

2D Animation Principles

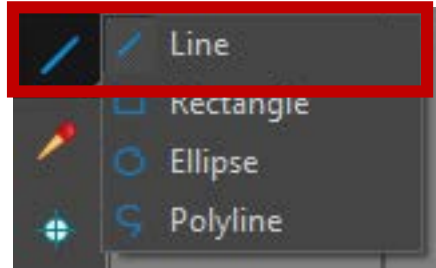
Week 2

Line/Rectangle/Ellipse/Polyline Tool, Select Tool, Contour Tool, Cutter Tool, New Color, New Color Palette, Intro into Timing Charts, Path of Action, Exposures, Creating Cycles, Follow-Through and Over Lapping

12 Principles of Animation

- **Squash and Stretch**
- **Anticipation**
- **Staging**
- **Straight Ahead** or Pose-to-Pose
- **Follow-Through and Overlapping**
- **Slow-in and Slow-out**
- **Arcs**
- **Secondary Action**
- **Timing**
- **Exaggeration**
- **Solid Drawing**
- **Character Appeal**

Line Tool



Style of the End Tip

Round or Flat

New Brush

Delete Brush

Style of the Start Tip

Round or Flat

Joint Style

Round, Mitre or Bevel

Auto-Close Gap

Snap to Contour

Snap and Align

Snap to Grid

Automatic Filling

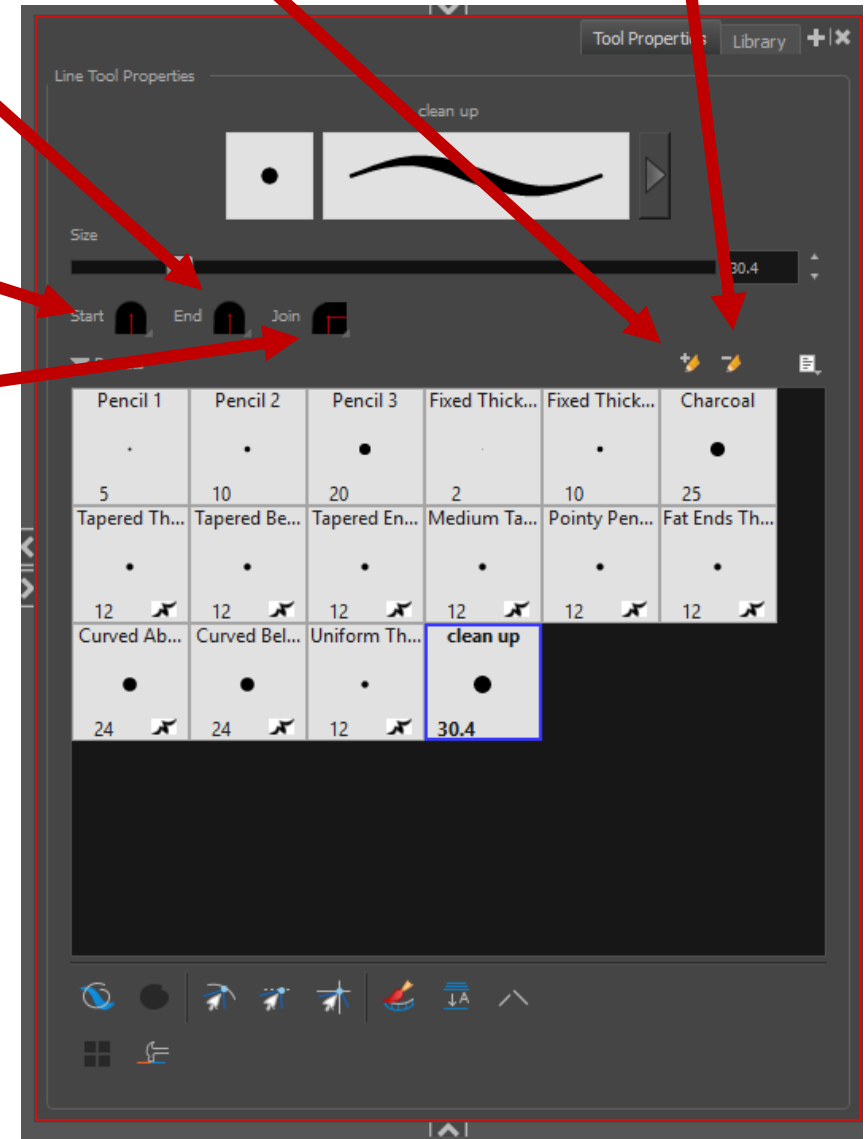
Draw Behind

Use Stored Colour Gradient

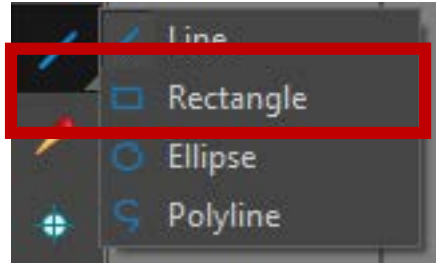
Line Building Mode

Automatically Create Colour Art

Auto-Flatten Mode



Rectangle Tool



Style of the End Tip

Round or Flat

Style of the Start Tip

Round or Flat

Joint Style

Round, Mitre or Bevel

New Brush

Delete Brush

Snap to Contour

Auto-Close Gap

Automatic Filling

Snap and Align

Snap to Grid

Draw Behind

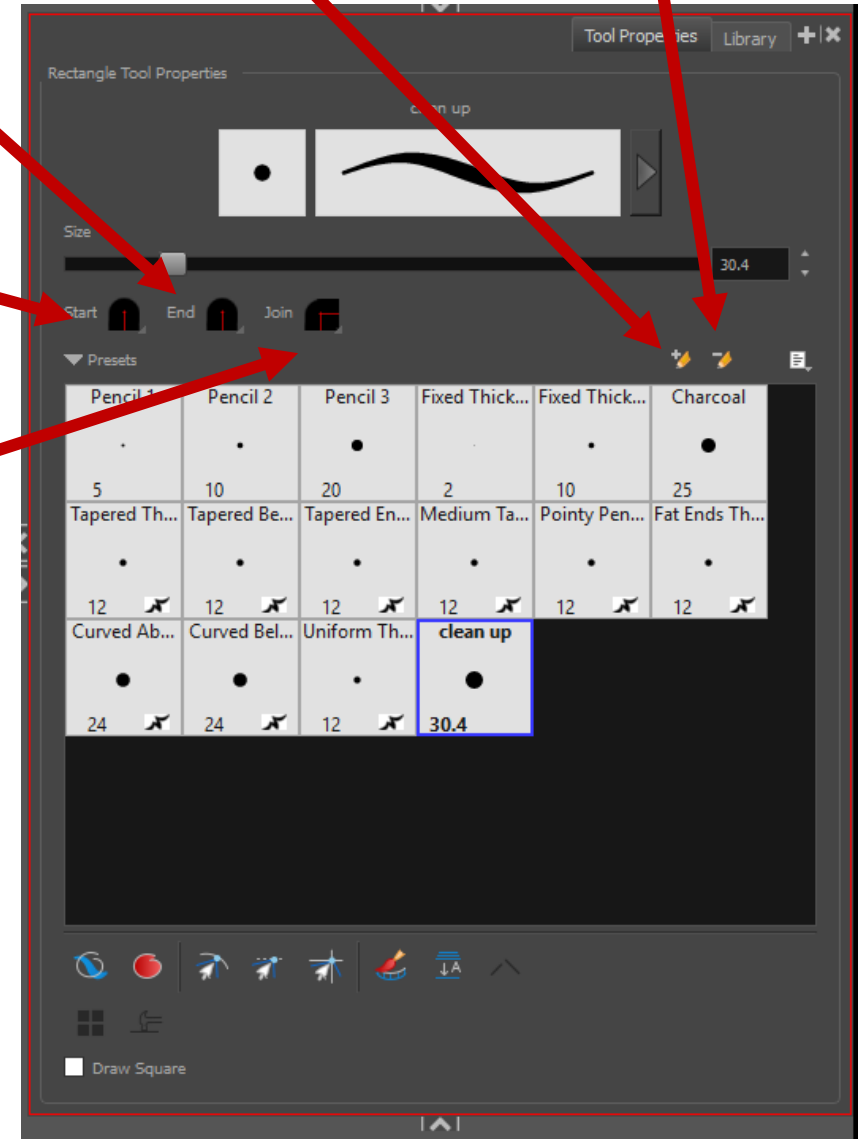
Use Stored Colour Gradient

Or Hold Shift

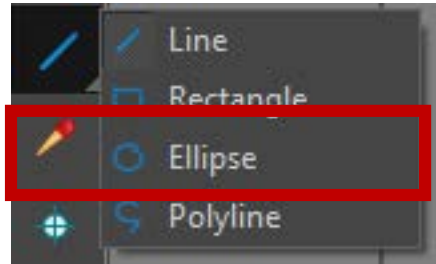
Line Building Mode

Automatically Create Colour Art

Auto-Flatten Mode



Ellipse Tool



Style of the End Tip

Round or Flat

New Brush

Delete Brush

Style of the Start Tip

Round or Flat

Joint Style

Round, Mitre or Bevel

Snap to Contour

Auto-Close Gap

Automatic Filling

Snap and Align

Snap to Grid

Draw Behind

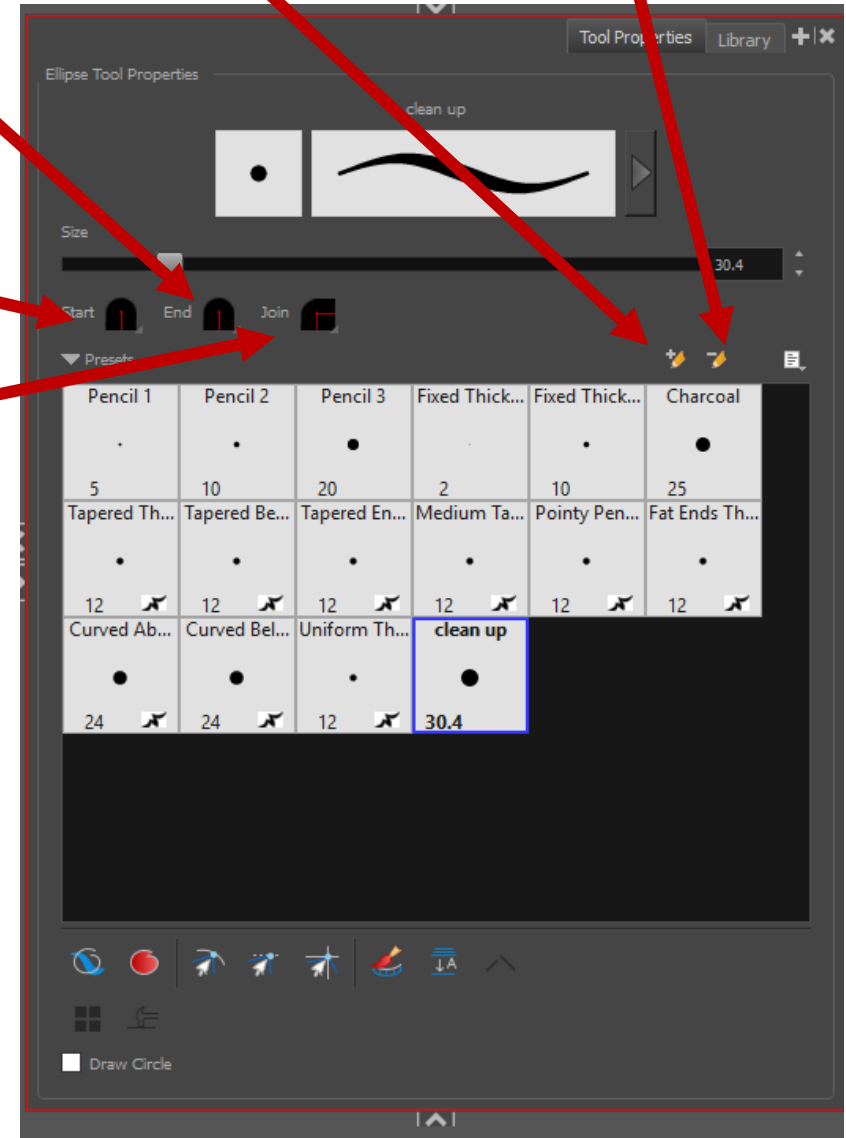
Use Stored Colour Gradient

Or Hold Shift

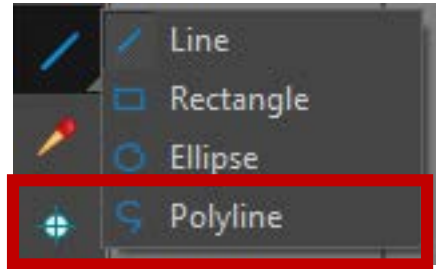
Line Building Mode

Automatically Create Colour Art

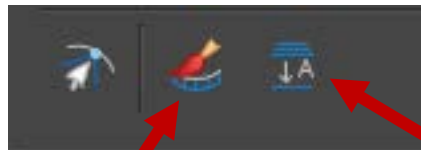
Auto-Flatten Mode



Polyline Tool



Snap to Contour

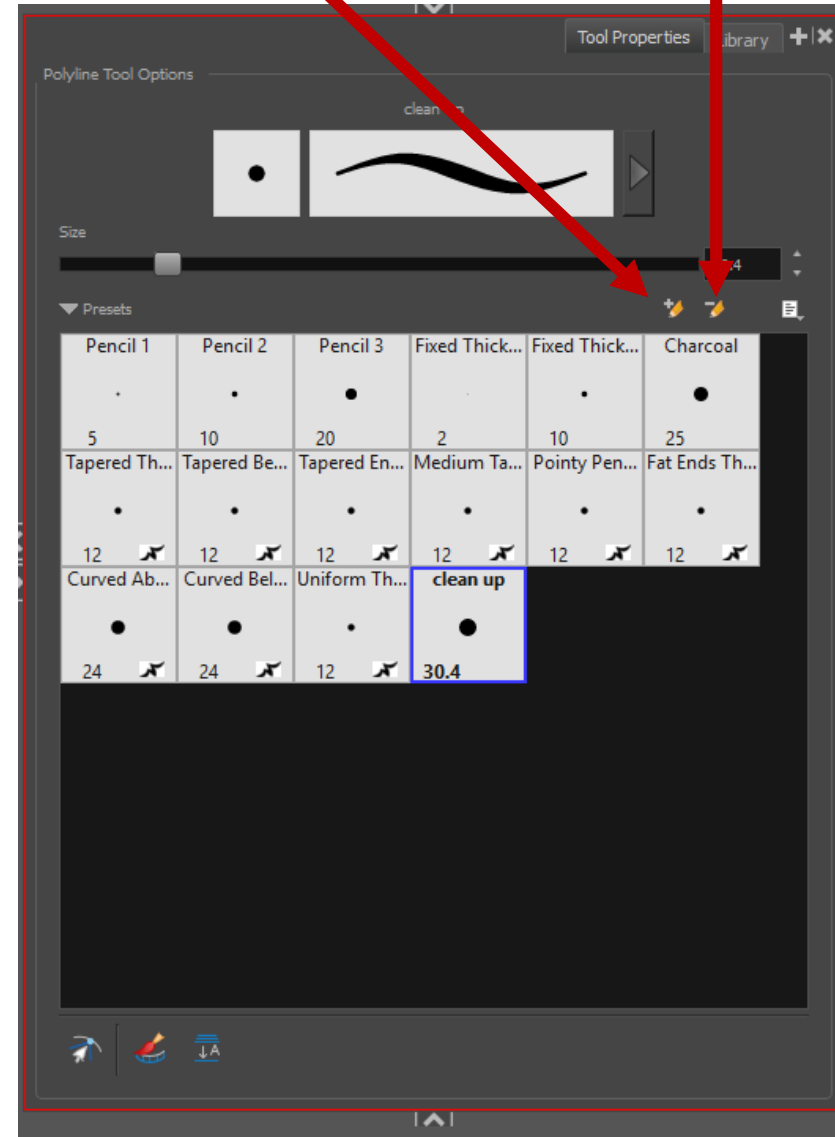


Automatically
Create Colour Art

Auto-Flatten
Mode

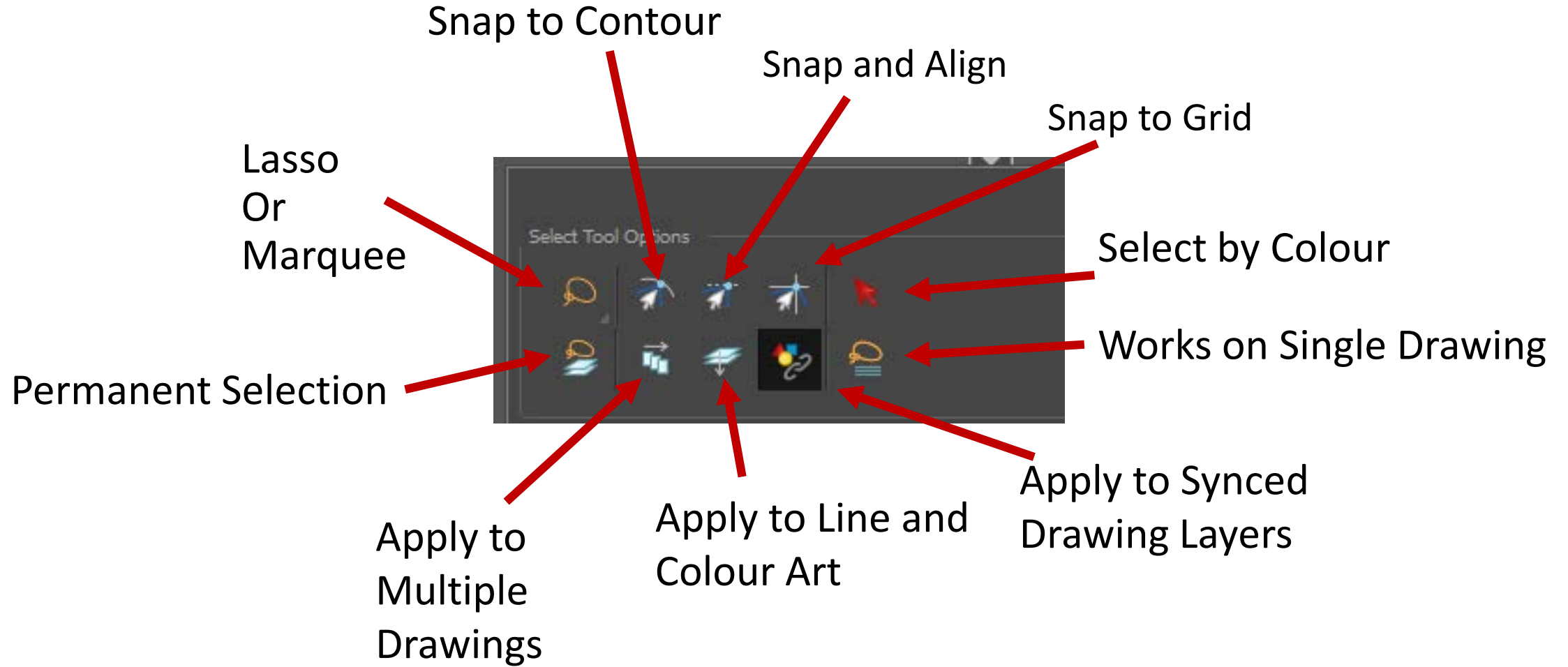
New Brush

Delete Brush



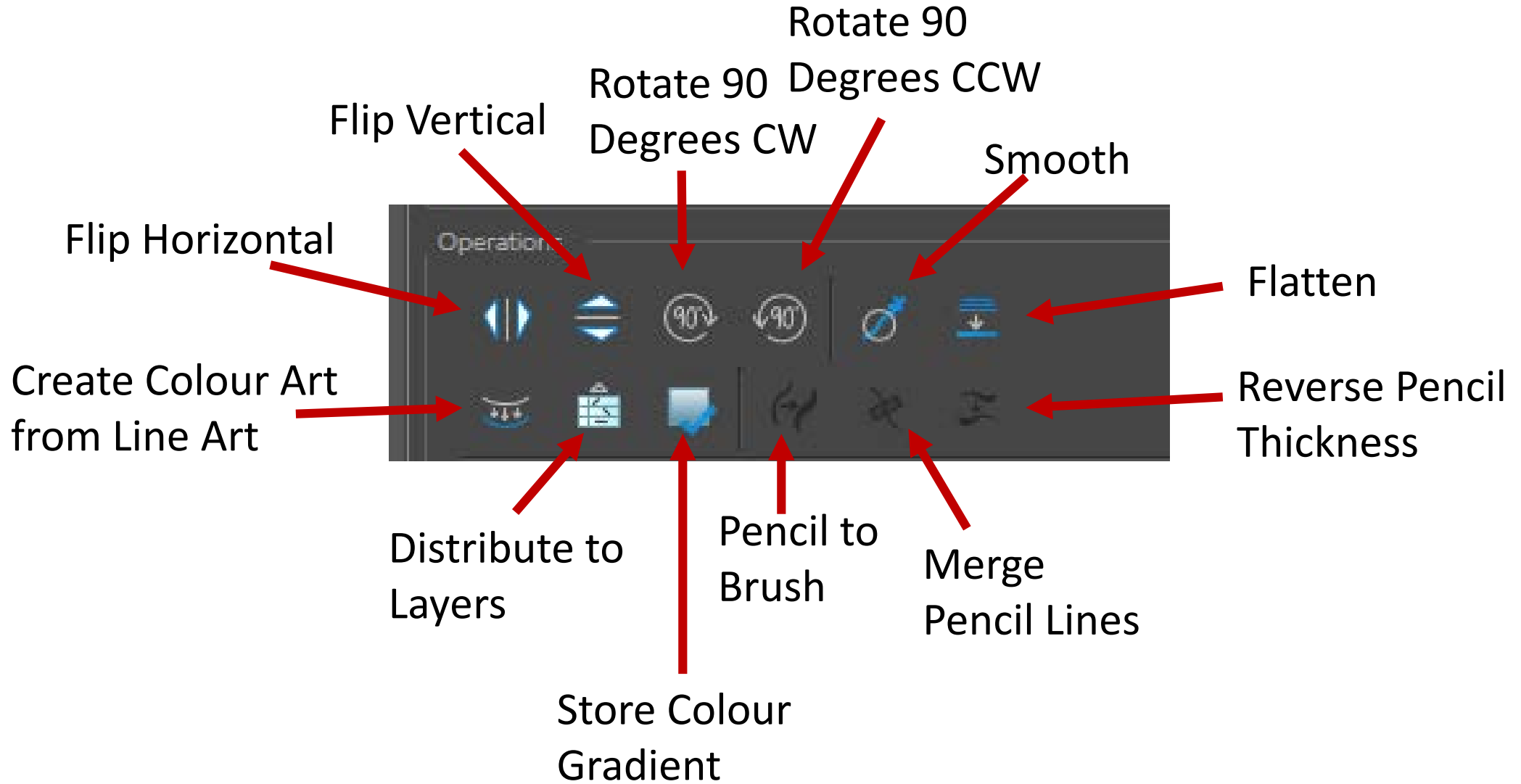


Select Tool





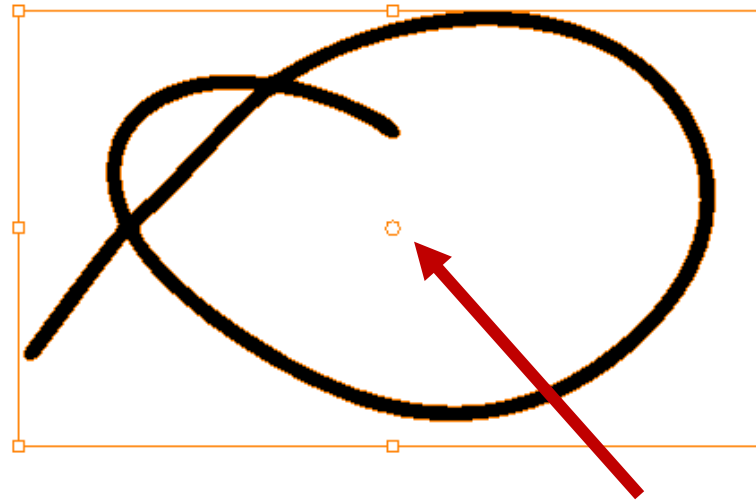
Select Tool





Select Tool

Selection on Canvas



Rotate
Scale
Skew
(Squash and Stretch Handles)

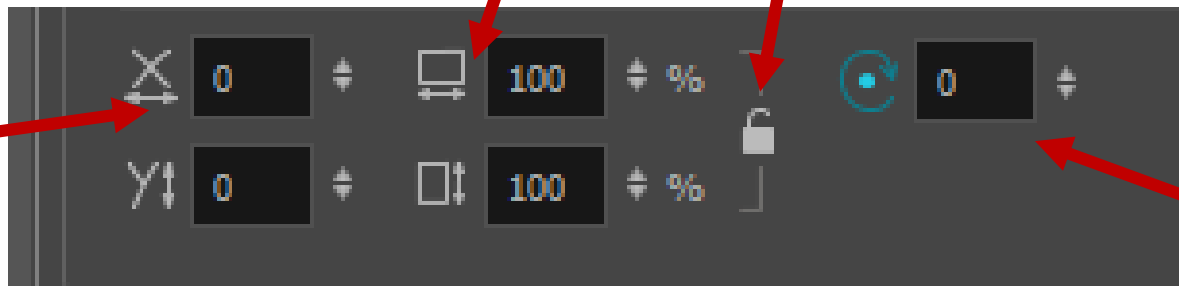
Rotation/Scale Point

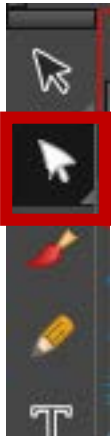
Offset
X and Y

Width and
Height

Lock or Unlock
Aspect Ratio

Angle
(Rotate)





Contour Tool

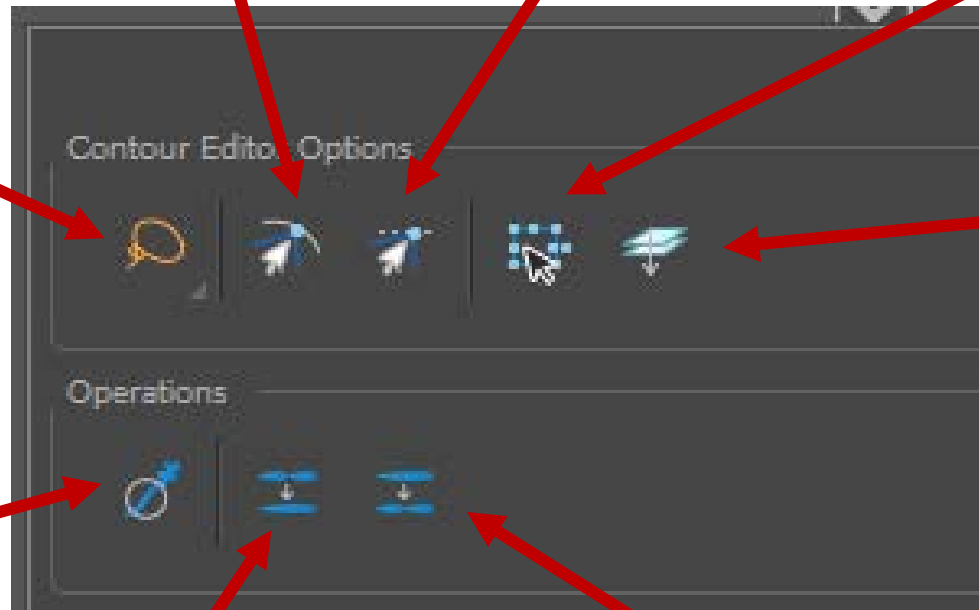
Lasso
Or
Marquee

Snap to Contour

Snap and Align

Show Contour
Editor Controls

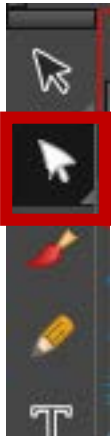
Apply to Line and
Colour Art



Smooth
Selection

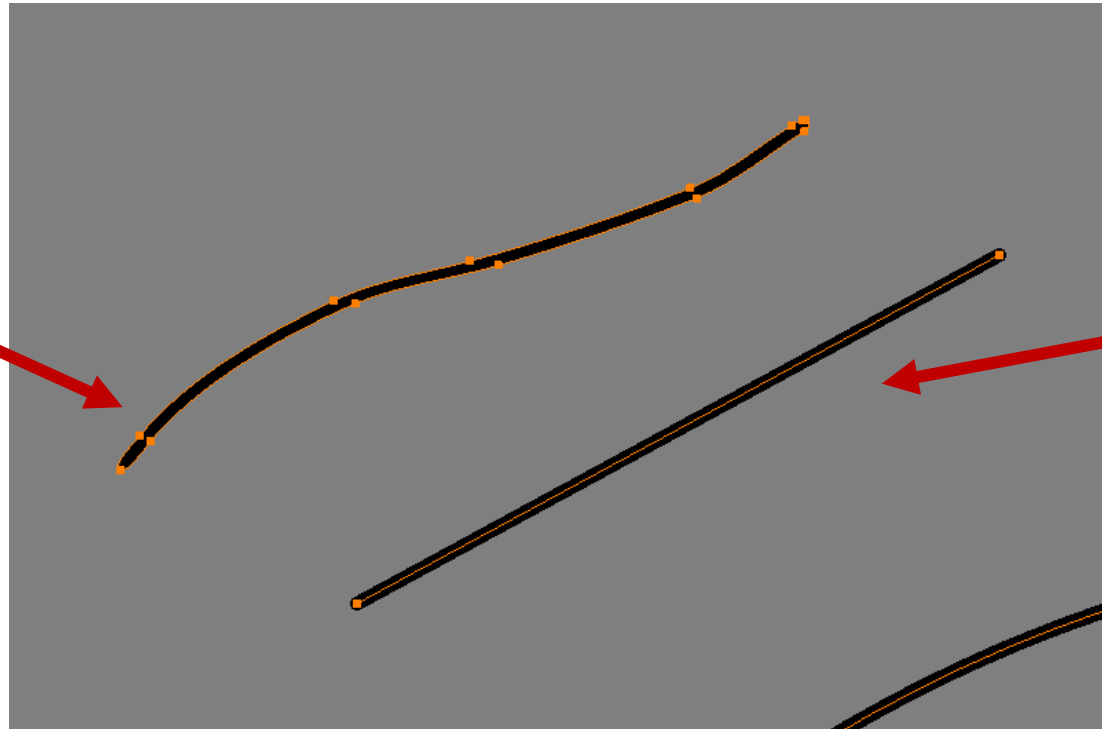
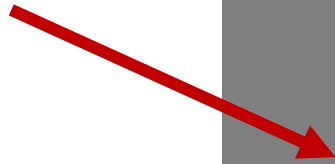
Join Pencil Lines

Split Pencil Line

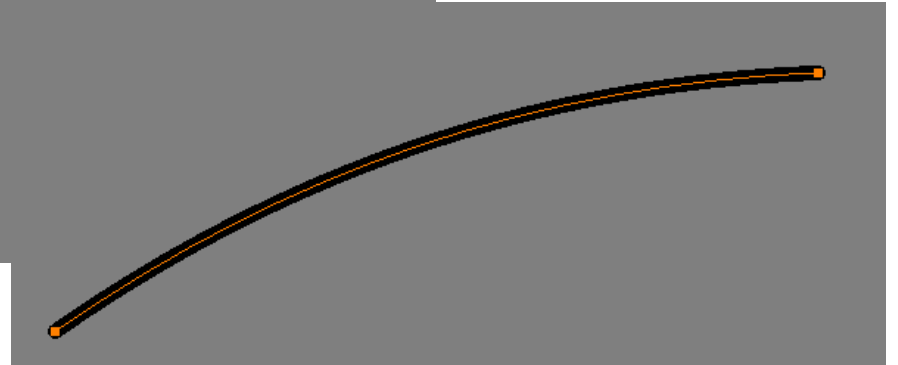


Contour Tool

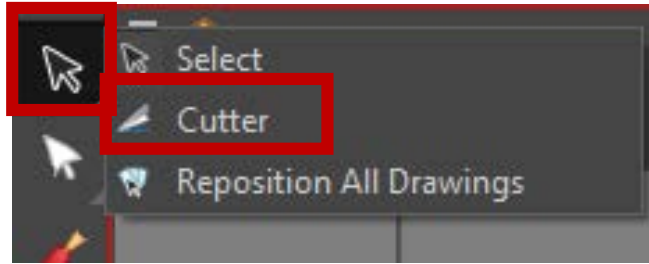
Brush Stroke:
Contour Vector



Line or
Pencil Stroke:
Centre Vector



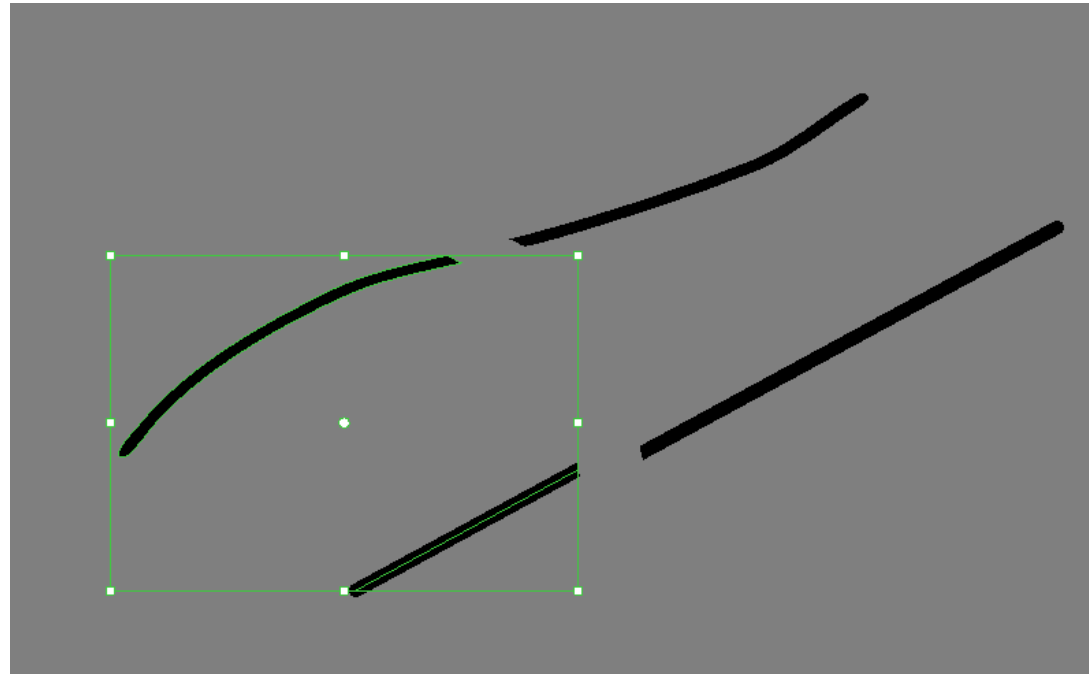
Cutter Tool



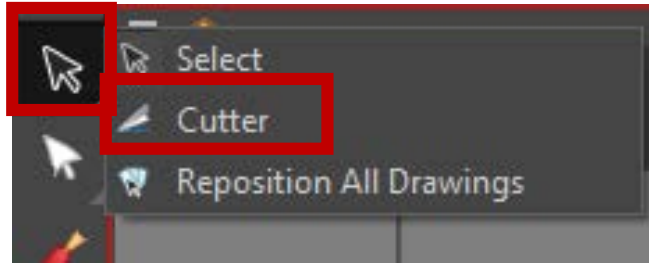
'Cuts' Selection

Selection:

Move, Scale, Rotate, Copy/Paste, Delete



Cutter Tool



Apply to Synced Drawing Layers

Apply to Line and Colour Art

Use Mouse Gesture

Use Mouse Gesture Breaker Mode

Lasso Or Marquee

Tip Style: Round, Flat or Bevel

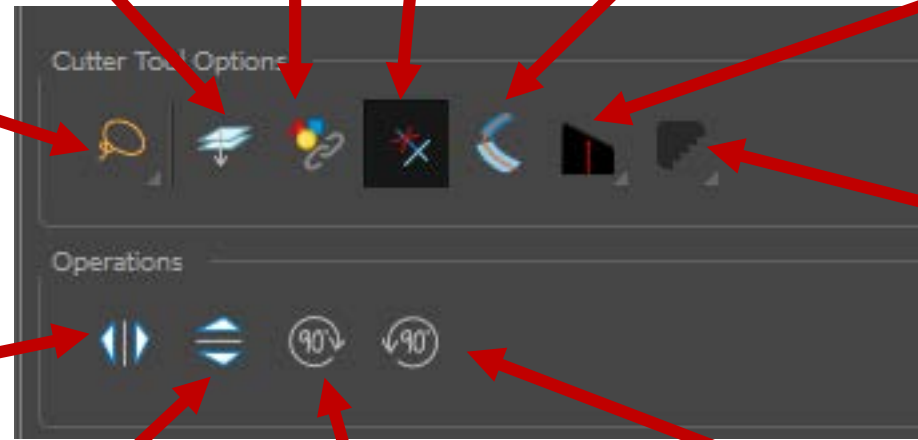
Antialiasing (Use in Bitmap Layers)

Flip Horizontal

Flip Vertical

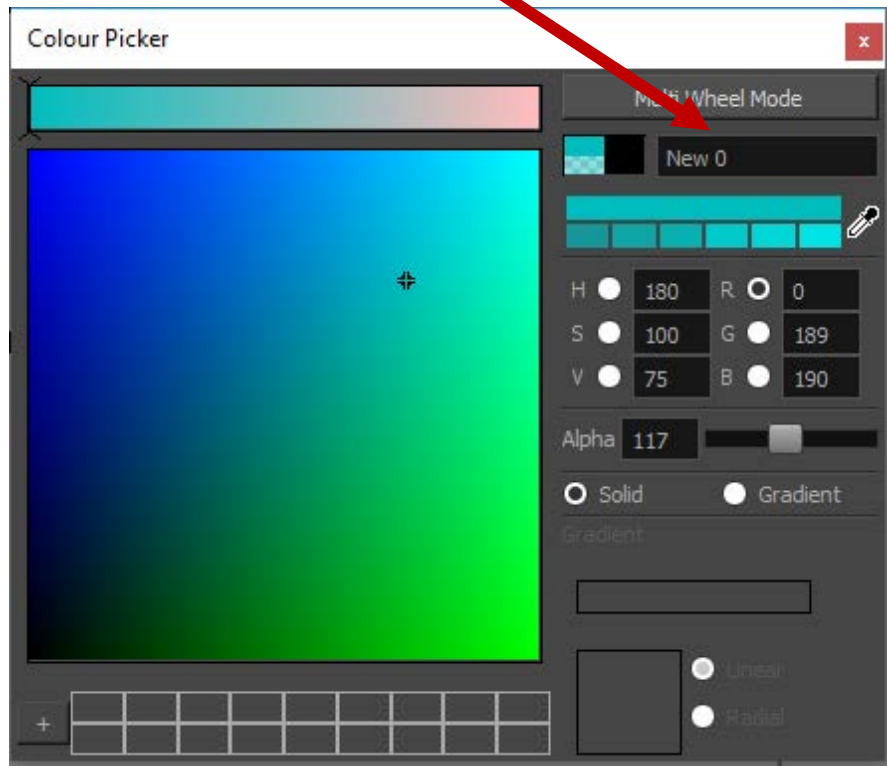
Rotate 90 Degrees CW

Rotate 90 Degrees CCW

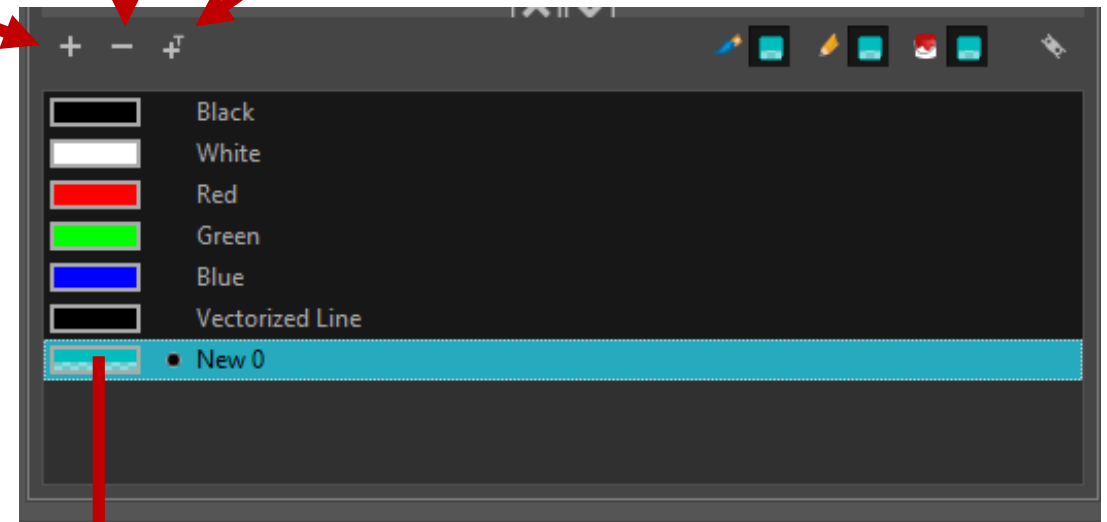


Adding New Colors to Palette

Change Colour Name

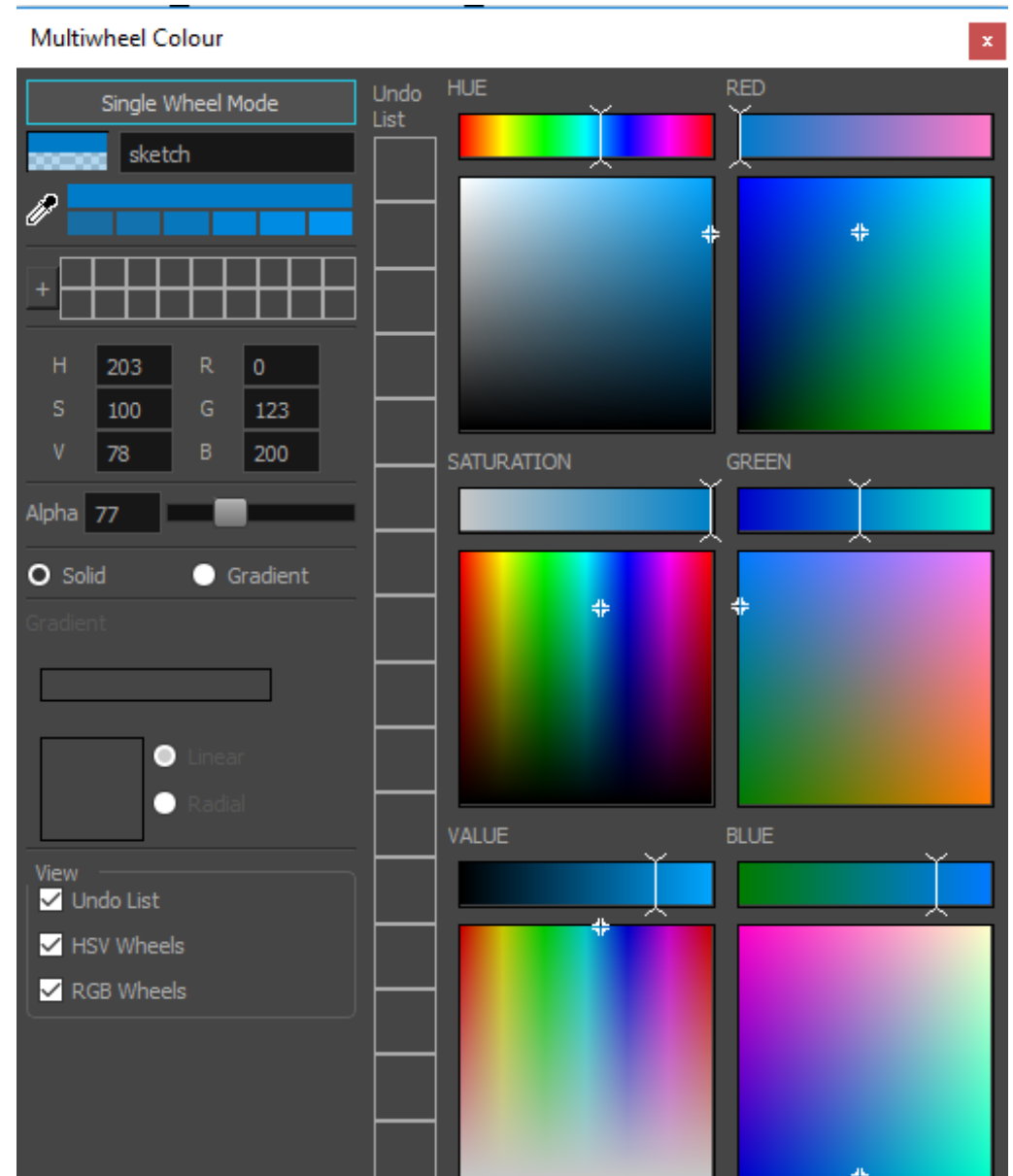
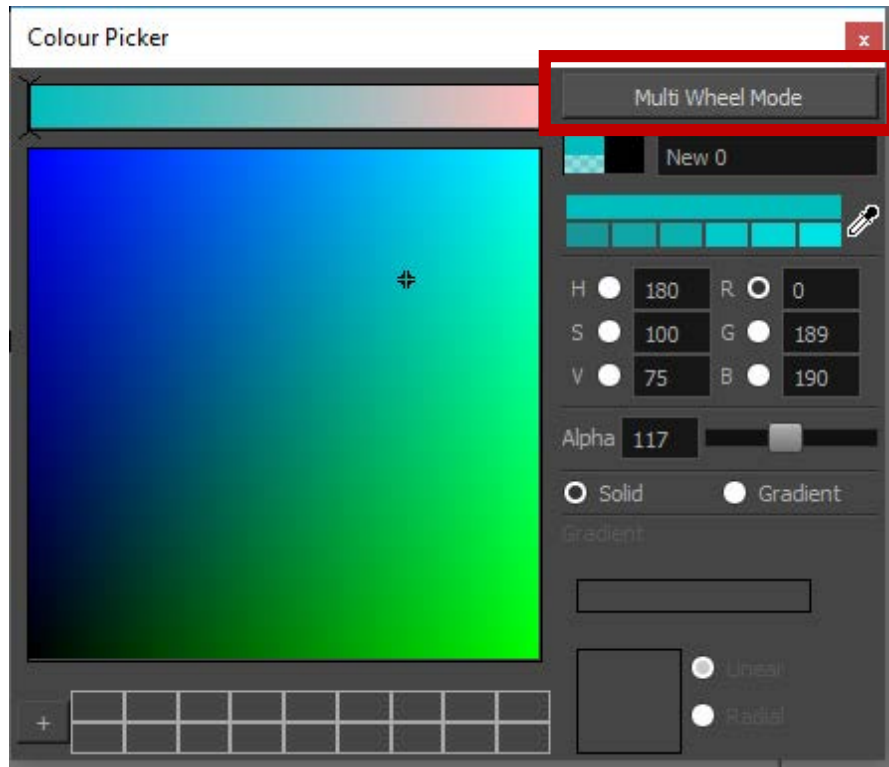


Add Color Delete Color Add Texture

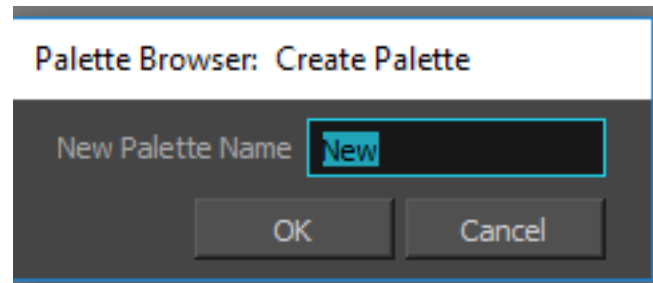
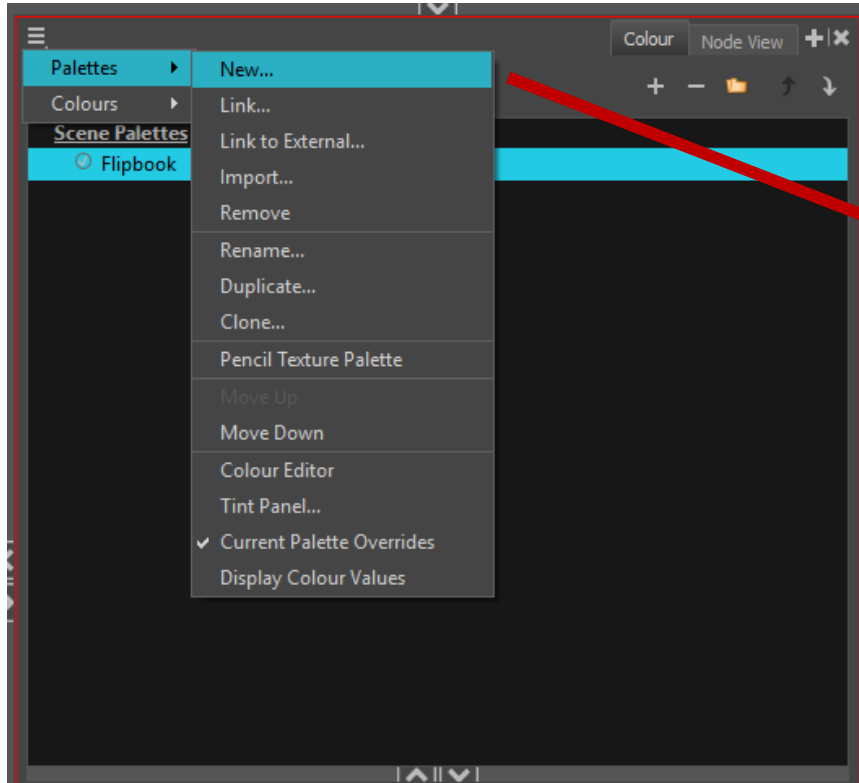


Double Click on New Color to Bring Up Color Picker

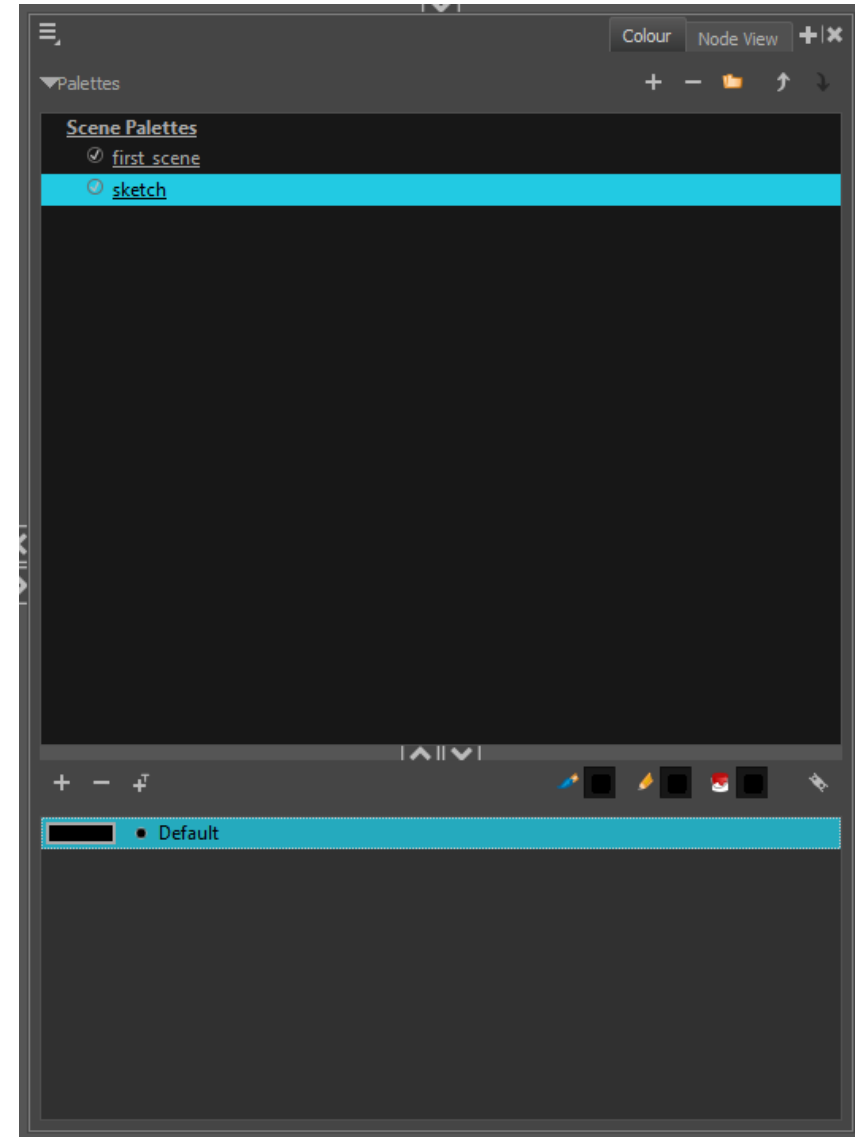
Adding New Colors to Palette



Creating New Color Palette

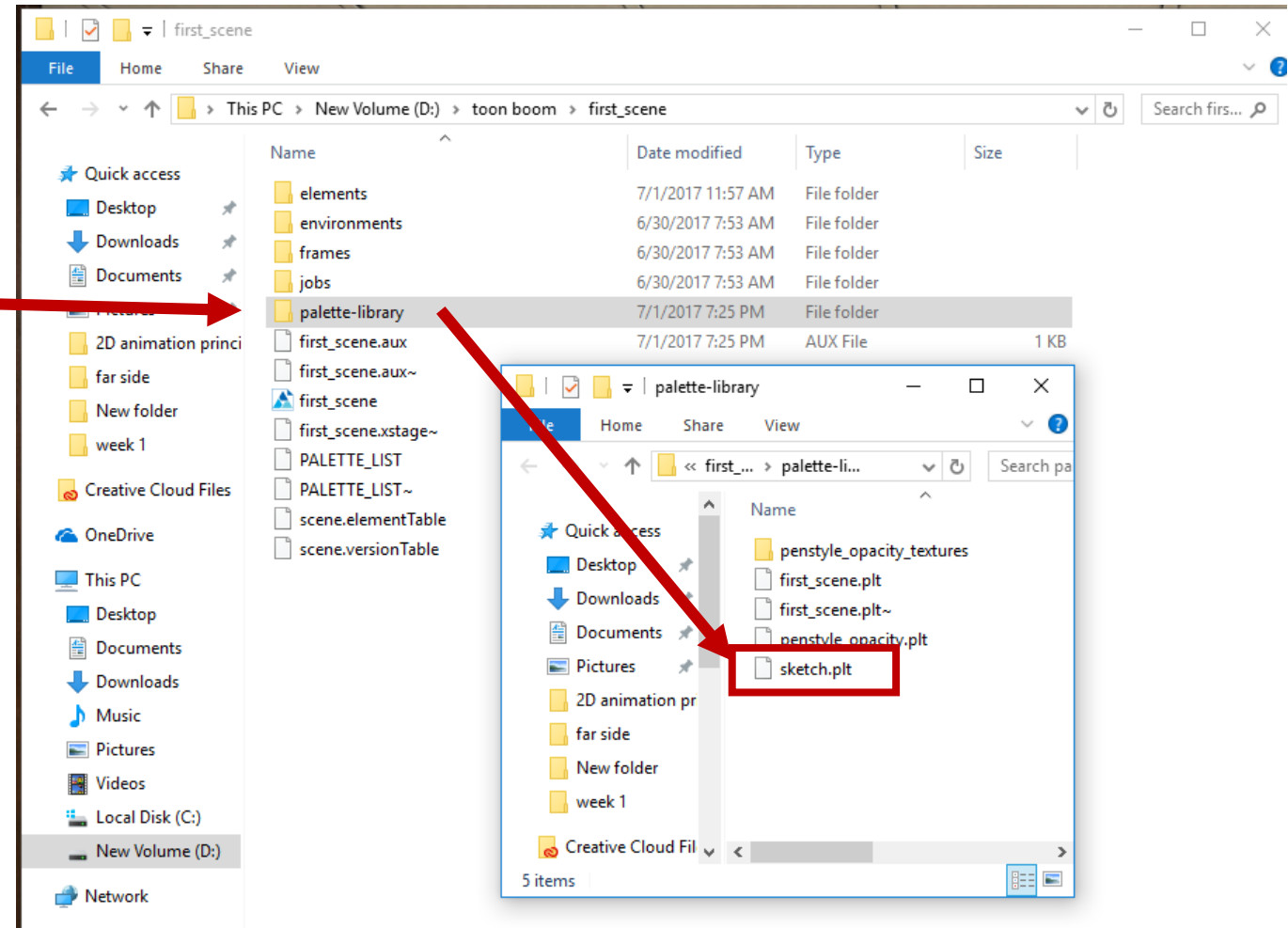


Add Colours to Palette

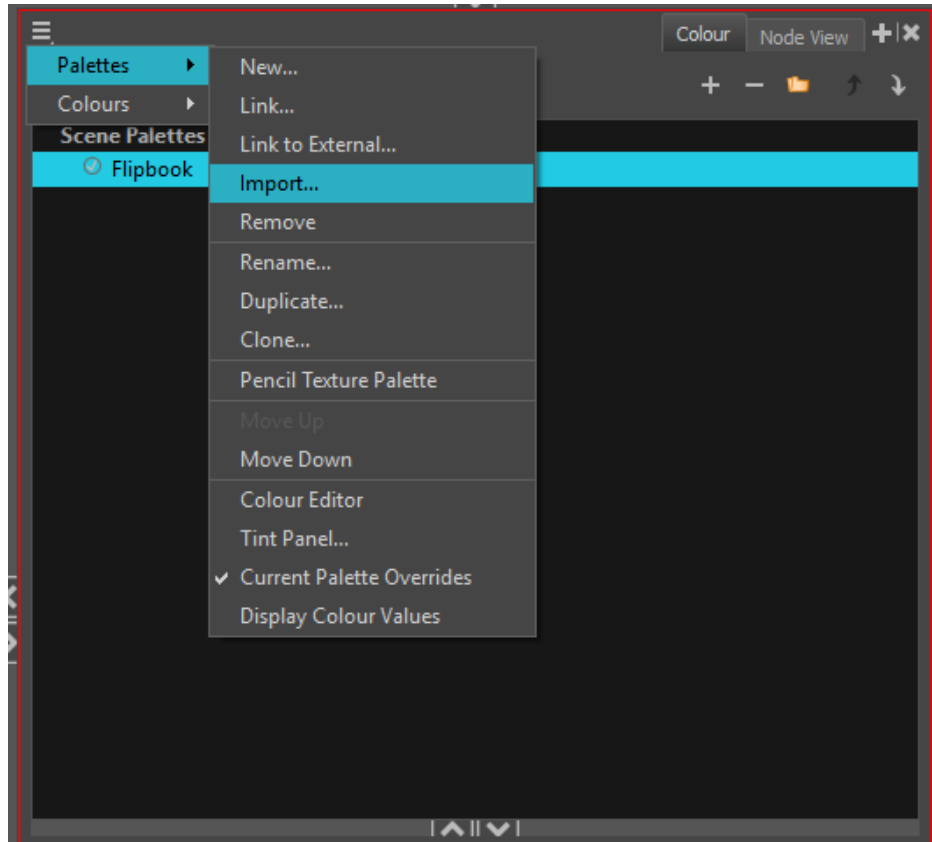


Creating New Color Palette To Use in Multiple Scenes

When you Save the Scene, The New Palette is saved in the Scene Folder in 'palette library' Folder as a PLT file



Creating New Color Palette To Use in Multiple Scenes

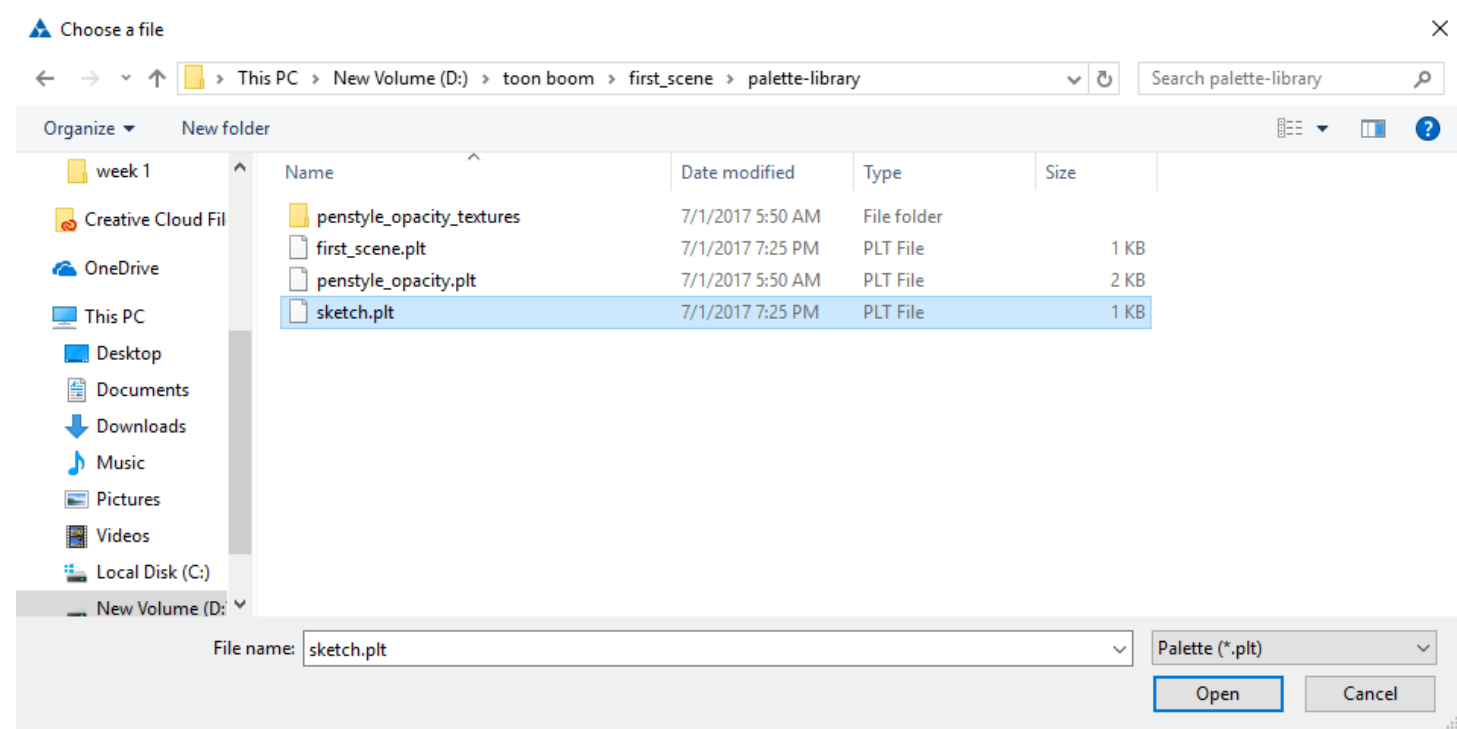


In Another (New) Scene:

Palette/Import

Maneuver to Scene Folder containing Palette

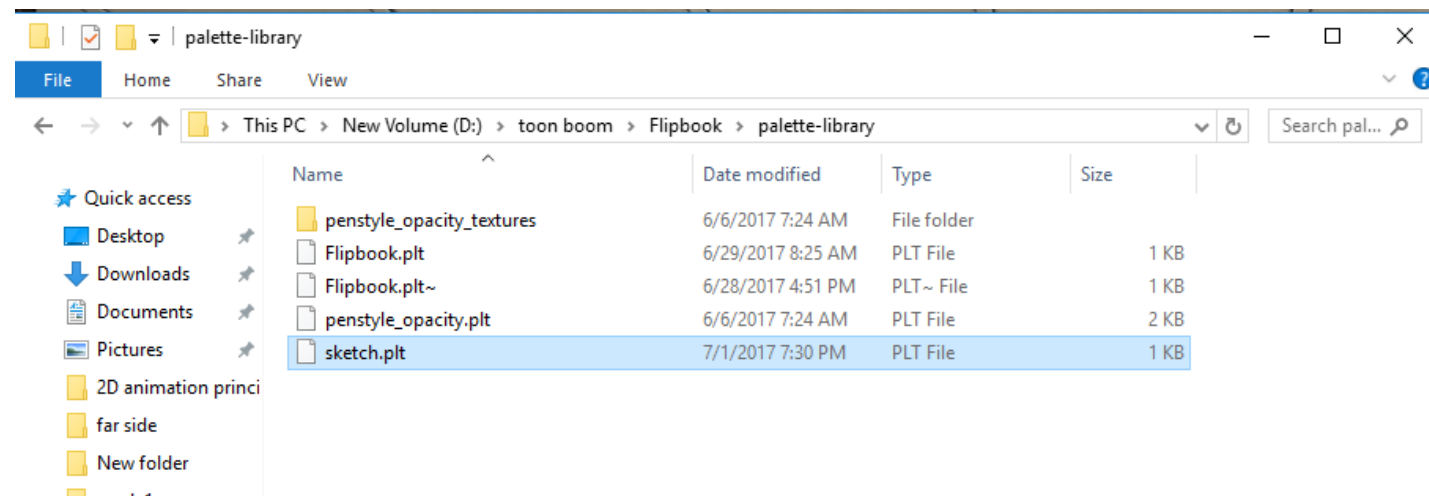
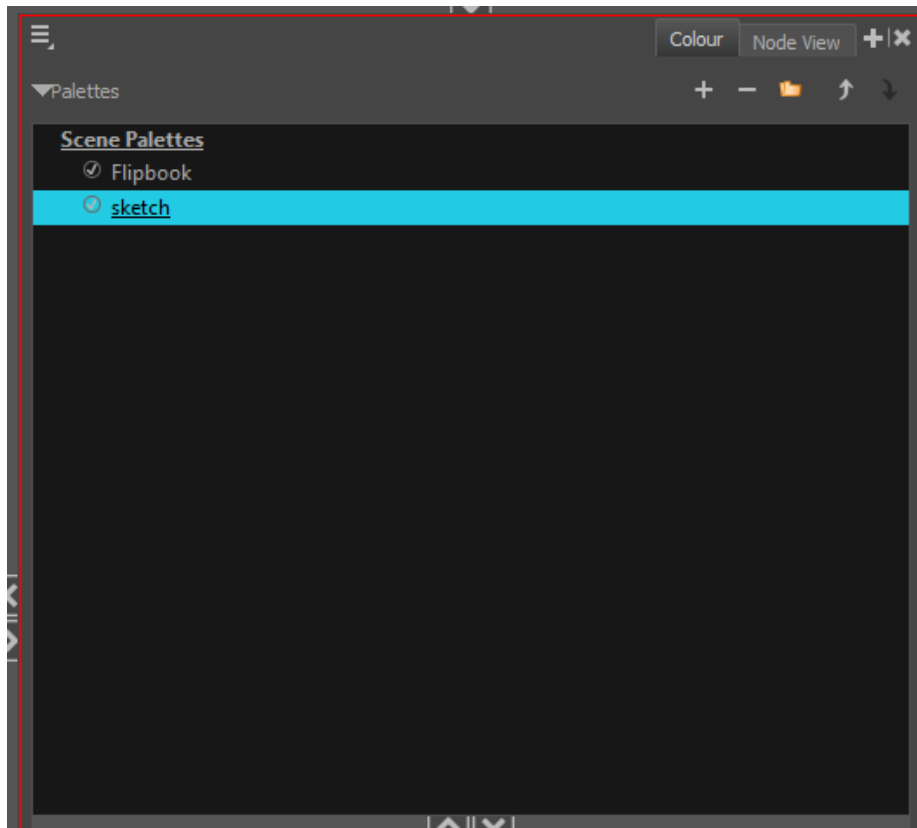
Select The Palette you want to Import/Open



Creating New Color Palette To Use in Multiple Scenes

When you Save your New Scene, the Imported Palette will be Saved as well in the palette library.

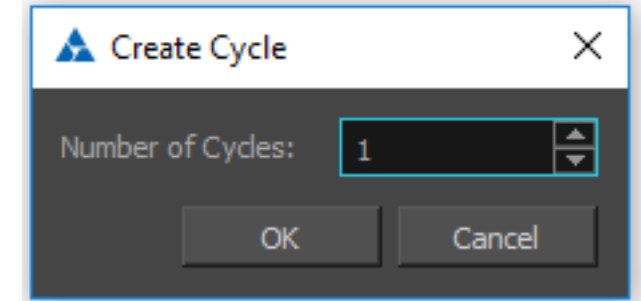
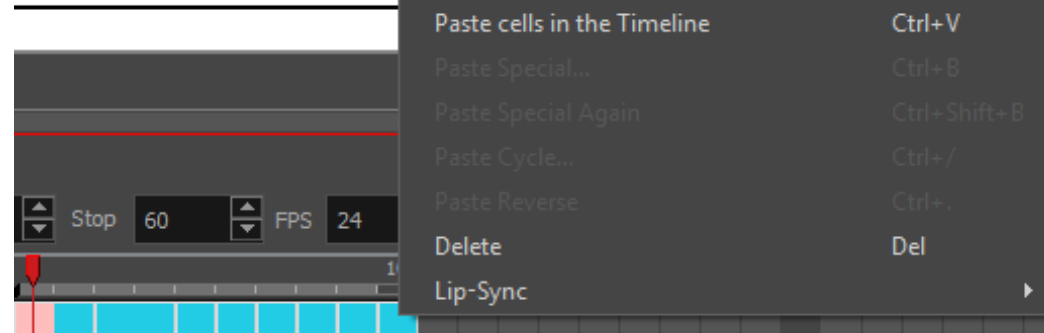
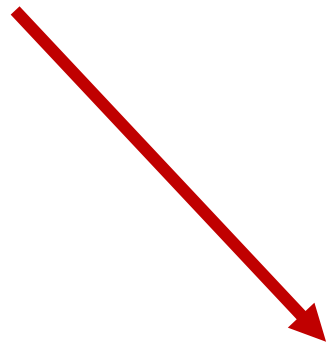
You will not have to Import it again.



Creating Cycles

Click and Drag to Select the Frames in the Cycle.

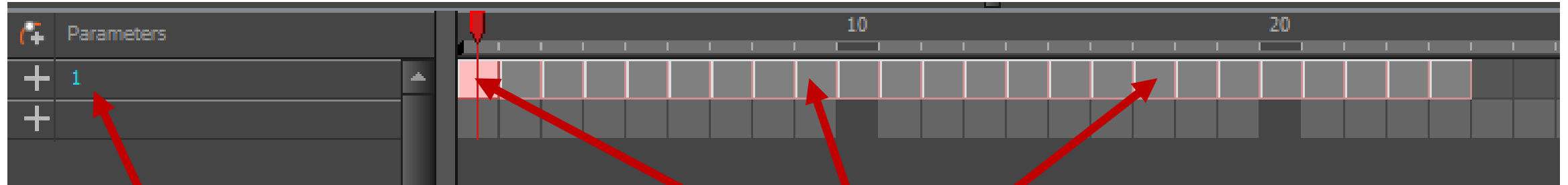
Right Click on Selection



Will not Extend Current Number of Frames in Time Line.

Will Over Write Any other Frames in Layer

Creating Cycles



Drawing Name

Drawing #1

If you Alter Drawing #1, the Changes will be Made on ALL the Drawings named #1.



Exposures

Shooting on 1's: Each Frame is a new/separate drawing (24 FPS/24 Drawings)

Shooting on 2's: Each Frame is held for 2 Shots (24 FPS/12 Drawings)

~~Shooting on 3's: Each Frame is held for 3 Shots (24 FPS/8 Drawings)~~

Shooting on 3's Creates choppy Animation.

You MUST Animate either on 1's or 2's

Held Cels

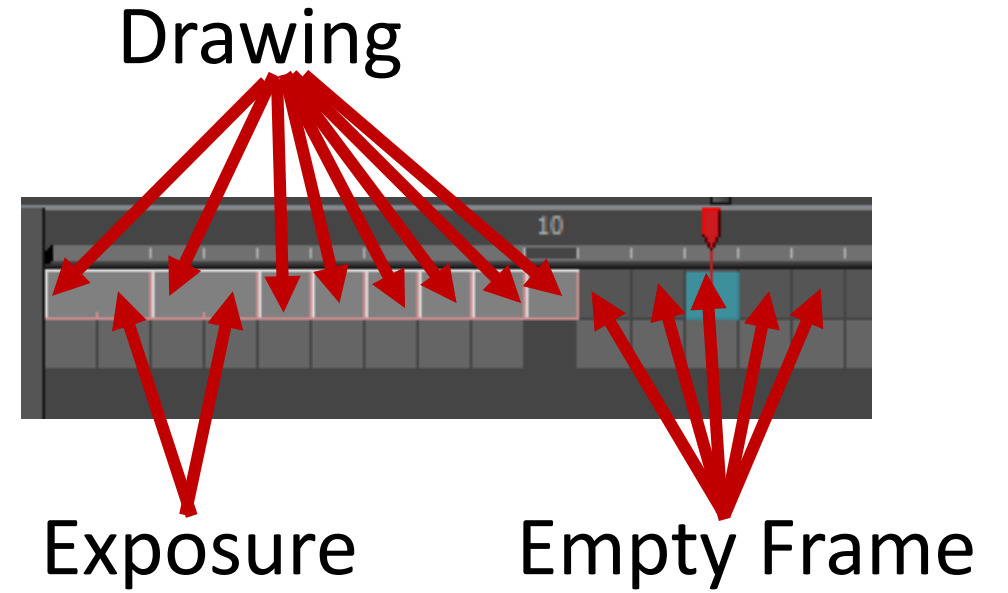
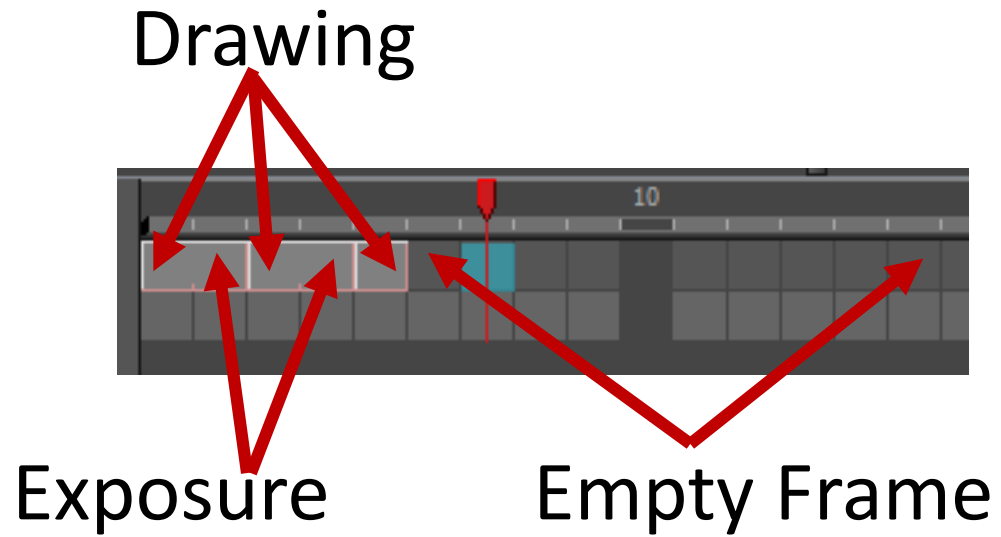
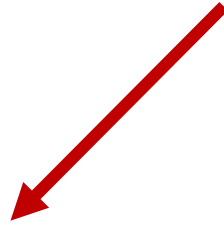
OVERLAY: An inanimate prop used as a foreground element of action in a scene. Usually painted on or applied to a cel and laid over the action to create the illusion of depth.

UNDERLAY: Same as an overlay except that it is placed on a lower cel level to enable characters to pass in front of it.

PROPS: chair, a door, a car, a glass and a cookie that will stay stationary for a time, then the character will interact with it.

LIMITED ANIMATION: Where sections of Character are on Held Cels and the parts of the Character that are moving are on separate Cels

Exposures



Exposures

To Add Exposures to a Drawing:

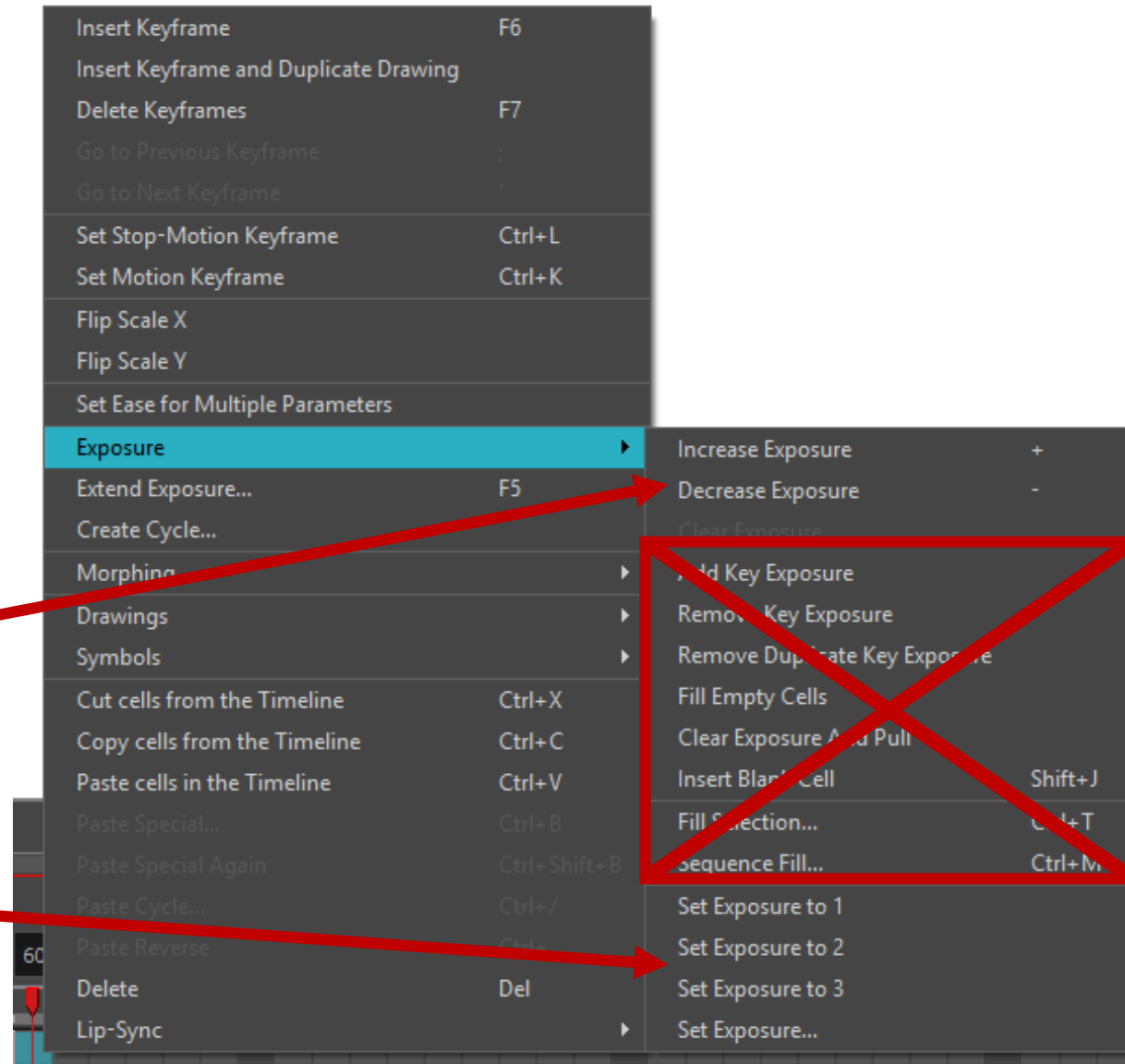
Right Click on Drawing in Time Line.

Select Exposure And use one of the Listed Options;

Increase/Decrease Exposure one Frame at a time

Or

Click and Drag Selection of Drawings and Set all to the Same Exposure



Exposures

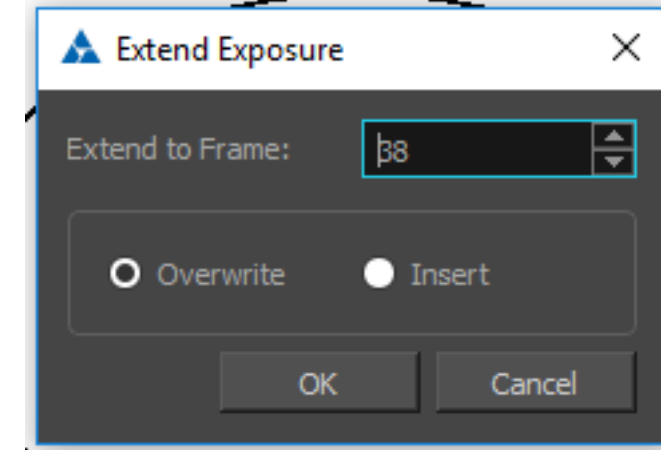
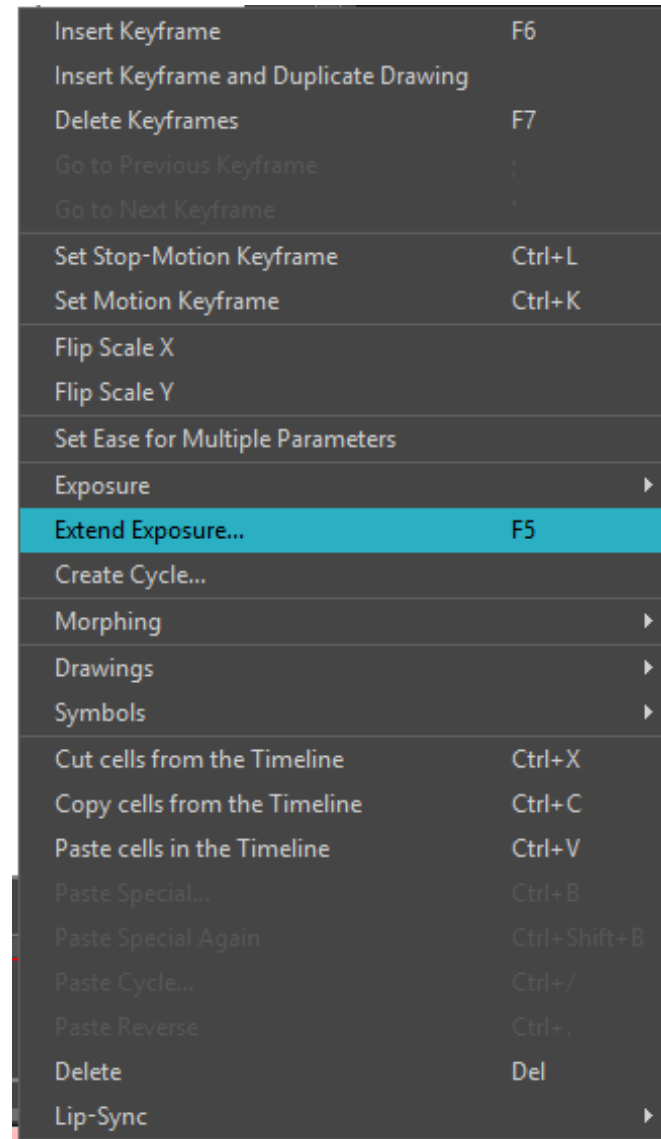
To Add Exposures to a Drawing:
Right Click on Empty Frame after
Drawing in Time Line.

Select 'Extend Exposure'

Type in Frame Number

Or

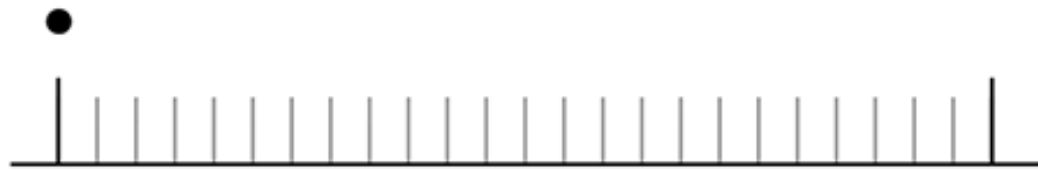
Select Empty Frame in Time Line
After Drawing and Hit 'F5'



Overwrite: Will Not Add
Frames and Overwrite any
Drawings with Exposure
Insert: Will Add Frames to
the Timeline and Preserve
any Drawings

Intro into Timing Charts

- Spacing of Drawings in Relationship to each other:
- The closer the drawings together, the slower the movement
- The further away the drawings are from each other the faster the movement



Mechanical Timing:

All Drawings are Evenly spaced Apart

Slow In/Ease In:

Drawings get closer together at the end of movement (Slow Out/Ease Out is the opposite)

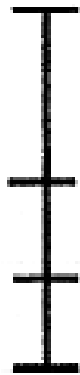
Combination of Slow In/Out



Intro into Timing Charts

Spacing:

Plotting Drawing Spacing using $\frac{1}{2}$'s and $\frac{1}{3}$'s;



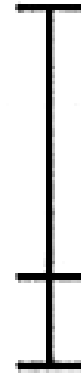
$\frac{1}{2}$ & $\frac{1}{4}$



$\frac{1}{2}$, $\frac{1}{4}$ & $\frac{1}{8}$



$\frac{1}{3}$



Favor

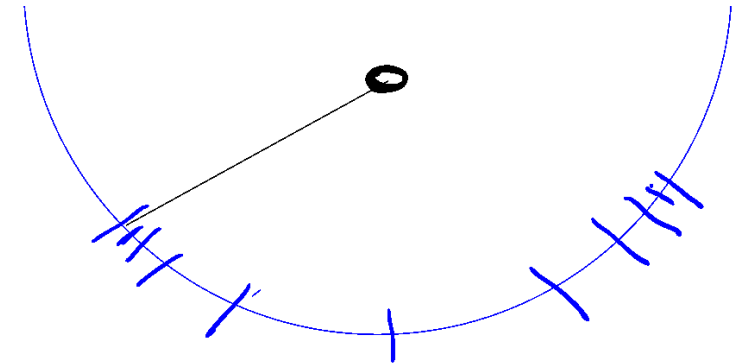
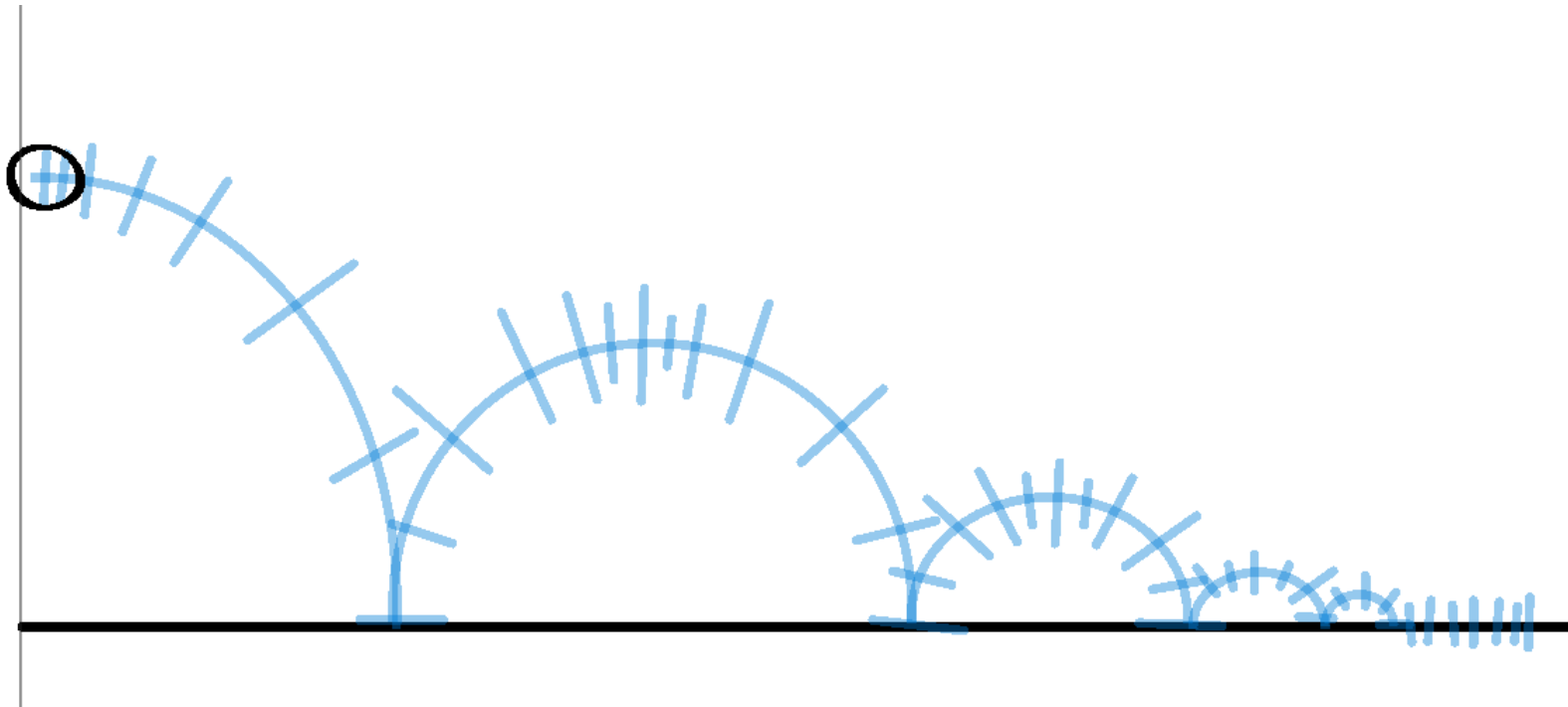
Intro into Timing Charts

Spacing:

Plotting Drawing Spacing using $\frac{1}{2}$'s and $\frac{1}{3}$'s;

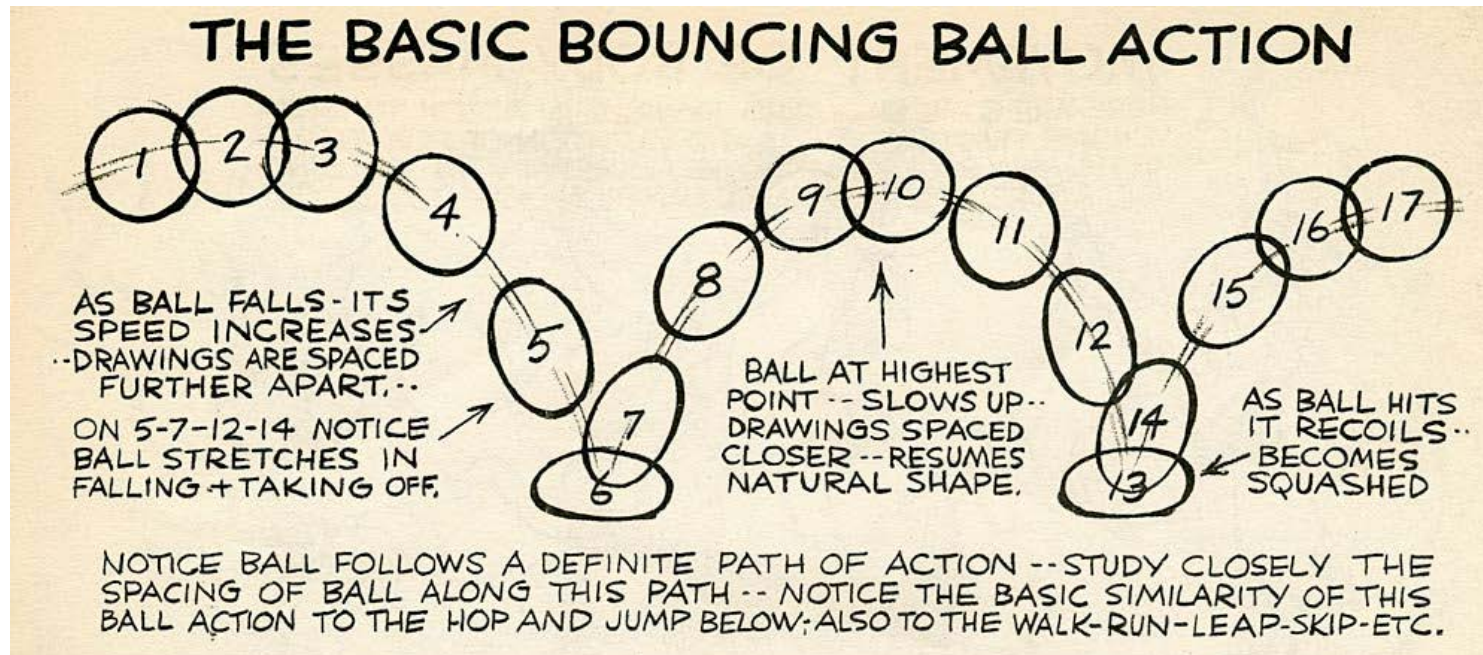
Path of Action (Guides)

- Using a New Color, Ellipse and Cutter Tool, Create a Guide your Bouncing Ball and Pendulum will Follow. Mark Spacing by $\frac{1}{2}$'s or $\frac{1}{3}$'s or a Combination of both.



Squash and Stretch

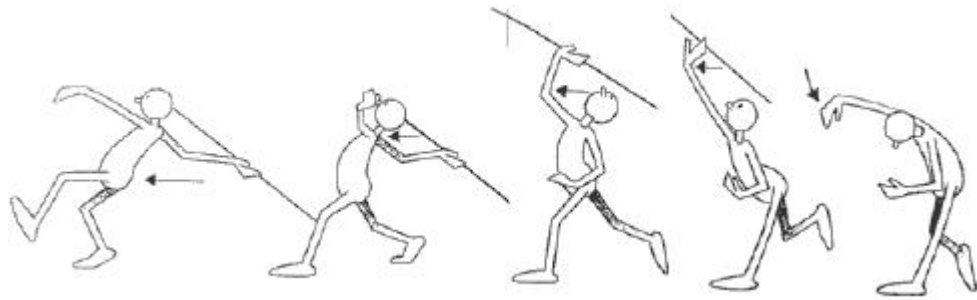
- Squash and stretch is the phrase used to describe "by far the most important" of the 12 basic principles of animation, described in the book *The Illusion of Life* by Frank Thomas and Ollie Johnston.



Squash and Stretch

- **Stretch:**
 - **Depicts Movement:** The faster the movement, the more Stretch.
- **Squash:**
 - **Depicts Contact:** The harder the Contact, the more Squash.
- **Rule of Squash and Stretch:**
 - No matter how Squashed or Stretched an object gets, its volume remains constant.

Follow-Through, Drag and Over Lapping



STOPS - MATERIAL CONTINUES

AND SETTLES

Assignment: **Bouncing Ball With Tail and Rope Pendulum with Weight** Due Week 3

- Create a New Scene Named 'Pendulum'
- Add a Colour Card Layer
- Add One Drawing Layers (Total of Two Drawing Layers)
 - One Layer for Guide (Path of Action, Timing and Spacing)
 - One Layer for Pendulum and Weight
- Rename Drawing Layers
- Create a New Color to use for Drawing the Guide
- Using the Ellipse and Cutter Tool Create a Guide on One Layer.
- Mark the Spacing of the Pendulum on the Guide using $\frac{1}{2}$'s and $\frac{1}{3}$'s
- Using the Line, Select (Rotate) and Copy/Paste, Create the Pendulum Animation.
 - Shot on 2's (Each Drawing Held for One Exposure)
 - NO DRAWING CAN BE HELD FOR MORE THAN ONE EXPOSURE!
 - Once the Initial Animation is completed, Make another pass and Depict the Pendulum as a Rope with a Weight at the end (Follow-Through, Drag and Overlap)
 - Use Contour Editor to help deform lines
- Render QuickTime Movie of Finished Assignment (1/4 Resolution) in Pendulum' Scene Folder
- You will be required to Turn In Entire Pendulum' Scene Folder with QuickTime Movie in Week 3 in order to receive credit for Assignment

Assignment: **Bouncing Ball With Tail and Rope Pendulum with Weight** Due Week 3

- Create a New Scene Named 'BouncingBall'
- Add a Colour Card Layer
- Add Three Drawing Layers (Total of Four Drawing Layers)
 - One Layer for Ground Circle Plane
 - One Layer for Guide (Path of Action and Spacing)
 - One Layer for Bouncing Ball
 - One Layer for Tail (Drag, Over Lap and Follow Through)
- Rename Drawing Layers
- Create two New Colors to use for Ground Plane and Guide.
- On One Layer, Create a Ground Plane
- On Another Layer, Create the Guide and Spacing using $\frac{1}{2}$'s and $\frac{1}{3}$'s.
- Using the Ellipse and Copy/Paste, Create a Bouncing Ball along Guide, complete with Timing and Squash and Stretch.
- Shot on 2's (Each Drawing Held for One Exposure)
- NO DRAWING CAN BE HELD FOR MORE THAN ONE EXPOSURE!
- After Completing the Bouncing Ball Animation, Create a Layer for the Tail and Finish Animation using Follow-Through and Overlap.
- Render QuickTime Movie of Finished Assignment (1/4 Resolution) in 'BouncingBall' Scene Folder. You will be required to Turn In Entire 'BouncingBall' Scene Folder with QuickTime Movie in Week 2 in order to receive credit for Assignment

Additional Resources:

- Slow in and Slow out
- <https://www.youtube.com/watch?v=fQBFsTqbKhY>
- Timing
- <https://www.youtube.com/watch?v=BarOk2p38LQ>
- Squash and stretch
- <https://www.youtube.com/watch?v=haa7n3UGyDc>
- Follow through and Overlapping action
- <https://www.youtube.com/watch?v=4OxphYV8W3E>