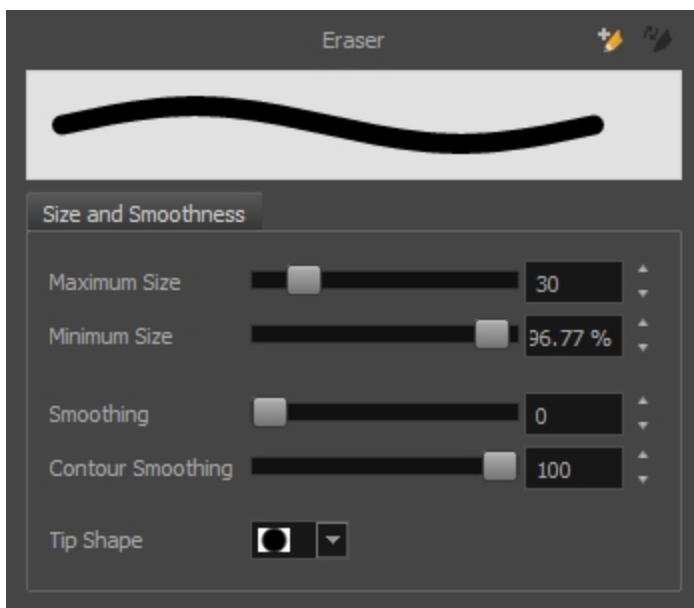
The Size and Smoothness tab is where you set the minimum and maximum sizes of your drawing tool which will produce the thick and thin effect on your stroke.

The Soft Eraser tab needs to be enable for its parameters to become active. This feature only works on soft or textured brush strokes. Both tabs works with the pressure sensitivity of a pen tablet.

Parameter	Description
Size and Smoothness	
Maximum Size	Sets the maximum width of the line.
Minimum Size	Sets the minimum width of the line in relation to the maximum size.
Smoothness	Lets you modify the central line smoothness of the line. This parameter smooths the initial movement of your line. Increasing the value will result in a smoother line with fewer control points.
Contour Smoothness	Optimizes the contour line smoothness of the line. This parameter smooths the contour of the line once it has been traced. The higher the value, the fewer con-

	trol points will compose your line.
Tip Shape	Lets you select a tip shape—from round and square ones to star shaped. This option is disabled when using a textured brush. ●■❘∕∕⁄—╲╲❭❬●⬤★✦⬩

Reshaping a Drawing Using the Contour Editor Tool

The Contour Editor tool is a powerful tool that allows you to add, remove or modify points on a vector line and control them with Bezier handles. It is used to correct line shapes and modify a single part of a colour zone. If a line is too thin or has a gap in it, you can modify and correct it with the Contour Editor tool. You can also use this tool to create elaborate shapes.

The Contour Editor displays vector points around a shape and the central vector points in a pencil line. Pulling or pushing on these points adjusts the brush's line thickness. Points can be selected and deleted. Each point has two Bezier handles for correcting the curves between two points. Shapes can be modified by pulling and pushing directly on the segment between the points. You can use it to perfect a central shape pencil line, a contour shape brush line, or even create an elaborate shape from a basic ellipse or square.

How to reshape with the Contour Editor tool

1. In the Timeline or Xsheet view, select the cell in which you want to draw.

1. In the Tools toolbar, select a shape tool: ∕ ◯ ▢.

2. In the Tool Properties view, click the Ellipse ◯ button, click the Auto Fill 🔴 button and set the pencil size to **0**.

3. In the Drawing or Camera view, draw a circle.
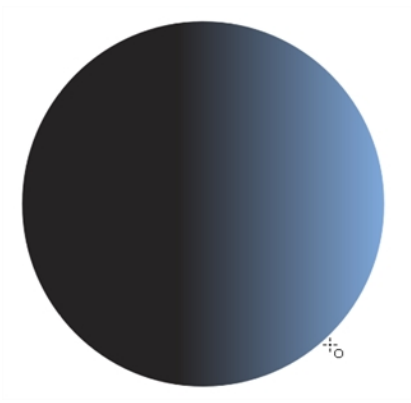
4. In the Tools toolbar, select the Contour Editor ▷ tool.

5. In the Drawing or Camera view, click the line to reshape it.
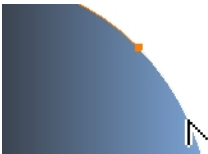
6. Select one or several points by clicking on them or circling around.
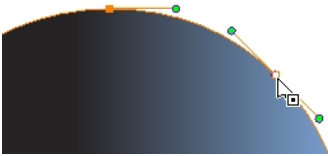
7. Press Delete to delete a selected point.

   Press Ctrl (Windows/Linux) or ⌘ (Mac OS X)and click on the contour to add a new point to adjust the contour.

8. To modify the shape, you can:

   ‣ Pull on the Bezier handle. Both point's handles will move as one.
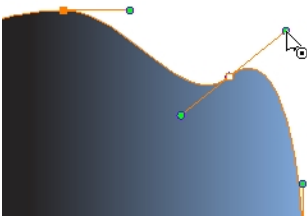
   ‣ Hold down Alt and pull on one of the Bezier handles. The point's handle will move independently from the other one.
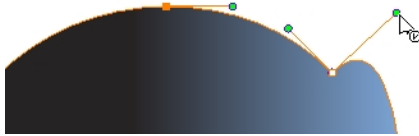
‣ Move the selected points to a new area.
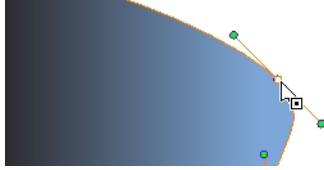
‣ Pull directly on the line between two points. No selection is necessary. Holding down Shift will limit the contour modification to the curve between the two first points.
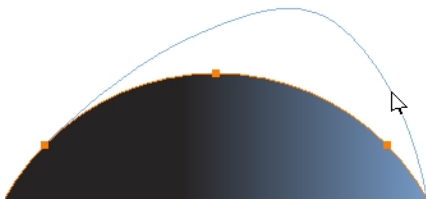
‣ If an anchor point has no visible Bezier handles, hold down the Alt key to display them.

‣ To add control points, press Ctrl (Windows/Linux) or ⌘ (Mac OS X) and click the line.

‣ To remove control points, select the control point and press Delete.

Drawing with Shapes
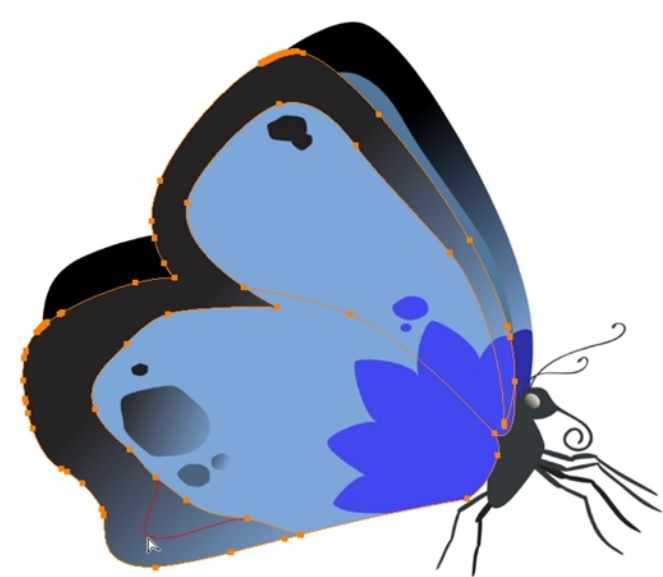
In Harmony, you can use the shape tools to draw circles, lines and squares. You can also easily reshape a square or circle into a much more complex drawing such as these butterfly wings—see *Reshaping a Drawing Using the Contour Editor Tool* on page 46 .

How to draw with a Shape tool

1. In the Timeline or Xsheet view, select the cell on which you want to draw.

2. In the Tools toolbar, select a shape tool: ╱ ◯ ▢ .

3. To automatically fill the shape, in the Tool Properties view, select the Auto Fill 🔴 option.

4. In the Camera view, click and drag to draw the shape.
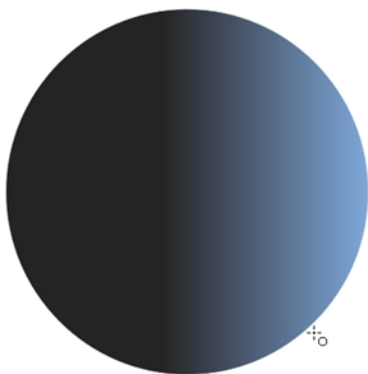
   ‣ Hold down Shift to lock the rectangle or the ellipse ratio to 1:1.
   ‣ Hold down Alt to draw the rectangle or ellipse from its centre.
   ‣ Hold down Shift to snap the line every 15 degrees.
   ‣ Hold down Alt to snap the start or end of the line to a nearby stroke.

5. Use the Contour Editor ▷ tool to deform the shape and create your drawing.
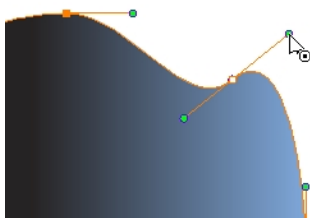
Drawing with the Polyline Tool
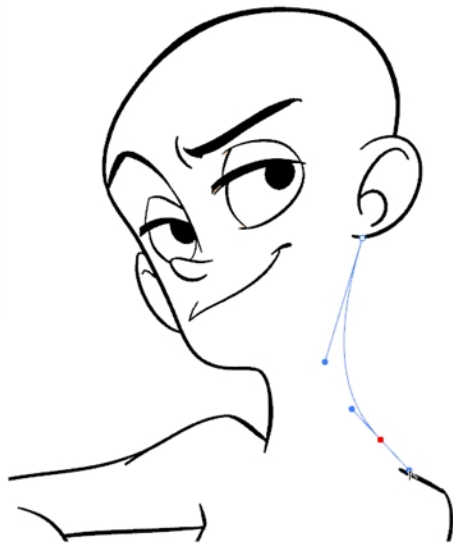
The Polyline tool is used to draw shapes with a central vector type of line. To form a shape, you click to add a point and then, without releasing the mouse, pull the handle in the desired direction before adding the next point and repeat the operation. To edit the shape, you can use the Contour Editor tool.

How to draw with the Polyline tool

1. In the Timeline view, select the cell on which you want to draw.

2. In the Tools toolbar, select the Polyline ⌇ tool or press Alt + _.

3. In the Camera or Drawing view, click and drag to create a point and a Bezier handle to shape your line.

    ‣ Press Alt to pull only one handle, instead of two.
    ‣ Press Shift to snap the handles to 45, 90, or 180 degrees.

4. Click a new area and drag to create a second point and Bezier handle.
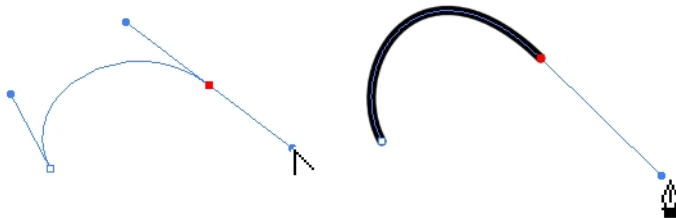
5. Repeat the previous step until your shape is completed.

6. Press Ctrl (Windows/Linux) or ⌘ (Mac OS X) and click to release the Polyline tool from the current path or shape that it is creating. Continue to use the tool to make multiple, independent paths or shapes.

7. If necessary, reshape the lines using the Contour Editor ▷ tool—see *Reshaping a Drawing Using the Contour Editor Tool* on page 46.

Drawing with Invisible Lines

There are two different ways to draw invisible lines.

Using the Pencil tool, you can draw as strokes only, meaning that the line will be invisible. This can be useful for drawing tones and highlights directly on the character.

The Stroke tool draws invisible lines only. You cannot add thickness to the line. Unlike the Close Gap tool that creates a short, straight line between two points, the stroke line will stay exactly where you draw it. This tool can be useful for closing a zone in a particular way or creating some hard shadows or highlight areas.

Sometimes, it may be difficult to see your strokes, especially if your colours are similar to the blue stroke colour. In Harmony, you can display the strokes in washed-out colours so that the invisible lines stand out.

How to draw invisible lines with the Pencil tool

1. In the Timeline view, select the cell on which you want to draw.

2. In the Tools toolbar, select the Pencil ✏ tool or press Alt + /.

3. From the top menu, select **View > Drawing > Show Strokes** ✎ or press K.

4. In the Tool Properties view, set the Pen Style size to **0**. You can also adjust the smoothness.

5. In the Camera or Drawing view, start drawing.

   If you forgot to enable the Show Strokes option before drawing, as soon as you draw a first stroke, a Message dialog box opens.
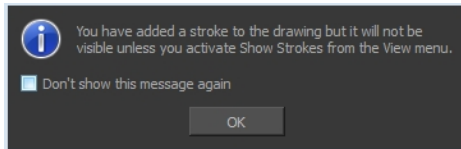
   Select the **Don't Show This Message Again** option if you do not want the dialog box to notify you about the Show Strokes option.

6. Click **OK**.

7. You can modify the stroke shape with the Contour Editor tool.

How to draw invisible lines with the Stroke tool

1. In the Timeline view, select the cell on which you want to draw.

2. In the Tools toolbar from the Paint drop-down menu, select the Stroke tool or press Alt + V.

3. From the top menu, select **View > Show Drawing > Show Strokes** or press K.

4. In the Tool Properties view, you can adjust the smoothness.

5. In the Camera or Drawing view, start drawing.

   If you forgot to enable the Show Strokes option before drawing, as soon as you draw a first stroke, a Message dialog box opens.
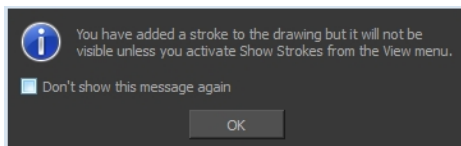
   Select the **Don't Show This Message Again** option if you do not want the dialog box to notify you about the Show Strokes option.

6. Click **OK**.

7. You can modify the stroke shape with the Contour Editor tool.

Deforming a Drawing with the Perspective Tool

The Perspective tool lets you deform a drawing selection and alter its perspective.

How to deform a drawing with the Perspective tool

1. In the Tools toolbar, select the Perspective ▱ tool from the Contour Editor drop-down menu or press Alt + 0.

2. In the Camera or Drawing view, select a drawing to deform.

3. Click and drag the different anchor points to deform the shape.

Warping a Drawing with the Envelope Tool

The Envelope tool lets you deform and warp part of a drawing using a grid envelope and Bezier handles.

How to warp a drawing with the Envelope tool

1. In the Tools toolbar, select the Envelope ⊞ tool from the Contour Editor drop-down menu.

2. In the Timeline view, select a drawing to deform.

3. In the Camera or Drawing view, select the region you want to deform

4. Click and drag the different anchor points and handles to deform the image.
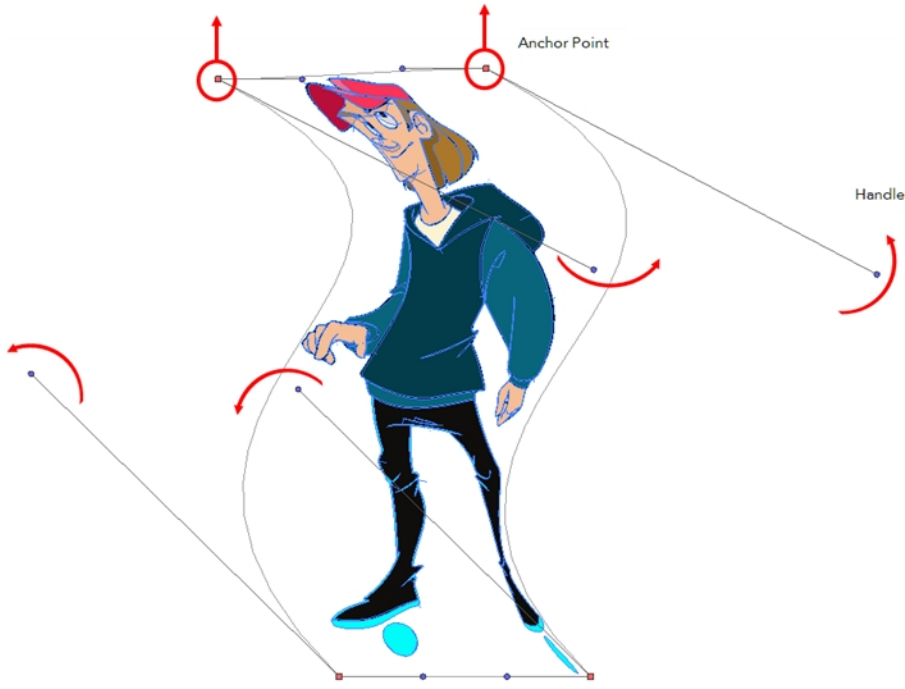
5. To display more controls, in the Tool Properties view, click the Show Advanced Controls ⠿ button.
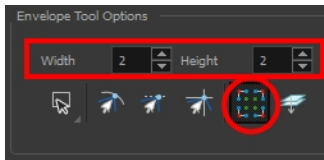
6. Increase the height and width of the grid to get more control points to deform your image.
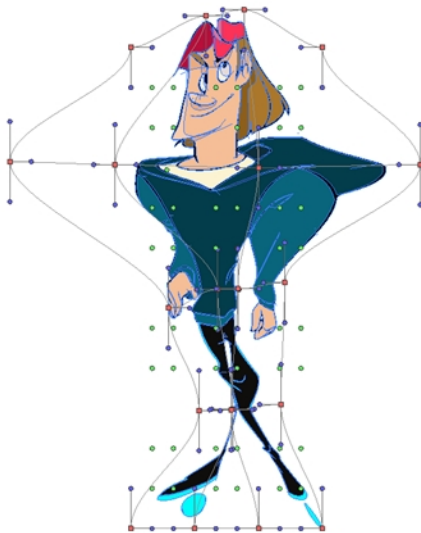
Cutting Drawing Parts
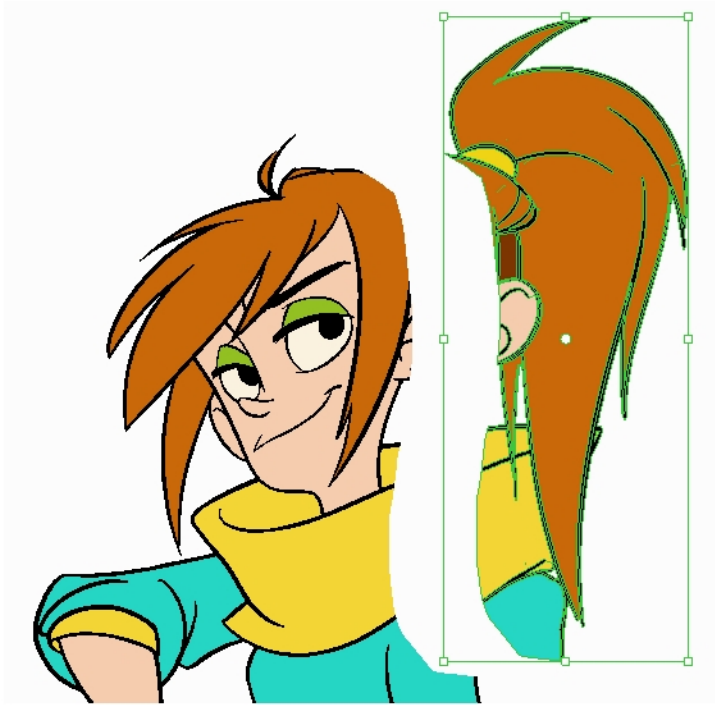
The Cutter tool lets you cut a drawing area to move, copy, cut or delete it.

How to cut with the Cutter tool

1. In the Tools toolbar, select the Cutter ✎ tool or press Alt + T.

2. In the Camera or Drawing view, make a selection around an area to cut away.
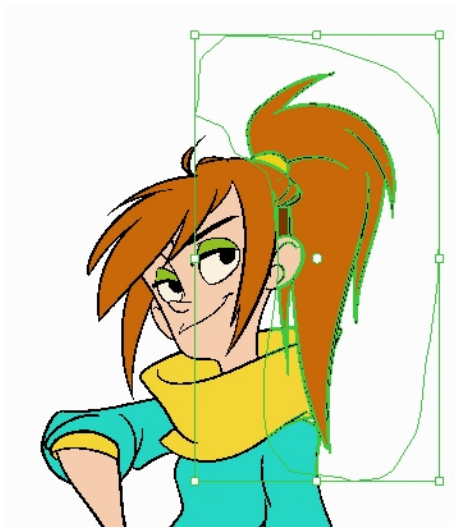
‣ To delete the selected zone, press Delete.
‣ To move the selection, click the selection and drag it to a new area.

‣ Use the bounding box controls to scale, skew, or rotate the cut piece.
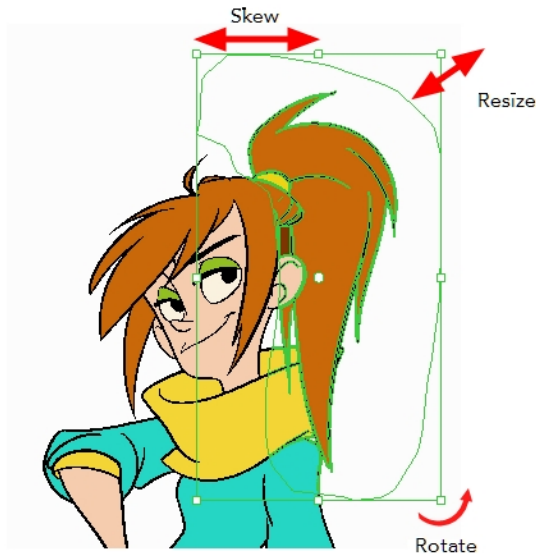
Smoothing Lines

When drawing in a digital application, it is not like drawing on a sheet of paper. Sometimes the lines you draw may look as if they were drawn with an unsteady hand. When this occurs, you may need to correct the look of your lines.

Harmony has a very powerful tool you can use to optimize contours and reduce the number of points on the lines, the Smooth Editor tool.

How to optimize lines with the Smooth Editor tool

1. In the Tools toolbar, select the Smooth Editor ⬚ tool or select **Drawing > Tools > Smooth Editor**.

2. In the Camera or Drawing view, place your pointer over the lines to smooth. You may need to pass over the same line several times to remove more points and make the line smoother. Note that by default, the Smooth Editor tool colour is yellow, it was changed to orange for screen grab clarity—see *Smooth Editor Tool Options* on page 94 to learn about the various settings available.
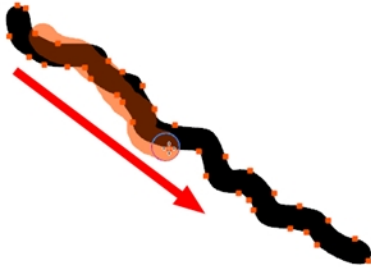
Working With Text
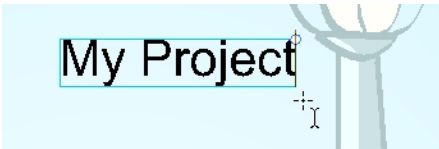
With the Text tool, you can type text in your project using various fonts and texts attributes. Text objects are part of a drawing, so you can manipulate them in the same way. OTF fonts are also supported.

How to add text to drawings

1. Do one of the following:

    ‣ In the Tools toolbar, select the Text ⊤ tool.

    ‣ From the top menu, select **Drawing > Tools > Text**.

    ‣ Press Alt + 9.

2. In the Timeline view, select the cell containing the drawing on which you want to add text.

3. In the Drawing or Camera view, click on the location you want the text to begin.

4. You can use the Tool Properties view to select the font, font size and format of the text you will type— see *Text Tool Options* on page 96.

5. Type in the desired text.
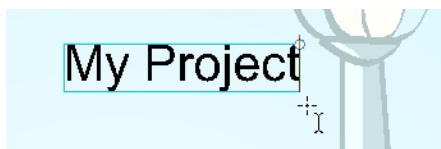
6. Click outside the text box to exit the typing mode.

If you want to create another text object, click outside the currently active text box. You can always return to edit the text by selecting the Text ⊤ tool and clicking in the text.

More Drawing Tools

Harmony offers a wide variety of useful tools to optimize your drawings and work more efficiently; tools such as Group, Arrange, and the animation disk to rotate your workspace.

- *Arrange* on page 59
- *Convert Brush Strokes to Pencil Lines* on page 60
- *Pencil Lines to Brush Strokes* on page 60
- *Strokes to Pencil Lines* on page 60
- *Optimize* on page 61
- *Grid* on page 62
- *Group/Ungroup* on page 62
- *Hand* on page 62
- *Rotate View* on page 63

Arrange

The different Arrange options let you reorder drawing objects inside a single layer in the Camera view.

Name	Button	Description	Access Method
Bring to Front		Moves the selected art to the front (on top).	From the top menu, select **Drawing > Arrange > Bring to Front.** Press Ctrl + Shift + PgUp (Windows/Linux) or ⌘ + Shift + PgUp (Mac OS X).
Bring Forward		Moves the selected art one level forward (closer to the front).	From the top menu, select **Drawing > Arrange > Bring Forward.** Press Ctrl + PgUp (Windows/Linux) or ⌘ + PgUp (Mac OS X).
Send Backward		Moves the selected art one level lower (behind).	From the top menu, select **Drawing > Arrange > Send Backward.** Press Ctrl + PgDown (Windows/Linux) or ⌘ + PgDown (Mac OS X).
Send to Back		Moves the selected art behind everything (bottom / back).	From the top menu, select **Drawing > Arrange > Send to Back**. Press Ctrl + Shift + PgDown (Windows/Linux) or ⌘ + Shift + PgDown (Mac OS X).

Convert Brush Strokes to Pencil Lines

The Brushes Strokes to Pencil Lines operation converts selected contour strokes into centreline pencil strokes. The brush stroke thickness will be lost.

How to convert brush strokes to pencil lines

‣ From the top menu, select **Drawing > Convert > Brush Strokes to Pencil Lines** or press ^.
‣ Right-click on the selection, select **Convert > Brush Strokes to Pencil Lines** or press ^

Pencil Lines to Brush Strokes

The Pencil Lines to Brush Strokes operation converts the selected centreline pencil strokes into contour strokes brush lines.

How to convert pencil lines to brush strokes

‣ From the top menu, select **Drawing > Convert > Pencil Lines to Brush Strokes** or press &.
‣ Right-click on the selection, select **Convert > Pencil Lines to Brush Strokes** or press &

Strokes to Pencil Lines

The Strokes to Pencil Lines operation converts the selected invisible line to a pencil line.

How to convert strokes to pencil lines

‣ From the top menu, select **Drawing > Convert > Strokes to Pencil Lines** or press Shift + F12 (Windows/Linux only).

‣ Right-click on the selection, select **Convert > Strokes to Pencil Lines** or press Shift + F12 (Windows/Linux only)

Optimize
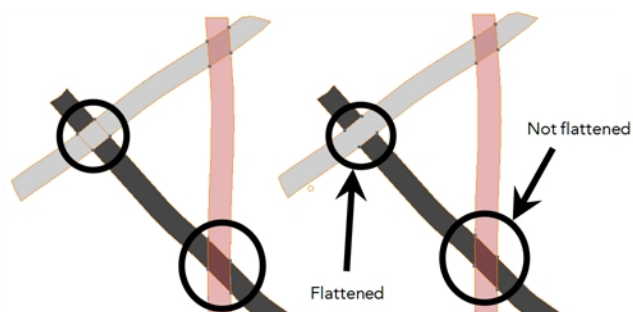
The Optimize command reduces the number of layers, such as overlapping brush strokes, in the selected drawing objects. Drawing objects will only be flattened and optimized if the selected objects do not change the appearance of the final image when they are merged.

For example, if you have selected a number of partially transparent objects, which you layered to create an additive colour effect, the selected transparent drawing objects will not be merged. This is because merging the transparent drawing objects will cause them to lose the effect of the layered transparent colours.

How to optimize

‣ Use the Select tool to select the drawing objects you want to optimize.

‣ From the top menu, select **Drawing > Optimize > Optimize**.

‣ From the Camera or Drawing view menu, select **Drawing > Optimize > Optimize**.

Grid

Use the Show Grid option to display a grid in the Drawing or Camera views.

Name	Button	Description	Keyboard Shortcut
Show Grid	⊞	Displays the grid.	**View > Grid > Show Grid** Press Ctrl + ' (Windows/Linux) or ⌘ + ' (Mac OS X).
Grid Outline Only		Displays the outline of the grid only.	**View > Grid > Grid Outline Only**
Square	⊞	Displays a standard square grid.	**View > Grid > Square**
12 Field Grid	12	Displays a 12-field size grid.	**View > Grid > 12 Field Grid**
16 Field Grid	16	Displays a 16-field size grid.	**View > Grid > 16 Field Grid**
Underlay	⊞◯	Displays the grid under the drawing elements.	**View > Grid > Underlay**
Overlay	⊞◯	Displays the grid over the drawing elements.	**View > Grid > Overlay**

Group/Ungroup

Use the Group option to group selected drawing objects. This can help in the selection, repositioning, re-scaling and other transformations to be applied to multiple objects of a drawing.

- From the top menu, select **Edit > Group > Group** or **Edit > Group > Ungroup**.
- From the Camera or Drawing view menu, select **Edit > Group > Group** or **Edit > Group > Ungroup**.
- Press Ctrl + G and Ctrl + Shift + G (Windows/Linux) or ⌘ + G and ⌘ + Shift + G (Mac OS X).

Hand

Use the Hand tool to pan through the Drawing or Camera view.

- In the Tools toolbar, select the Hand ✋ tool, click in the Drawing or Camera view and drag.

- You can also Hold down the Spacebar, click in the Drawing or Camera view and move your mouse in the direction you want to pan the view.

Rotate View

The Rotate View ⟳ tool lets you rotate the Drawing or Camera view, the same way as you would do with a real animation disc. This tool can also be used in the Perspective view.

How to use the Rotate View tool

1. Do one of the following:

    ‣ From the top menu, select **Drawing > Tools > Rotate View**.
    ‣ Press Ctrl + Alt (Windows/Linux) or ⌘ + Alt (Mac OS X).
    ‣ In the Tools toolbar, select the Rotate View ⟳ tool.
    ‣ In the Drawing or Camera view, right-click and select **Drawing Tools > Rotate View**.

2. In the Drawing or Camera view, click and drag to rotate the space.

Drawing Tool References

Harmony has a wide variety of drawing tools and each one of them has a series of options and modes available. This section covers these options. For details on how to use these tools, see *Drawing Tasks* on page 27.

- *Pencil Tool Options* on page 64
- *Vector Brush Tool Options* on page 66
- *Select Tool Options* on page 70
- *Eraser Tool Options* on page 76
- *Contour Editor Options* on page 80
- *Shape Tool Options* on page 82

Pencil Tool Options

When you select the Pencil ✏ tool, its properties and options appears in the Tool Properties view.
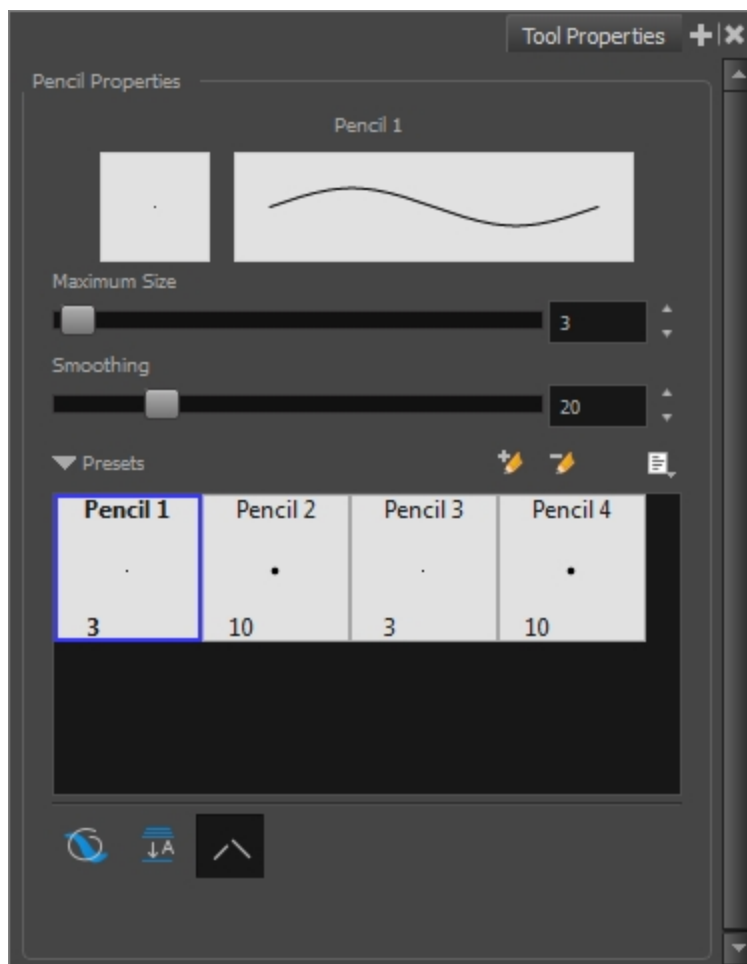
Maximum Size and Smoothing

This is where you set the maximum size of your drawing tool.

- ‣ **Maximum Size:** Defines the width of the stroke.
- ‣ **Smoothing:** Defines the number of control points added to the centre line. The fewer the control points the smoother (but less faithful) the line.

Pencil Presets

Harmony provides a variety of pencil presets and also lets you create and save your own. It is a good idea to create and save pencils with precise sizes and parameters when you draw and design for efficiency and consistency.

You can export the pencil presets that you have created and import those that others have created. This is a good way for you and project collaborators to keep a consistent look for the project—see *Working with Pencil Presets* on page 30

Draw Behind

When drawing on vector layers, the Draw Behind mode lets you paint behind existing art. By default, strokes appear over your work until you release the tool.

Auto-Flatten Mode

When drawing on vector layers, lines do not usually become one object. The Auto-Flatten mode automatically merges lines created with the existing ones into one single object as you draw.

> **NOTE:**
> Using the Select tool, you can use select and remove a segment of flattened pencil lines. Overlapping pencil lines drawn with the Auto-Flatten mode enabled are essentially cut into segments by the overlap and can therefore be treated as individual lines.

Auto-Close Gap

Auto Close Gap off   Auto Close Gap on
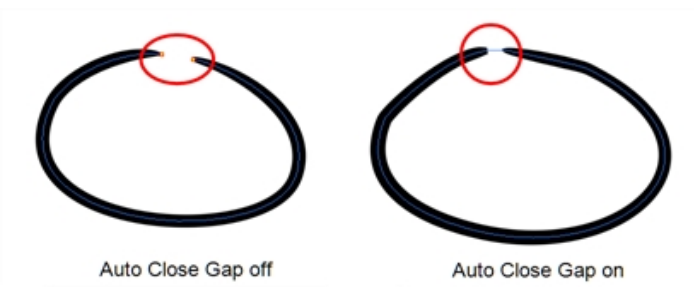
When using the pencil tool, you can automatically close strokes with an invisible stroke.

It is recommended to keep this option enabled when drawing with the Pencil tool.

Vector Brush Tool Options

When you're drawing on a vector layer and select the Brush 🖌 tool, its properties and options appear in the Tool Properties view.

Previewing the Stroke

The Preview area lets you see a preview of the stroke that will be produced after you customize the different

parameters in the Tool Properties view.

1. Select a brush style from the Presets section. It's a good idea to choose a brush preset that is closest to the style you want to create.

2. Click on the Show Extended Properties arrow to display advanced customization parameters.

Maximum Size and Smoothing

This is where you set the maximum size of your drawing tool.

‣ **Maximum Size:** Defines the width of the stroke.
‣ **Smoothing:** Defines the number of control points added to the centre line. The fewer the control points the smoother (but less faithful) the line.

Brush Presets

Brush presets are created by saving the properties of the current brush to a new preset, which you can reuse for repeated tasks. You can create as many brush presets as you need—see *Drawing with the Brush Tool* on page 34.

How to import pencils, brushes and erasers

1. From the Brush menu ▤ , select **Import Brushes**.

2. In the browser window that appears, navigate to and select the **.xml** file.

3. Click **Open.**

4. In the Import Brushes dialog box, select the brushes brushes and erasers you want to import. You can also import pencils at the same time.

5. Click **Import**.

   The imported brush, eraser and pencil styles will appear in the presets library. You can reuse any of the imported tips to create other brush, eraser and pencil style presets.

How to export pencils, brushes and erasers

1. From the Brush menu, select **Export**.

2. In the Export Brushes dialog box, select the vector brushes and erasers to export, as well as any pencils.

3. Click **Export**.

4. In the Export Brushes window that appears, browse to the location where you want to save the .xml file and give it a name.

5. Click **Save**.

How to change the Presets Library thumbnail display

1. From the Brush menu, select one of the following:

Parameter	Description
Small Thumbnail	Reduces the size of the thumbnails in order to view more at the same time. Displays an image of the tool's tip and its maximum size.
Large Thumbnail	Increases the size of the thumbnails in order to see the images more clearly. Displays an image of the tool's tip, its maximum size and its name.
Stroke View	Displays the tool's name, maximum size and stroke preview.

Draw Behind

When the Draw Behind 🌀 mode is enabled, the lines you draw will appear behind the art that already exists.

Repaint Brush Mode

The Repaint Brush 🖌️ is used to repaint zones that have already been painted, it will not affect empty zones or pencil lines. It also automatically flattens each of its brush lines so it does not add new brush lines on top of existing ones. You can use this mode to paint tones or highlights onto your character.

Auto-Flatten Mode

When enabled, the Auto-Flatten ≣ mode automatically flattens the new lines created with the existing artwork as you draw in the Drawing or Camera view. Brush strokes will flatten with brush strokes and pencil lines will flatten with pencil lines.

Select Tool Options

When you use the Select 🖈 tool, its properties and options appear in the Tool Properties view.
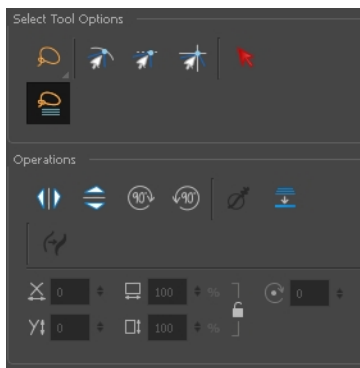
Lasso and Marquee

Choose between the Lasso 🔵 and Marquee 🔲 options to change the selection style of the tool.

- Click and hold Alt to temporarily switch from the current mode to the other.

Snap Options

You can enable different snapping modes to help you when repositioning drawings using the Select tool.

- **Snap to Contour:** Snaps your selection or point to any line you position it on. As soon as you move it close enough to another line, your point or selection will snap to it.

- **Snap and Align:** Snaps the selected anchor point to any existing line while displaying temporary rulers as a guide that you can also snap your anchor point to.

- **Snap to Grid:** Snaps your selection following the currently enabled grid.
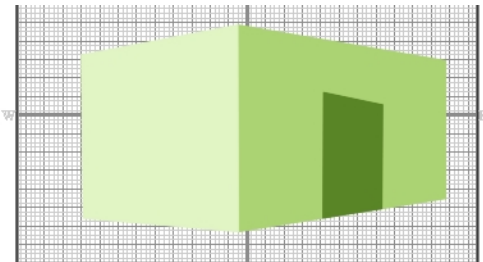
How to snap to the grid

1. Do one of the following:

   ‣ Select **View > Grid > Show Grid** to display the grid in the Camera or Drawing view or press Ctrl + ' (Windows/Linux) or ⌘ + ' (Mac OS X).

   ‣ Select **View > Grid > Square Grid**, **12 Field Grid** or **16 Field Grid** for your current needs.

2. In the Tools toolbar, select the Contour Editor ⯈ tool or press Alt + Q.

3. In the Tool Properties view, click the Snap to Grid ⯈ button.

4. In the Camera or Drawing view, click on the anchor point you want to snap to the grid, drag it to the desired position and release.
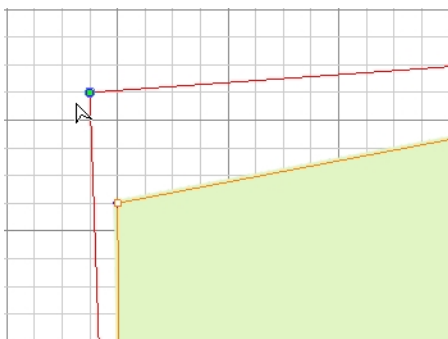
Selecting by Colour

The Select by Colour mode lets you select all the zones and lines in your drawing painted with the same colour swatch.

NOTE: Only the zones painted with the **SAME** colour swatch will be selected. If another zone is coloured with the exact same RGB value (same colour), but not painted with the same colour swatch, it will not be selected.

How to select areas by colour

1. In the Tools toolbar, select the **Select** tool or press Alt + S.

2. In the Tool Properties view, click the Select by Colour button.

3. In the Camera or Drawing view, click on any zone or line in your drawing.

   All zones and lines of the same colour are selected.

4. Click the Select tool again to return to the regular Select mode.

Single Mode

By default, when you draw a selection box in the Camera view, the Select tool will select only the drawing strokes of the current drawing. If you prefer the Select tool to select all the strokes on all layers, you can disable the Works on Single Drawing ✏ option in the Tool Properties view or disable the Select tool Works on Single Drawing preference. To do this, go to the top menu, select **Edit > Preferences > Camera** (Windows/Linux) or **Stage Essentials > Preferences > Camera** (Mac OS X) and uncheck the Select tool Works on Single Drawing option.

Flip Horizontal and Vertical

The Flip Horizontal ◁|▷ and Flip Vertical ⇕ operations flip the current selection horizontally or vertically.

‣ From the top menu, select **Drawing > Flip Horizontal** and **Flip Vertical**.

Rotate 90 Degrees CW and CCW

The Rotate 90 Degrees CW and Rotate 90 Degrees CCW operations rotate the current selection 90 degrees clockwise or counter-clockwise.

‣ From the top menu, select **Drawing > Transform > Rotate 90 Degrees CW** and **Rotate 90 Degrees CCW**.

‣ Press Ctrl + 7 and Ctrl + 9 (Windows/Linux) or ⌘ + 7 and ⌘ + 9 (Mac OS X).

Smooth

The Smooth operation lets you smooth out selected drawing strokes and remove extra points.

‣ From the top menu, select **Drawing> Optimize > Smooth** or press Alt + Shift + S.

Flatten
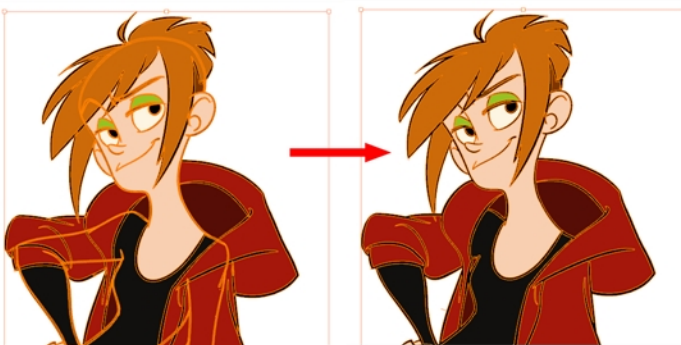
The Flatten operation is used to merge drawing objects and brush strokes into a single layer. If you draw new lines to fix a drawing or line with many brush strokes, it can be useful to flatten them all into a single shape. By default, lines are drawn one on top of each other. If you intend to repaint the lines or modify their shape, it will be easier if they are flattened.

‣ From the top menu, select **Drawing > Optimize > Flatten** or pres Alt + Shift + F.

Distribute to Layers

The Distribute to Layers ⬚ option is used to separate the selected art strokes and send them to new drawing layers. In the Camera view, once you have drawn your artwork, you can select the strokes you want to distribute using the Select ▸ tool and click on the Distribute to Layers ⬚ button; you can also select **Drawing > Distribute to Layers**. It will automatically take every stroke from the drawing selection made in the Camera view and separate them into a different layer for each. If an artwork is composed of several strokes, you must group them using **Edit > Group > Group** before using the Distribute to Layers option. This option cannot be done from the Drawing view.

Pencil to Brush
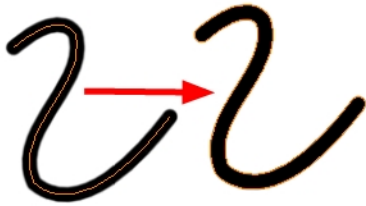
The Pencil to Brush ↺ operation converts the selected centre line pencil strokes into contour strokes brush lines.

From the top menu, select **Drawing > Convert > Pencil Lines to Brush** or press &.

Offset X and Y

Use the Offset X and Offset Y operation fields to enter specific values and precisely reposition the selected shape.
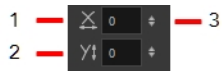
1. **X**: Type a value in this field to reposition your selection along the X-axis.
2. **Y**: Type a value in this field to reposition your selection along the Y-axis.
3. **Up/Down arrows:** Use the up and down arrows to modify the value in the X or Y value field.

Width and Height

Use the Width and Height operation fields to enter specific values to resize the selected shape with precision.
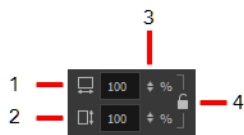
1. **Width**: Type a value in this field to resize the width of your selection.
2. **Height**: Type a value in this field to resize the height of your selection.
3. **Up/Down arrows:** Use the up and down arrows to modify the value in the Width or Height fields.
4. **Lock icon**: Click the lock icon to lock or unlock the ratio between the Width and Height values.

Angle

The Angle operation lets you to enter specific values and accurately rotate the selected shape.
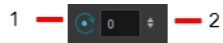
1. **Angle**: Type a degree value in this field to rotate your selection.
2. **Up/Down arrows:** Use the up and down arrows to modify the value in the Angle value field.

When you select a pencil line with the Select tool, additional options appear in the Tool Properties view.

Adjusting the Pencil Line Thickness

Use the Adjusting the Pencil Line Thickness operation field to resize the selected centreline strokes. This operation is not permitted on contour line shapes, such as brush strokes or shape fills.
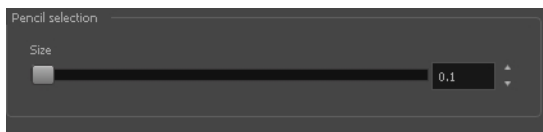
Adjusting the Text Selection

When you select text with the Select tool, the tool properties will display the Text tool options on the bottom of the view. You can also press Alt + 9 to display only the Text properties in the Tool Properties view—see *Text Tool Options* on page 96.
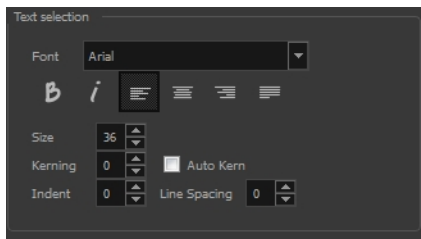
Eraser Tool Options

When you're drawing on vector layer and you select the Eraser 🖍 tool, its properties and options appear in the Tool Properties view.
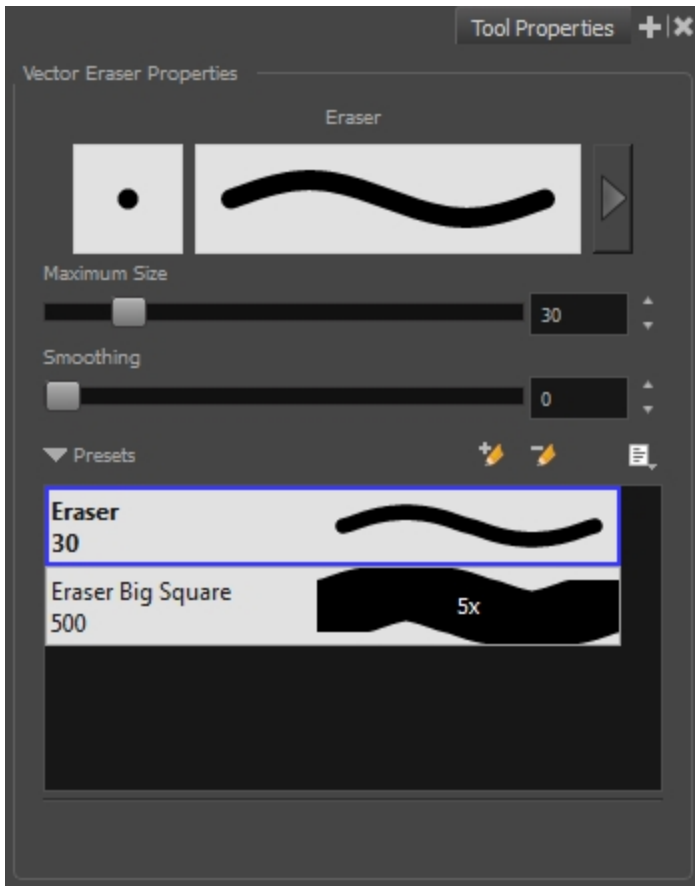
Previewing the Stroke

The Preview area lets you see a preview of the stroke that will be produced after you customize the different parameters in the Tool Properties view. Click on the Show Extended Properties arrow to display advanced customization parameters,

Maximum Size and Smoothing

This is where you set the maximum size of your drawing tool.

‣ **MaximumSize:** Defines the width of the stroke.

‣ **Smoothing:** Defines the number of control points added to the centre line. The fewer the control points the smoother (but less faithful) the line.

Eraser Presets

It is a good idea to create and save erasers with precise sizes and parameters in order to save time when drawing

and designing. Toon Boom Harmony provides you with a variety of default eraser styles and allows you to create and save your own.

Eraser presets are created by saving the properties of the current eraser as a preset, in order to reuse it again and again. You can create a new preset from the Eraser Tool Properties view, but it is better to do it from the Eraser Properties—see *Erasing Parts of a Drawing* on page 44.

The Eraser tool uses its own preset list, separated from the Brush tool.

How to import pencils, brushes and erasers

1. From the Brush menu ≣ , select **Import Brushes**.

2. In the browser window that appears, navigate to and select the `.xml` file.

3. Click **Open.**

4. In the Import Brushes dialog box, select the brushes brushes and erasers you want to import. You can also import pencils at the same time.

Select Brushes from the list:

☑	MyPencil 2　　　P	～
☑	MyBrush 10　　B	～
☑	MyEraser 30　　E	～

☑ Select/Deselect All
☑ Pencil
☑ Vector Brush　☑ Vector Eraser

Import　　Cancel

5. Click **Import.**

The imported brush, eraser and pencil styles will appear in the presets library. You can reuse any of the imported tips to create other brush, eraser and pencil style presets.

How to export pencils, brushes and erasers

1. From the Brush menu, select **Export**.

2. In the Export Brushes dialog box, select the vector brushes and erasers to export, as well as any pencils.

3. Click **Export**.

4. In the Export Brushes window that appears, browse to the location where you want to save the .xml file and give it a name.

5. Click **Save**.

How to change the Presets Library thumbnail display

1. From the Brush menu, select one of the following:

Parameter	Description
Small Thumbnail	Reduces the size of the thumbnails in order to view more at the same time. Displays an image of the tool's tip and its maximum size.
Large Thumbnail	Increases the size of the thumbnails in order to see the images more clearly. Displays an image of the tool's tip, its maximum size and its name.
Stroke View	Displays the tool's name, maximum size and stroke preview.

Contour Editor Options

When you select the Contour Editor ⌖ tool, its properties and options appear in the Tool Properties view.
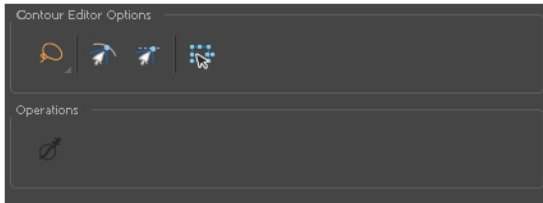
Lasso and Marquee

Choose between the Lasso ⬭ and Marquee ⬚ options to change the selection style of the tool.

- Click and hold Alt to temporarily switch from the current mode to the other.

Snap to Contour

The Snap to Contour ⤳ option will snap the selected anchor point to any line you position it on.

How to snap two shapes together

1. In the Tools toolbar, select the Contour Editor ⌖ tool or press Alt + Q.

2. In the Tool Properties view, click the Snap to Contour ⤳ button.

3. In the Camera or Drawing view, click on an anchor point you want to snap to the other shape, drag it on top of the contour line area and release it.
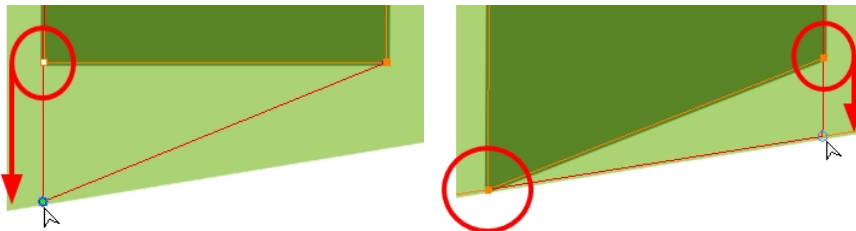
Snap and Align
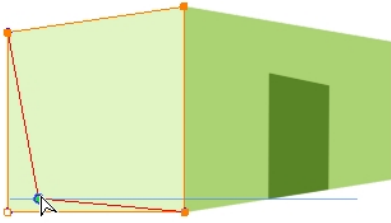
The Snap and Align ✈ option lets you snap the selected anchor point to any existing line while displaying temporary rulers as a guide that you can also snap your anchor point to.

How to snap and align

1. In the Tools toolbar, select the Contour Editor ▷ tool or press Alt + Q.

2. In the Tool Properties view, click the Snap and Align ✈ button.

3. In the Camera view, click on an anchor point you want to snap, drag it until a ruler is displayed, position it on the ruler or on the contour line and release.

Show Contour Editor Controls

Use the Show Contour Editor Controls ⊡ option to show the contour editor controls. You can use these controls to scale, reposition and rotate the selected anchor points.

Smooth Selection

The Smooth ![icon] operation lets you smooth out selected drawing strokes and remove extra points.

‣ From the top menu, select **Drawing> Optimize > Smooth** or press Alt + Shift + S.

Shape Tool Options

When you select a shape tool (Rectangle, Ellipse, Line), its properties and options appear in the Tool Properties view.
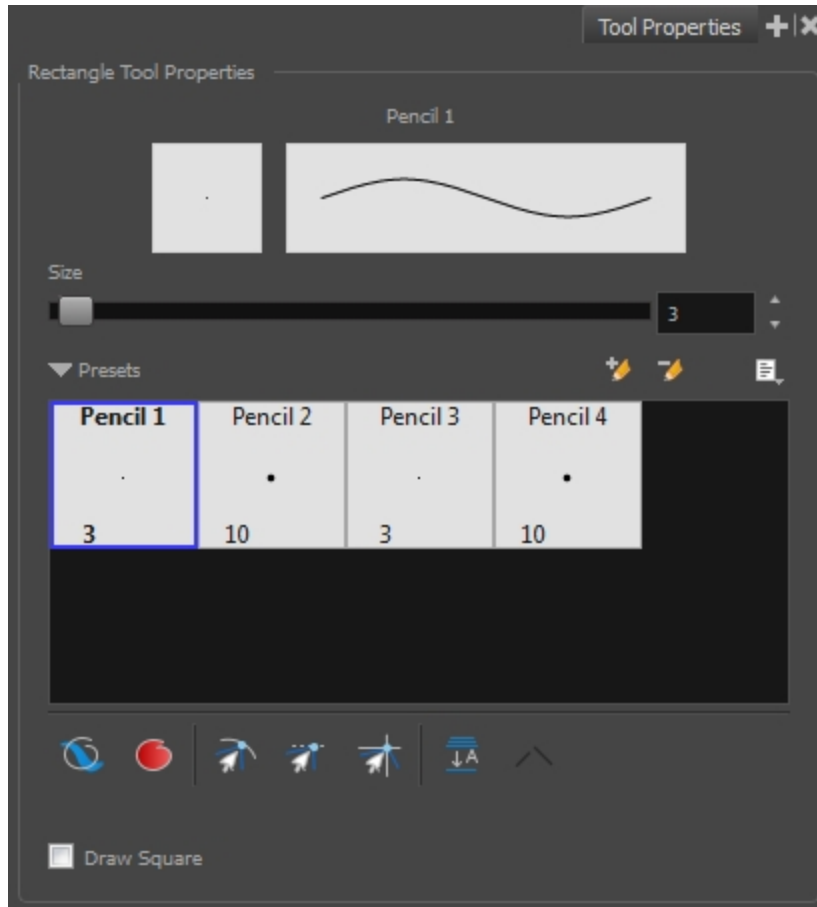
Previewing the Stroke

The Preview area lets you see a preview of the stroke that will be produced after you customize the different parameters in the Tool Properties view.

1. Select a brush style from the Presets section. It's a good idea to choose a brush preset that is closest to the style you want to create.

2. Click on the Show Extended Properties arrow to display advanced customization parameters.
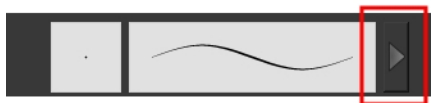
Size

Move the Size slider left to reduce the line thickness and to the right to increase its width.

Adjusting the Pencil Line Style
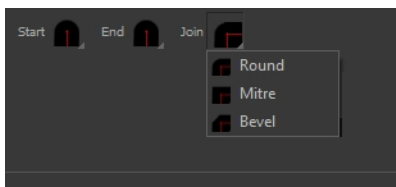
You can adjust the start, end, and joint style of a selected pencil line.

- **Start**: Lets you select the style of the start tip, which is the first tip you drew. You can choose between Round or Flat style.

- **End**: Lets you select the style of the end tip, which is the last tip you drew. You can choose between Round or Flat style.

- **Join:** Lets you select the joint style. The joints are where the line curves abruptly. You could also define the Join style as the corner style. You can choose between Round, Mitre and Bevel style.

Pencil Presets

Harmony provides a variety of pencil presets and also lets you create and save your own. It is a good idea to create and save pencils with precise sizes and parameters when you draw and design for efficiency and consistency.

You can export the pencil presets that you have created and import those that others have created. This is a good way for you and project collaborators to keep a consistent look for the project—see *Working with Pencil Presets* on page 30

Draw Behind

When the Draw Behind mode is enabled, the lines you draw will appear behind the art that already exists.

Automatic Filling
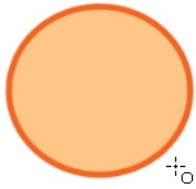
Use the Automatic Filling 🔴 option to automatically fill your shape with the selected colour as you draw. By default, the Shape tool creates the outline of an empty shape that you can later fill using the Paint tool. This option is unavailable for the line tool.

Snap Options

When drawing a shape, you can enable different snap modes to help you create your shape.

- The Snap to Contour ⤢ option snaps your shape to any line you position it on.

- The Snap and Align ⤢ option snaps the selected anchor point to any existing line, while displaying temporary rulers as a guide that you can also snap your anchor point to.

- The Snap to Grid ⤢ snaps your shape to the currently enabled grid.

Auto-Flatten Mode

When enabled, the Auto-Flatten ⥯ mode automatically flattens the new lines created with the existing artwork as you draw in the Drawing or Camera view. Brush strokes will flatten with brush strokes and pencil lines will flatten with pencil lines.

Using the Select tool, you can use the middle mouse button to select a segment of flattened pencil line. This creates a nice finish on the lines and corners of your artwork.

Middle mouse button drag
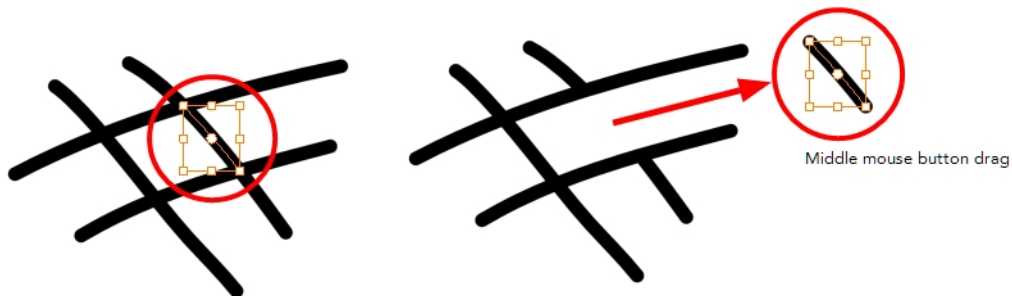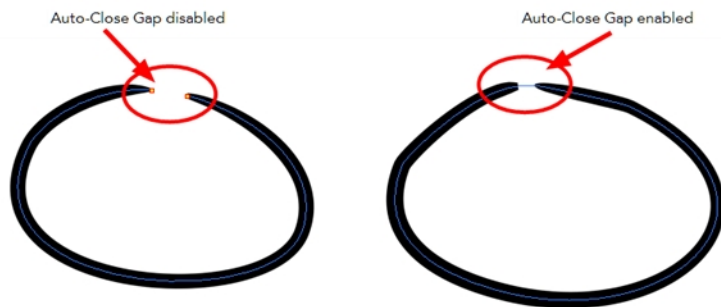
Auto-Close Gap

When enabled, the Auto-Close Gap ⌃ mode automatically connects, with an invisible stroke, the pencil lines you draw close to each other in the Camera view.

NOTE: It is recommended to leave this option enabled when drawing with the Pencil tool.

Keep Proportion
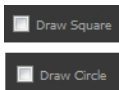
When the Ellipse or Rectangle mode is enabled in the Tool Properties view, the Draw Circle or Draw Square option appears. When selecting these options, the shape produced will be a perfect circle or square (as opposed to an oval or rectangle).

Enabling this option is a good idea if you plan to create many squares or circles. However, if you only need to create one, holding down the Shift key as you create your shape will maintain the proportion in the same way.

Polyline Tool Options

When you select the Polyline ⌇ tool, its properties and options appear in the Tool Properties view.
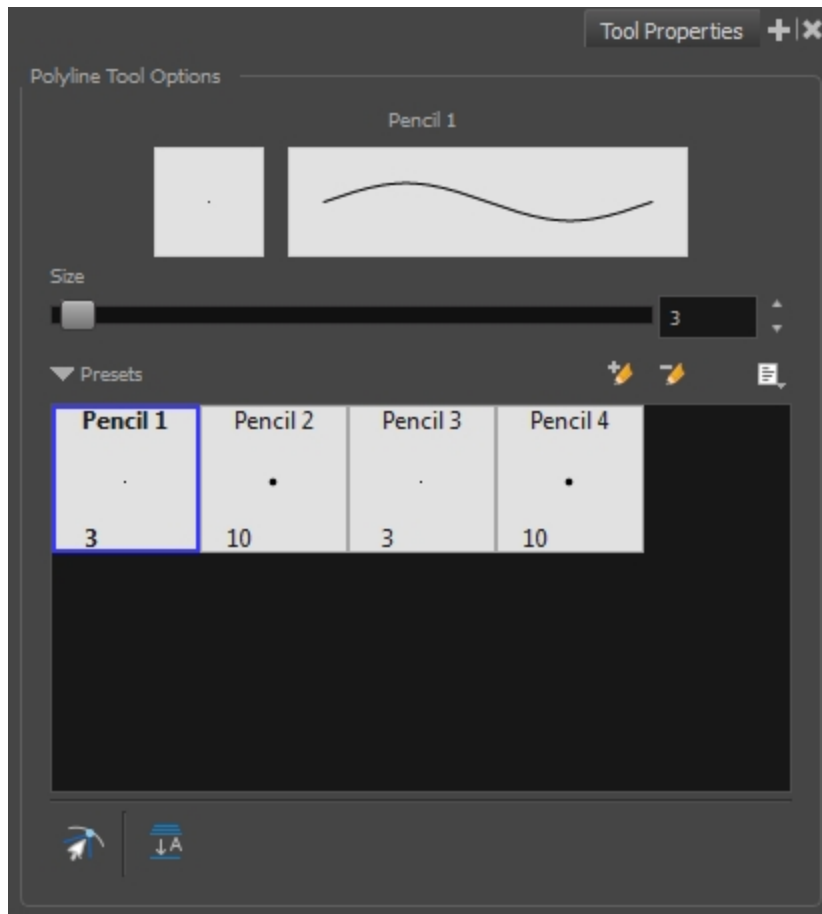
Previewing the Stroke

The Preview area lets you see a preview of the stroke that will be produced after you customize the different parameters in the Tool Properties view.

1. Select a brush style from the Presets section. It's a good idea to choose a brush preset that is closest to the style you want to create.

2. Click on the Show Extended Properties arrow to display advanced customization parameters.
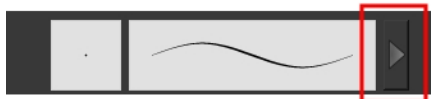
Size

The Size parameter lets you set the size of the polyline that you will draw.
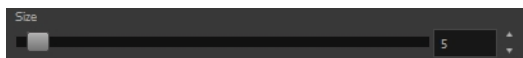
Pencil Presets

Harmony provides a variety of pencil presets and also lets you create and save your own. It is a good idea to create and save pencils with precise sizes and parameters when you draw and design for efficiency and consistency.

You can export the pencil presets that you have created and import those that others have created. This is a good way for you and project collaborators to keep a consistent look for the project—see *Working with Pencil Presets* on page 30

Snap to Contour

The Snap to Contour ✈ option will snap your selection to any line you position it on.

Auto-Flatten Mode

When enabled, the Auto-Flatten ⎍ mode automatically flattens the new lines created with the existing artwork as you draw in the Drawing or Camera view. Brush strokes will flatten with brush strokes and pencil lines will flatten with pencil lines.

Stroke Tool Options

When you select the Stroke tool, its properties and options appears in the Tool Properties view.
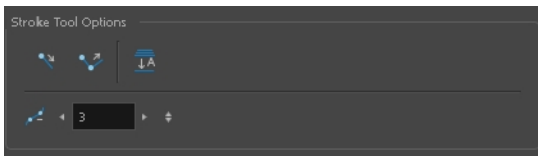
Draw Stroke as Straight Lines

Enable the Draw Stroke as Straight Lines ✎ option if you want the new strokes you draw to be a perfect straight line. Disable the option if you want the stroke to follow the mouse gesture.

Connect Line Ends

Enable the Connect Line Ends ✎ option if you want the start or end point of your new stroke to connect to your existing strokes to make sure no gaps are left in your drawing.

Auto-Flatten Mode

When enabled, the Auto-Flatten ⎍ mode automatically flattens the new lines created with the existing artwork as you draw in the Drawing or Camera view. Brush strokes will flatten with brush strokes and pencil lines will flatten with pencil lines.

Smoothness

You can modify the central line smoothness of your line using this option. This parameter smooths the initial

movement of your line. Increasing the value will result in a smoother line with fewer control points. Use the left and right arrows to increment the value by one full unit. Use the Up - Down slider to quickly increment the value.

Perspective Tool Options

Selecting the Perspective tool displays its properties and options in the Tool Properties view.
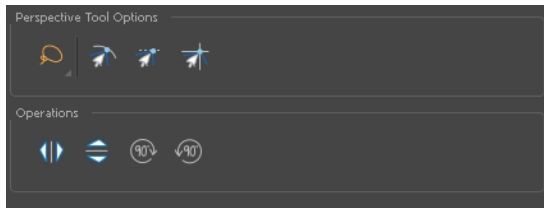
Lasso and Marquee

Choose between the Lasso and Marquee options to change the selection style of the tool.

- Click and hold Alt to temporarily switch from the current mode to the other.

Snap Options

- The Snap to Contour option will snap the selected anchor point to any line you position it on—see *Contour Editor Options* on page 80.

- The Snap and Align option lets you snap the selected anchor point to any existing line while displaying temporary rulers as a guide that you can also snap your anchor point to—see *Contour Editor Options* on page 80.

- The Snap to Grid option snaps your selection according to the currently enabled grid.

Flip Horizontal and Vertical

The Flip Horizontal ◀▶ and Flip Vertical ⇕ operations flip the current selection horizontally or vertically.

‣ From the top menu, select **Drawing > Flip Horizontal** and **Flip Vertical**.

Rotate 90 Degrees CW and CCW

The Rotate 90 Degrees CW ⟳ and Rotate 90 Degrees CCW ⟲ operations rotate the current selection 90 degrees clockwise or counter-clockwise.

‣ From the top menu, select **Drawing > Transform > Rotate 90 Degrees CW** and **Rotate 90 Degrees CCW**.

‣ Press Ctrl + 7 and Ctrl + 9 (Windows/Linux) or ⌘ + 7 and ⌘ + 9 (Mac OS X).

Envelope Tool Options

Selecting the Envelope tool displays its properties and options in the Tool Properties view.
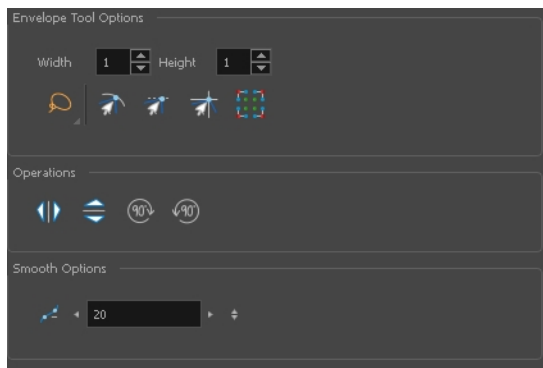
Width and Height

Increase the width and height values to add more columns and rows to the deformation grids.
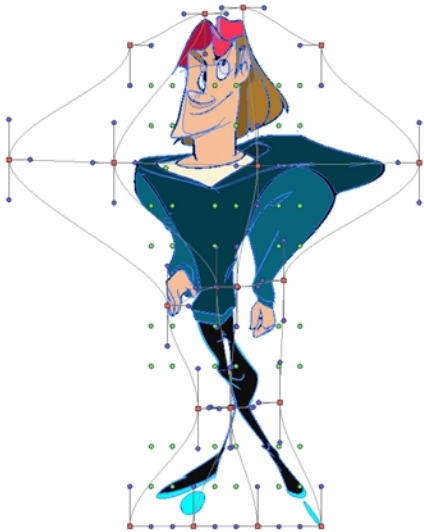
Lasso and Marquee

Choose between the Lasso 🔴 and Marquee ⬛ options to change the selection style of the tool.

- Click and hold Alt to temporarily switch from the current mode to the other.

Snap Options

- The Snap to Contour 📐 option will snap the selected anchor point to any line you position it on—see *Contour Editor Options* on page 80.

- The Snap and Align 📐 option lets you snap the selected anchor point to any existing line while displaying temporary rulers as a guide that you can also snap your anchor point to—see *Contour Editor Options* on page 80.

- The Snap to Grid 📐 option snaps your selection according to the currently enabled grid.

Show Advanced Controls

To display more controls, you can click on the Show Advanced Controls ⠿ button.

Flip Horizontal and Vertical

The Flip Horizontal ◁|▷ and Flip Vertical ≈ operations flip the current selection horizontally or vertically.

‣ From the top menu, select **Drawing > Flip Horizontal** and **Flip Vertical**.

Rotate 90 Degrees CW and CCW

The Rotate 90 Degrees CW 〔90〕 and Rotate 90 Degrees CCW 〔90〕 operations rotate the current selection 90 degrees clockwise or counter-clockwise.

‣ From the top menu, select **Drawing > Transform > Rotate 90 Degrees CW** and **Rotate 90 Degrees CCW**.

‣ Press Ctrl + 7 and Ctrl + 9 (Windows/Linux) or ⌘ + 7 and ⌘ + 9 (Mac OS X).

Smoothness

You can modify the central line smoothness of your line using this option. This parameter smooths the deformed lines. Increasing the value will result in a smoother line with fewer control points. The more you increase the value, the less details and curves you will get. Use the left and right arrows to increment the value by one full unit. Use the Up - Down slider to quickly increment the value.

Cutter Tool Options

When you select the Cutter ✎ tool, its properties and options appear in the Tool Properties view.
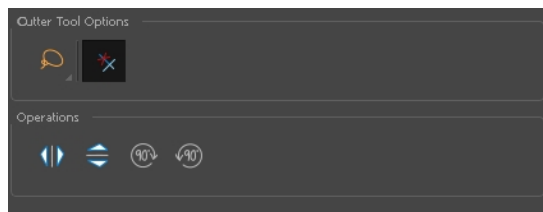
Lasso and Marquee

Choose between the Lasso 〇 and Marquee ▭ options to change the selection style of the tool.

• Click and hold Alt to temporarily switch from the current mode to the other.

Use Mouse Gesture

When using the Lasso 〇 selection type, the Use Mouse Gesture ✶ option lets you automatically delete any extra sections of line in your artwork by simply dragging your mouse over it.

NOTE: For this operation to work, you lines **CANNOT** be flattened.

Use Mouse Gesture Breaker Mode

When using the Lasso 〇 selection type, the Use Mouse Gesture Breaker Mode ⟨ option lets you draw an

invisible stroke on a pencil line to cut it in two individual objects. Once a pencil line is cut with this option, you will be able to select the two portions independently with either the Cutter tool, Pencil Editor tool or Select tool.

Single pencil line   Use Mouse Gesture Breaker mode   Two pencil lines
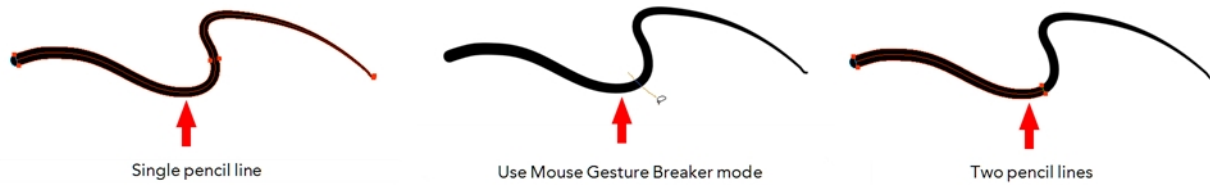
NOTE: This option only works with pencil lines.

Tip Style
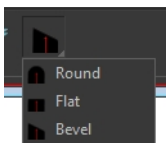
If you erase the end of a pencil line or erase a pencil line through the centre, new line tips or line ends are created. Use the Tip Style option to customize the shape of the new line tips that are created.

Antialiasing
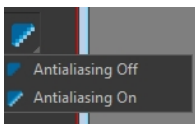
When drawing on a bitmap layer, lines are no longer clean vector shapes. For the edges to be smooth, a slight amount of antialiasing is used. When using the Cutter tool, you can cut a portion of your drawing with or without antialiasing. By default, the option is enabled. If you want to cut your drawing using a hard edge, you can select the Antialiasing Off option.

Flip Horizontal and Vertical

The Flip Horizontal 🔵 and Flip Vertical ⇌ operations flip the current selection horizontally or vertically.

‣ From the top menu, select **Drawing > Flip Horizontal** and **Flip Vertical**.

Rotate 90 Degrees CW and CCW

The Rotate 90 Degrees CW 🔄 and Rotate 90 Degrees CCW 🔄 operations rotate the current selection 90 degrees clockwise or counter-clockwise.

‣ From the top menu, select **Drawing > Transform > Rotate 90 Degrees CW** and **Rotate 90 Degrees CCW**.
‣ Press Ctrl + 7 and Ctrl + 9 (Windows/Linux) or ⌘ + 7 and ⌘ + 9 (Mac OS X).

Smooth Editor Tool Options

When you select the Smooth Editor tool, its properties and options appear in the Tool Properties view.
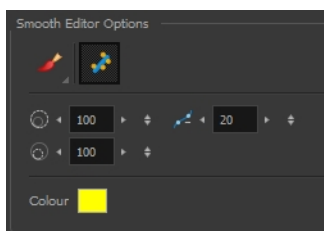
Brush, Marquee and Lasso Smoothing Style

The Smoothing Style options allow you to smooth a portion of your drawing by tracing a smoothing stroke over the zone to optimize or by selecting an area of the drawing with the Marquee or Lasso.

Note that by default, the Smooth Editor tool colour is yellow, it was changed to orange for screen grab clarity.
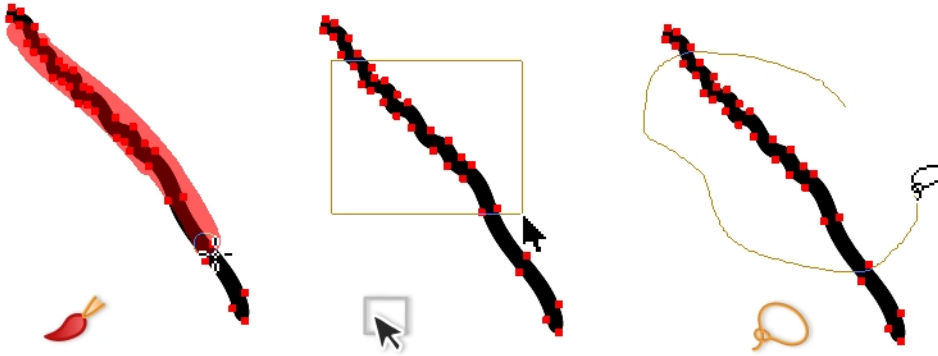
Show Control Points

The Show Control Points option allows you to show or hide the Bezier points around lines. When the Bezier points are displayed, you can see the result of your smoothing and the number of points left on the curve. When it is turned off, only the original artwork is displayed.

Minimum Size and Maximum Size

This is where you set the minimum and maximum sizes of your drawing tool which will produce the thick and thin effect on your stroke. This works with the pressure sensitivity of a pen tablet.

This options is available while using the Brush Smoothing style.

- ‣ **Maximum and Minimum Size:** Defines the maximum and minimum width of the stroke.
- • **Up/Down arrows:** Use the up and down arrows to set the minimum and maximum size value.

Smoothness

The Smoothness impacts the strength of the smoothing result. The higher the value, the more points are removed and the smoother the curve. The Smoothness range is from 0 to 100; the default value is 20.
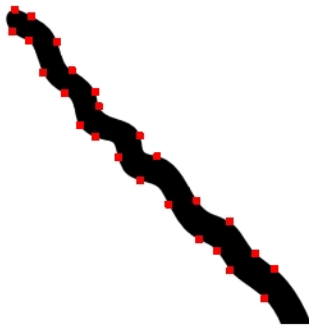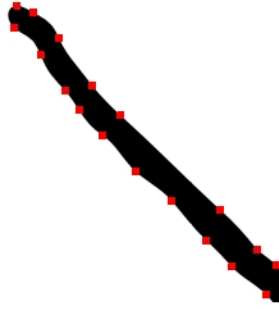
Smoothness = 2   Smoothness = 10

Colour

You can modify the colour of the control points displayed on the artwork while working with the Smooth Editor tool by double-clicking on the colour swatch.

Text Tool Options

Use the Text tool's properties to select the font type and other formatting options you want to apply to the text.

If you already wrote your text, you must first use the Text tool and select the text portion you want to format.
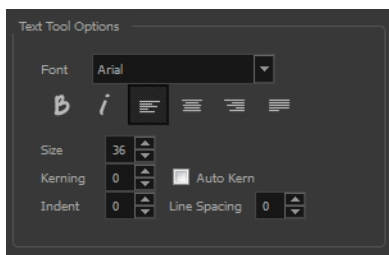
Font Type

Use the Font drop-down menu to select a font. OTF fonts are supported.

Vivaldi   Copperplate Gothic Light

My Project   MY PROJECT

Font Style

Use these buttons to select a style for your text:

- B Bold

My Project

- i Italic

My Project

Alignment

Use these buttons to align the paragraph.

Left	Centered
LOREM IPSUM DOLOR SIT AMET, CONSECTETUR ADIPISCING ELIT. AENEAN VESTIBULUM, METUS AC FERMENTUM PORTTITOR, ODIO TURPIS PORTTITOR NIBH, ID CONSEQUAT MAGNA LIGULA ET ELIT. CURABITUR SOLLICITUDIN ELIT AC LOREM MOLLIS ACC UMSAN.	LOREM IPSUM DOLOR SIT AMET, CONSECTETUR ADIPISCING ELIT. AENEAN VESTIBULUM, METUS AC FERMENTUM PORTTITOR, ODIO TURPIS PORTTITOR NIBH, ID CONSEQUAT MAGNA LIGULA ET ELIT. CURABITUR SOLLICITUDIN ELIT AC LOREM MOLLIS ACC UMSAN.
Right	Justified
LOREM IPSUM DOLOR SIT AMET, CONSECTETUR ADIPISCING ELIT. AENEAN VESTIBULUM, METUS AC FERMENTUM PORTTITOR, ODIO TURPIS PORTTITOR NIBH, ID CONSEQUAT MAGNA LIGULA ET ELIT. CURABITUR SOLLICITUDIN ELIT AC LOREM MOLLIS ACC UMSAN.	LOREM IPSUM DOLOR SIT AMET, CONSECTETUR ADIPISCING ELIT. AENEAN VESTIBULUM, METUS AC FERMENTUM PORTTITOR, ODIO TURPIS PORTTITOR NIBH, ID CONSEQUAT MAGNA LIGULA ET ELIT. CURABITUR SOLLICITUDIN ELIT AC LOREM MOLLIS ACC UMSAN.

Font Size

Enter a size for the text.

small text big text

Kerning

Use the kerning field to modify the spacing between letters and characters. You can select the Auto Kern option to set the kerning automatically based on the font's predefined standard. A negative value decreases spacing between each character, creating a letter overlap and a positive value increases it.

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean vestibulum, metus ac fermentum porttitor, odio turpis porttitor nibh, id consequat magna ligula et   elit. Curabitur sollicitudin elit ac lorem mollis acc umsan.

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean vestibulum, metus ac fermentum porttitor, odio turpis porttitor nibh, id consequat magna ligula et   elit. Curabitur sollicitudin elit ac lorem mollis acc umsan.

Indent

Enter a value in the Indent field to increase or decrease the indentation on the first line of your text. A positive value sets the first line of your paragraph farther to the right and a negative value sets it farther to the left.

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean vestibulum, metus ac fermentum porttitor, odio turpis porttitor nibh, id consequat magna ligula et   elit. Curabitur sollicitudin elit ac lorem mollis acc umsan.

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean vestibulum, metus ac fermentum porttitor, odio turpis porttitor nibh, id consequat magna ligula et   elit. Curabitur sollicitudin elit ac lorem mollis acc umsan.

Line Spacing

Enter a value in the Line Spacing field to decrease or increase the space between each line of text.

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean vestibulum, metus ac fermentum porttitor, odio turpis porttitor nibh, id consequat magna ligula et   elit. Curabitur sollicitudin elit ac lorem mollis acc umsan.

Lorem ipsum dolor sit amet,

consectetur adipiscing elit. Aenean

vestibulum, metus ac fermentum

porttitor, odio turpis porttitor nibh, id

consequat magna ligula et   elit.

Curabitur sollicitudin elit ac lorem

mollis acc umsan.

Resizing the Text Box

You can resize the text box by selecting your text box with the Text T tool and moving the anchor point right or left. Using the Select tool will distort and scale your text itself rather than changing the width and height of your text box.

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean vestibulum, metus ac fermentum porttitor, odio turpis porttitor nibh, id consequat magna ligula et elit. Curabitur sollicitudin elit ac lorem mollis acc umsan.
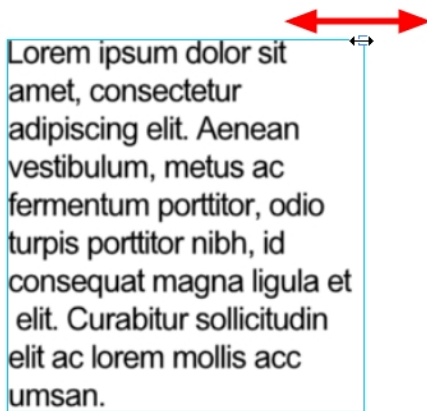
Converting Text into Separate Objects

Text contained in a text field is treated as a single drawing object. You can easily separate the text so each character becomes an individual drawing object that you can select and modify independently.

How to break a text object

1. In the Tools toolbar, click the Select ▶ tool or press Alt + S.

2. In the Drawing or Camera view, select the text object you want to break.

   Lorem ipsum

3. From the top menu, select **Drawing > Convert > Break ApartText Layers**.

   ‣ From the Drawing or Camera view menu, select **Drawing > Convert > Break ApartText Layers**.

   Lorem ipsum

   Each character is surrounded by a bounding box that you can modify; they remain text objects that you can edit.

4. If you want to convert your independent letter to a complete vector object that you can deform, use the Select tool to select the letters to convert.

5. From the top menu, select **Drawing > Convert > Break Apart Text Layers** to break the selection into a regular drawing object, with no more text attributes.

   ‣ From the Drawing or Camera view menu, select **Drawing > Convert > Break Apart Text Layers** to break the selection into a regular drawing object, with no more text attributes.

orem ipsum

Chapter 3: Colour Styling and Colour Models

Abigail Archer, Grossology © Nelvana Limited, Corus® Entertainment Inc.
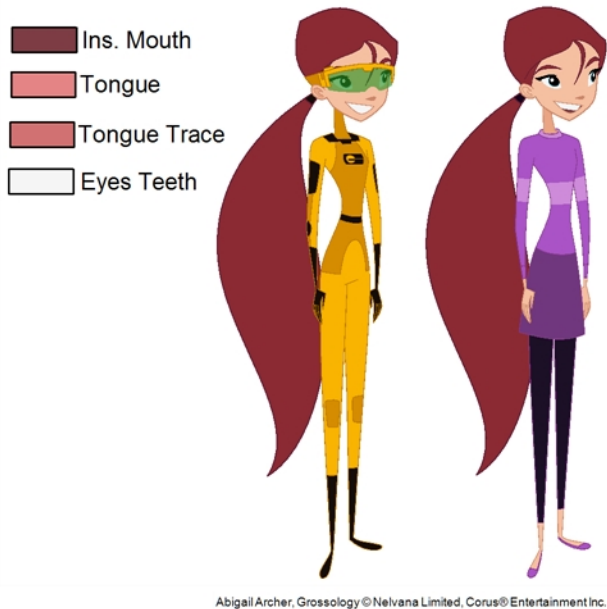
Once the characters, props and locations are designed, it's time for the colour styling and colour models creation. This is when the colours and moods are determined. The line models created during the design step are painted and organized as colour models for the colourists.

Harmony has a great concept of colour palettes. Each character can have its own set of colours that is carried through the entire project called the *master palette*. If the master is modified, the colours in the entire project are updated simultaneously.

By doing the colour styling in Harmony, your master palette will be created at the same time, so you do not need to use third party software. Also you will not have to recreate the colour palette again in Harmony. It is possible to create this step in an external software, but it is a great time saver to do it directly in Harmony.

> NOTE: Throughout this section, there may be slight differences between your interface and the illustrations in this guide. This is because the images are taken from Harmony Premium.

To create the colour style and colour models, follow these steps:

- *Preparation* on page 101
- *Working with Palettes* on page 105
- *Colours* on page 122
- *Painting the Model* on page 133

Preparation

Before painting, you need to organize the colour model scenes and bring in your references. The colour styling preparation is done in five steps:

- *Colour Model Storage* on page 102

Colour Model Storage

First, you will need to create a storage location for all your models and palettes. The best way to do this is to create a colour model scene. There are different possibilities available to structure your designs and colour model scenes. We strongly recommend that you put all of your colour models in the same scenes. It is important to maintain a structure for your models so they do not end up scattered throughout the project.

There are four main model categories:

Characters

Props

Effects

Locations

Grossology © Nelvana Limited, Corus® Entertainment Inc.
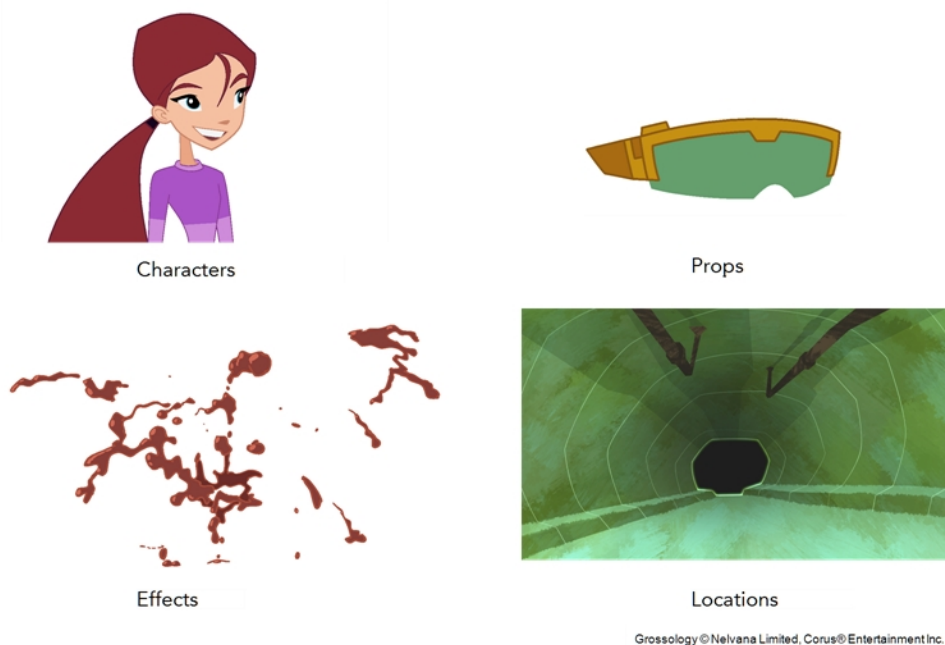
If you have a small project, such as a short or an advertising contract, you can always place all the characters, props, effects, and locations in the same scene. For large projects such as feature-length productions or series, you should create four separate model scenes following these categories.

Scene Creation

In order to create colour models, you need to create your scenes.

When working on a paperless or cut-out animation project, if you have designed your characters, props, effects and locations directly in Harmony, you can paint your models directly in your design scene. You can also create a new colour model scene and import your designs in that one. Refer to the Fundamentals Guide to learn more about creating a scene.

If you have not already done so, refer to the Fundamentals Guide to learn about production structure, file organization, and how to create a Project root directory. We recommend storing your colour model scenes in the root directory or in a colour models subdirectory for even better organization.

A useful way to name your colour model scene is to include the project name, then the colour model type such as characters, props, effects, or locations, and finally `colourmodel`. For example, a character colour model

scene for the Adventure project would be named **`adventure_characters_colourmodel`**. This ensures that you always know what scene corresponds to what.
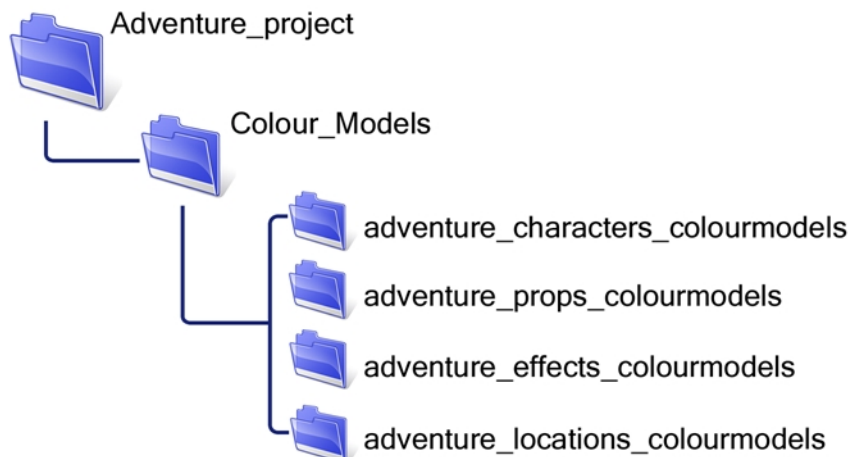
Colour Model Scene Structure

To store your colour models in a scene, you should create one drawing layer for each character, prop, effect, or location. You should name these according to the model.

You can also load other colour references in the scene to balance your overall colours. For example, if you work in a character colour model scene, it's a good idea to import some of the key locations to compare and adjust the colours so they match well.

Setting Up the Workspace

Now that your scenes are created and structured, you can open the corresponding colour model scene. For the optimal workspace for inking and painting, set up your workspace with these views:

- Xsheet
- Camera
- Drawing
- Colour

Erik, Di-Gata Defenders © Nelvana Limited, Corus® Entertainment Inc.

How to rename a drawing

1. In the Xsheet view, click on a drawing name.

2. Do one of the following:
   ‣ From the Xsheet view menu, select **Drawings > Rename Drawing.**
   ‣ Right-click on the drawing name and select **Drawings >Rename Drawing.**
   ‣ Press Ctrl + D (Windows/Linux) or ⌘ + D (Mac OS X).

   The Rename Drawing dialog box opens.
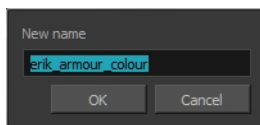
3. Type in a new name and click **OK**.

Working with Palettes

In animation, specific colours are used to paint each particular character. In order to maintain absolute consistency, a colour palette is created for each character, prop and effect throughout the production. This is referred to as a *master palette*[1].

Master palettes contain a colour swatch for each zone to colour with a precise RGBA colour value.

Using a master colour palette has many benefits, including:

- Each character consistently retains their dedicated colours.

- You cannot accidentally use a colour which is not in the master palette.

- Standardization and colour consistency throughout the production

- Multiple artists can use the same colour palette and produce the same results.

Toon Boom Harmony uses palettes to hold all the colours needed to paint your elements, allowing complete control and consistency in your painting process.

A **palette**[2] is created by assigning a set of colours to each character, prop or effect. You will create a new palette and add a new colour, known as a *colour swatch*, for each zone of the character, such as the skin, hair, tongue, shirt, pants, and so on.

In Harmony, palettes are individual files that you can copy, transfer, and store. Palettes have a `*.plt` file name extension—see *Palette File Storage* on page 109.

When a zone on the character is painted with the colour contained in a colour swatch, a link is automatically created between that colour swatch and the zone. This means that if the tint of the colour in the colour swatch is changed, any zone linked to it will update to the new tint. This is one way that colour palettes can save time and money in your production.

Another advantage of this system is that you can create complete palettes for different lighting situations. For instance, in addition to the regular palette for a character, you could have one for that character in the rain using colours that are duller and less vibrant than the dry daytime colours, or yet another for using in a night scene. Using palettes linked to your character in this way allows you to instantly change its colouring to suit the mood and atmosphere of the scene without tediously repainting each element.

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[1]A master palette is a group of colours attributed to a character or a prop. The palette is used throughout the entire production to maintain consistency in the look and to ensure that the same colours are used throughout the production. Also known as palette.

[2]A palette or master palette is a group of colours attributed to a character or a prop. The palette is used throughout the entire Toon Boom Studio project to maintain a consistency in the look and avoid the colour changing during the animation. Also referred to as a master palette.
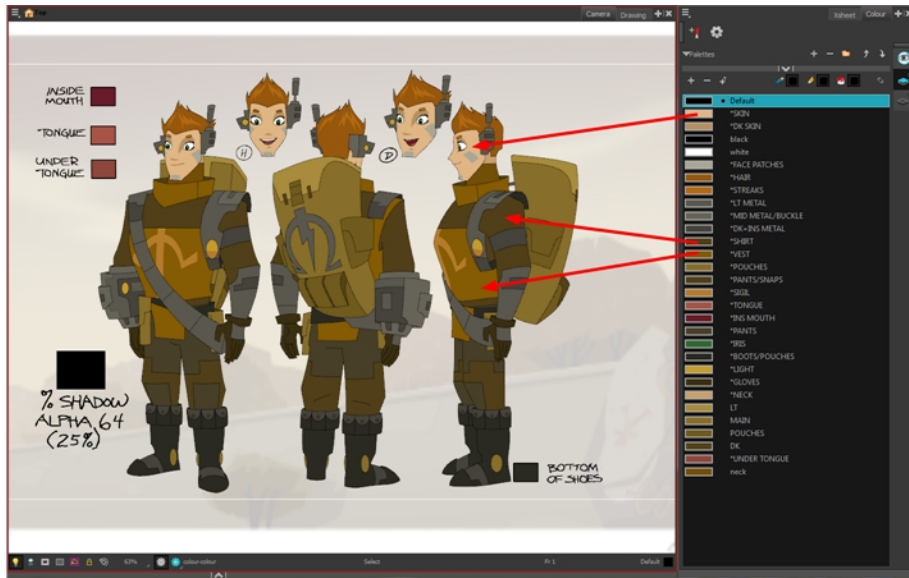
Erik, Di-Gata Defenders © Nelvana Limited, Corus® Entertainment Inc.

This section is divided as follows:

Palette Lists

The Colour view has two modes: basic and advanced.
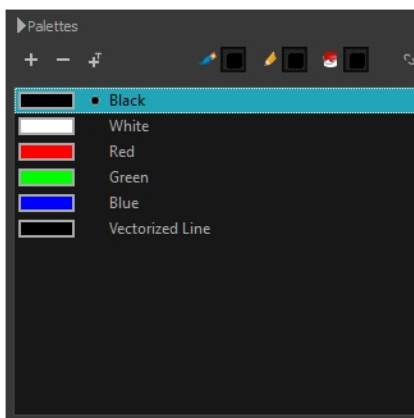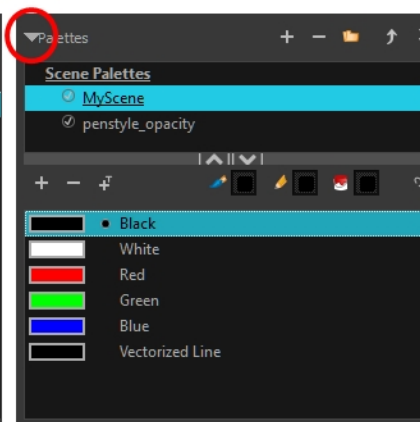
Basic mode   Advanced mode

- **Basic Mode**

The Colour view's basic mode only shows the Colour list. When you open Toon Boom Harmony, you only see the colours available in the Default palette which contains six basic colour swatches and is automatically named the same as your scene. For simple projects, you can manage with the default palette, but for movies, series, or shorts it is recommended that you create palettes for your characters. To create a palette, you have to switch to the Advanced mode of the Colour view and show the Palette list.

- **Advanced Mode**

The Advanced mode displays the list of all palettes that are linked to the scene. To create palettes for your characters, you must display the Palette list.

A palette list is a file containing all of the links to the original palette files. Every drawing layer has a palette list. The scene also has a palette list. For example, a drawing layer can use three different palettes stored in three different locations, while another drawing layer can use two of these palettes plus another one coming from another scene. The palette list keep track of the locations of the palettes.

There are two types of palette lists:

- **Scene Palette List**

The Scene Palette list is mainly used with cut-out animation, but is also very useful for paperless and traditional animations. A cut-out character will often be divided into 20 to 30 different drawing elements that use the character's master palette.

The palette list is stored at the scene level instead of the Element directory. This way, all palettes linked to this list will appear in every drawing element created in the scene. There is no need to manually load the palette in each element.

The Scene Palette list is the simplest one to use. By default, Toon Boom Harmony is set to use only Scene Palette lists.
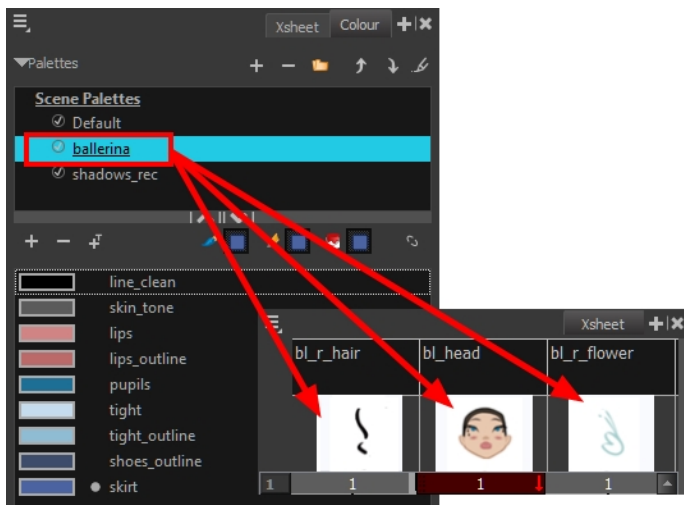
- **Element Palette List**

In Toon Boom Harmony, you can switch to Advanced Palette List mode and choose to save your palette at an element's level. The Element Palette list is mainly used with traditional and paperless animation. Unlike cut-out animation, all columns (drawing elements) contain different characters, props, backgrounds, and effects. The Element Palette list is used when you do not necessarily want all of the palettes for all of your elements linked in every column.

The palette list is stored in the drawing element's directory instead of directly in the Scene level. This ensures that the links to the palettes appear only in the appropriate element. If you prefer to access a global palette list, link your palettes to the Scene Palette list.
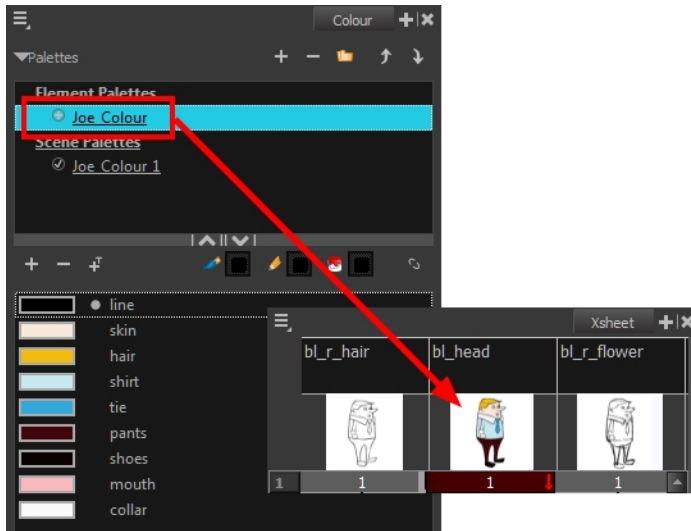
When you are using several cloned palettes that are related to the same original palette, Toon Boom Harmony uses the palette located highest in the list to determine the colour of the painted zones—see *Cloning a Colour Palette* on page 115.

How to show or hide the Palette list

‣ In the Colour view, click the Show/Hide Palette List View button to expand or collapse the Palette List area.

The Palette List window opens and displays all your palettes.
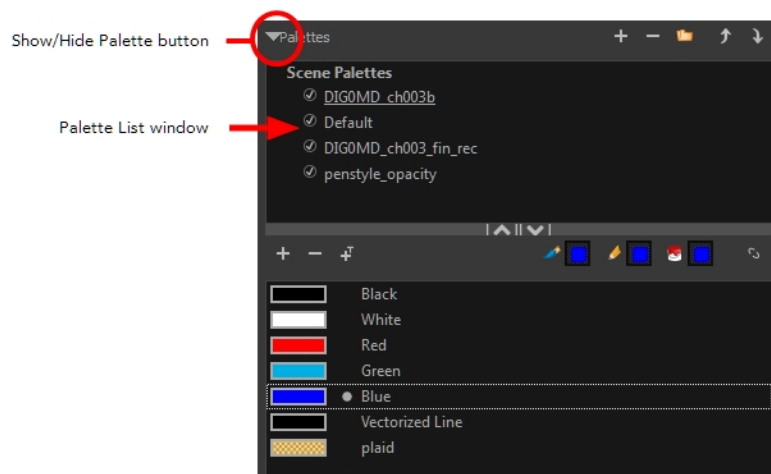
How to set the Advanced Palette Lists mode

1. Do one of the following:

    ‣ From the top menu, select **Edit > Preferences** (Windows/Linux) or **Stage Essentials > Preferences** (Mac OS X).

    ‣ Press Ctrl + U (Windows/Linux) or ⌘ + U (Mac OS X).

1. Select the **Advanced** tab.

2. In the section, select the **Advanced Palette Lists** option.

3. Click **OK**.

How to reorder palettes in the Palette list

Do one of the following:

    ‣ From the Colour View menu, select **Palettes** > **Move Up** or **Move Down**.

    ‣ In the Palette list, click the Up 🔼 and Down 🔽 buttons.
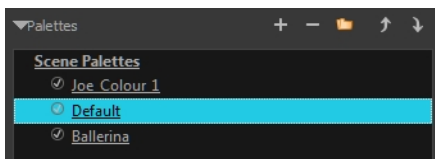
Palette File Storage
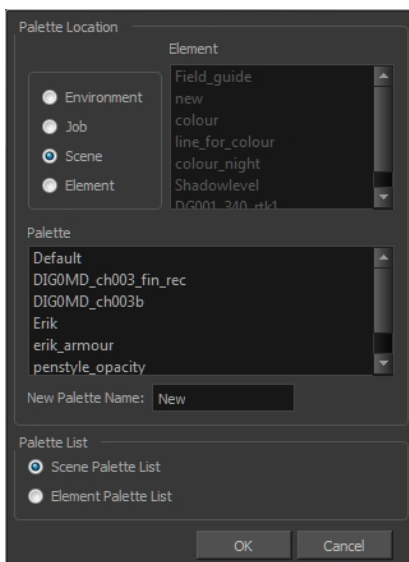
In Harmony, palettes are individual **`*.plt`** files that can be copied, transferred and stored. When a palette is created from Harmony, it needs to be stored somewhere. By default, the palette file is stored in the scene directory in a palette-library folder unless you specify a different location. There are four locations where you can find palette-library folders:

- **Element:** The Palette Library folder is stored directly in the drawing Element folder.
- **Scene:** The Palette Library folder is stored directly in the Scene folder.
- **Job:** The Palette Library folder is stored in a Job folder contained in the Scene folder.
- **Environment:** The Palette Library folder is stored in an Environment folder contained in the Scene folder.

By default, the palette is stored at the scene level. For simple projects and standalone projects, it is recommended to keep it as is. If you work with a larger studio, it is recommended to verify with them on the file structure.

This existing structure is compatible with Harmony Server. Harmony's database has a leveled structure starting from the Environment down to the Element. Its client-server configuration allows all data, such as palettes and scenes, to be shared between a series of client machines.

Element Level

Working with Harmony Stand Alone, the Element level is very useful when there are a lot of different palettes. When a colour model drawing is created, it is stored in its element folder. By storing the corresponding palette file with the colour model, the colourist can load them both from the same location. This also creates a more organized structure.

Scene Level

Working with Harmony Stand Alone, a palette file can also be saved at the scene level, so that all of the palettes from the scene are stored together. The palette naming must be structured so the colourist or character builders can find the correct one. Saving the palettes at the scene level makes it very easy to back up the palettes and retrieve their location.

The scene level can also be useful for cut-out animation. Instead of creating a colour model scene that includes all of the characters, props, effects, and location, the colour palette or model will often be directly imported to, or created in, the character building scene. Just as with a cut-out character building scene, each element uses the same palette so it would not be efficient to save the palette inside one element. Instead, it is saved at the scene level. This prevents a palette overload because all of the models are in different scenes. It also allows each scene to have its own set of palettes corresponding to its model.

When working on a cut-out animation production, it is highly recommended that you work with the Scene level.

Palette Backup

When sharing palettes between scenes, some users may accidentally modify the colours, even though the palettes are locked by default. That is why it is a good idea to copy and back up your palette libraries and master palette directories.

When a palette file is copied, it automatically becomes a clone palette, so there will not be any trouble replacing an altered file. Harmony automatically updates all of the files and drawings linked to it.

Creating a Colour Palette

You can create a palette in either Basic or Advanced mode.

By default, Toon Boom Harmony is set to the Basic mode. For simple productions, it is recommended to use the Basic mode. This setting stores the palettes automatically for you and saves them at the Scene level. When you use the Advanced Palette Lists mode, you can decide at which level you want to store your palettes: Environment, Job, Scene, or Element.

Before you can create a palette in the Advanced Palette Lists mode, you must first set your preferences to Advanced Palette Lists mode in the Preferences dialog box.

You can remove palettes from your Palette list if they're not needed in your scene. The actual palette file will not be deleted and you can reimport it in your Palette list later on.

How to set the Advanced Palette Lists mode

1. Do one of the following:
   ‣ From the top menu, select **Edit > Preferences** (Windows/Linux) or **Stage Essentials > Preferences** (Mac OS X).
   ‣ Press Ctrl + U (Windows/Linux) or ⌘ + U (Mac OS X).

1. Select the **Advanced** tab.

2. In the section, select the **Advanced Palette Lists** option.

3. Click **OK**.

How to create a new palette (Basic Palette Lists mode)

1. From the Colour View menu, select **Palettes** > **New** or click the New Palette ➕ button.

   The Create Palette window opens.

2. Enter the palette name according to the model.

3. Click **OK**.

   The palette appears in the drawing element's palette list.

How to create a palette from the Advanced Palette Lists mode

1. In the Timeline or Xsheet view, select the drawing that requires a palette.

2. In the Colour view, click the **Show Palette List View** button to display the palette list.

3. Do one of the following:

   ‣ From the Colour view menu, select **Palettes > New.**

   ‣ Click the Create Palette ➕ button.

   The Palette Browser: Create Palette dialog box opens.

4. Select the level to store the palette file.

   ‣ **Environment**: The palette-library folder is stored in the scene's parent environment folder.

   ‣ **Job**: The palette-library folder is stored in the scene's parent job folder.

   ‣ **Scene**: The palette-library folder is stored directly in the scene folder.

   ‣ **Element**: The palette-library folder is stored directly in the drawing element folder.

   When you select a level that has a palette stored in it, the palette names are displayed in the Palette field.

5. Name the palette. There is no need to add the suffix "palette" to the name as it is always recognized as a palette file.

6. Select a Palette List option.

   ‣ The Scene Palette List is mainly used with cut-out animation. A cut-out character will often be divided in twenty to thirty different drawing elements that use the character's master palette.

The palette list is stored at the scene level instead of the Element directory. This way, all palettes linked to this list will appear in every drawing element created in the scene. There is no need to manually load the palette in each element.

‣ The Element Palette List is mainly used with traditional and paperless animation. Unlike cut-out animation, all columns (drawing elements) contain different characters, props, backgrounds and effects. The Element Palette List is used because you do not necessarily want all of the palettes for all of your elements linked in every column.

The palette list is stored in the drawing element's directory instead of directly in the Scene level. This ensures that the links to the palettes appear only in the appropriate element. If you prefer to access a global palette list, link your palettes to the Scene Palette List.

7. Click **OK**.

The new palette appears in the palette list.

How to rename a palette

1. In the Colour view, select the palette to rename.

2. Do one of the following:

   ‣ Right-click and select **Rename**.
   ‣ From the Colour View menu, select **Palettes** > **Rename**.

3. In the Rename dialog box, give the palette a new name and click **OK**.
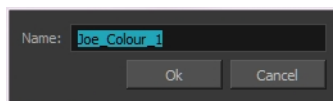
How to remove a palette

1. In the Colour view, select the palette to remove.
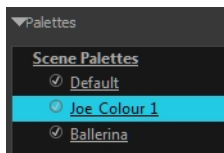
2. Do one of the following:

   ‣ From the Colour View menu, select **Palettes** > **Remove**.
   ‣ Right-click on the selected palette and select **Remove**.
   ‣ Click the Remove Palette ▬ button located above the Palette list.

   If the palette was used in your scene, the zones painted with its colours turn red.

Duplicating a Colour Palette

A duplicated palette is a simple copy of the original palette. It uses the same names, colour values, but has a different ID and is independent from the original palette. This ensures that both palettes are completely independent.

This option is used when there are similar models and you want to avoid recreating and naming all the colours. You can change the values and the names afterward without affecting the original palette. You can also keep some RGBA values, such as the eyes, teeth, tongue, inside mouth, etc.

How to duplicate a palette

1. In the Colour view, select the palette to be duplicated.
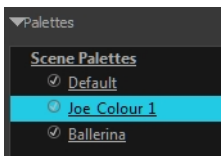
2. Do one of the following:

   ‣ From the Colour menu, select **Palettes** > **Duplicate**.

   ‣ Right-click on the selected palette and select **Duplicate**.

   The Palette Browser: Duplicate Palette window opens.

3. If you are in Advanced Palette List mode, select the palette storage level—see *Palette File Storage* on page 109.
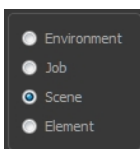
4. In the New Palette Name field, name the palette.
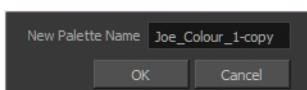
5. In the New Palette Name field, name the palette.

6. Click **OK**.

    The palette appears in the palette list.

Cloning a Colour Palette
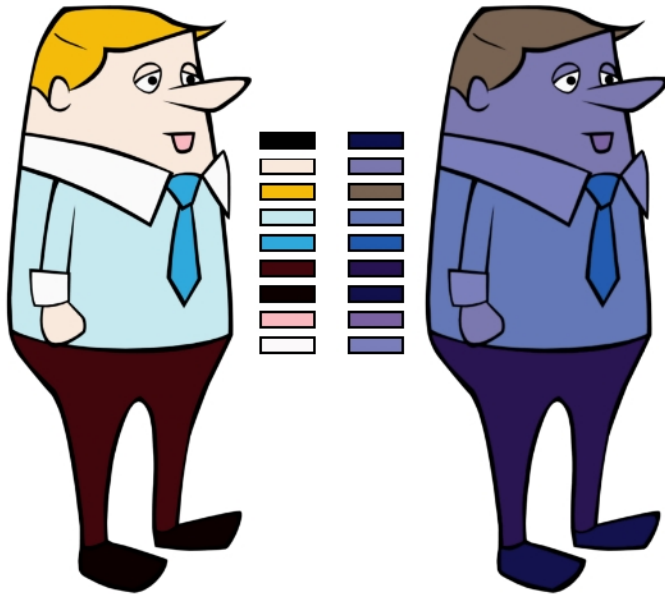
A character usually has only one master palette, although there are times when the characters are placed in different lighting conditions and require a different colour shading. The night palette is a popular choice when a scene or sequence changes from day to night. It can be difficult and time-consuming to repaint everything and creating two independent palettes can be quite complex. As an alternative, Toon Boom Harmony provides clone palettes.

The clone palette is a copy of the master palette. The colours in each palette have the same properties. The colours have the same identification number pointing to the same colour zones, but they can have different names and RGBA values. Depending on the palette (night or day) you're currently using, the painted drawing will update. So there's no need to repaint the animation. All you have to do is create or import a clone palette (palette style).

How to clone a palette

1. In the Colour view, select a palette to clone.
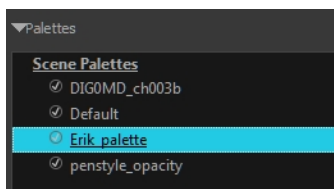
2. From the Colour menu, select **Palettes > Clone** or right-click and select **Clone**.

    The Palette Browser: Clone Palette dialog box opens.

Basic palette   Advanced Palette List mode
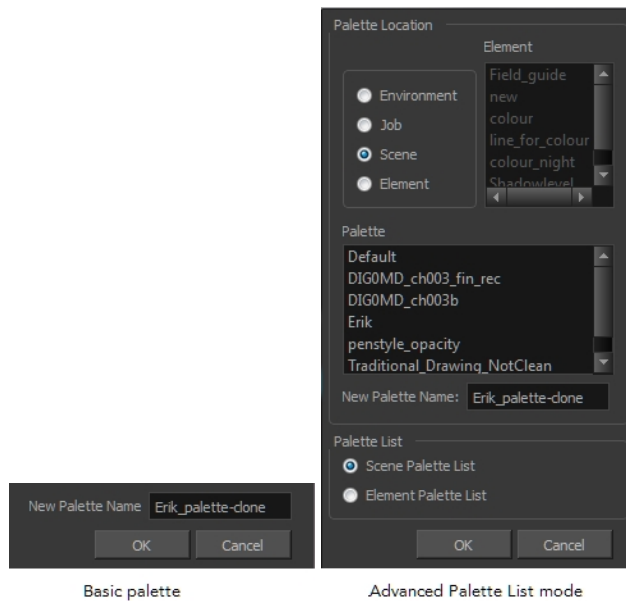
3. If you're in Advanced Palette List mode, select the palette storage level—see *Palette File Storage* on page 109.
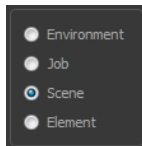
4. In the New Palette Name field, name the palette. We recommend keeping the "-clone" in the name.

5. Click **OK**.

   The cloned palette appears in the palette list.
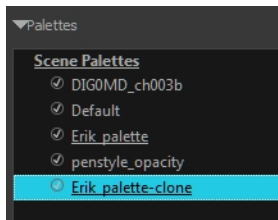
6. In the Palette list, select the clone palette you created to offset or blend colours—see *Mixing Colours* on page 131.

7. From the Colour View menu, select **Palettes > Tint Panel** or right-click and select **Tint Panel**.

   The Blend/Offset Tint panel opens.
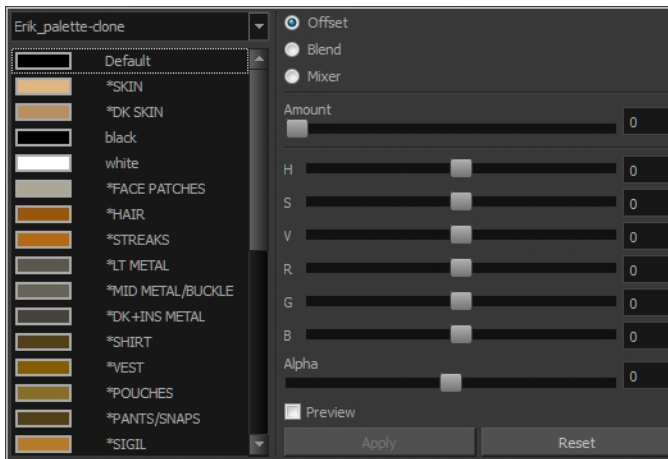
8. Select one or more colours to modify. You can select all your colours by pressing Ctrl + A (Windows/Linux) or ⌘ + A (Mac OS X).

9. Offset, blend, or mix the colours using the sliders and increasing the Amount value.
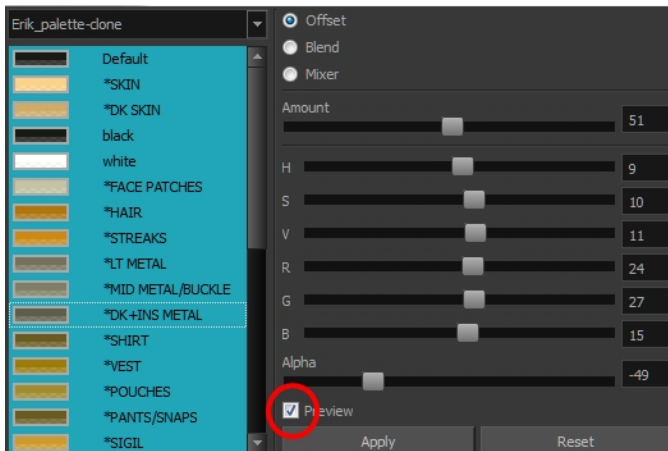
10. Select the **Preview** option to see a preview of the colours while you adjust them.

NOTE: You can also modify the colours individually with the Colour Picker window.

Importing and Linking Palettes

Before starting colouring work such as ink and paint or even creating new colour models, you may want to load existing colour palettes to your scene. You can do so by linking colour palettes to your palette lists.

You may encounter a case where only a colour palette is visible when a layer is selected. If you need that palette in a second layer, you can link the palette to the second layer's palette list. A good example would be a scene where there is a character on one layer and its arm is on another. In order for both layers to access the palette, you must link both Element Palette lists to that palette. If your palette is linked to the Scene Palette list, it will be accessible by all layers.

If you created a palette in another project and you want to import it in your current project, you can browse for the palette file on your computer and add it to your scene. When the palette is imported in your scene, the file is copied in the project's directory. It is not linked to the original file.

With Toon Boom Harmony as a stand-alone application, every scene is local to the machine. This means that all of the scene's data is only accessible from that particular scene. Palettes are also local to the scene; they can be shared between all drawing layers, but not between scenes.

However, you may want to share palettes across a whole project. Harmony offers that possibility. By default, a palette is an independent file stored in your scene. This file can be copied, moved, or deleted.

To link a palette throughout an entire project, you need to create a central directory where you can copy all the palettes you created. Every time you link a palette in an element, it is linked to this folder. If you modify the palette, it will be updated throughout the whole project.

You will notice that when you create or link a palette, a small icon appears on its left. These icons represent the palette's link status.

Icon	Description
	Indicates that the palette is safe.
	There won't be any problems once the scene is exported. For example, the palette file is stored in the scene folder and is linked to the Scene Palette List.
	Indicates that the palette file is stored in a directory external to the scene's structure.
	The palette file is probably stored in a Master Palette directory on a hard drive external to the palette-libraries planned for the palette storage. The warning in this case is that if you move your Master Palette directory to another location, you may loose the palette in your scene.
	Indicates that a palette file stored in a level such as Element, Scene, Job or Environment is linked to a Palette list that is not on the same level.
	For example, a palette file is stored into the Environment folder and is linked to the Element Palette list. The palette is shared.
	Indicates a potentially dangerous situation.
	Problems may occur when trying to export or link to the palette file. For example, a palette file is stored into the element folder and is linked to the Scene Palette list. The issue in this case is that if you decide to delete the layer containing the palette, it will be lost from your scene.

How to link a colour palette

1. Do one of the following:

   ‣ From the Colour View menu, select **Palettes** > **Link**.
   ‣ Right-click and select **Link**.
   ‣ Click the Import 📁 button.

   The Palette Browser: Link Palette dialog box opens.
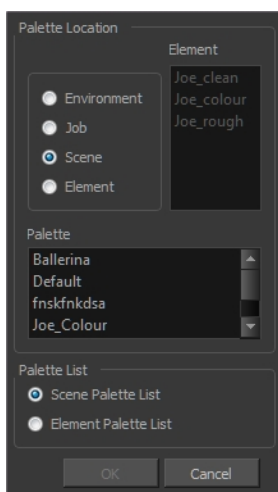
2. Select the level where the palette file is stored—see *Palette File Storage* on page 109.

3. Select the palette list linking level by enabling either **Scene Palette List** or **Element Palette List**—see *Palette Lists* on page 106.

   The palette appears in the Colour view.

How to import a palette into your project

1. Do one of the following:

   ‣ From the Colour menu, select **Palettes** > **Import**.

   ‣ Right-click and select **Import**.

   The Browser window opens.

2. Browse for a palette file located (`*.plt`) on your hard drive. You will generally find the palettes in your project's palette-library directory.

3. Click **Open**.

   The Palette Browser opens.

Basic Palette List mode   Advanced Palette List mode
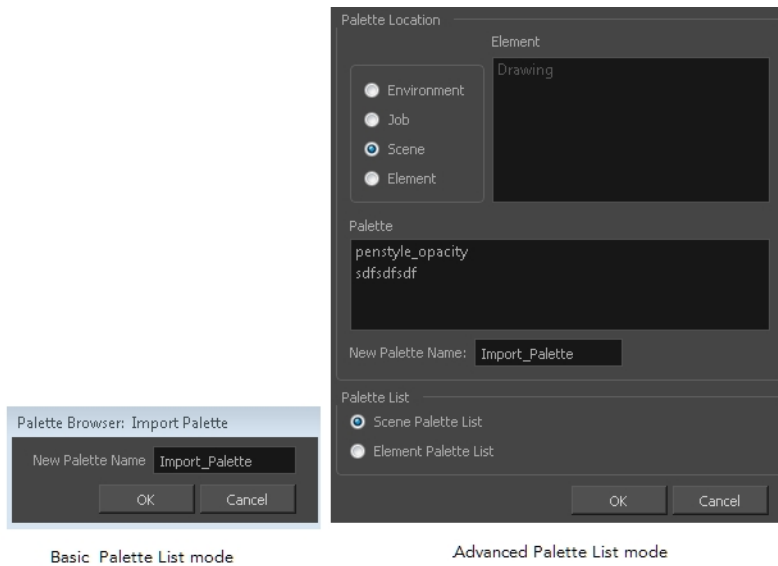
4. If you're in Advanced Palette mode, select the level where the palette file is stored—see *Palette File Storage* on page 109.

5. If you're in Advanced Palette mode, select the palette list linking level by enabling either **Scene Palette List** or **Element Palette List**—see *Palette Lists* on page 106.

6. In the New Palette Name, name the imported palette.

   The palette appears in the Colour view and the file is copied in your project.

How to link to an external palette

1. In the Colour view, click on the **Create Palette** button to create a palette to be used as external.

2. Save your scene by selecting **File > Save** from the top menu or by clicking the Save button or press Ctrl + S (Windows/Linux) or ⌘ + S (Mac OS X).

3. On your computer or server, create a master directory. Ideally, this should be created in your Root folder to keep it within the project directory. You could also place it inside your Colour Model's sub-directory—see *Chapter 6: Project Organization and File Structure* in the Fundamentals Guide.
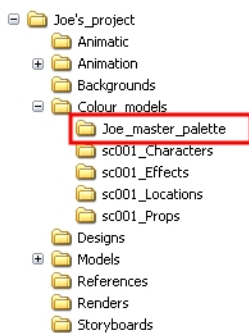
4. Name the folder appropriately, for example: `Joe_master_palette`.

5. From your operating system, browse to your Toon Boom Harmony scene and open the palette-library folder.
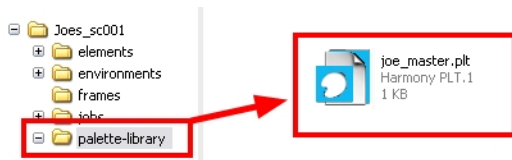
6. Select and copy your palette `*.plt` file to copy it to the master palette directory.
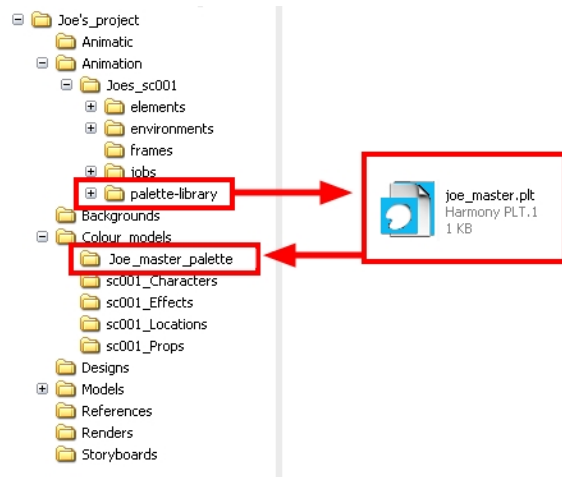
7. Create a new Toon Boom Harmony scene or open the scene where you will link this palette.

8. In the Timeline or Xsheet view, select the element to link the palette to.
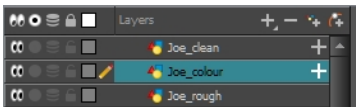
9. From the Colour View menu, select **Palettes > Link to External.**

   The Link to External Palette dialog box opens.
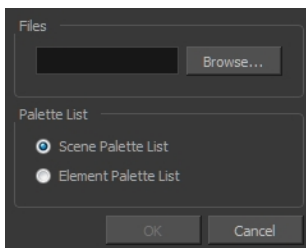
10. Click **Browse** to search for your master palettes folder and select the palette `*.plt` file you want to link.

11. In the Palette list section, select how you want to load the palette; at the scene or element level.

12. Click **OK**.

    The linked palette appears in the Colour view.

If a palette is outside the scene, the External icon appears beside the palette name.

NOTE: To link an element (such as a colour model) to the palette that is stored in the external palette directory, you must remove the original palette from the element's palette list. You will then load the duplicated palette into the palette list using the Link to External command, like you did for the other elements.

Colours

Toon Boom Harmony has some very powerful colouring features when it comes to painting. To paint your drawings, you will use different colour swatches, unlike some other painting programs where you modify the main swatch each time you want to paint with a different colour.

In the Colour view, you choose a different colour swatch for each colour you want to paint in your drawing. You can add as many swatches as you want. You can also rename them and modify existing ones.

When you modify the colour of an existing swatch, it automatically updates all the zones painted with this swatch throughout the entire project. The colour swatch has a unique ID number that associates it with the painted zones. This way, you can change the look of your character at any time without having to repaint it!

This section is divided as follows:

Adding a Colour Swatch

You can use several different types of colour swatches, including solid colour, gradient colour and bitmap texture swatches.
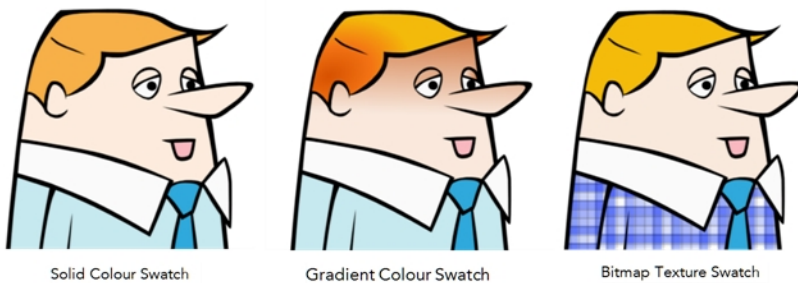
Solid Colour Swatch   Gradient Colour Swatch   Bitmap Texture Swatch

How to add or modify a solid colour swatch

1. In the Colour view, click the Add Colour ➕ button.

2. From the Colour View menu, select **Colours** > **Edit** or double-click on the colour swatch.

   The Colour Picker window opens.
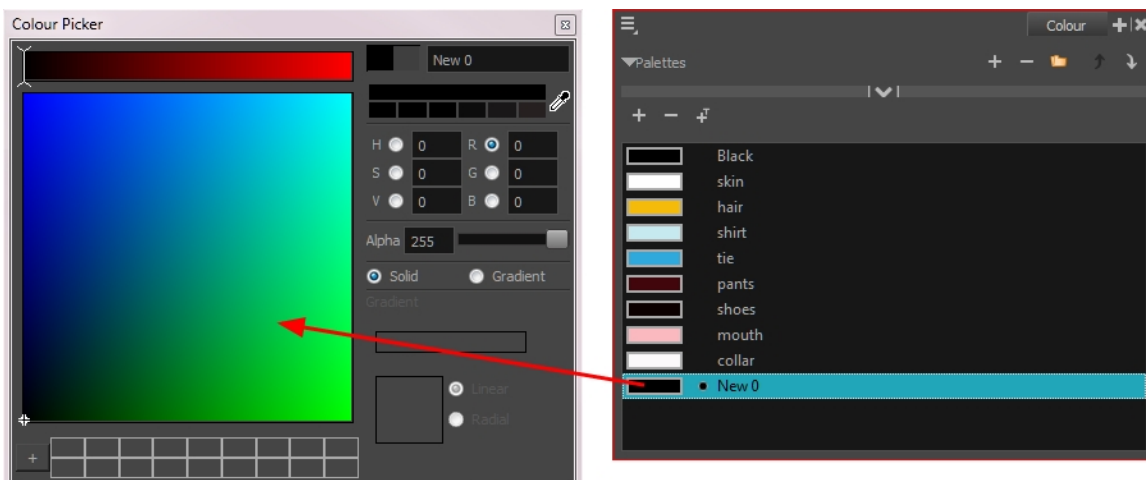
3. To set your colour, do one of the following:

    ‣ In the colour wheel, select a colour.

    ‣ Enter the HSV or RGB values in the corresponding fields. Select the **R,G,B,H,S** or **V** options to change the look of the colour picking area.

    ‣ Click the Dropper 🖊 button to select any colour on your screen. It can be from the Harmony interface, your operating system or any other open application.

How to add a new colour swatch using the default colour

‣ From the Colour View menu, select **Colours > New**.

A new swatch is added to your palette using the default colour swatch colour. The new swatch created with the New command will be named `New  0`.

How to create a gradient colour swatch

1. In the Colour view, select a colour to modify .

2. Do one of the following:

    ‣ Click the new colour and from the Colour View menu, select **Colours > New**.

    ‣ Double-click on the colour swatch.

The Colour Picker window opens.
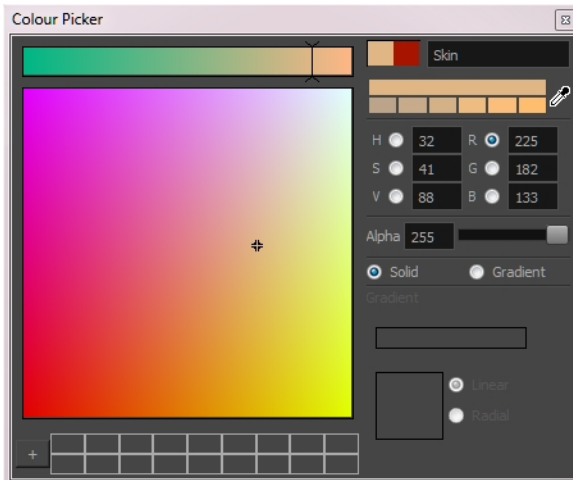
3. Select the **Gradient** option.

4. Select the **Linear** or **Radial** option.

5. Adjust the Gradient arrows to modify the colours.
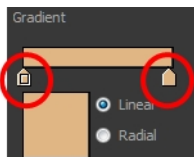
‣ Add extra colours by clicking between the arrows below the gradient bar. Then click on the Colour Preview to select a colour.

‣ Pull down the arrows to remove them.
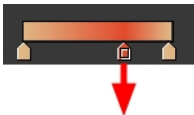
‣ Move the arrows left and right to modify the gradient distance.

NOTE: To learn how to reposition the gradient zones in your drawings, see *Editing Gradients and Textures* on page .

How to create a texture colour

1. From the Colour menu, select **Colours > New Texture** or click the New Texture ⌁ button.

   The Browser window opens.

2. Browse for a PSD or TGA bitmap file created with a third party software and click **Open**.

The texture is added to the colour list.

NOTE:
To learn how to reposition the textured zones in your drawings, see *Editing Gradients and Textures* on page 201.

You can also replace a texture once it is painted. If you decide to make the character's shirt wool instead of plaid, just update the texture file in the swatch and the entire project updates. Any transformation previously applied to the texture's position in your drawings will be kept.
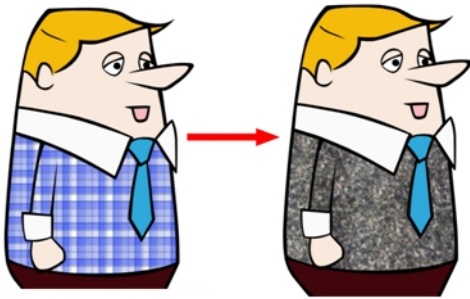
How to replace a texture swatch

1. In the Colour view, select the texture swatch that contains the bitmap texture you want to replace.
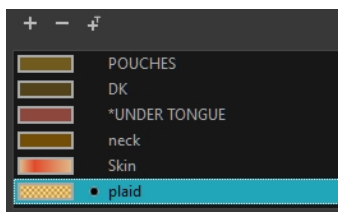
2. From the Colour View menu, select **Colours > Edit Texture** or double-click on the swatch.

   The Browser window opens.

3. Browse for the new PSD or TGA bitmap file created in a third party software.

4. Click **Open** to update the colour swatch.
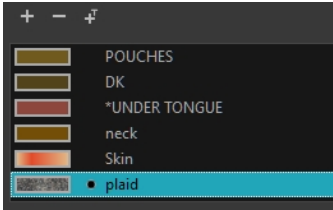
How to delete a colour swatch

1. In the Colour view, select the colour swatches to delete.
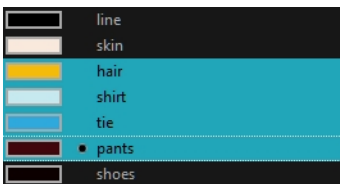
2. Do one of the following:

   ‣ From the Colour View menu, select **Colours > Delete**.

   ‣ Click the Delete Colour ── button.

   ‣ Right-click and select **Delete**.

   ‣ Press Delete.

   If the colour swatch is used in a drawing, the Delete Colour dialog box opens.
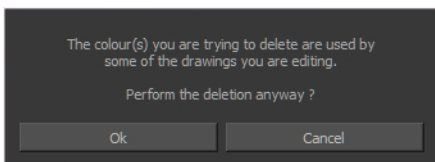
3. Click **OK** to delete the colours or click **Cancel** to abort the operation.

   ‣ If you delete colour swatches already in use, the zones painted with them turn red so you can easily identify them.

Editing Gradients and Textures

If you paint a zone with a gradient or texture colour, you can use the Edit Gradient/Texture tool to modify its position in the zone. You can move, scale, rotate and skew. If you want to match the colour to the animation, set the first texture position and copy the Edit Gradient/Texture position. When moving to the next drawing, you can select the next texture and paste the previous position to continue the modifications.

If you are painting a hand-drawn animation or if your want the Brush tool and Paint tool to use your gradient's position, angle and scale settings instead of the default ones, you can store your own settings and reuse them afterward.

This way of editing a texture using the Edit Gradient/Texture tool also works with pencil lines drawn with textured "brushes". If you then paint your textured pencil line with a gradient, you can do so and then edit both elements independently at the same time.

How to use Edit Gradient/Texture tool

1. Do one of the following:

    ‣ In the Tools toolbar, click the Edit Texture ▢ tool.

    ‣ Press Shift + F3.

2. Click the gradient or texture colour to modify.

Erik, Di-Gata Defenders © Nelvana Limited, Corus® Entertainment

A blue selection frame surrounds the selected gradient or texture.

Blue selection frame

Texture was scaled
down and skewed

3. Edit the gradient or texture by adjusting the control handles around the selection frame.

Colour Display Modes

The Colour view has two display modes:

- List

- Swatch

You can also display the RGB values and names of your solid colour swatches instead of only the name. This option is not available when displaying the colours in Swatch mode.

	● (000 000 000 255)	line
	(249 233 220 255)	skin
	(244 187 010 255)	hair
	(198 233 239 255)	shirt
	(047 169 220 255)	tie
	(065 006 012 255)	pants
	(012 000 000 255)	shoes
	(250 185 191 255)	mouth
	(251 249 250 255)	collar

How to switch between the display modes

1. From the Colour View menu, and do one of the following:

   ‣ Select **Colours > Swatch Mode** to display the swatches.

‣ Deselect **Colours > Swatch Mode** to display the colour list.

List mode

Swatch mode

How to display the swatch colour values

‣ From the Colour View menu, select **Palettes > Display Colour Values**.

The solid colour swatches' RGB values are displayed between the colour swatch and its name. The gradient colour swatches will be identified as (gradient).

Copying and Pasting Colours

When you're creating palettes, you may want to copy colour swatches or their values and paste them in other palettes to save time. You can also quickly copy a colour value from a palette in your scene to a selected colour swatch in a different palette.

You can copy a selected colour swatch and paste it as a clone. Since it produces a clone colour swatch, it is impossible to use the Paste as Clone command in the same palette as you copied the original colour swatch from.

If you would like to keep a reference file of some colour IDs or use them with custom plug-ins, you can copy the colour swatch IDs. Here is an example of colour ID: **075cf5b552401130**.

```
ToonBoomAnimationInc PaletteFile 2
Solid    Black                0x075cf5b15fe006a1   0   0   0 255
Solid    White                0x075cf5b15fe006a3 255 255 255 255
Solid    Red                  0x075cf5b15fe006a5 255   0   0 255
Solid    Green                0x075cf5b15fe006a7   0 255   0 255
Solid    Blue                 0x075cf5b15fe006a9   0   0 255 255
Solid    Custom               0x075cf5b15fe006a8   0   0 150 255
Solid    "Vectorized Line"    0x0000000000000003   0   0   0 255
```

How to copy and paste colours

1. In the Colour view, select one or more colours to copy.
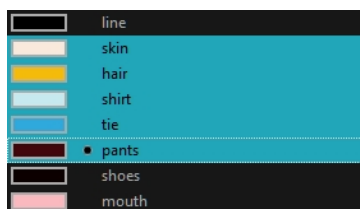
2. In the Colour View menu, select **Colours > Copy** or press Ctrl + C (Windows/Linux) or ⌘ + C (Mac OS X).

3. In the Palette list, select the palette in which you want to paste the colours.

4. From the Colour View menu, select **Colours** > **Paste as New Colours** or press Ctrl + V (Windows/Linux) or ⌘ + V (Mac OS X).

   ‣ To paste the colour values of the copied swatch over an existing colour swatch, select **Colours** > **Paste Colour Values**.

How to clone a colour swatch

1. In the Colour view, select the colour swatch you want to clone.

2. From the Colour View menu, select **Colours > Copy** or press Ctrl + C (Windows/Linux) or ⌘ + C (Mac OS X).

3. In the Colour view, select the colour palette you want to paste the clone into or create a new palette.

4. From the Colour View menu, select **Colours > Paste as Clone**.

   The cloned colour swatch appears in the palette.

How to copy a colour ID

1. In the Colour view, select the colour swatch you want toget the ID from.

2. From the Colour View menu, select **Colours > Copy Colour ID** or press Ctrl + C (Windows/Linux) or ⌘ + C (Mac OS X).

3. Paste the copied value as plain text in the desired document.

Mixing Colours

If you want to modify a series of colours to blend a tint in them or offset their RGBA values, you can use the Tint panel. You can also create palette styles, such as night and day styles.

How to mix colours

1. In the Colour view, select the palette that contains the colours you want to offset or blend.
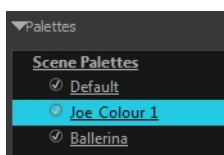
2. Do one of the following:

   ‣ From the Colour View menu, select **Palettes** > **Tint Panel**.

‣ Right-click and select **Tint Panel**.

The Tint Blend/Offset panel opens.
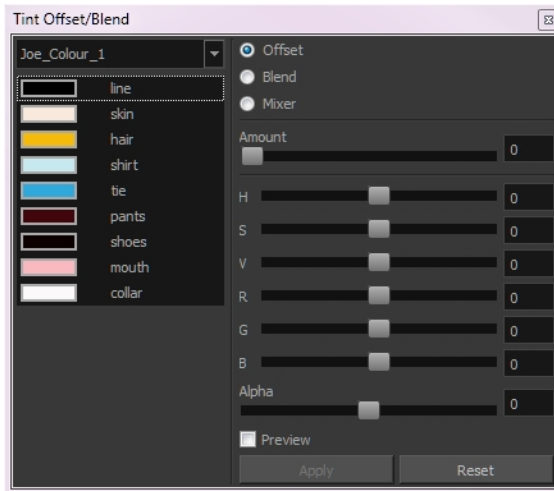
3. Select one or more colours to modify in the colour list. To select all the colours, press Ctrl + A (Windows/Linux) or ⌘ + A (Mac OS X).
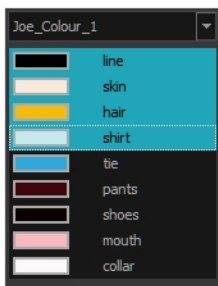
4. Select **Preview** option.

5. Select the **Offset**, **Blend**, or **Mixer** option.

Click the colour swatch to change the tint in the Colour Picker window
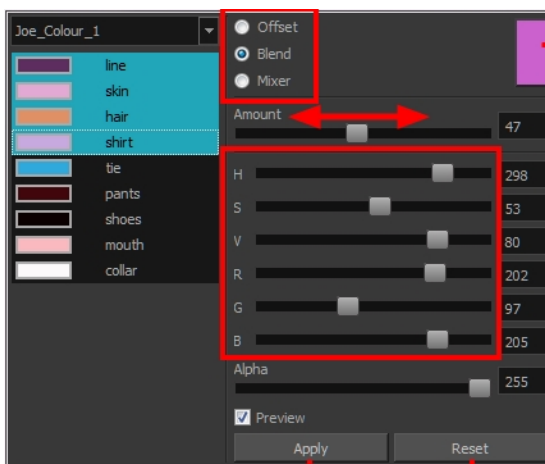
Click Apply to implement the modification to your palette.

Click Reset button to reset the transformation.

Parameter	Description
Offset	Offsets the selected colours by the adjustments made using the HSB and RGB sliders. Use the Amount slider to adjust the degree of offset. Use the Alpha slider to adjust the opacity of the selected colour.
Blend	Blends the selected colours with the colour swatch in the top-right corner. Use the Amount slider to adjust the degree of blend. A blend of 100% turns the selected colours into the same colour as the swatch. Adjusting the HSB and RGB sliders affect the swatch colour, which in turn affects the selected colours on the left. Use the Alpha slider to adjust the opacity of the swatch.
Mixer	Select a Base and Tint colour to form a third colour swatch. Use the slider just beneath to mix the Base and Tint colours by different amounts. This will affect the mixed swatch whether it is selected or not. Select either the Tint or Base swatch and use the HSB and RGB sliders to adjust its colour. This will affect the mixed swatch colour, which in turn affects the selected colours on the left.

6. Click **Apply**.

Painting the Model

Now that you've created the colours and the palette, you're ready to paint your model.

The colour model needs to be painted in order to adjust the colours with the other elements in the production. You can paint your model regardless of the colour RGBA and adjust them later when all the elements are together.

Abigail Archer, Grossology © Nelvana Limited, Corus® Entertainment Inc.

For paperless and cut-out animation, it's a good idea to provide a line-up template with the colour model to show the scale ratio between the characters, props and backgrounds.

Once your colour model is completed, create a line-up template by pasting one of the production's main characters, or even just a hand, beside the colour model to show the relative size. This allows the animator, layout artist, or scene setup artist to retain the correct scaling throughout the entire project when setting the elements in the scene. You can store your template in the Library.

How to paint a colour model

1. Create your master colour palette—see *Creating a Colour Palette* on page 110

2. Add new colours to the palette—see *Adding a Colour Swatch* on page 123.

3. Select your Paint Bucket 🪣 🪣 🪣 tool. We recommend the Paint Unpainted 🪣 tool.

4. In the Colour view, select a colour to paint your drawing.
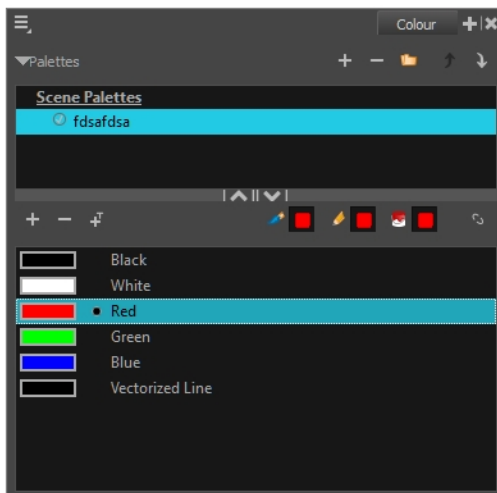
Colour view when working with vector layers   Colour view when working with bitmap layers
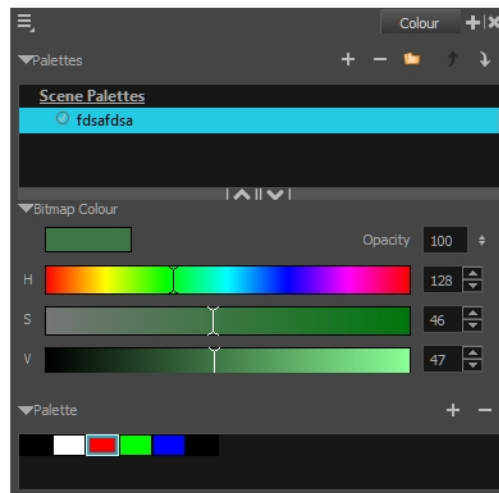
5. Paint the model by selecting colour swatches in the palette and clicking on your drawing. Note that only closed zones will be painted. If there's a gap in your artwork, you must close before you can paint it.

Abigail Archer, Grossology © Nelvana Limited, Corus® Entertainment Inc.

6. Adjust the colours—see *Mixing Colours* on page 131.

Chapter 4: Timing
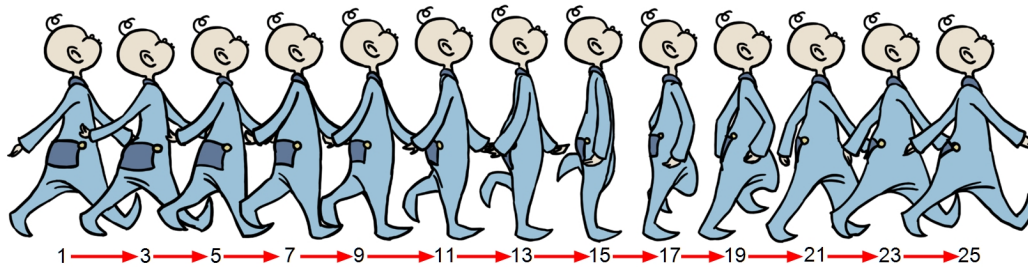
When you create hand-drawn animation traditionally or in a paperless environment, it's important to know how to set and modify the timing of your drawings.

In a traditional workflow, the person in charge of the digital exposure sheet reproduces the paper exposure sheet created by the animator. In a paperless workflow, the animator creates and manages their own exposure sheet directly in Harmony without the need for reproduction.

If you're more of a traditional animator, you will probably work with an exposure sheet. If you're a digital animator, you may prefer to work with a timeline to visualize your timing. Harmony offers both.

The Timeline view is also used to visualize timing, and represents elements and groups of elements as layers.

In this chapter, you will learn how to work on your drawing's exposure and length. The exposure and animation paths for symbols are covered in separate chapters.

The basic digital exposure sheet process is divided into the following steps:

Preparation

The digital exposure task is quite simple. There are very few things to prepare in order to get ready.

Opening the Scene

The scene is generally created during a previous step, such as scanning (in a traditional animation workflow), scene set up, digital layout, or production organization.

Using the Workspace

If you're doing paperless animation, use the Camera or Drawing view if you want to sketch at the same time.

While drawing and animating paperless animation, you can use the Workspace Manager to save a frequently used layout and name it `Paperless Animation`, for example.

Preparing References

To start an exposure sheet, you need to prepare your references. For traditional animation, you will need to reproduce the animator's paper exposure sheet. If you're working remotely, the studio can scan the paper exposure sheet using third-party software and send the digital files to be opened and viewed digitally.

Frames

Once the references are ready, you need to set the scene length by adding the right number of frames to your scene. You can set the global scene length from the top menu.

In the Timeline view, you can add and remove frames from a scene to edit its length.

How to set the scene length

1. From the top menu, select **Scene > Scene Length.**

   The Set Scene Length dialog box opens.
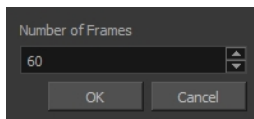
2. In the Number of Frames field, enter the number of frames needed.

How to extend or reduce the scene length in the Timeline view

When you remove frames at the end of a scene to reduce the scene length in the Timeline view, the exposed drawings and symbols are not deleted. They're still available if you extend the scene afterward.

1. In the Timeline view, drag the scene length bracket:

   ‣ **Right**: To add more frames to your scene.
   ‣ **Left**: To reduce the number of frames in your scene.
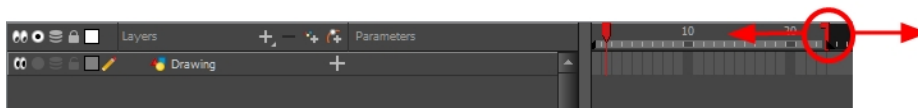
How to add frames in the middle of a scene

You can add frames anywhere in the middle of the scene—before or after a selection.

1. In the Timeline view, select the frame to which you want to add frames before or after.

2. Do one of the following:

    ‣ From the top menu, select **Scene > Frame > Add Frames Before Selection** or **Add Frames After Selection**.

    ‣ Press Ctrl + G and Ctrl + H (Windows/Linux) or ⌘ + G and Ctrl + H (Mac OS X).

    The Add Frames dialog box opens.
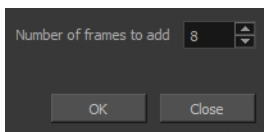
3. In the Number of Frames to Add field, enter the number of frames needed in the scene.

4. Click OK.
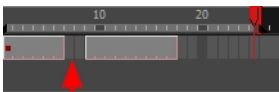
    Two frames were added
    before selected frame

How to add frames at the start or end of a scene

1. In the top menu, select **Scene > Frames > Add Frames at Start** or **Add Frames at End**.

    The Add Frames dialog box opens.
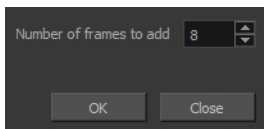
2. In the Number of Frames to Add field, enter the number of frames needed in the scene.

3. Click OK.

Creating Drawings

Before filling any value or setting any timing or exposure, you need to add different drawing elements.

Each drawing element is represented as a horizontal element layer in the Timeline view.

To start an exposure sheet, you will use drawing elements. Drawing elements are drawing containers. Any image file, either bitmap or vector, will use a drawing element.

When you add a drawing element to your scene, a folder is added to the scene directory. This folder is named the same way as the drawing element. Its purpose is to contain all the drawings related to this element. For example, in cut-out animation, a character can have many heads available. All of the head drawings will be contained in this folder, even if they are not exposed in the Timeline view. There is always a drawing container connected to a drawing element (column).

> **NOTE:** There are different element types available, such as sound and expression. A sound element contains sound files. Expressions, Beziers, 3D path, Quadmaps and Pegs are for motion purposes during the compositing step. It's not necessary to create these types to create your exposure sheet.

You can add drawing elements from the Timeline view and the Scene menu.

This section is divided as follows:

Layer Concepts

A layer is linked to a directory, the location where all its drawings are saved. This directory has the same name as the layer. When a name is typed in a cell ,Harmony searches the layer's directory for the corresponding drawing to display. If there is no corresponding drawing, a new one is created.

Drawings are exposed in cells and linked to the drawings saved in the layer's directory. When you remove a drawing from a cell, it is not displayed and still exists in the directory.

A drawing that is exposed multiple times (for example, in a walk-cycle) would be linked to the same original drawing in the layer's directory. If you modify, repaint, or correct the drawing, all exposed drawings with the same name are updated simultaneously. You must duplicate or create a new drawing to modify a single exposure and retain the others.

When you create a drawing cycle, all of the repeated drawings are linked to the original files. This means that when you modify, repaint, or correct a drawing named "1," all drawings named "1" are updated simultaneously. In order to modify a drawing independently from its other exposures, you must duplicate the drawing.

Layer Types

There are several types of layers that you can add in the Timeline view. Each layer is indicated by an icon to help you differentiate them.

Drawing Layer

The most common layer type is the drawing layer. Any time you need to create a vector drawing or import a symbol or image, you can use a drawing layer. You can also create bitmap artwork on a drawing layer.

NOTE: Bitmap images are contained in bitmap layers.

Bitmap Layer

If you import a bitmap images (as original bitmap) in your project, they are inserted in a Bitmap layer. If you choose to vectorize your image when you import, the vectorized object will be placed on a Drawing layer.

When importing a bitmap image, you have the option of encapsulating the image in a symbol. If you place a bitmap into a symbol, you will be able to mix vector drawings with it on the same layer.

Camera Layer

You can only have one Camera layer at a time in the Timeline view. By default, there is no Camera layer when you create a scene. You need to add a Camera layer when you want to create a camera motion.

NOTE: If you want to have several cameras with different settings, you can keep adding Camera layers in your Timeline view (however, only one will ever be visible at a time as you can only have one camera at a time in your timeline). To switch to a different camera, select **Scene > Camera** and select another camera layer.

Effect Layer

To enhance the look of your scene, you can add effect layers and attach your drawings to them.

Colour-Card Layer |

The Colour-Card layer is used to add a plain colour background to a scene. By default, your scene has no background colour and if you render it as a QuickTime movie or image sequence, it will have a black background.

Group Layer

A Group layer can be used to organize the Timeline view. You can drag and drop other layers onto a Group layer and then collapse the Group layer to hide these other layers from view.

If you create the Group layer in the Timeline view.

Peg Layer

A Peg layer is a trajectory or motion path layer that does not contain drawings. It can be attached to any drawing layer, cut-out puppet, or other peg layers; they will all follow the trajectory you set in the Peg layer.

Quadmap Layer

A Quadmap layer can be described as a deformation transformation layer that does not contain drawings. This can be attached to any drawing layer, cut-out puppet, or even other Peg layers. They will all follow the deformation you set in the Quadmap layer.

Sound Layer

You can import sound files to add dialog and sound effects to your project. The sound layer will be added to your Timeline and Xsheet view when you import a sound file in your scene.

In the Xsheet view, the Sound layer is a dark grey colour.

Adding New Drawing Elements

There are different ways to add a drawing layer to your project. By default, when you create a new scene there is one corresponding Drawing layer in the Timeline view.

You can add an element for each drawing and it will appear as a layer in the Timeline view.

How to add a drawing element from the Timeline view

1. In the Timeline view, click the Add Drawing Layer ![icon] button or press Ctrl + R (Windows/Linux) or ⌘ + R (Mac OS X).

   The Add Drawing Layer window opens.
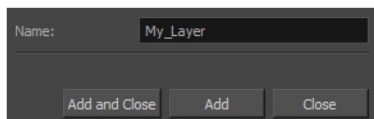
2. In the Name field, name your new layer.

3. Do one of the following:

   ‣ Click **Add** to add a first layer and keep the window open to add more layers.
   ‣ Click **Add and Close** to add a new layer and close the window.

   A new drawing layer is added to the Timeline view.

How to add a drawing element from the top menu

1. From the top menu, select **Insert > Drawing**.

   The Add Drawing Layer dialog box opens.
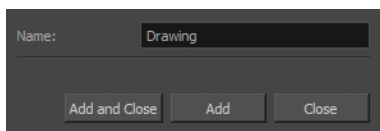
2. In the Name field, type a relevant element name and click **OK**.

   The new drawing element appears in your scene.

Deleting Columns

You can delete an element in the Xsheet view.

How to delete layers in the Timeline view

1. In the Timeline view, select the layers to delete.
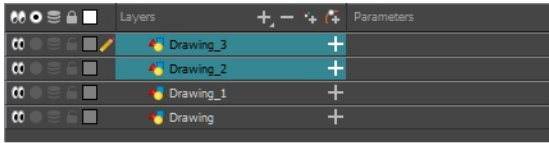
2. Do one of the following:

   ‣ In the Timeline's Layer toolbar, click the Delete Layers ▬ button.

   ‣ Right-click on the selection and select **Delete**.

Layer Properties

Each element has its own set of properties that you can modify, including effect and peg layers.

If you want to modify an element's properties, you can display the properties of a selected layer in the Timeline view. You can display a layer's properties as a window or as a view of its own.

The Layer Properties editor allows you to:

- Rename the layer

- Enable or disable the layer

- Lock the layer

- Change the track colour

The Column Properties editor allows you to:

- Rename the layer

- Enable or disable the layer

How to display a layer's properties

1. Do one of the following:

   ‣ In the Layer Properties view is not part of your workspace, from the top menu, select **Windows > Layer Properties**. In the Timeline view, select a layer

   ‣ In the Timeline view, double-click on a layer.

   ‣ Press Shift + E.

   The properties display.
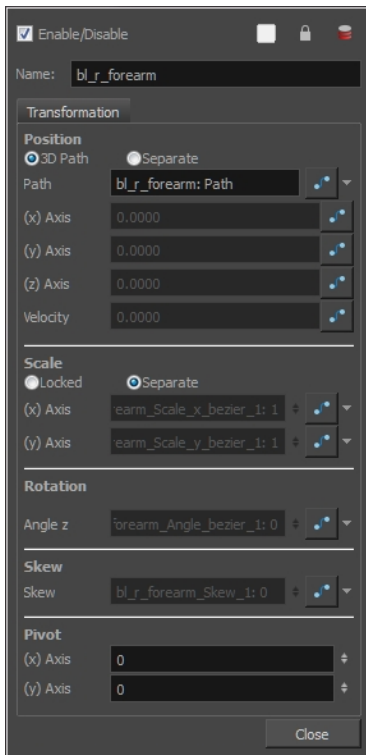
Modifying Layers

Once you add layers to your project, you can modify their properties, names, or ordering.

You can change the order of your elements in the Timeline view.

How to rename a layer in the Timeline view

1. In the Timeline view, double-click on the name of the layer to rename.

2. In the Name field, rename the layer and press Enter/Return.

How to rename a layer in the Layer Properties editor

1. In the Timeline view, double-click anywhere on the layer except the layer name to rename.

   The Layer Properties editor opens.

2. In the Name field, rename the layer.
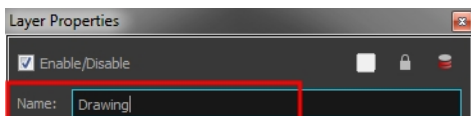
3. Click **Close**.

How to reorder layers in the Timeline view

1. In the Timeline view, select the layers to move.

2. Drag the selection to the new location.

3. Do one of the following:

   ‣ Drop the selection on an existing layer to make it a child of another element layer.
   ‣ Drop it between the existing layers. Timeline layers that are located above the selection are displayed in front it. Layers located under it in the Timeline View are displayed behind it.

Duplicating Layers

Duplicating an element provides you with a copy of the drawings and their exposure. You can modify anything you want in the duplicated element without affecting the original one.

How to duplicate an element

1. In the Timeline view, click the layer you want to duplicate.
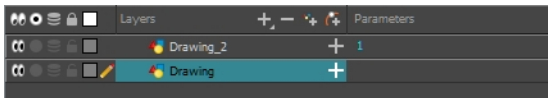
1. In the Timeline menu, select **Drawings > Duplicate Drawings** or press Alt + Shift + D.

   The new duplicated layer appears.

Cloning Layers

Cloning a layerprovides you with a copy of the selected element that uses the same drawings as the original.

How to clone an element

1. In the Timeline view, select the layer you want to clone.
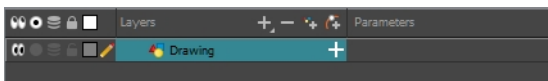
1. Do one of the following:

   ‣ From the top menu, select **Edit > Clone: Drawings Only** to clone only the layer drawings.
   ‣ From the Timeline menu, select **Layers > Clone Selected Layers: Drawings Only**.
   The new cloned layer appears.

Filling Exposure

Harmony provides different tools to fill in exposures and values, create cycles, and set increments.

This section is divided as follows:

Typing Exposure

If you want to type an exact drawing name or value in the Timeline view, you must use the Parameters section of the Timeline.

NOTE: You can only use alphanumeric values. (`0-9`, `a-z`, underscore (_) and dash (–)).

How to type a value in the Timeline view

1. In the Drawing Substitution field, double-click to edit the field and type the name of the drawing you want to create.
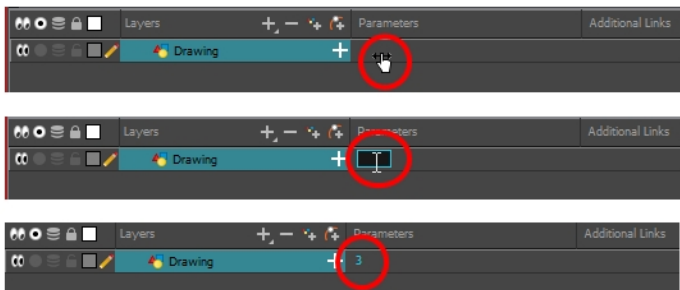
2. Press Enter/Return to validate the value.

Extending a Single Exposure

Extending the exposure lets you select a cell that contains a value and pull it down to the desired frame.

How to extend a sequence from the top menu

1. Do one of the following:

   ‣ From the top menu, select **Animation > Cell > Extend Exposure**.

   ‣ Press F5.

   The Extend Exposure dialog box opens.

2. Enter the frame number you want to extend the cell to.

Extending the Exposure of Previous Drawings

When drawing on a blank frame you can automatically create a new drawing and extend the timing from the previous exposed drawing.

In the following example, a cell is selected on the timeline for creating a new drawing in image A. In image B, the previous exposure does not extend to the new drawing, while in image C, it does.

How to extend the exposure of previous drawings

1. Open the Preferences dialog box by doing one of the following:

   ‣ From the top menu, select Edit > Preferences.

   ‣ Press Ctrl + U (Windows/Linux) or ⌘ + U (Mac OS X).

   The Preferences dialog box opens.

2. Select the **General** tab.
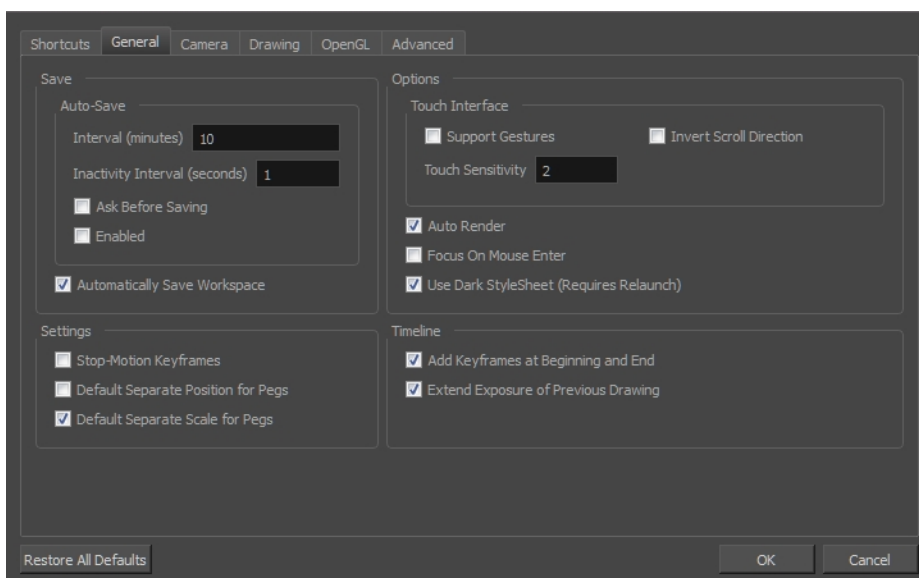
3. In the Timeline section, select the **Extend Exposure of Previous Drawing** option.
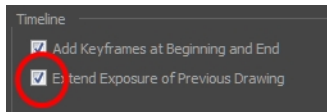
4. On the left side of the Timeline view, select a cell and create a new drawing.

    The previous exposure automatically extends to the beginning of the new drawing.

Dragging Cells

To readjust your timing, you can drag one or more cells to a new location.

You can turn off the Gestural Drag mode for the Xsheet view to prevent drawings from being dragged from one location to another. This feature does not apply to Annotation columns.

How to drag a cell to another location in the Timeline view

1. In the Timeline view, select one or more cells to move.
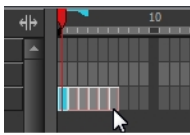
2. Drag the cells to the new location.
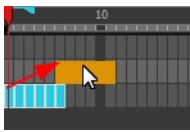
3. Drop the selection by doing one of the following:

    ‣ Drop by simply releasing the mouse or pen.
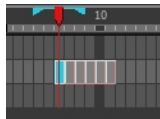
    ‣ Hold Ctrl (Windows/Linux) or ⌘ (Mac OS X) while dropping the selection to copy the cells. The original cells will not be moved.
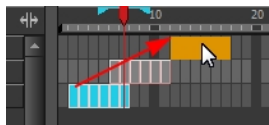
    ‣ Press Shift while dropping the selection to insert them between existing frames.
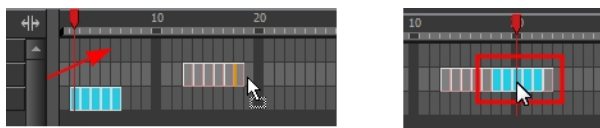
Increasing and Decreasing Exposure

Once a value is entered in the Timeline view, you can increase and decrease its exposure.

Increasing the exposure adds one more exposure to a selected cell; repeating this action adds an extra cell each time. This is an efficient way to extend a drawing's exposure and is always set in Insert mode. Increasing an exposure pushes the existing exposure forward.

Decreasing the exposure removes one exposure from a selected cell and pulls any cells following it to the beginning of selection.

How to increase exposure

1. In the Timeline view, select a cell.
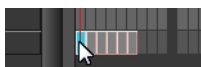
2. Do one of the following:

   ‣ From the top menu, select **Animation > Cell > Increase Exposure**.

   ‣ Right-click and select **Exposure > Increase Exposure**.

   ‣ Press +.

How to decrease exposure

1. In the Timeline view, select a cell.

2. Do one of the following:

   ‣ From the top menu, select **Animation > Cell > Decrease Exposure**.

   ‣ Right-click and select **Exposure > Decrease Exposure**.

   ‣ Press -.

How to use the Clear Exposure and Pull feature

1. In the Timeline view, select a range of cells.
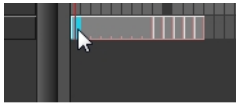
2. Do one of the following:

   ‣ From the top menu, select **Animation > Cell > Clear Exposure and Pull**.
   ‣ Right-click and select **Exposure > Clear Exposure and Pull**.

   The exposure is reduced by the selected number of cells.

Deleting Exposure

You can delete a drawing's exposure in several ways. When you delete a drawing's exposure from the Timeline view, you are not deleting the actual drawing file. You can always retrieve it by typing its name again in a cell.

You can delete the exposure in a selected cell range or delete the entire exposure of a drawing exposed over several cells. Note that you can also delete the exposure for drawings inside a collapsed group.

How to delete selected exposures

1. In the Timeline view, select the exposure you want to delete.

2. Do one of the following:

   ‣ Right-click and select **Delete**.
   ‣ Press Delete.

How to clear the entire exposure of a drawing

1. In the Timeline view, select a cell of a drawing exposed over several cells.

2. Do one of the following:

   ‣ From the top menu, select **Animation > Cell > Clear Exposure**.
   ‣ In the Timeline view, right-click and select **Exposure > Clear Exposure**.

Inserting Blank Cells

You can place an empty cell between other cells.

How to insert blank cells

1. In the Timeline view, select the cell in which you want to insert a blank cell.

2. Do one of the following:

- ‣ In the top menu, select **Animation > Cell > Insert Blank Cell**.
- ‣ Right-click on the selected cell and select **Exposure > Insert Blank Cell**.
- ‣ In the Timeline toolbar, click the Insert Blank Cell ![icon] button (you may have to customize the toolbar to display it).
- ‣ Press Shift + J.

A blank cell is inserted.
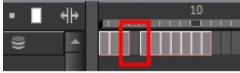
Setting the Exposure

You can easily increase or decrease the exposure for a selected cell range.

How to set the exposure

1. In the Timeline view, select the cell range on which you want to set the exposure.
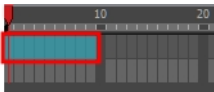
2. Do one of the following:

   - ‣ From the top menu, select **Animation > Cell > Set Exposure to > Set Exposure to 1**, **2**, **3**, or **Set Exposure**.
   - ‣ In the Timeline toolbar, click one of the Set Exposure ![EX 1] ![EX 2] ![EX 3] ![EX ...] buttons (you may have to customize the toolbar to display them).

3. If you chose the Set Exposure option, the Set Exposure dialog box opens. Enter the number of frames you want the drawings to display and click **OK**.
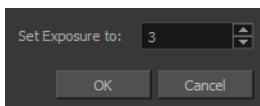
Filling a Selection with a Single Exposure

You can fill the same value over an entire selection. The selection can be over one cell, a cell range in one column, a cell range over many columns, an entire column, or many columns. You can use numbers, words, letters, or any alphanumeric value.

How to fill a selection with a single exposure

1. In the Timeline view, select a cell range.
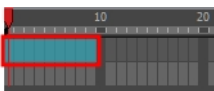
2. Do one of the following:

   ‣ From the top menu, select **Animation > Cell > Fill Selection**.

   ‣ Press Ctrl + T (Windows/Linux) or ⌘ + T (Mac OS X)).

   The Fill Selection dialog box opens.
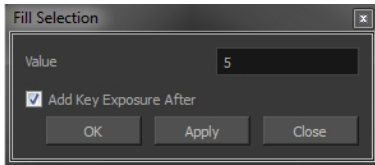
3. In the Value field, type the desired value.

4. To insert a key exposure in the frame following the last cell in the selection, select the **Add Key Exposure After** option. Otherwise, leave it deselected.

5. Click **OK**.

Filling a Selection with a Sequence

You can create a numbered sequence over a selection. The sequence can be forward, backward, single, double or higher increment, as a cycle, and so on. The selection can be over one cell or a cell range.

How to fill a selection with a sequence

1. In the Timeline view, select a cell range.
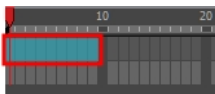
2. Do one of the following:

   ‣ From the top menu, select **Animation > Cell > Sequence Fill**.

   ‣ In the Timeline view, right-click and select **Exposure > Sequence Fill**.

   ‣ In the Xsheet toolbar, click the Sequence Fill ⊞ button (you may have to customize the toolbar to display it).

   ‣ Press Ctrl + M (Windows/Linux) or ⌘ + M (Mac OS X)).

   The Sequence Fill dialog box opens.
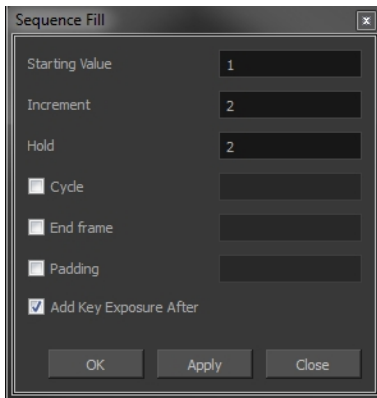
3. In the Starting Value field, type the first number in the sequence.

4. In the Increment field, type the number by which the drawing number will increase from frame to frame. For example, an increment of 1 gives you: `1-2-3-4`; an increment of 2 gives you: `1-3-5-7`; and -2 gives you this: `8-6-4-2`.

Filling Empty Cells

You can fill empty cells to extend the exposure of single frame drawings to fill the range of empty cells after each one. When creating drawings on cells that are not side-by-side, the exposure of the first drawing no longer fills automatically. You must select the frame range where you want your drawings to hold their exposure up to the next drawing and use the Fill Empty Cells command.

How to fill empty cells

1. In the Timeline view, select a cell range.
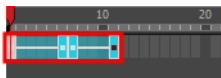
2. Do one of the following:

   ‣ Right-click and select **Exposure > Fill Empty Cells**.
   ‣ From the top menu, select **Animation > Cell > Fill Empty Cells**.
   ‣ In the Timeline toolbar, click the Fill Empty Cells button.
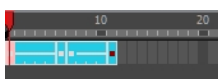
Each drawing in the selection is exposed in the range of empty cells that follow it.

Creating Cycles

Once you have entered a series of drawings and exposures, you can create cycles out of them in several ways.

You can loop your drawings using the following command:

• Create Cycle

When you create a drawing cycle, all of the repeated drawings are linked to the same original files. This means that when you modify, repaint, or correct a drawing named "**1**" for example, all drawings named "**1**" are updated simultaneously. In order to modify a drawing independently from its other exposures, you must duplicate the drawing.

How to create a cycle

1. In the Timeline view, select the cell range to loop.
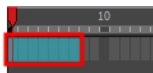
2. Right-click on the selection and select **Create Cycle** or in the Timeline toolbar, click the Create Cycle button (you may have to customize the toolbar to display it).

   The Create Cycle dialog box opens.
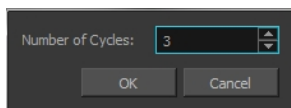
3. Enter the number of cycles you want, including the current selection.

Managing Key Exposures

Before working with key exposures, it's important to understand how keyframes, exposure and key exposure work in Harmony:

- **Keyframe**: A keyframe is a point in time where a change to the properties of the object or character occurs. In Harmony, keyframes consist of the coordinates that determine how an entire layer and its contents are moved. Keyframes include these parameters: XYZ position, skew, scale, angle and pivot.

- **Exposure**: Exposure is a property; it is the length of time that a drawing is visible over a series of frames. In Harmony, exposure is independent of keyframes. That is, keyframes are not linked to drawings. Keyframes can be moved independently from the drawing exposure.

- **Key Exposure**: A key exposure in Harmony is a type of exposure that forces a drawing to remain exposed on a specific frame. If a drawing is exposed before a key exposure and you swap out that drawing for another one, then the original drawing is retained. This preserves the key drawing. Note that Harmony automatically sets a key exposure when you perform a drawing swap.

Adding Key Exposures

Key exposures are mainly used for swapping drawings in cut-out animation where you will have numerous drawings for the various positions of the mouth or eyes of a character for example.

If there is a particular drawing you want to keep on a specific frame, you can set it as a key exposure. This prevents it from be overwritten by a drawing swap on a preceding frame. A key exposure is simply a property of an exposure that forces it to be exposed on a certain frame regardless of whether the previous exposure is the same drawing or not.

> **NOTE:** Keep in mind that if you modify the artwork in a drawing, all instances of that drawing will be automatically updated even if set as a key exposure. This keeps your existing animation key poses intact. It is frequently used on a mouth or eyes layer.

Example: Swapping a drawing with no key exposure

In the following example, drawing 3 (DR 3) is selected on the timeline and it contains no key exposure.

When it is swapped for drawing 4 (DR 4), the entire duration of drawing 3 substituted for drawing 4.

Example: Swapping a drawing with a key exposure

Here's what happens when swapping a drawing with a key exposure. In the following example, the playhead is positioned in the middle of drawing 5 (DR 5) to set the position for the new key exposure. When the new key exposure is added, drawing 5 is split in two; both halves contain drawing 5. Now if you swap the first drawing 5 for drawing 1, the second drawing 5 retains its exposure.

How to add a key exposure

1. In the Timeline view, select the drawing cell to set as the key exposure.

2. Do one of the following:In the Timeline toolbar, click the Add Key Exposure button.

‣ In the Timeline toolbar, click the Add Key Exposure ⬚ button.

‣ Right-click and select **Exposure > Add Key Exposure**.

A new key exposure is added.

If you added a key exposure at the beginning of the drawing, the entire exposure is filled with that same drawing. If you added a key exposure anywhere other than the beginning of the drawing, then the drawing is split in two and both parts contain the same drawing.

Removing Key Exposures

When you no know longer need a key exposure, you can remove it. When you do this, the existing key exposure is replaced by the preceding exposure. In the following example, a key exposure is set to drawing 1 (DR 1). When the key exposure is removed, the exposure is replaced by the preceding exposure, drawing 4 (DR 4).
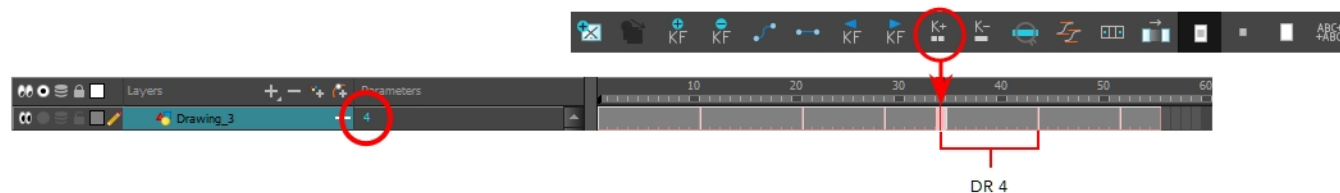
How to remove a key exposure

1. In the Timeline view, select a key exposure to remove.

2. Do one of the following:

   ‣ In the Timeline toolbar, click the Remove Key Exposure ⬚ button.

   ‣ Right-click and select **Exposure > Remove Key Exposure**.

   The key exposure is removed and replaced by the preceding exposure.

Removing Duplicate Key Exposures

When working with drawings to adjust the timing of a mouth in a lipsync, for example, and forcing the use of specific key exposures, unnecessary key exposures will be created. You can delete these duplicates without affecting the rest of the drawing. The first drawing of the selection will be used for the range.

> NOTE: Duplicate key exposures may occur when pasting with the Enforce Key Exposure option selected.

How to remove duplicate key exposures

1. In the Timeline view, select the layer that contains duplicate key exposures.

2. In the Timeline toolbar, click the Remove Duplicate Key Exposure ⊬ button (you may have to customize the toolbar to display it).

Navigating between Frames

Once a cell is selected in the Timeline view, you can navigate between the drawings, frames, and layers using keyboard shortcuts that work in the Camera, Drawing, and Timeline views.

You can navigate through:

- Drawings
- Frames

How to navigate through drawings and frames

1. In the Timeline view, select a cell.
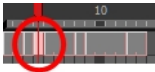
2. Once the cell is selected, you can navigate between:

   ‣ **Previous and next layers**: From the top menu, select **Drawing > Previous Layer** and **Next Layer** or press H and J.

   ‣ **Previous and next drawings**: From the top menu, select **Drawing > Previous Drawing** and **Next Drawing** or press F and G.

   ‣ **Previous and next frames**: From the top menu, select **Play > Previous Frame** and **Next Frame** or press comma (,) and period (.).

Managing Drawings

Drawings that are created in Toon Boom Harmony are not stored in their cells. They are actual files stored in the project's folder. If you want to rename a drawing or delete a drawing from your project, you need to edit the file and not the cells.

This section is divided as follows:

Renaming a Drawing

To rename a drawing, you need to select the drawing cell and use the Rename Drawing command.

How to rename a drawing

1. In the Timeline view, select the drawing to rename.

2. Do one of the following:

   ‣ Right-click and select **Drawings > Rename Drawing**.
   ‣ In the Timeline toolbar, click the Rename Drawing [A] button (you may have to customize the toolbar to display it).
   ‣ Press Ctrl + D (Windows/Linux) or ⌘ + D (Mac OS X).

   The Rename Drawing dialog box opens.
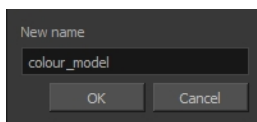
3. In the New Name field, type in the new drawing name.

Deleting a Drawing

You can permanently delete a drawing file from a project's folder.

NOTE: Deleting a drawing file is an operation that cannot be undone.

How to delete a drawing

1. In the Timeline view, select the drawings to delete.

2. Do one of the following:

   ‣ From the top menu, select **Drawing > Delete Selected Drawings**.
   ‣ Right-click and select **Drawings > Delete Selected Drawings**.

Duplicating a Drawing

If you want to modify a drawing that already exists, but keep the original drawing intact, you can duplicate the drawing and work on the copy. When duplicating a drawing, the selected cell is replaced with the new drawing. The exposure of the original drawing that was on the current cell is removed. The original drawing is not deleted from the project folder or other cells in which it is exposed.

With Toon Boom Harmony, you can create a keyframe at the same time as you duplicate your drawing. This way, you can modify and reposition drawings without affecting the original drawing.

How to duplicate a drawing

1. In the Timeline view, select the drawing to duplicate.
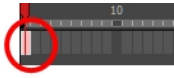
2. Do one of the following:

   ‣ From the top menu, select **Drawing > Duplicate Drawings**.
   ‣ Right-click and select **Drawings > Duplicate Drawings**.
   ‣ Press Alt + Shift + D.

Copying and Pasting Drawings

When you copy and paste a selection in the Timeline view, you are not copying and pasting the actual drawings, you are pasting the exposure. Exposure is a property; it is the length of time that a drawing is visible over a series of frames. In Harmony, exposure is independent of keyframes. That is, keyframes are not linked to drawings. Keyframes can be moved independently from the drawing exposure.

If you want to copy and paste selected drawings into a different layer or paste the selection in the same layer to duplicate the drawings, you must use the Paste Special feature.

There are four different ways to paste your selected drawings with the Paste Special dialog box:

> **Never create drawing files**: When adding exposures to a drawing layer, drawing files will not be created.

> **Only create drawing files when they do not exist**: When adding exposures to a drawing layer, new drawings will be created only when drawings with the same name do not already exist in the destination.

> **Replace existing drawings. Create drawing files when they do not exist:** Replace drawings with the same names to update a scene with new modified drawings and preserve the animation.

>> **Tip**: If you don't want to lose the existing animation when pasting a template, such as when placing new drawings after the animation, then delete the template's animation. It will still have updated the drawings but not override the existing animation.

> **Always create drawing files**: When adding exposures to a drawing layer, new drawings will always be created. If drawing files with the same name already exist, Harmony will create a new name for the drawing.

If you want to perform another Paste Special operation using the same settings you used previously, you can use the Paste Special Again command instead. You can paste your selection using the same settings as in the most recent Paste Special operation, without opening the Paste Special dialog box.

How to paste drawings with the Paste Special command

1. In the Timeline view, select the drawings to copy and press Ctrl + C (Windows/Linux) or ⌘ + C (Mac OS X).
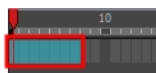
2. In the Timeline view, select the cell where you want your pasted selection to start.

3. Do one of the following:

   ‣ Right-click and select **Paste Special**.
   ‣ From the top menu, select **Edit > Paste Special**.
   ‣ In the Timeline toolbar, click the Paste Special ▧ button (you may need to customize the toolbar to display it).
   ‣ Press Ctrl + B (Windows/Linux) or ⌘ + B (Mac OS X).

   The Paste Special dialog box opens.
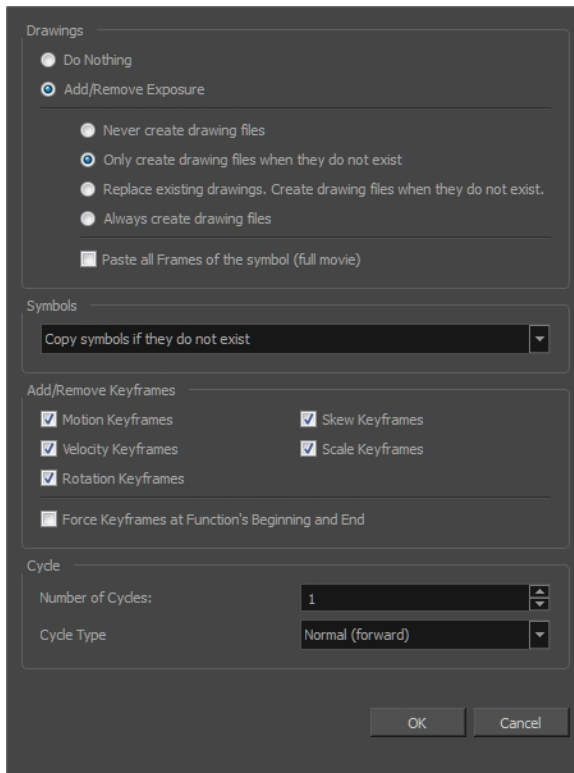
4. In the Drawings section, select the **Always Create Drawings** or **Only Create Drawings When They Do Not Exist option.**

How to paste new drawings with the previous Paste Special settings

1. Do one of the following:

   ‣ From the top menu, select **Edit > Paste Special Again**.

   ‣ Right-click and select **Paste Special Again**

   ‣ In the Timeline toolbar, click the Paste Special Again ⭐ button (you may have to customize the toolbar to display it).

   ‣ Press Ctrl + Shift + B (Windows/Linux) or ⌘ + Shift + B (Mac OS X).

Merging Drawings

You can merge elements. All drawings will be merged. Unused columns and layers will be deleted, but the original drawing files are still accessible.

How to merge drawings in entire layers or columns

1. In the Timeline view, select the layers you want to merge.
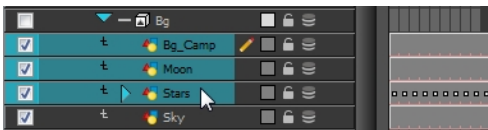
2. In the top menu, select **Edit > Merge**.

Modifying the Layer Display

You can change the way a layer in the Timeline view display. You can stay organized without changing the content of elements or your animation output.

This section is divided as follows:

Showing or Hiding Layers

As you work in the Drawing or Camera view, some layers may be in the way or are used as references. You can hide these layers to make your work area less cluttered and easier to navigate. You can show and hide layers in the Timeline view in several different ways.

When using the Solo mode to show or hide layers, here's how it works:

- If you have anything selected, it is not affected.

- When multiple layers are selected and you enable/disable the Solo mode on any of those layers, it is applied to all the selected layers.

- When multiple layers are selected and you enable/disable the Solo mode on layers that are not part of the selection, it is applied only to those particular layers.

When exporting or rendering a scene, the Solo mode setting of layers is ignored.

> **NOTE:**
> When a layer is affected by an inverted cutter, enabling the Solo mode for this layer will not show it unless the mask is also enabled.

How to show or hide all layers

1. Click one of the following in the Layers toolbar:
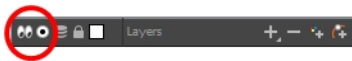
   ‣ Enable/Disable All 👀 button to show or hide all layers.

      Any hidden layers are unhidden, so you can view all layers.

   ‣ Solo Mode ⦿ button to view disable your current Solo mode selection. Any soloed drawing or sound layers are disabled, so you can view all layers. When you click again on the Solo Mode button, you last Solo selection is displayed.

How to show or hide individual layers

1. Do one of the following:

   ‣ In the Layer toolbar, click the Solo Mode ⦿ button.

   ‣ Click the layer's Enable/Disable All 👀 button to show or hide that layer.
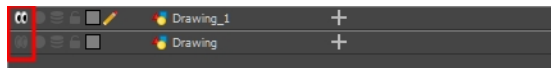
   ‣ Press A to show a layer or D to hide selected layers.

   ‣ In the Timeline toolbar, click the Enable/Disable ☑ button (you may have to customize the toolbar to display it).

How to enable the selected layer and disable all others

1. Do one of the following:

   ‣ Hold down Alt and click the Solo Mode ⦿ button of the layer you want to solo and hide all other layers.

   ‣ In the Timeline toolbar, click the Disable All Others ⚔ button (you may have to customize the toolbar to display it).

Changing the Colour of a Layer

To easily identify elements in the Timeline view, you can change the colour of layers.

How to change the layer's colour in the Timeline view

1. In the Timeline view, click the Change Track Colour ☐ button of the layer you want to modify.
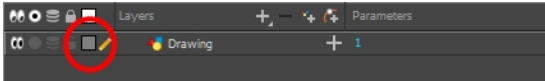
2. In the Select Colour dialog box, select a new colour for your layer.
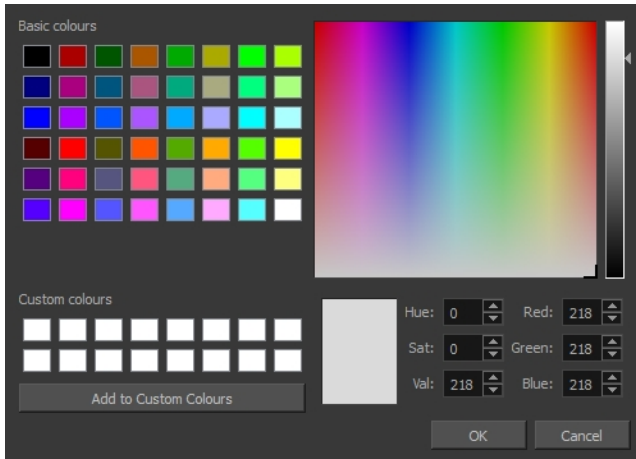
3. Click **OK**.

   The layer's background colour is updated. In a Drawing layer, exposed cells are the brighter, selected colour for easy identification.
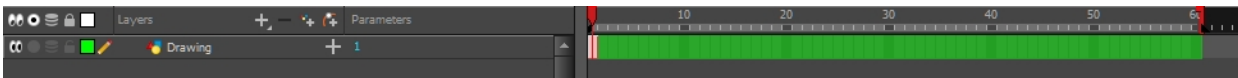
How to reset a layer's colour in the Timeline view

1. In the Timeline view, select the layers to reset.

2. In the Timeline toolbar, click the Default Track Colour ▦ button (you may have to customize the toolbar to display it).

Chapter 5: Paperless Animation
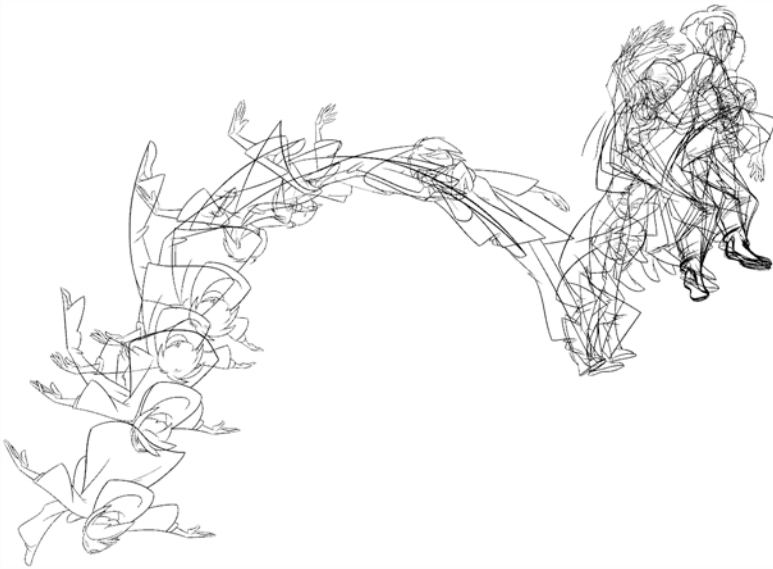
Toon Boom Harmony is a powerful paperless animation software that incorporates animation and drawing tools to make your work easier and more efficient.

Although it is a digital process, paperless animation is still hand-drawn and the fundamental principles of animation still apply.

One of the advantages of working with paperless animation is that you do not lose time scanning elements in and testing them because everything is already digital. You can simply draw your animation and play back your line test right away. This also saves the substantial amount of paper required by traditional animation. Another practical advantage is the ability to undo and redo some actions that are often difficult on paper, such as erasing brush strokes.

This chapter is divided as follows:

Preparation

To prepare for paperless animation with Harmony, you will need to complete the following tasks.

Setting Up Your Workspace

To sketch the animation directly in Harmony, you will mostly frequently need the Camera or Drawing view, the Xsheet or Timeline view, and the Tool Properties and Colour views.

While drawing and animating paperless animation, you can use the Workspace Manager to save a frequently used layout and name it **Paperless Animation**, for example.

For more information on setting up your workspace, refer to Chapter 2: Interface in the Fundmentals Guide.

Setting the Scene Resolution and Length

If the scene resolution was not already set by the digital layout artist or by a Toon Boom Storyboard Pro import, it is the next step to be accomplished. The layout artist, scene planner or animator will often take care of this task prior to the animation when working with paperless and cut-out animation.

How to set the resolution and frame rate

1. From the top menu, select **Scene > Scene Settings**.

   The Scene Settings dialog box opens.

2. In the Resolution tab, Choose a resolution from the list or enter a new one.
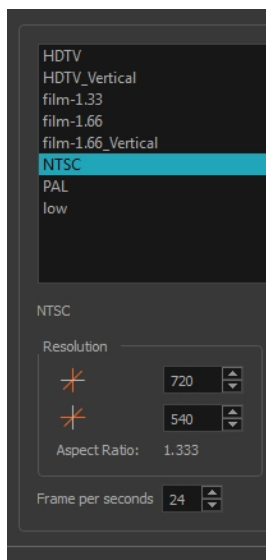
3. Set your frame rate.
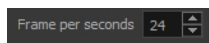
4. Click **OK**.

NOTE: It is important to set the resolution before you begin to set positioning and camera moves, as it may affect the ratio and composition.

Once you have set the resolution and frame rate, you must set the scene length by adding the right number of frames to the scene. You can set the scene length from the top menu. If you do not yet know the number of frames that will be needed, simply add some frames so you can draw different poses. However, if you only need to draw a background and one pose, you do not need to add more frames.

You don't need to do this step if you are importing your animatic in the QuickTime movie file format. The QuickTime import feature takes care of the scene length at the same time as the movie import.

How to set the scene length

1. From the top menu, select **Scene > Scene Length**.

   The Set Scene Length dialog box opens.
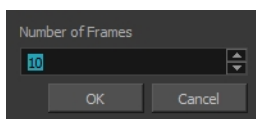
2. Type the scene duration in the Number of Frames field.
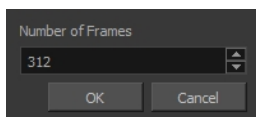
3. Click **OK**.

Importing the Layout, Storyboard and Animatic
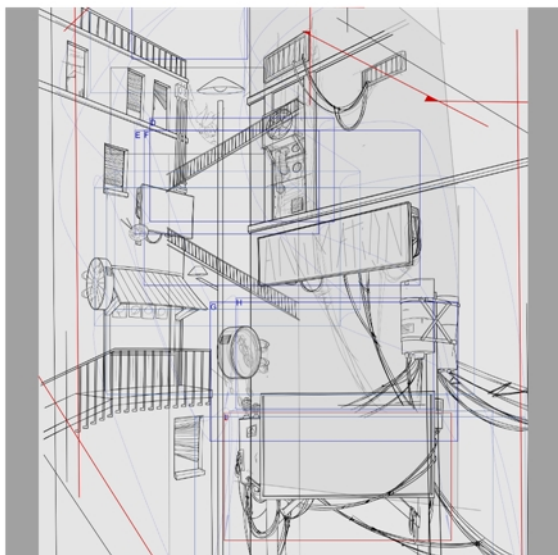
To animate a scene, you need to import your layout, storyboard or animatic, depending on which technique you are using. The most popular method is the animatic.

If you created a digital layout prior to the scene animation, you will animate directly in that scene. In this case, there is no need to import references since they are already there.

Importing the Animatic

If you have an animatic available, you can import it. The animatic will give you the right timing to expose your animation poses.

There are three ways to import an animatic in a scene.

How to import a QuickTime animatic

Toon Boom lets you import QuickTime movie files in the scene, cut them as image sequences and import the sound as an independent soundtrack.

1. From the top menu, select **File > Import > Movie**.

   The Select QuickTime Movie window opens.

2. Browse to your animatic.

3. Click **Open**.

4. The Import Movie window displays the conversion progress.
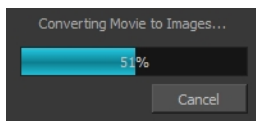
   When the conversion is complete, the Import Images dialog box opens—see the Import chapter in the Compositing and Effects guide to learn more.

1. Click **OK**.

How to import an image sequence animatic

You can also import an animatic composed of a sequence of bitmap images that were created in a third-party software by using the Import Images feature.

Use the same technique to import layouts and poses that were created on paper and scanned in third-party software.

1. From the top menu, select **Import > Images**.

2. The Import Images dialog box opens—see the Import chapter in the Compositing and Effects guide to learn more.

3. Click **OK**.

How to import a Toon Boom Storyboard Pro animatic

If the animatic was created with Toon Boom Storyboard Pro, you need to create an Export to Toon Boom function from that software. This will create your scenes and import your layout and posing and camera moves. This must be done at the beginning of the production. When you work in Harmony, use the same technique as you would in any QuickTime animatic.

If your project was created using Toon Boom Storyboard Pro, the animatic and camera moves are already set in your scene and you can go ahead and import the background elements.

Importing the Background Elements
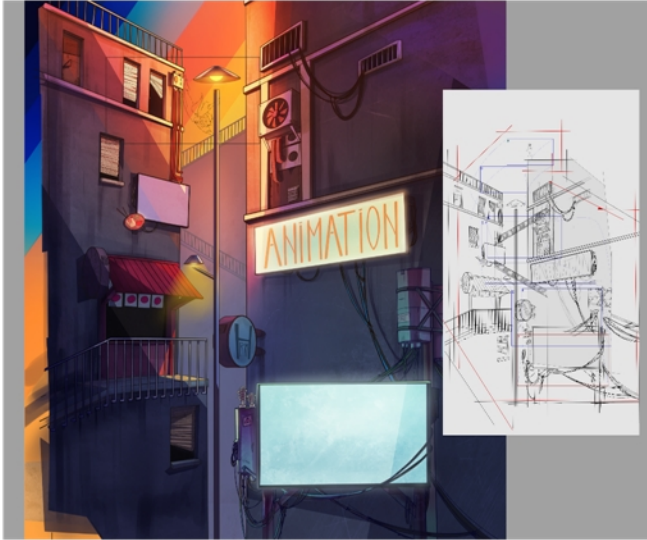
Once the layout or animatic is set, you can import the background elements.

There are two types of background elements you can import: bitmap and vector-based.

Bitmap background

You can import external bitmap background elements to your scene using the Import Images dialog box. Be sure to deselect the Convert to Toon Boom Vector Drawing option to retain your elements as bitmaps and preserve your colours.

To import a bitmap background, follow the procedure to import an image sequence animatic—see *Importing the Animatic* on page 170. For in-depth information on importing bitmap images, refer to Chapter 7: How to Import Bitmap Images in the Getting Started Guide.

Creating the Drawing Elements

Before beginning to draw in the Camera or Drawing view, you must add a drawing element to the Xsheet or Timeline view. You will also need to select the appropriate cell in your drawing element.

How to add a drawing element from the Timeline view

1. In the Timeline view, click the Add Drawing Layer ![icon] button or press Ctrl + R (Windows/Linux) or ⌘ + R (Mac OS X).

   The Add Drawing Layer window opens.
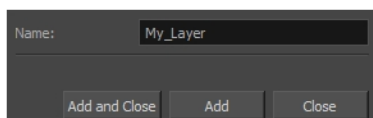
2. In the Name field, name your new layer.

3. Do one of the following:

   ‣ Click **Add** to add a first layer and keep the window open to add more layers.
   ‣ Click **Add and Close** to add a new layer and close the window.

   A new drawing layer is added to the Timeline view.

How to add a palette to your element

1. In the Timeline view or Xsheet view, select the cell in the drawing element that you plan to animate.

2. Do one of the following:

   ‣ From the Colour view menu, select **Palettes > Import**.
   ‣ Click the Import Palette 📁 button.

   The Browser window opens.

3. Select the palette.

4. Click **OK**.

Creating the Drawings

Once your drawing elements have been created and your palettes are loaded, you are ready to create drawings for your animation. But before creating the drawings, you should familiarize yourself with the following operations.

There are two different ways to create drawings. You can create drawings automatically by letting Harmony do it for you or by typing names (Typing mode) in the Xsheet cells.

How to automatically create a drawing

1. From the Timeline or Xsheet view, select the appropriate cell and start drawing in the Camera or Drawing view.

   Harmony creates the drawing and names it using the next available number. If there is no existing drawing, then it will be named "1", then "2" and so on—see the Preferences guide to learn more about the Use Current Frame As Drawing Name option.

How to create a drawing using the Typing mode

1. To insert a drawing name in a column cell, double-click on the cell and type the name using alphanumeric values: `0-9`, `a-z`, `underscore` (_) and `dash` (-). By default, if you press the Enter/Return key, the cursor will move on to the next cell. If you press the Esc key, it will quit the typing mode and return to normal mode—see Typing Exposure to learn more about the Typing mode.

Drawing Concept

When you add a drawing element to your scene, a folder is automatically added to the scene directory. This folder is named the same as the drawing element. Its purpose is to store all the drawings related to this drawing element. For example, when working with cut-out animation, a character can have many hands available. All of these hand drawings will be contained in this folder even if they are not exposed in the Timeline or Xsheet view. In other words, there is always a drawing container associated with a drawing element (layer, column).

All the drawings that were scanned in or created directly in Harmony will be saved in this directory. This means that when a value or drawing name is entered in the column, the Harmony will search the directory for the corresponding drawing to display. If it is unable to find it, a new drawing will be created. The column cells are not storage places, but simply links to the corresponding directory. If you remove a drawing from the column exposure, it will not be deleted; it is simply not displayed. You can always access it again.

When you create a drawing cycle, all repeated drawings are linked to the same original files. So when you modify, repaint or correct drawing 1, the entire cycle will be updated; every time drawing 1 appears, it is accessed from a single file.
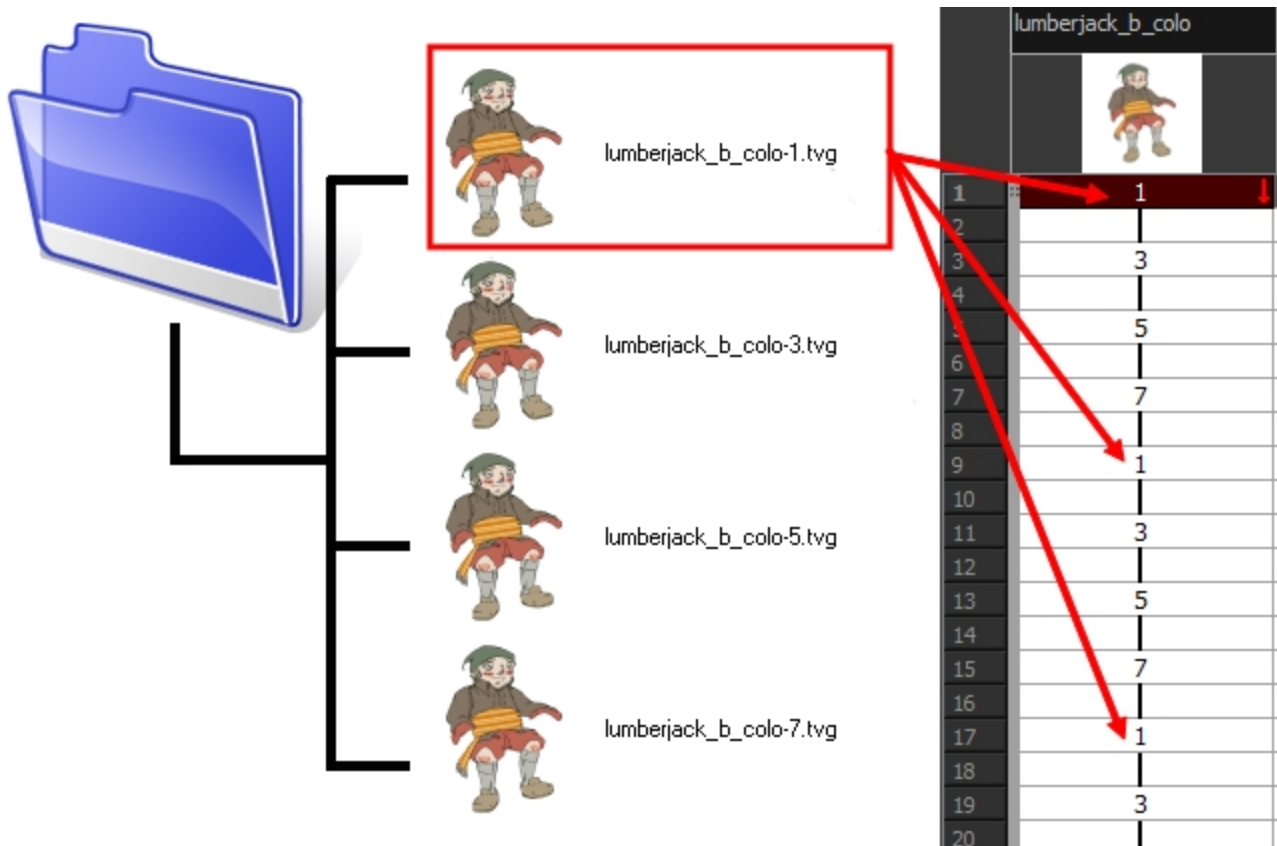
Renaming a Drawing

When you want to rename a drawing, use the Rename Drawing command. Do not double-click on the frame and write a new name, as this will create a new drawing and hide your actual drawing. Note that your drawing will not be deleted; it is still contained inside the element folder. Simply re-enter the name and it will reappear.

NOTE: To learn how to rename a sequence of cells by prefix or by frame position, see Renaming a Drawing.

Rough Animation
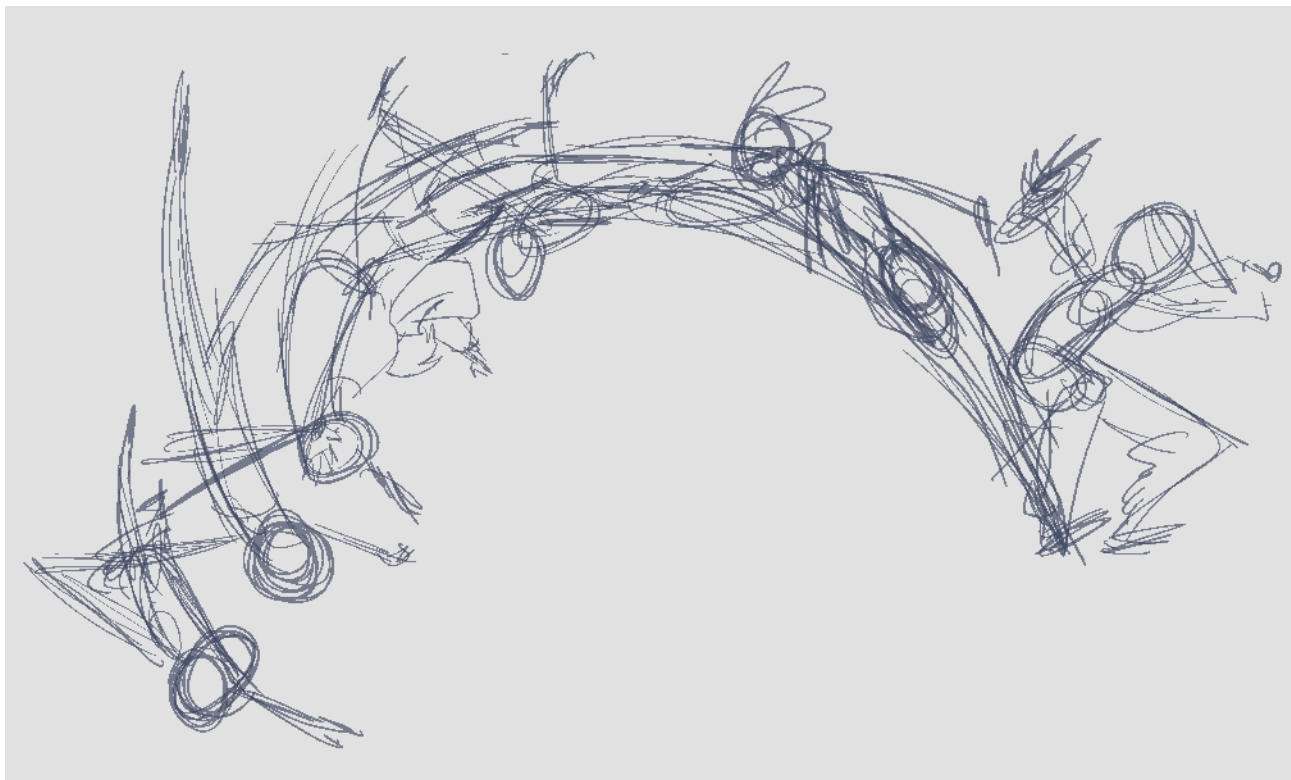
The first step to complete a traditional paperless animation is the rough construction, which is the skeleton of your animation. You would usually start with the main action. For example, to animate a walk cycle, you will start with the torso motion and the legs. Head, arms and clothes will be added later during the secondary animation.

For a satisfactory animation, complete the main action before adding all the details. If you start animating all the details right away, you will lose a lot of time if you have to make corrections. Your animation will often look too rigid.

How to animate

1. In the Tools toolbar, select the Brush ✏ tool or press Alt + B.

2. In the Colour view, select a colour for the brush. It is a good idea to choose a light colour for your rough animation. This will help you in the task that follows, the clean up process.
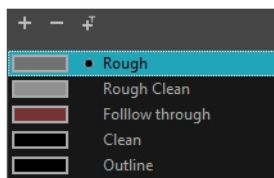
3. In the Timeline view, select the cell where the first drawing will appear.

4. In the Camera or Drawing view, draw the first key drawing.

5. In the Tools toolbar, click the Onion Skin ![icon] button. The Onion Skin feature displays your previous and next drawings as visual references to help you draw your new pose.

6. In the Timeline view, click and drag the blue onion skin markers to extend the number of previous and next visible drawings.

7. In the Camera View or Drawing View toolbar, press either the Onion Skin Reduce One Next/Previous Drawing or Onion Skin Add One Next/Previous Drawing to reduce or increase the number of previous and next visible drawings. The red icons ![icons] are for the previous drawings and the green icons ![icons] are for the next drawings.

8. In the Timeline view, select the cell where your next key drawing will appear.
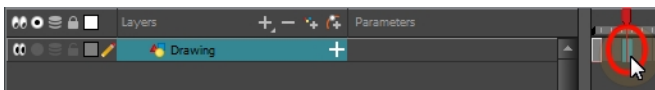
9. In the Camera or Drawing view, draw your second key drawing.

10. In the Timeline view, select a cell between the two key drawings.
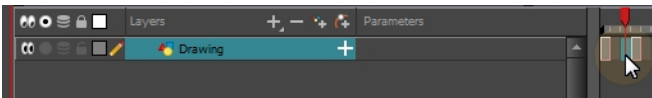
11. From the Timeline toolbar, click Create Empty Drawing to create an empty drawing or press Alt + Shift + R.
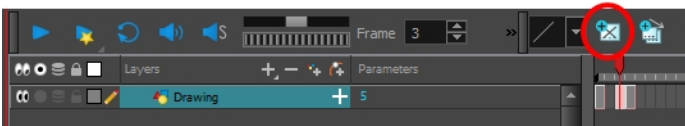
NOTE: Instead of creating an empty drawing, you can simply start drawing.

12. In the Camera or Drawing view, draw your new pose.

13. In the Timeline view, select a new cell and repeat the previous steps for each new drawing.

14. In the Timeline view, use the Enable/Disable All 👀 and Solo ⊙ buttons to turn off any layers you don't want to see during playback.
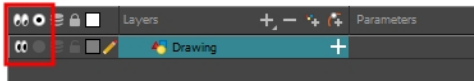
15. To loop playback, move the red playhead to the desired start frame and click the **Start** button on the Timeline toolbar. Move the playhead to the last frame of the playback and click the **Stop** button.
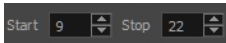
16. in the Playback toolbar, click the Loop ↻ button to start the playback.

17. In the Playback toolbar, click the Play ▶ button to start the animation.

Secondary Animation

Once your rough animation is correct, you can start adding extra details, such as arms, clothes or hair.

You can add the extra details on the same layer with the same colour or you can also create a new colour so that you can always see your original sketch.

> **NOTE:** If you want to keep your rough animation as it is to avoid any mistakes, you can add an extra drawing element and use the Light Table feature to draw over the first drawing element. This technique can also be used if you want to reuse your rough animation for other characters. For example, if you have a rough walk-cycle, you can reuse it for another character and add its personal features in a new layer. This way, you only need to animate the secondary animation instead of the whole body again.

How to create secondary animation on the same layer

1. In the Timeline view, select the cell in which you want to add new details.

2. In the Colour view, create a new colour (give it the same name and add the prefix _2 or _sec, for example) or select the same rough colour as before.

3. In the Drawing Tools toolbar, select your drawing tool.

4. In the Camera view, draw the secondary animation.

5. Do one of the following:

   ‣ In the Xsheet view, select the next cell in which you want to draw.

   ‣ Press F and G to navigate between your drawings.

6. Do one of the following:

   ‣ Select **View > Onion Skin > Show Onion Skin**.

   ‣ In the Timeline view menu, select **Onion Skin > Show Onion Skin**.

   ‣ Press Alt + O.

7. In the Camera or Drawing view, draw the secondary animation.

How to create your secondary animation on an extra layer

1. Add a new drawing layer and name it `secondary_animation`.

2. In the Timeline view, select the rough layer's timing.

3. Copy the timing and in the top menu, select **Edit > Paste Special** or Ctrl + B (Windows/Linux) or ⌘ + B (Mac OS X).

4. Choose **Never create drawing files** from the options to paste the timing but not the drawing files.
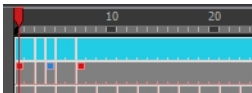
5. If you are working in the Drawing view, in the Drawing View toolbar, enable the Light Table.

6. In the Timeline view, select the cell where you want to add the new details.

7. In the Colour view, create a new colour (give it the same name and add the prefix *_2* or *_sec*, for example) or select the same rough colour as before.

8. In the Tools toolbar, select your drawing tool.

9. In the Camera view, draw the secondary animation on top of your rough drawing.
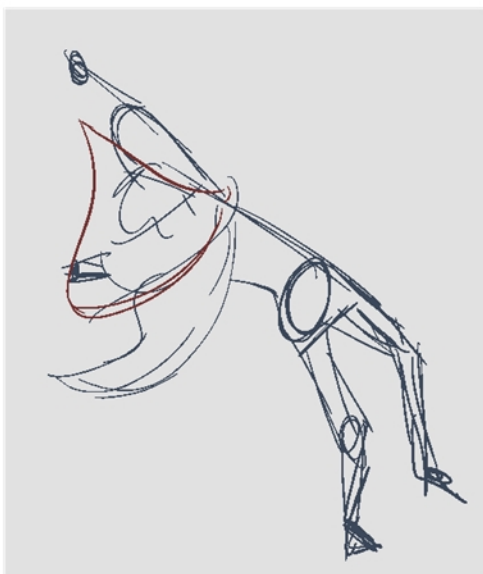
10. Do one of the following:
    ‣ In the Xsheet View, select the next cell in which you want to draw.
    ‣ In the Camera or Xsheet view, press F and G to navigate between your drawings.

11. Do one of the following:
    ‣ In the top or Camera View menu, select **View > Onion Skin > Show Onion Skin**.

‣ In the Timeline view menu, select **Onion Skin > Show Onion Skin**.

‣ Press Alt + O.

12. In the Camera view, draw the next secondary animation.

13. You can also use the Playback toolbar to play the animation in real time.

Bringing Your Animation on Model

If your primary and secondary animation were done as a rough drawing, it is now time to put your drawing on model. This means that you have to review your animation and ensure that every single detail is on model and there is no volume distortion. You can do this directly on the original sketch layer or on a new layer.

If your primary and secondary animation was done quite on model, you can proceed directly to the animation clean-up. If not, proceed the same way as you did for the secondary animation task to bring your animation on model.

Animation Clean-up

When your rough animation is ready, it is time to clean it up and ink it. The clean-up is also called *tracing*. It consists of tracing solid and clean lines over the rough animation to get closed zones. This is the final paperless animation step before the ink and paint step.

You will need to add a new drawing layer to create your cleaned up drawing. This is the equivalent of adding a sheet of paper and tracing the rough using the animation disk.

This method allows you to keep the roughs and the cleans intact. You only need to disable the rough layer to prevent it from appearing in the scene.

If you plan on tracing your animation in the Drawing view, enable the light table to display all the layers in your project.

How to trace your animation in a new layer

1. In the Layer toolbar, click the Add Drawing Layer 🗂 button.

2. In the Timeline view, click the Lock 🔒 button of the layer containing your rough animation to avoid selecting the layer in the Camera view.
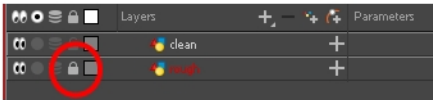
3. In the Timeline view, in the new layer, select the cell corresponding to the first key drawing of your rough animation.

4. In the Tools toolbar, select the drawing tool of your choice. The Pencil 🖊 tool is recommended.

5. In the Colour view, select a colour for tracing your animation. A dark bold colour, such as black, would ensure that it contrasts well with the light colour of your rough animation.

6. In the Camera or Drawing view, start tracing the first key drawing.

7. If you have some other layers in the way, you can disable them temporarily from the Timeline view so that only the rough animation and clean-up layer are displayed in the Camera view.

8. In the Tools toolbar, click the Onion Skin 🗜 button and pull on the blue onion skin handles in the Timeline view to extend the number of frames you can see.

9. In the Camera View or Drawing View toolbar, press either the Onion Skin Reduce One Next/Previous Drawing or Onion Skin Add One Next/Previous Drawing to reduce or increase the number of previous and next visible drawings. The red icons ⊖ ⊕ are for the previous drawings and the green icons ⊖ ⊕ are for the next drawings.

10. In the Timeline view, select the next cell corresponding to a rough drawing.

11. In the Drawing or Camera view, trace your next drawing.
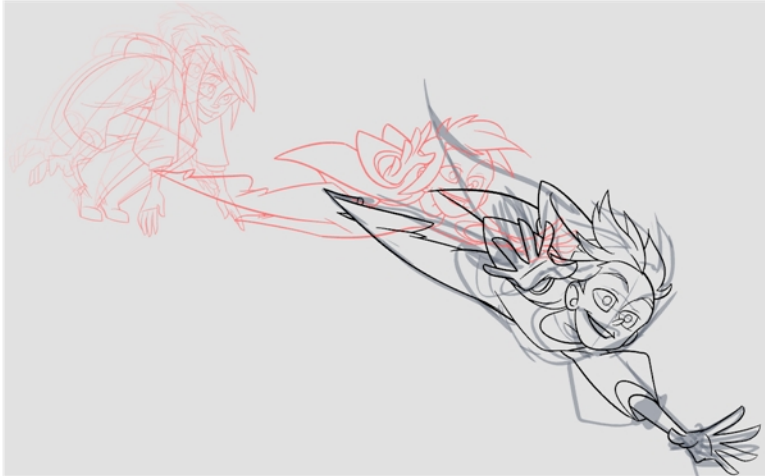
12. Repeat the previous steps for each drawing.

Tools

To understand paperless animation, you must first discover the tools available. There are, of course, drawing tools, but also practical features such as setting a drawing as a key, breakdown or in-between.

When you create hand-drawn animation digitally, there are certain tools you require in order to work efficiently, as you would with an animation table, paper and pencils.

The onion skin and light table are used to preview previous and next drawings, cells, elements and frames. When designing or animating, it is very useful to see your previous drawings. Just as if you were building a cut-out puppet, you want to view other drawing elements to know where to draw the new element.

This topic is divided as follows:

- *Onion Skin* on page 185
- *Light Table* on page 186
- *Rotate View Tool* on page 187
- *Create Empty Drawing* on page 188
- *Reposition All Drawings* on page 189

Onion Skin

The Onion Skin tool lets you preview the previous and next drawings. By default, the previous drawings appear in a shade of red and the next drawings are displayed with a shade of green. You can change these colours in the Preferences dialog box.

How to enable onion skinning

1. Do one of the following:

   ‣ From the top menu, select **View > Onion Skin > Show Onion Skin**.

   ‣ In the Timeline view, click the Onion Skin button on a layer.

   ‣ In the Tools toolbar, click the Onion Skin button.

   ‣ Press Alt + O.

   Blue arrows appear on both sides of the play head.

2. Drag the blue arrows to add more frames to the onion skin display.

Light Table

The light table is used to preview the previous and subsequent active layers in washed-out colours. It is useful for seeing the other layers when designing, animating or cleaning up your animation.

Only the currently selected drawing is displayed by default in the Drawing view. When enabling the light table, the other layers appear as a washed-out display and are used as a reference. You can not select or manipulate them.

In the Camera view, when the light table is activated, all layers but the currently selected one are shown washed-out. The display returns to the normal mode when an animation tool is selected.

How to enable the light table

1. Do one of the following:

   ‣ In the top menu, select **View > Light Table**.
   ‣ In the Drawing View toolbar, click the Light Table 💡 button.
   ‣ In the bottom Camera View toolbar, click the Light Table 💡 button.
   ‣ Press Shift + L.

2. The drawings for the other layers are displayed as washed-out colours in the Camera and Drawing views.

3. In the Timeline view, you can disable the layers you want to hide from the light table.
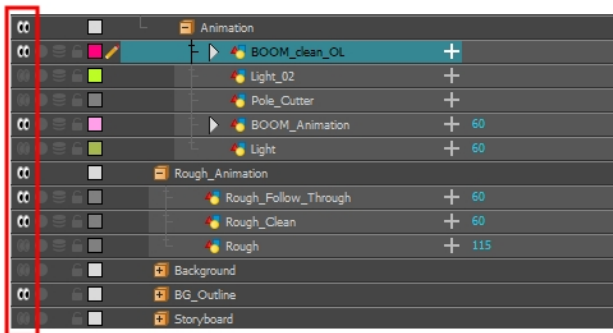
Rotate View Tool

Use the Rotate View tool (animation disk) to rotate your Camera or Drawing view while you draw for increased flexibility. The rotary tables in each view are independent; if you rotate the Drawing view 25 degrees, if you switch to the Camera view, you can use the rotary table in that view and rotate it to a different angle without affecting the settings in the other view.

How to use the rotary table

1. Do one of the following:

    ‣   In the Camera or Drawing view, hold down Ctrl + Alt (Windows/Linux) or ⌘ + Alt (Mac OS X)

    ‣   In the Tools toolbar, click the Rotate View 🔴 button.

    The rotary table appears.
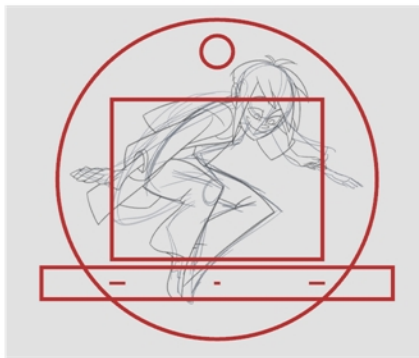
2. Rotate the view to the desired angle.

3. Release the keyboard shortcut or switch to a new drawing tool.

4. Press Shift + X to reset the rotation.

Create Empty Drawing

The Create Empty Drawing command automatically creates a drawing in the selected cell, replacing any drawing that may already be exposed in that cell and the following ones until it meets another drawing, key exposure or a blank cell.

How to create an empty drawing

1. In the Timeline view, select the cell in which you want to create an empty drawing.

2. Do one of the following:

   ‣ In the top menu, select **Drawing > Create Empty Drawing**.
   ‣ In the Timeline View toolbar, click the Create Empty Drawing button.
   ‣ Press Alt + Shift + R.

   The new drawing is created in the Timeline view.

Reposition All Drawings

The Reposition All Drawings � option is used to reposition, scale, rotate or skew all drawing strokes on every drawing included in a layer.

How to reposition all drawings

1. From the Tools toolbar, select the Reposition All Drawings � tool. This also automatically selects every stroke in your drawing in the Drawing and Camera view.

2. Do any of the following:

   ‣ To reposition, click and drag your selection to a new area.

   ‣ To rotate, rotate the selection box handle.
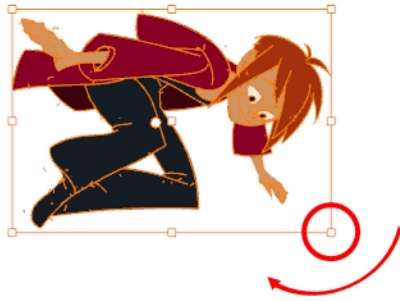
‣ To scale, pull or push on the top, side, bottom or corner control points. Hold down Shift to maintain the selection's ratio.
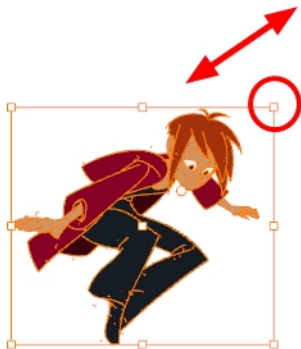
‣ To skew, drag the sides or top and bottom segments, between the control points.
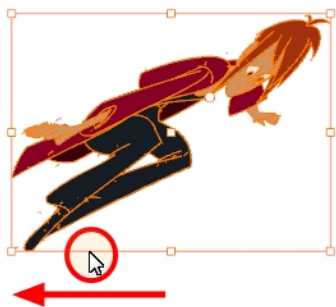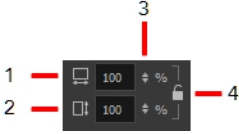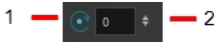
3. When you release your cursor, every drawing in the drawing layer you repositioned, scaled, rotated or skewed will follow the same transformation.

4. You can also adjust the position by modifying the settings and using the operation buttons in the Tool Properties view.

Reposition All Drawings Properties

Parameter	Description
Flip Horizontal and Flip Vertical	The Flip Horizontal ⧀⧁ and Flip Vertical ⇕ operations flip the current selection horizontally or vertically. ‣ From the top menu, select **Drawing > Flip Horizontal** and **Flip Vertical**.

Rotate 90 Degrees CW and CCW	 The Rotate 90 Degrees CW 90 and Rotate 90 Degrees CCW 90 operations rotate the current selection 90 degrees clockwise or counter-clockwise. ‣ From the top menu, select **Drawing > Transform > Rotate 90 Degrees CW** and **Rotate 90 Degrees CCW**. ‣ Press Ctrl + 7 and Ctrl + 9 (Windows/Linux) or ⌘ + 7 and ⌘ + 9 (Mac OS X).
Width and Height	Use the Width and Height operation fields to enter specific values to resize the selected shape with precision. 1. **Width**: Type a value in this field to resize the width of your selection. 2. **Height**: Type a value in this field to resize the height of your selection. 3. **Up/Down arrows:** Use the up and down arrows to modify the value in the Width or Height fields. 4. **Lock icon**: Click the lock icon to lock or unlock the ratio between the Width and Height values.
Offset X and Offset Y	Use the Offset X and Offset Y operation fields to enter specific values and precisely reposition the selected shape. 1. **X**: Type a value in this field to reposition your selection along the X-axis. 2. **Y**: Type a value in this field to reposition your selection along the Y-axis. 3. **Up/Down arrows:** Use the up and down arrows to modify the value in the X or Y value field.
Angle	The Angle operation lets you to enter specific values and accurately rotate the selected shape. 1. **Angle**: Type a degree value in this field to rotate your selection.

	2. **Up/Down arrows:** Use the up and down arrows to modify the value in the Angle value field.

Chapter 6: Ink and Paint

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When traditional animation is traced, cleaned up, scanned in and properly exposed, it's time for the ink and paint process. This consists of cleaning all dirt and hair (for example, dust that was in the scanner, dots that do not belong in the drawing, extra floating artwork around the drawing that must be removed), painting the lines and filling the colours in the empty zones on an entire animation sequence.

For paperless animation, the drawings are cleaned up directly in Harmony, so there is generally no dirt to clean, only painting and inking.

For cut-out animation, once the character builder paints the pieces, there is no more ink and paint process because the same parts are always reused and moved around. The ink and paint process applies only to traditional and paperless animation workflows.

Harmony is optimized to ink and paint drawings efficiently. Since most of the drawings are vector-based, the colour zones are completely filled and there are no scattered spots left blank. Also, there are some actions that can be applied on an entire animation sequence at once, like dirt removal, some colour filling, line repainting, and so on.

Harmony uses palettes to hold all the colours you need to paint your elements. A palette is created by assigning a set of colours to each character, prop or effect. The colour styling artist will create a new palette and add a new colour for each zone of the character, such as the skin, hair, tongue, shirt, pants, and so on. Each colour is known as a *colour swatch*—see *Working with Palettes* on page 105.
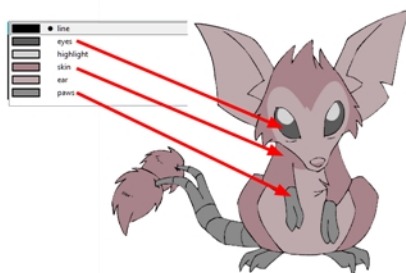
Di-Gata Defenders © Nelvana Limited, Corus® Entertainment

When a zone on the character is painted with the colour contained in a colour swatch, a link is automatically created between that colour swatch and the zone. This means that if the tint of the colour in the colour swatch is changed, any zone linked to it will update to the new tint. This is one way that colour palettes can save time and money in your production.

Another advantage of this system is that you can create complete palettes for different lighting situations. For instance, in addition to the regular palette for a character, you could have one for that character in the rain using colours that are duller and less vibrant than the dry daytime colours, or yet another for using in a night scene. Using palettes linked to your character in this way allows you to instantly change its colouring to suit the mood and atmosphere of the scene without tediously repainting each element.

The ink and paint process is divided into the following steps:

Preparation

The optimal workspace for creating colour models and inking/painting in traditional animation includes the following views:

- Camera

- Drawing

- Colour

As there is no default workspace for these tasks, you will need to create a custom workspace for yourself—see the Fundamentals Guide.

You may have a character or element palette that has colours that are very similar to the Drawing and Camera view's background colour. For example, a white eyeball colour on a white background which makes it difficult to know if the zone was painted. You can change the background colour of the Camera or Drawing view in the Preferences dialog box.
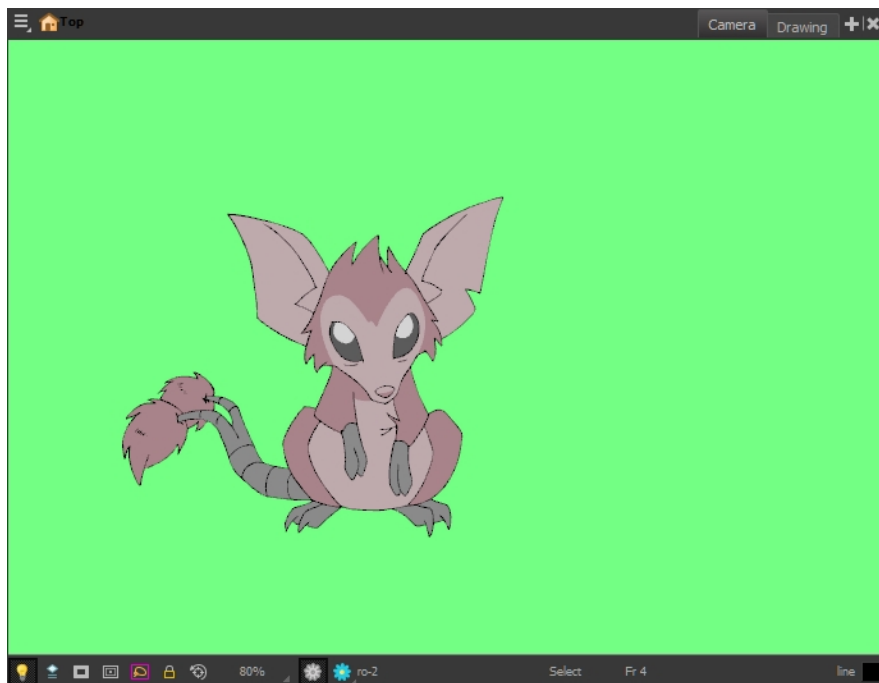
Di-Gata Defenders © Nelvana Limited, Corus® Entertainment Inc.

How to change a view's background colour

1. Do one of the following:

   ‣ From the top menu, select **Edit > Preferences**.

   ‣ Mac OS X: Select **Stage Essentials > Preferences.**

   ‣ Press Ctrl + U (Windows/Linux) or ⌘ + U (Mac OS X).

   The Preferences dialog box opens.

2. Select the **General** tab.

3. In the Colours section, click **Edit Colours**.

   The Colours dialog box opens.

4. Select the **Camera** or **Drawing** tab.

5. Change the background colour of:

   ‣ **Camera View**: Click the **Background** colour swatch.
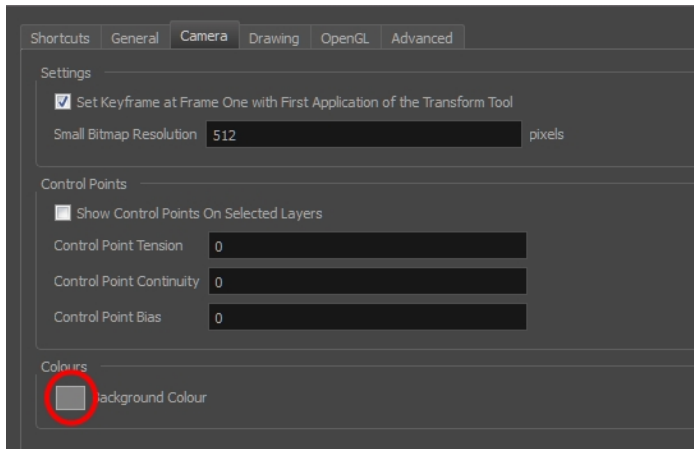
‣ **Drawing View**: Click the **Background** Colour colour swatch.
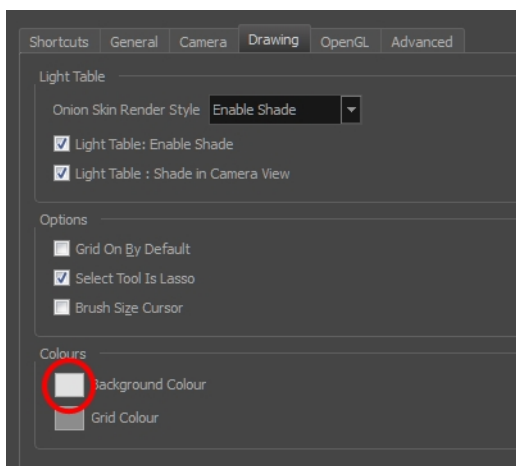
The Select Colour dialog box opens.

6. Select a colour by clicking a colour swatch, clicking a colour in the colour gradient, or entering a HSV/RGB Value.
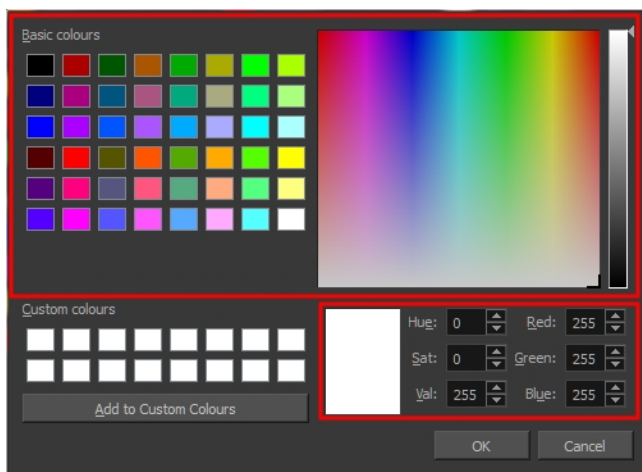
7. Click **OK** in the three opened dialog boxes to apply your changes.

NOTE:
When you need to paint drawings with similar colours throughout the palette, you can create a clone of that palette and change all the colours to very bright tints to facilitate the paint process—see *Cloning a Colour Palette* on page 115.

Painting

This section is divided as follows:

- *Painting Using the Paint Tool* on page 199
- *Selecting a Colour in a Drawing* on page 200
- *Editing Gradients and Textures* on page 201
- *Inverting a Colour Selection* on page 202

Painting Using the Paint Tool

The main tool you will use to paint your drawings with is the Paint tool. The Paint tool can be used in several different modes, which can be customized in the Tool Properties view.

The Paint tool paints closed zones, including brush strokes and pencil lines. If there are gaps in the lines defining a zone, you must close them using the Brush, Pencil, or Close Gap tools or the Automatic Close Gap option.

How to paint with the Paint tool

1. In the Timeline or Xsheet view, select the cell on which you want to paint.
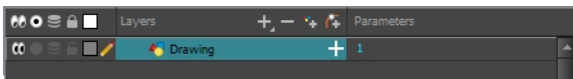
2. Do one of the following:

   ‣ In the Tools toolbar, click the Paint 🪣 tool.
   ‣ Press Alt + I.

3. In the Colour view, select a colour.
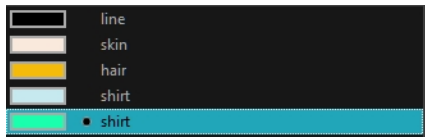
4. In the Camera view, start painting. Click on a zone or pencil line to paint it, or trace a lasso or marquee selection to paint several zones or pencil lines at the same time.

NOTE: The last colour you select while using the Paint tool will be used the next time you select the Paint tool if you're using the unlocked painting tools in the Colour view.

Selecting a Colour in a Drawing

While working in the Camera or Drawing view, you can use the Dropper tool to pick a colour from your drawing without going to the Colour view.

How to use the Dropper tool

1. Do one of the following:

   ‣ In the Tools toolbar, select the Dropper 🖌 tool.
   ‣ From the top menu, select **Drawing > Drawing Tools > Dropper**.
   ‣ Press Alt + D.

2. In the Camera or Drawing view, click on the desired colour.

   ‣ If you're using another drawing tool such as the Paint tool, you can temporarily hold down the D key and click in your drawing before releasing the key to pick your colour. When you release the key, you will return to your previous tool. You may also want to select the zones painted with the colour currently selected in the Colour view. This can be useful for removing rough lines from a clean drawing.

How to select the zones painted with the current colour

1. In the Colour view, select the colour from which you want to select the corresponding zones.
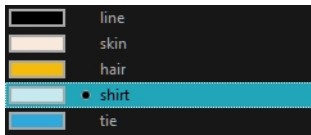
2. Do one of the following:

   ‣ Select **Drawing > Select Strokes With Current Colour**.

   ‣ Press Ctrl + Shift + A (Windows/Linux) or ⌘ + Shift + A (Mac OS X).

Editing Gradients and Textures

If you paint a zone with a gradient or texture colour, you can use the Edit Gradient/Texture tool to modify its position in the zone. You can move, scale, rotate and skew. If you want to match the colour to the animation, set the first texture position and copy the Edit Gradient/Texture position. When moving to the next drawing, you can select the next texture and paste the previous position to continue the modifications.

If you are painting a hand-drawn animation or if your want the Brush tool and Paint tool to use your gradient's position, angle and scale settings instead of the default ones, you can store your own settings and reuse them afterward.

This way of editing a texture using the Edit Gradient/Texture tool also works with pencil lines drawn with textured "brushes". If you then paint your textured pencil line with a gradient, you can do so and then edit both elements independently at the same time.

How to use Edit Gradient/Texture tool

1. Do one of the following:

   ‣ In the Tools toolbar, click the Edit Texture ⬜ tool.

   ‣ Press Shift + F3.

2. Click the gradient or texture colour to modify.

Erik, Di-Gata Defenders © Nelvana Limited, Corus® Entertainment

A blue selection frame surrounds the selected gradient or texture.

Blue selection frame

Texture was scaled down and skewed

3. Edit the gradient or texture by adjusting the control handles around the selection frame.

Inverting a Colour Selection

When you need to select all colour swatches but one, or select only a few swatches here and there, it might be faster to select the only colour you do not need in order to select and invert the selection.

How to invert a colour swatch selection in the Colour view

1. In the Colour view, select the colour swatch you **DO NOT** want to have in your final selection.
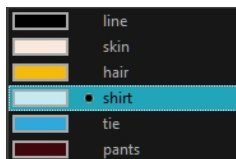
2. Do one of the following:

Inking the Lines

Repaint Brush Mode

The Repaint Brush mode is used to paint a section by manually painting over the lines. This is useful when the vectorization triangles are not placed as you would like or you simply need to repaint a section of a segment. It

is also useful for paperless animation, where there are no triangles. So, the Repaint Brush is used to paint a certain area. It acts like the Brush tool, but will only show on painted areas that are already painted.

Unlike the Brush tool, the Repaint Brush mode flattens automatically. The brush strokes are not added one on top of each other.

How to enable the Repaint Brush mode

1. In the Tools toolbar, select the Brush ✏ tool.

2. In the Tool Properties view, enable the Repaint Brush ✏ mode.

Verifying the Zones are Painted

When the ink and paint process is completed, it's always a good idea to verify that every zone was painted properly.

The first step to check your ink and paint is to go through all your drawings and verify that there are no colour mistakes. You can use the F and G keyboard shortcuts or the Preview option available in the Xsheet.

How to preview drawings from the Xsheet

1. First, save your scene.

2. Do one of the following:

   ‣ From the top menu, select **File> Save**.
   ‣ Click the Save 💾 button.
   ‣ Press Ctrl + S (Windows/Linux) or ⌘ + S (Mac OS X).

3. In the Xsheet view, select the range of drawings or the whole column to preview.
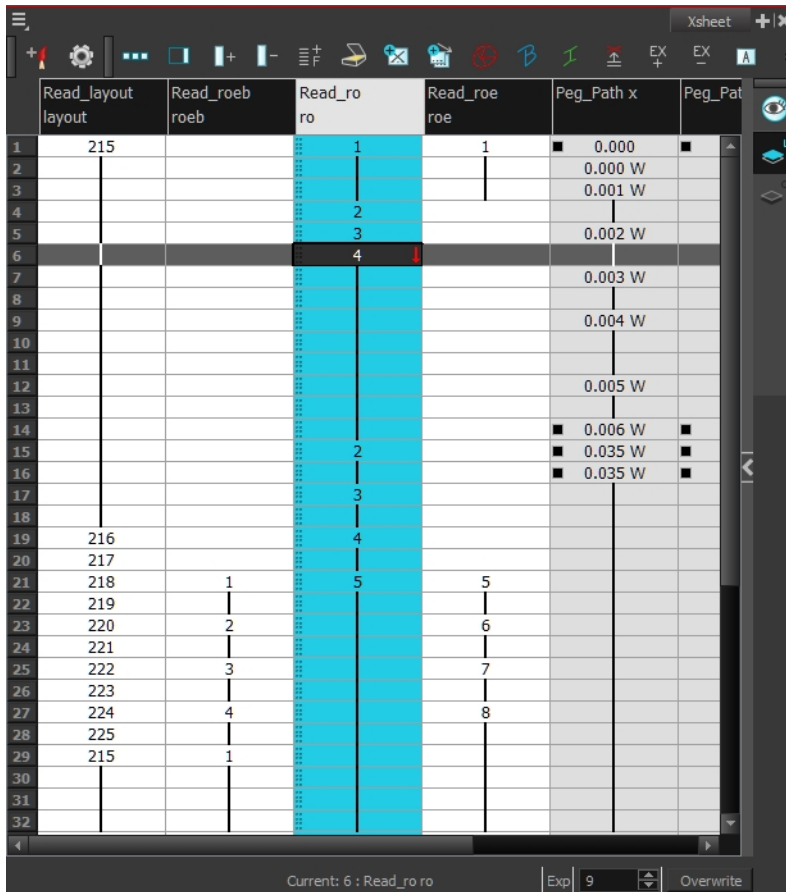
4. In the Xsheet View menu, select **View > Preview Selected Drawings** or press Alt + P.

The Play window opens.

Di-Gata Defenders © Nelvana Limited, Corus® Entertainment Inc.
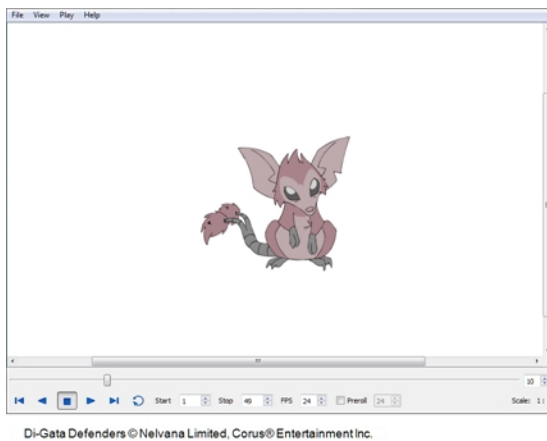
5. Play your drawings.

6. Select the **Preroll** option to see blank frames at the beginning and end of the animation sequence while looping the playback.

☑ Preroll 24 ⊟
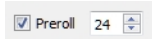
Paint Tool Properties

When you select the Paint tool, its properties and options appears in the Tools Properties view.
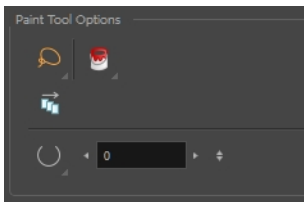
Icon	Tool Name
	Lasso and Marquee on page 205
	Painting Modes on page 205
	Apply to Multiple Drawings on page 207
	Select Newly Paintedand Unpainted Contours/Lines on page 207
	Close Gap on page 207

Lasso and Marquee

The Lasso and Marquee options let you choose the type of selection the current tool will perform. The default selection mode is Marquee.

- Lasso ⬭ lets you draw a custom selection box around zones.

- Marquee ⬚ makes a rectangle selection box.

> **NOTE:**
> Hold down the Alt key to switch to toggle between the selection modes.

Painting Modes

The Paint tool has four different modes available:
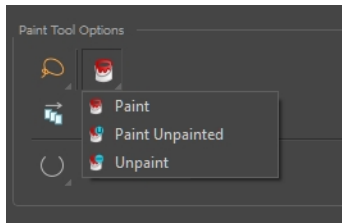
You can also find these tools directly in the Tools toolbar and in the Drawing Tools menu.

Paint Mode

The Paint 🪣 mode paints everything it touches, including empty and filled zones—see *Painting Using the Paint Tool* on page 199.

Paint Unpainted Mode
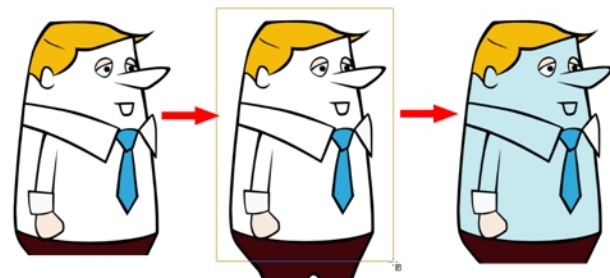
The Paint Unpainted 🪣 mode paints only empty zones. Any line or filled zone will remain unchanged.

Unpaint Mode
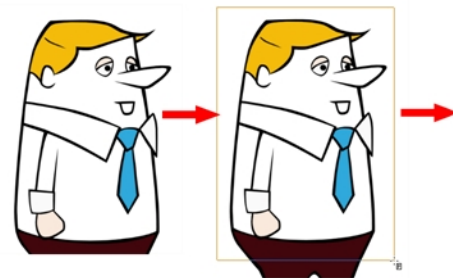
The Unpaint 🪣 mode unpaints everything it touches, including empty and filled zones.

Apply to Multiple Drawings
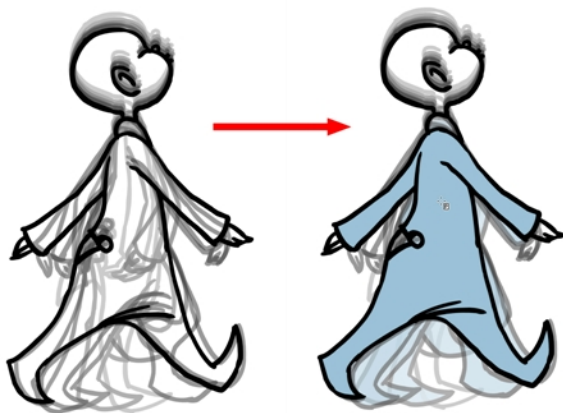
The Apply to Multiple Drawings option is used for fast painting in hand-drawn animation. When you want to paint several drawings in a same layer at once, such as a walk cycle, you can enable this option and make a selection in the Camera or Drawing view. All the closed zones located within your Paint tool selection are painted with the selected colour swatch.

You do not need to enable the Onion Skin preview to use this option. The option will stay enabled only for the next action. If you want to use it again, you must click on the Apply to Multiple Drawings button again, or press Alt + A.

Select Newly Paintedand Unpainted Contours/Lines
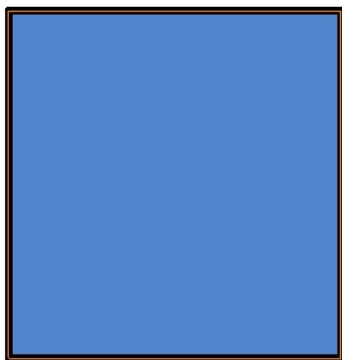
In the Paint tool properties, this option keeps a selection highlighted around the latest painted zone after using the Paint, Unpaint, or Paint Unpainted tool.

Close Gap

The Close Gap option has four modes available:
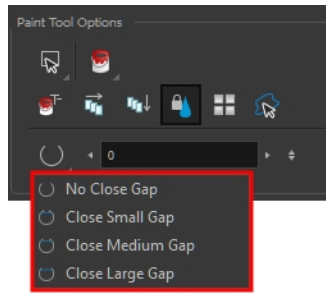
When painting, you may notice that some drawing areas are not closed. To close the zone, you can draw the missing line with the Brush or Pencil tool, or close the gap with an invisible line using the Close Gap tool.

The Close Gap tool lets you close small gaps in a drawing by creating small, invisible strokes between the two closest points to close the colour zone. You do not need to trace directly over the gap. You can draw it a few millimeters away. The two closest points automatically close the gap.

Glossary

alpha channel	An image channel that carries transparency information. An image already has three channels: red, green and blue (RGB). The alpha channel is the fourth channel (RGBA). The matte, or the transparency information, is stored in this fourth channel. An image without an alpha channel is always opaque.
animatic	A movie with sound that is developed from the storyboard. The storyboard panel is exposed for the duration of the scene and at times, the characters are placed on a trajectory to indicate motion. The camera moves are also animated. The animatic is used to determine the rhythm of a project and provides a good overview of the project before beginning production.
animation	A simulation of movement created by displaying a series of pictures or frames.
anime	An animation style known for its sinister and dark feel; popular in Japan.
arc	Action rarely occurs in a straight-forward manner; rather it typically unfolds in what storytellers refer to as an arc. The purpose of a story arc is to move a character or situation from one state or scenario to the next.
aspect ratio	The relationship between the width and height dimensions for any scene,

	frame or film format. Television ratio is 4:3 and widescreen ratio is 16:9.
auto-feed	An automated method of feeding drawings into a scanner in which multiple drawings are stacked into a sheet feeder. When the scanner is activated, the drawings are scanned consecutively, without further user intervention.
automatic lip-sync detection	Automatically mapping drawings in an element to the mouth chart generated for a sound. This can save time when lip-syncing a voice track.
axis	An imaginary line around which an object rotates. For 2D graphics, there are two axes: X (horizontal and Y (vertical). For 3D graphics, there are three axes: X (horizontal, Y (vertical) and Z (depth).
background	The part of a scene that is farthest to the rear. The background is the artwork, or decor, against which the animation takes place.
Bézier	A method of defining curved lines invented by French mathematician Pierre Bézier. A Bézier curve is a mathematical or parametric curve. Bézier curves use at least three points to define a curve.
bitmap	An image composed of pixels with a single resolution (size). If it is enlarged too much, it will lose definition and pixels will begin to appear. This is known as *pixelation*.
breakdown	In cut-out animation, breakdown is the action of breaking a character into pieces to create a puppet with articulations. To break down a character, the artist cuts parts, such as the hands and arms, from the character's model and pastes them in separate layers. Next, the joints are fixed and the pivots set. In traditional animation, a breakdown is an animation pose generally found between two key poses. The key poses are the main poses in an animation and the breakdowns are secondary poses, ones that help describe the motion and the rotation curve (usually referred to as an *arc*).
camera shake	Camera shake occurs in a scene when the camera moves slightly and quickly in several directions. This gives the impression of an impact, vibration or, for example, bumps on the road.
caption	A text field containing dialogue, effects, sound, or slugging information in a storyboard.
cel	In traditional animation, a cel (also known as *celluloid*) is a transparent sheet on which the animation is inked and painted before being sent to the camera. The picture's outline is drawn on the front of the cel and then coloured along the back. In Harmony, a cel is an individual space in an Xsheet column from which you can expose a drawing or a function's coordinate.
character design	Each character in an animated film is drawn from multiple angles in poster-style format, called a *model sheet*, which serves as a reference for the animators.
clean up	After rough drawings have been tested and approved, all the noise in the image (excess lines, notes, etc) is removed to create final drawings which

	can be inked, painted and shot. The cleanup process refers to either tracing a clean line over a rough drawing to achieve the final version, or removing dirt and extra lines left by the scanning process.
CMYK	Cyan, Magenta, Yellow, Black. Refers to the process used by printers to define colour on the printed page.
colour card	A colour card is a solid colour card that is the same size as the camera. The colour card can be used to fill the background with a solid colour when there is no background image included.
colour model	The official colour design that must be used to paint the animation. A model is the definitive character, prop, or location design that each artist must follow for the production.
colour wheel	A display of the colour spectrum in the form of a circle.
compositing	Compositing is the action of incorporating all of a scene's elements to create the final result prior to rendering. For example, the compositing artist will import all the animation sequences, background, overlays and underlays in the scene and position them correctly. The artist will then set the camera frame and animate it, if needed. Finally, the animator will create all the computer-generated effects for the project.
cross dissolve	An effect used to fade two scenes, one into the other.
cut	A direct transition between two scenes. When a cut is used, there are no transition effects inserted to pass from one scene to the next. The first scene ends and the second one starts immediately.
cut-out animation	The action of animating characters made of several pieces by moving them around frame by frame. Cut-out animation can either be computer generated or done traditionally using paper.
cycle	A group of images that together make up an action, such as walking. A cycle is an action repeated as a loop over a period of time. It can be a series of animated drawings or keyframes.
dialogue	The text spoken by a character in a movie or animation.
dope sheet	Used by animators, directors and other members of a crew to track the sequence and timing of images, dialogue, sound effects, sound tracks and camera moves. Also known as an *exposure sheet* or *Xsheet*.
doping	To assign a particular drawing to a range of frames.
DPI	Dots per inch is the standard measure of resolution for computerized printers. It is sometimes applied to screens, in which case it should more accurately be referred to as *pixels per inch*. Either way, the dot is the smallest discrete element making up the image.
ease/velocity	In animation, the ease, also known as *velocity*, is the acceleration and deceleration of a motion. It can be a motion created by a function curve, or a series of animated drawings. Other common terms for ease-in and ease-out are slow-in and slow-out.
ease-in	Gradual acceleration in the action. Also known as *slow-in*.
ease-out	Gradual deceleration in the action. Also known as *slow-out*.

establishing shot	A scene in which the viewer can see the whole area in which a sequence is happening. For example, if a child is playing on the ground in front of his house, the establishing shot would be a scene where the viewer can see the house, the ground, a part of the street and the buildings around the central point of action. This helps the viewer understand the story location and scene orientation.
exposure	In animation, an exposure is the number of cels on which a drawing appears in the scene. For a drawing to appear longer, the exposure must be extended over a greater number of cels.
exposure sheet	A sheet with several vertical columns and horizontal frames used to indicate a scene's timing. Each column represents a scene layer. The drawing numbers in each column are indicated and repeated over the particular amount of frames they need to appear. The exposure sheet is used by animators, directors and other members of a crew to track the sequence and timing of images, dialogue, sound effects, sound tracks and camera moves. Also known as a *dope sheet*.
fade in/fade out	Fade in or fade out is a transition effect used to open or close a sequence. A fade in occurs when the first scene appears progressively, from complete transparency to its complete opacity. A fade out occurs when the last scene progressively disappears, going from complete opacity to complete transparency.
fast-in	Dramatic acceleration at the start of the action.
fast-out	Dramatic acceleration at the end of the action.
field	In animation, a field is a measurement unit used to calculate motion, registration and camera positioning. A standard animation scene will vary between 6 to 12 fields.
field chart	A guide containing all the field units that animation and layout artists use to determine a scene size or camera motion.
film-1.33	A resolution that is ideal for the widescreen film format that conforms to the standard 4:3 pixel aspect ratio.
film-1.66	A resolution that is ideal for the widescreen film format that conforms to the 16:9 pixel aspect ratio. (The pixels are wider than they are high).
flipping	In traditional animation, flipping is the action of going through the drawings of an animation sequence very quickly in order to see the animation in motion. Flipping can also be the action of creating a mirror transformation of an object.
follow-through	The secondary motion caused by the main action. For example, a character wearing a cloak is running. The main action is the body running. This will cause the cloak to follow the motion, although it will not move at the same time, but react a few frames later and follow the main motion curve.
forward kinematics	Forward kinematics is a feature used to animate principally 3D characters and cut-out puppets with hierarchy. It is used to animate a puppet from one of parent parts, such as a shoulder, and make the rest of the arm move with it as a single piece.

frame	A single photographic image in a movie. In traditional animation, the North American standard generally contains 24 frames per second, while in Europe the standard is 25 frames per second.
frame rate	The frame rate is the speed at which the frames are played. They are generally calculated by frame per second. For example, a scene could be played back at 12, 24, 25, 30 or 60 frames per second or any other number.
	This is the measurement of the frequency (rate) at which an imaging device produces unique consecutive images, called *frames*. The term applies equally to computer graphics, video cameras, film cameras, and motion capture systems.
	Frame rate is most often expressed in frames per second (fps) and in progressive-scan monitors as hertz (Hz).
functions	A computer-generated motion, trajectory or path on which elements, other trajectories and effects parameters can be attached. The function can be controlled by adding keyframes and control points on the function curve.
gamut	The range of colours that a particular device can represent.
HDTV	High Definition Television delivers a higher quality image than standard television does because it has a greater number of lines of resolution. To take advantage of the superior quality and make full use of your resolution setting, the output device must be compatible with HDTV technology.
hold	A frame in the animation in which the character maintains its position without moving. A hold can be created between any two keyframes.
HSV	Hue, Saturation, Value. A method of defining colours in terms of hue (tint), saturation (shade) and value (tone or luminance).
in-between	The drawings that exist between the key poses. These are drawn to create fluid transitions between poses.
ink and paint	The ink and paint process is the action of painting the empty zones and colouring the lines on the final animation drawings, while following a colour model.
interpolation	The computer-generated motion created between two keyframes. You have the choice to create interpolation, or not, between your keyframes.
jump cut	A jerky cut between two scenes. Typically, a jump cut is not visually pleasing. It is generally caused by one scene ending, and a second one starting, with a similar image. The lack of difference causes the eye to see a little jump between the two scenes.
key pose	Important positions in the action defining the starting and ending points of any smooth transition. Keys, or key poses, are the main drawings in an animation sequence describing the motion. For example, if an arm is waving, the keys will be of the arm at one extremity of the wave motion and the other extremity. By flipping those drawings, the animator can see the skeleton of the motion without having all the drawings.
keyboard shortcuts	One or more keyboard keys which, when used, cause an operation to be performed.

keyframe	Important positions in the action defining the starting and ending points of any action. A keyframe is a computer-generated position at a specific moment (frame) on a given trajectory.
layers	In animation, a layer is an individual column, level or character. A scene's layers are superimposed to form the final image.
layout	The communication step between the storyboard and the animation. It is the action of putting the storyboard on model. That is, drawing the character by following the design in the model pack, so the animator can start working.
	The layout artist draws the background, creates the camera and field guide matching the scene and camera motion. Lastly, the animator draws on model the main action poses.
layout and posing	The action of putting on model. That is, at the right scale, the storyboard for the animator to start working.
library	A storage area containing templates and assets that can be reused in any project or scene.
light table	A device that allows you to see other layers in transparency while you are working on a particular layer.
line of action	The direction that the action will follow. Also known as *path of action*.
lip-sync	The character's mouth synchronization with the dialogue sound track. Frame by frame, the mouth will be adjusted to fit the sound to give the illusion of the character is speaking.
low resolution	A format that is ideal for videos destined for the web, where size and fast download of a video file take precedence over quality. A low-resolution image is one that lacks fine detail.
manual lip-sync detection	The manual swapping of mouth position drawings to match a voice track. For this process, both sound scrubbing (listening to a sound wave broken up frame-by-frame) and drawing substitutions are used.
master palette	A group of colours attributed to a character or prop. The palette is used throughout the entire production to maintain consistency in the look and to ensure that the same colours are used throughout the production. Also known as *palette*.
model/colour model	The definitive character, prop or location design each artist must follow for a production. A colour model is the official colour design that must be used to paint the animation.
motion keyframe	A keyframe with computer-generated interpolation.
mouth chart	A chart based on the eight animation phonemes (A, B, C, D, E, F, G, and X, which is used to represent silence) used for lip-sync.
multiplane	The effect of passing through multiple levels of drawings to create a sense of depth in a shot. A multiplane is a scene in which the layers are placed at different distances from the camera so that when the camera moves, a depth illusion occurs. With a multiplane, all the perspective and scale is calculated automatically.

NTSC	The standard analogue television broadcasting system used in North America. NTSC conforms to North American standards on how rectangular pixels are displayed for computer and television screens.
nudge	A small push (left, right, up, down, forward or backward) done with the keyboard arrow keys on a selected element. Nudging is used to move a selection very slightly and precisely.
onion skin	A feature that lets you see the previous and next drawings of a sequence.
overlay	A part of the scene environment, such as a chair or a bush, that is placed in front of the main animation.
PAL	A resolution that works best with the European format for television and computer screens, as the rectangular pixels are displayed at a different orientation.
palette/master palette	A palette or master palette is a group of colours attributed to a character or a prop. The palette is used throughout the entire project to maintain a consistency in the look and avoid the colour changing during the animation. Also referred to as a master palette.
palette style	A palette style is a second version of an existing palette with a slight change in the tint and value. A palette style can be used to create the night version of a palette. It may also be called a clone palette.
pan	To move the camera across the scene in any direction.
panel	In a storyboard, a panel is a frame in a shot. A shot can be composed of one or several panels.
paperless animation/tradigital	The paperless animation process is the action of animating digitally. The main paperless animation process is to draw, frame by frame, the animation directly in the software.
passing position	When drawing a walk sequence for a character, the passing position is the point at which one leg passes the other.
path of action	Direction that the action will follow. Also known as *line of action*.
peg	In traditional animation, a tool used to ensure accurate registration of action as cel layers move. In digital animation, in which you are doing a more advanced puppet rigging, you can use peg layers. Peg layers are trajectory layers that do not contain drawings. They are motion paths that you can use to add path articulations. For the latter, you can also use the Inverse Kinematics tool.
phoneme	A unit of sound in a language.
pivot	The point around which a peg or drawing rotates.
pixel	The smallest element of an image displayed on a monitor or TV screen. Pixel, short for *picture element*, is a single point in a graphic image. It is a small sample of an image, a dot, a square, or a very small section made out of smooth filtering. If you zoom in close enough on a digital image, you will see the pixels, which look like small squares of different colours and intensity.

pose-to-pose animation	The pose-to-pose animation process is the action of creating all the main action poses, called *key poses*, and then placing the secondary poses between the keys. The secondary poses are called *breakdown*. Finally, the animator fills the gaps with the in-between drawings to achieve a smooth animation.
rendering	The final step when animating by computer. During rendering, the computer takes each pixel that appears on screen and processes all of the components, as well as adding motion blur before it produces a final image. The process of calculating the final images after the compositing process.
resolution	The size of a scene, generally calculated in pixels. For example, the NTSC resolution is 720 x 480. The resolution should match the final output: HDTV, film-1.33, film-1.66, NTSC, PAL, low.
RGB	Red, Green, Blue. A method of defining colour by specifying amounts of these three colour components.
rigging	The process of attaching the various parts of a cut-out puppet.
rotary table	Equivalent to the animation disk/table, a device that allows you to rotate the workspace for greater comfort while drawing.
rotoscoping	An animation technique in which animators trace over live-action film movement, frame by frame, for use in animated films. The act of sketching over live-action footage to create an animated sequence.
roughs	The skeleton sketch of an animation or design. Roughs mainly consist of sketch lines and shapes, though they can also contain design details.
safe area	The zone at the center of a scene's frame that is safe from being cropped by the TV frame. As a TV frame cuts a margin off the original frame size, maintaining a safe area ensures that the scene's main action will remain clearly visible once the film is screened on television.
scene	A shot in a movie or show. A sequence is composed of several scenes. A scene changes to another scene by a simple cut or transition.
script	The original text containing all the movie or show information. In animation, the script contains all of the location descriptions, dialogue, time and more. A project starts with a script.
sequence	A series of scenes or shots forming a distinct part of the story or movie, usually connected by unity of location or time.
shot	A scene in a movie or show. A sequence is composed of several shots. A shot changes to another shot by a simple cut or transition.
slow-in	The gradual acceleration in the action. Also known as *ease-in*.
slow-out	The gradual deceleration in the action. Also known as *ease-out*.
slugging	To indicate the start and stop times of dialogue and relevant actions.
sound scrubbing	A process that lets you hear sound in real time while you move the playhead forward or backward. This is very useful for finely-tuning a lip-sync.
stop-motion keyframe	A keyframe with no computer-generated interpolation.

storyboard	A visual plan of all the scenes and shots in an animation. The storyboard indicates what will happen, when it will happen and how the objects in a scene are laid out.
straight-ahead	A technique in which an entire sequence is drawn from the first position to the last, in order. There is very little planning in this methodology. Where the character ends up and how it gets there can be a surprise for both the audience and the animator. While this approach is spontaneous and creative, it can create inaccurate results.
strokes	Invisible vector lines forming the drawing zones. They can be adjusted with Bézier handles.
tablet/pen	A device used in conjunction with, or instead of, a mouse to move a mouse pointer (sometimes referred to as the *cursor*) around the computer screen.
template	An asset stored in the library that can be reused in any project. A template can be a drawing, a series of keyframes, a sound file, a panel, a cut-out character, an effect, a trajectory, an animation, or anything else used in the animation.
thumbnails	A very small image used as a reference or indicator.
timecode	The timing information printed on a movie clip to indicate the scene, hour, minute and second that is currently displayed on the screen.
timeline	A horizontal representation of a scene's elements, timing and keyframes.
trace and paint	After the rough animations have gone through cleanup and a final line or pencil test, each drawing is traced and painted for the final animation. In today's digital world, this may be done in a variety ways other than the traditional celluloid or acetate methods.
track breakdown	The break down of an animated film's soundtrack into individual sounds to produce the precise frame-by-frame position of each sound.
traditional animation	A type of animation process whereby all the animation sequences are drawn by hand on paper before scanning or inking them on cels.
trajectory	A computer-generated path or trajectory that elements can follow. The trajectory can be controlled by control points, keyframes and velocity.
transition	An effect placed between two scenes as they pass from one to the other. Common transition effects are cross-dissolve and wipe.
underlay	In animation, an underlay is a specific part of the decor placed behind the main animation.
aspect ratio	The aspect ratio describes the shape of the grid unit. A square grid unit would have a 1:1 ratio , whereas a grid unit of aspect ratio 4:3 is a unit with one side 1.33 times as big as the other side.
vector	A vector-based image is composed of points and Bézier curves. The computer reads the points and traces the segments, linking them to reproduce the image shape. There is no fixed size or resolution in a vector image. The graphic can be enlarged and distorted as much as desired and the system will simply recalculate the segments and rebuild the shapes. Vector images are translated and displayed in pixels once the calculation is

	done.
velocity	In animation, the velocity, also known as *ease*, is the acceleration or deceleration of a motion. This can be achieved by a function curve, or via a series of animated drawings. Other common terms for ease-in and ease-out are *slow-in* and *slow-out*.
walk cycle	A series of drawings "on the spot" that describe the walk for a character. The illusion of movement is created by the use of background pans. To avoid making innumerable drawings, animators routinely make a walk cycle for a character.
Xsheet (exposure sheet)	The Xsheet or exposure sheet, is a sheet with several vertical columns and horizontal frames used to indicate a scene's timing. Each column represents a scene's layer. In each column, the drawing numbers are indicated and spread over the specific number of frames in which they appear. The exposure sheet is used by animators, directors and other members of the crew to track the sequence and timing of images, dialogue, sound effects, sound tracks and camera moves. Also known as *dope sheet*.
zone	An area which can be painted with colour.

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