# MAKING SCIENTIFIC FIGURES WITH AFFINITY PHOTO

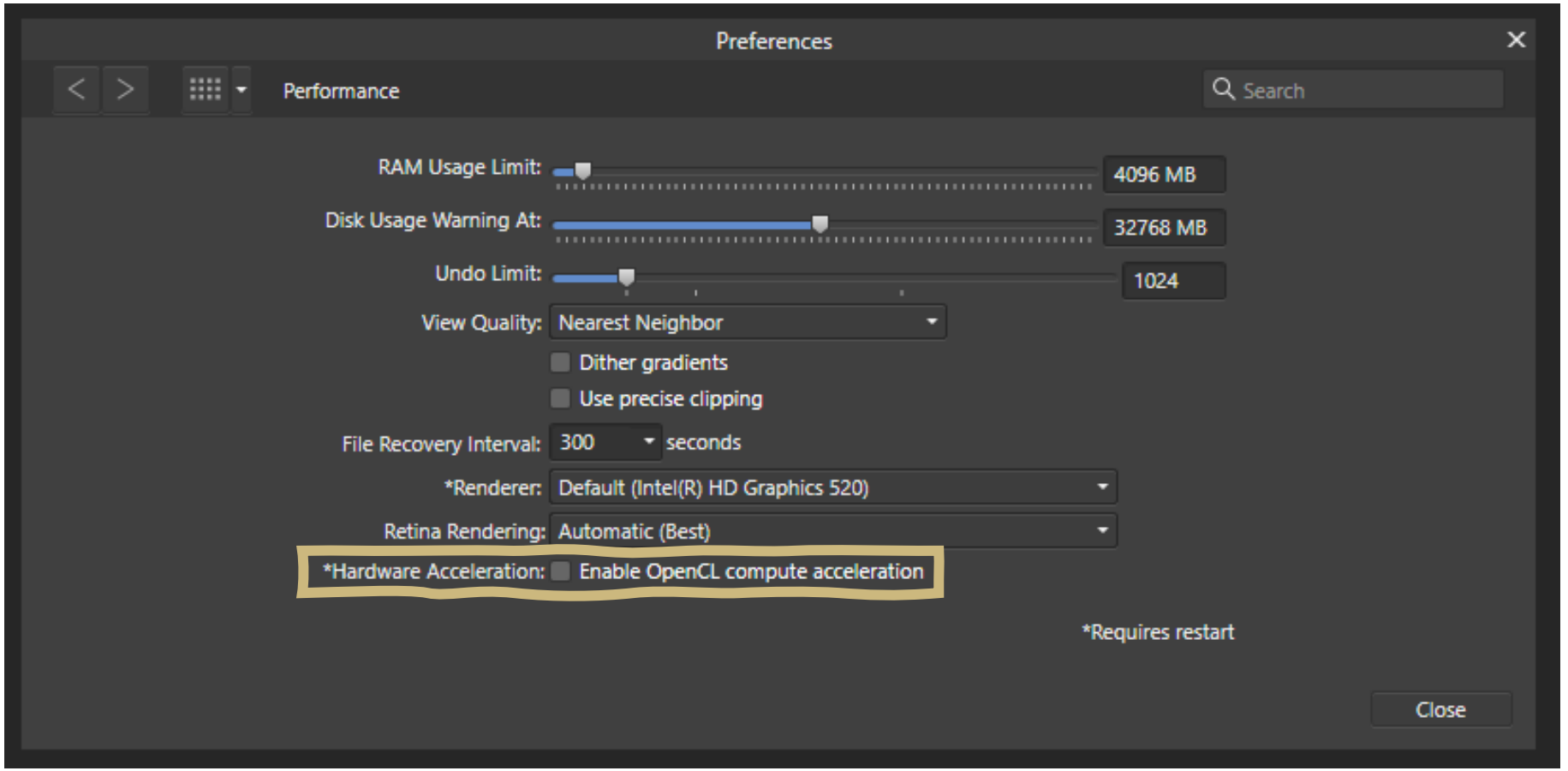
(OR PHOTOSHOP)

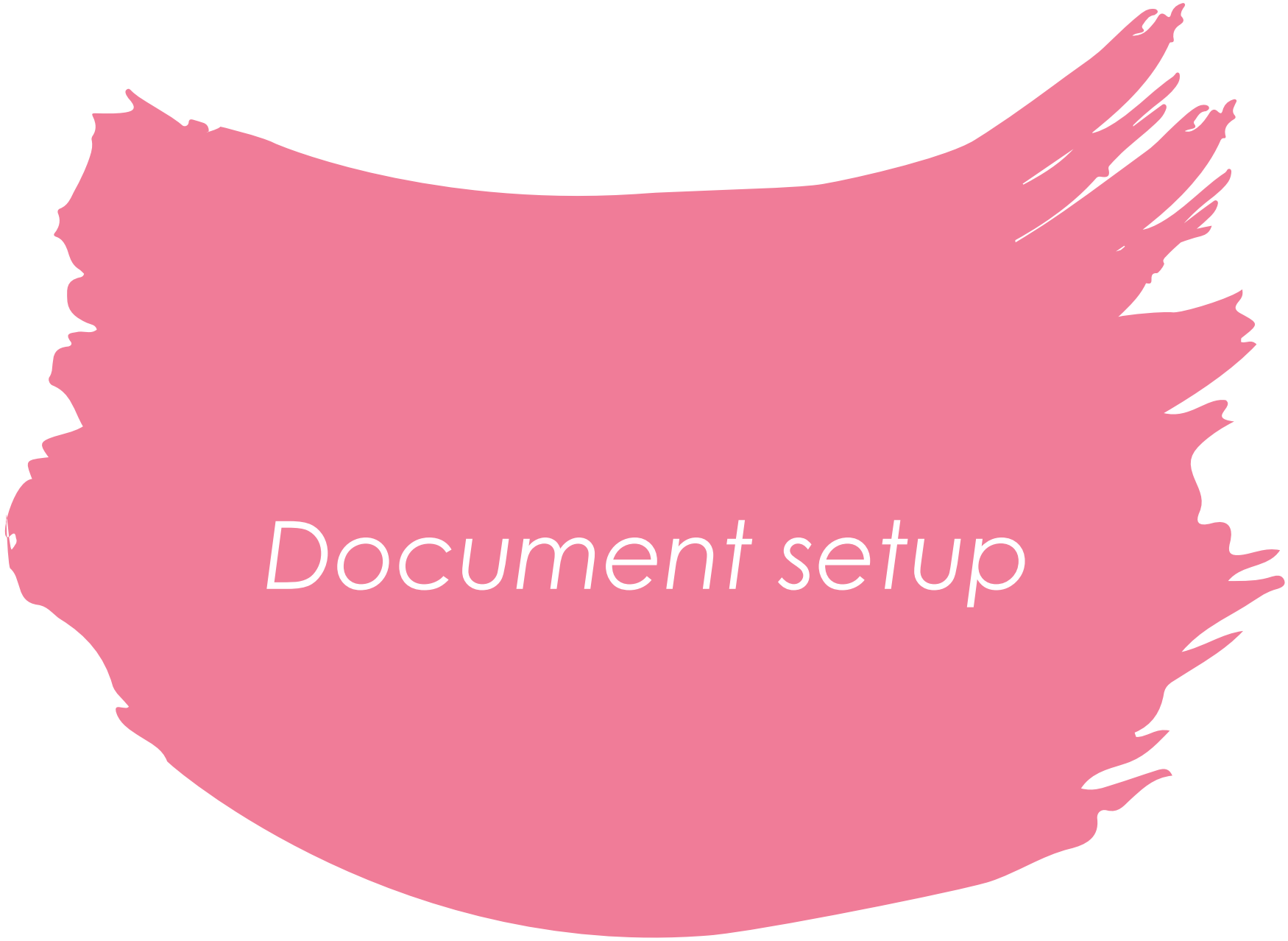
In this tutorial, you'll learn tools for making elements of a scientific figure.

This, however, won't teach you what makes a **good** scientific figure. You need to learn that on your own.

# Performance issues?

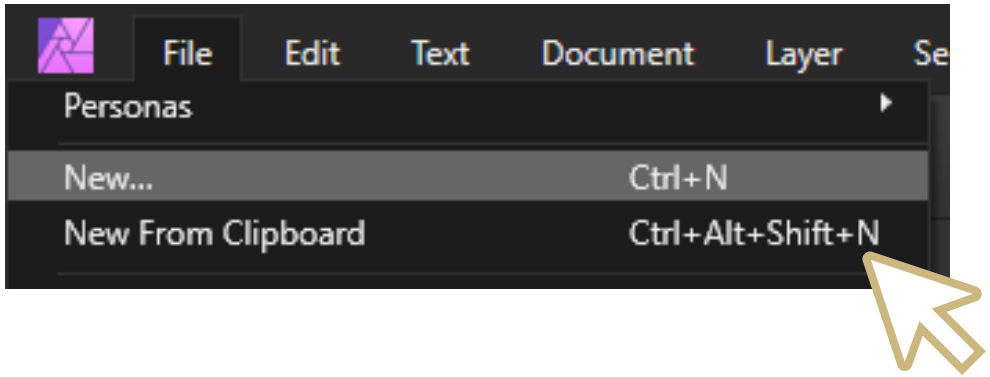
*Edit* > *Preferences* > *Performance* > Uncheck *Enable OpenGL compute acceleration*




Document setup

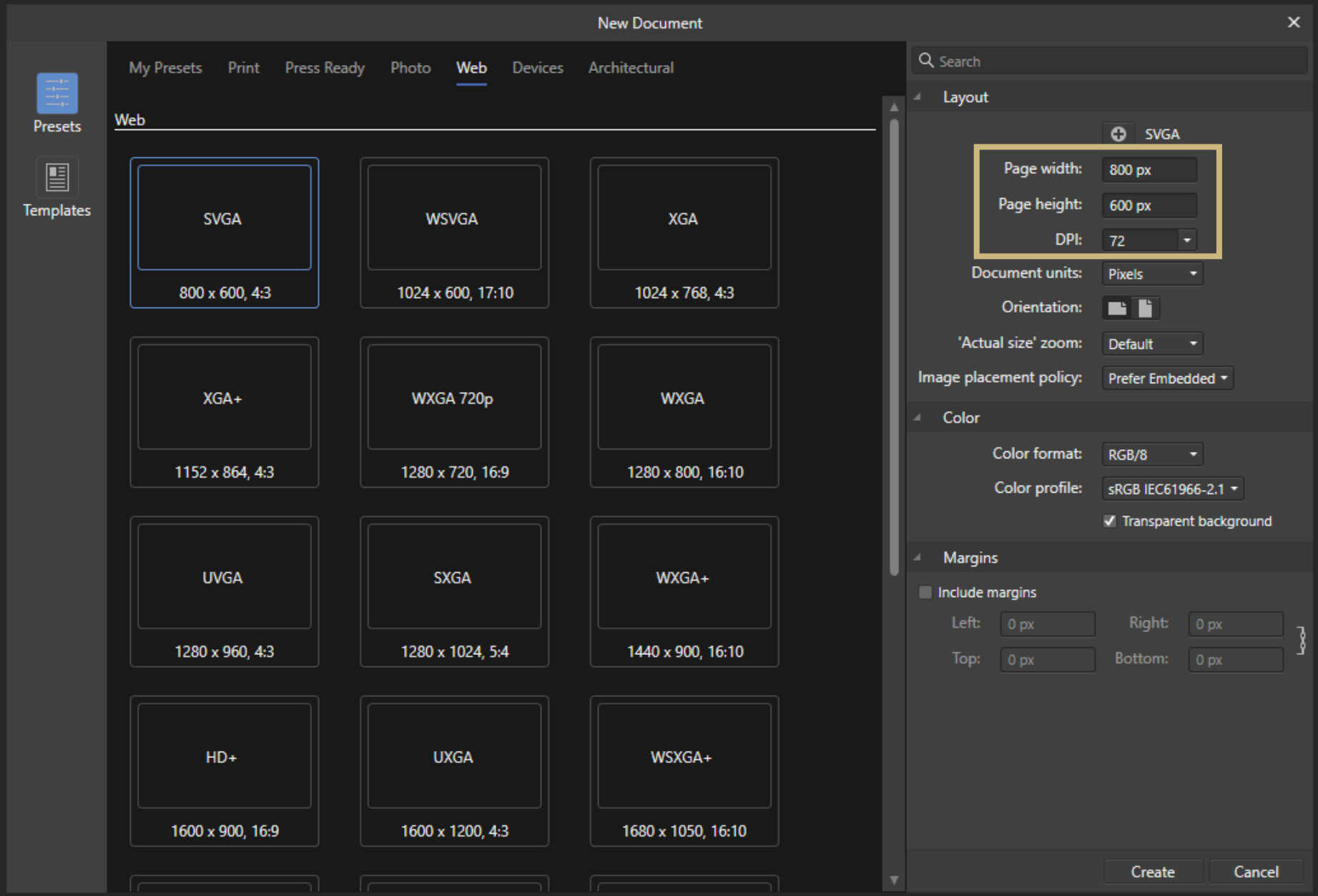
# Creating a new figure

*File > New …*



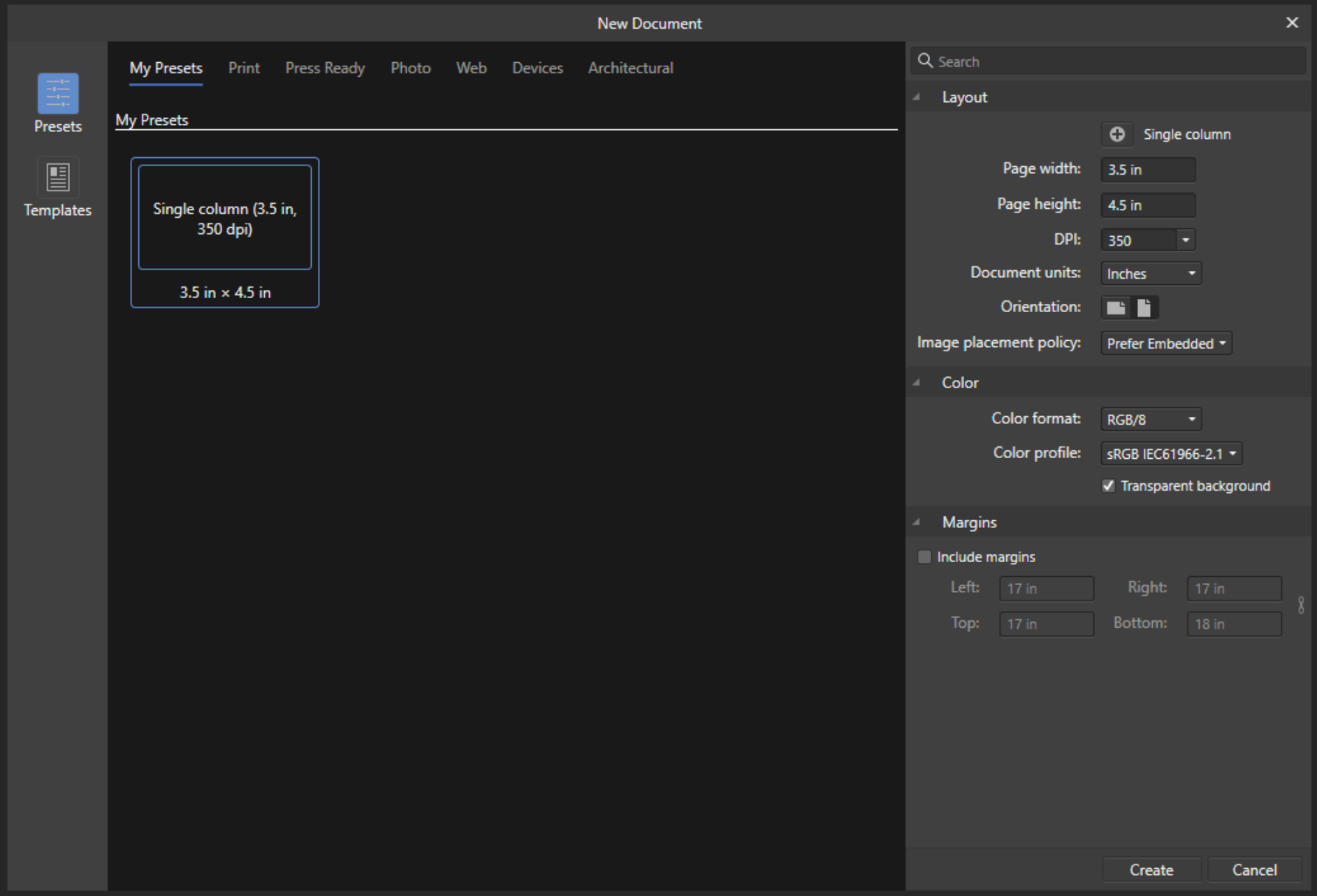

*File > New From Clipboard*

Useful if you have a figure already copied to your clipboard.




DPI only really matters when working for print/publication.

What's more important is that you have enough pixels, so your figures don't look fuzzy.

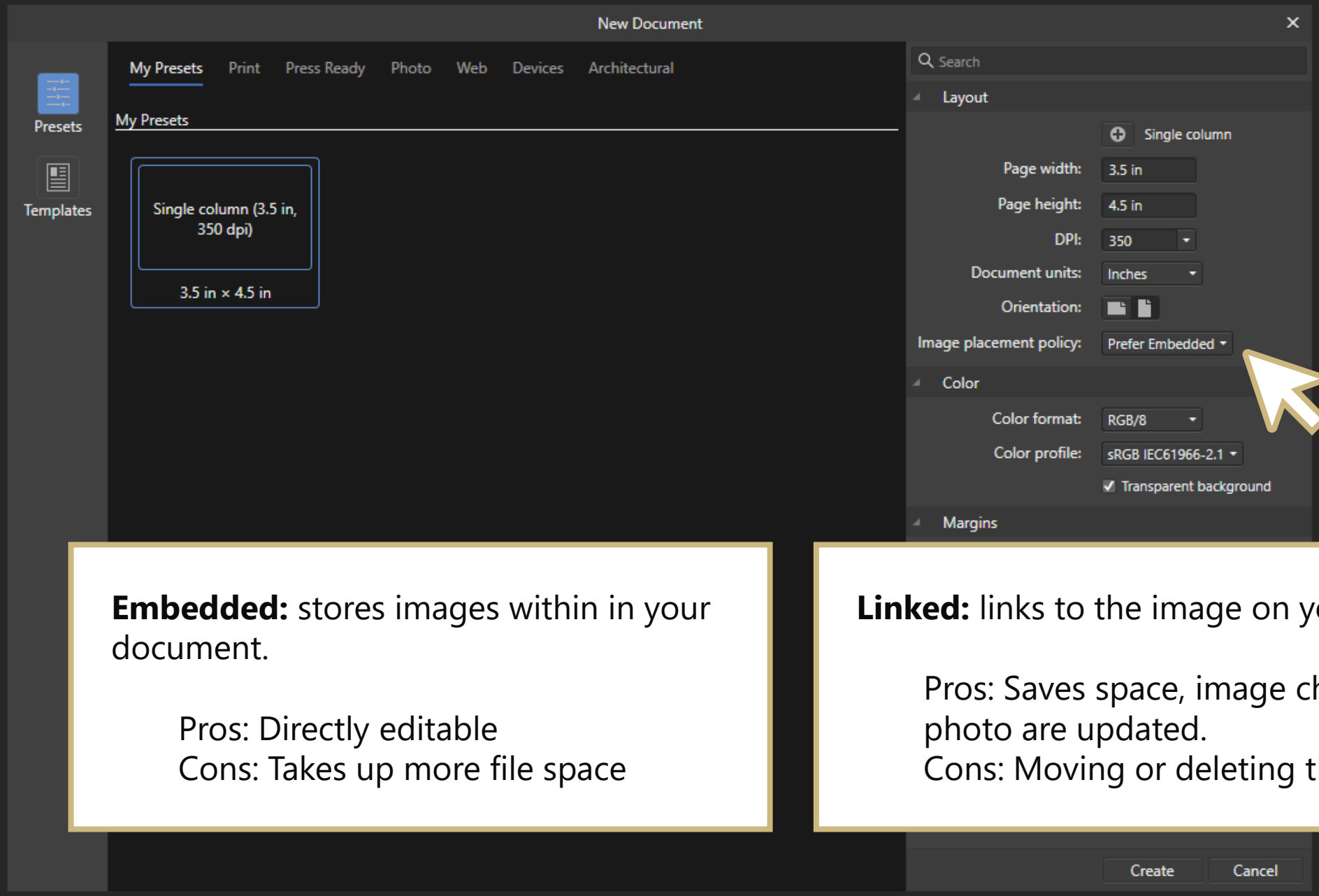



**Let's create a single-column figure preset.**

1. Set documents units to inches.
2. Set width to 3.5 in.
3. Set page height.

# Image Placement Policy

How the program decides to treat images you place into your document.

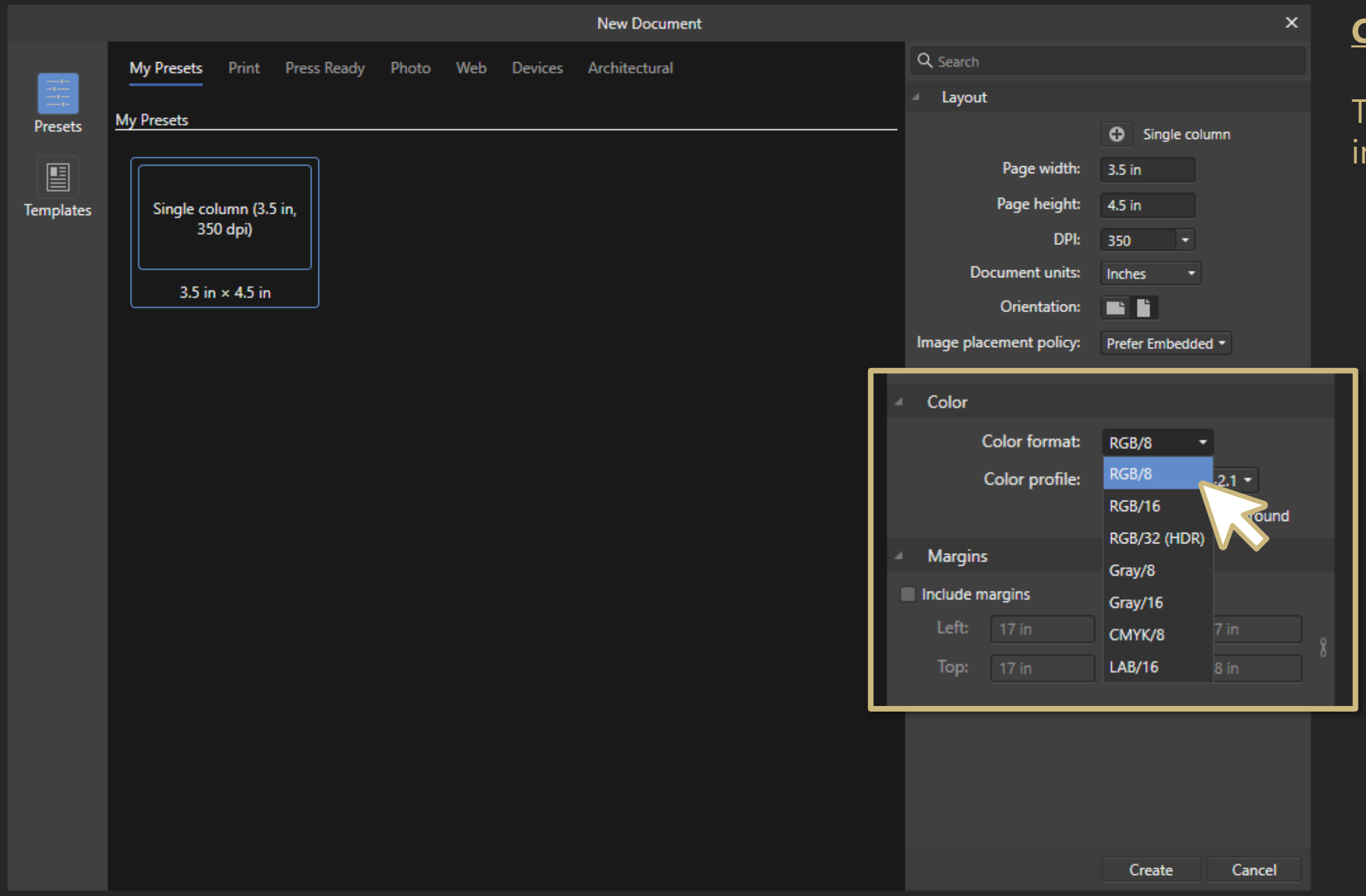



**Embedded:** stores images within in your document.

Pros: Directly editable
Cons: Takes up more file space

**Linked:** links to the image on your computer.

Pros: Saves space, image changes outside Affinity photo are updated.
Cons: Moving or deleting the image causes errors




## Color format

The color space we work in.

# Color format: RGB or CMYK?

1. **RGB** – for digital and print figures.

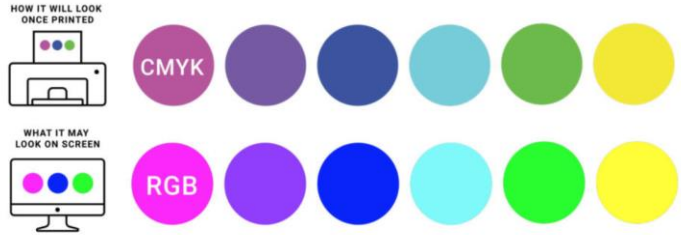
   Pros:
   - Vibrant color range

   Cons:
   - Colors on screen don't match what's printed

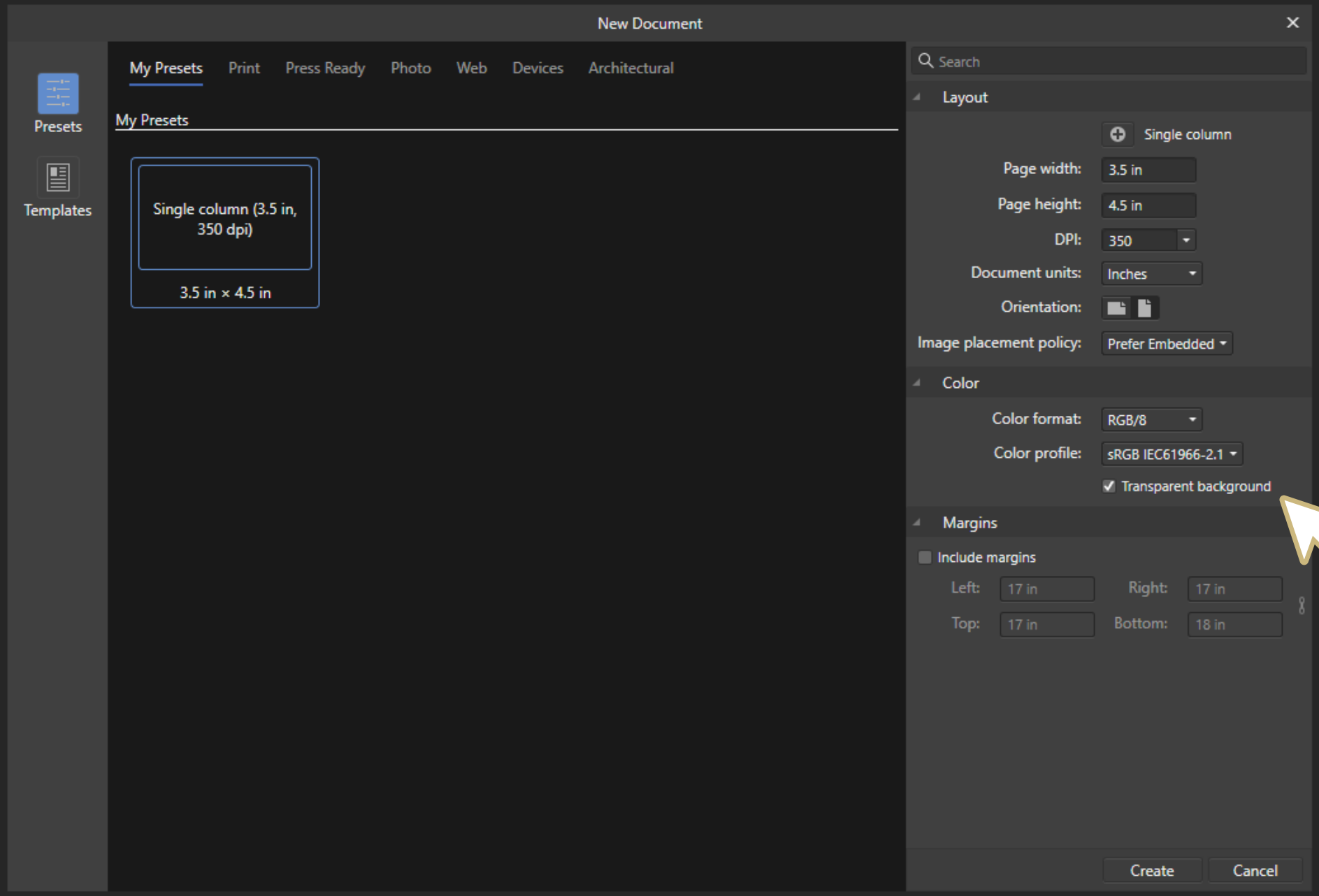
2. **CMYK** – for print-only figures.

   Pros:
   - Closer idea of printed colors

   Cons:
   - Less vibrant colors



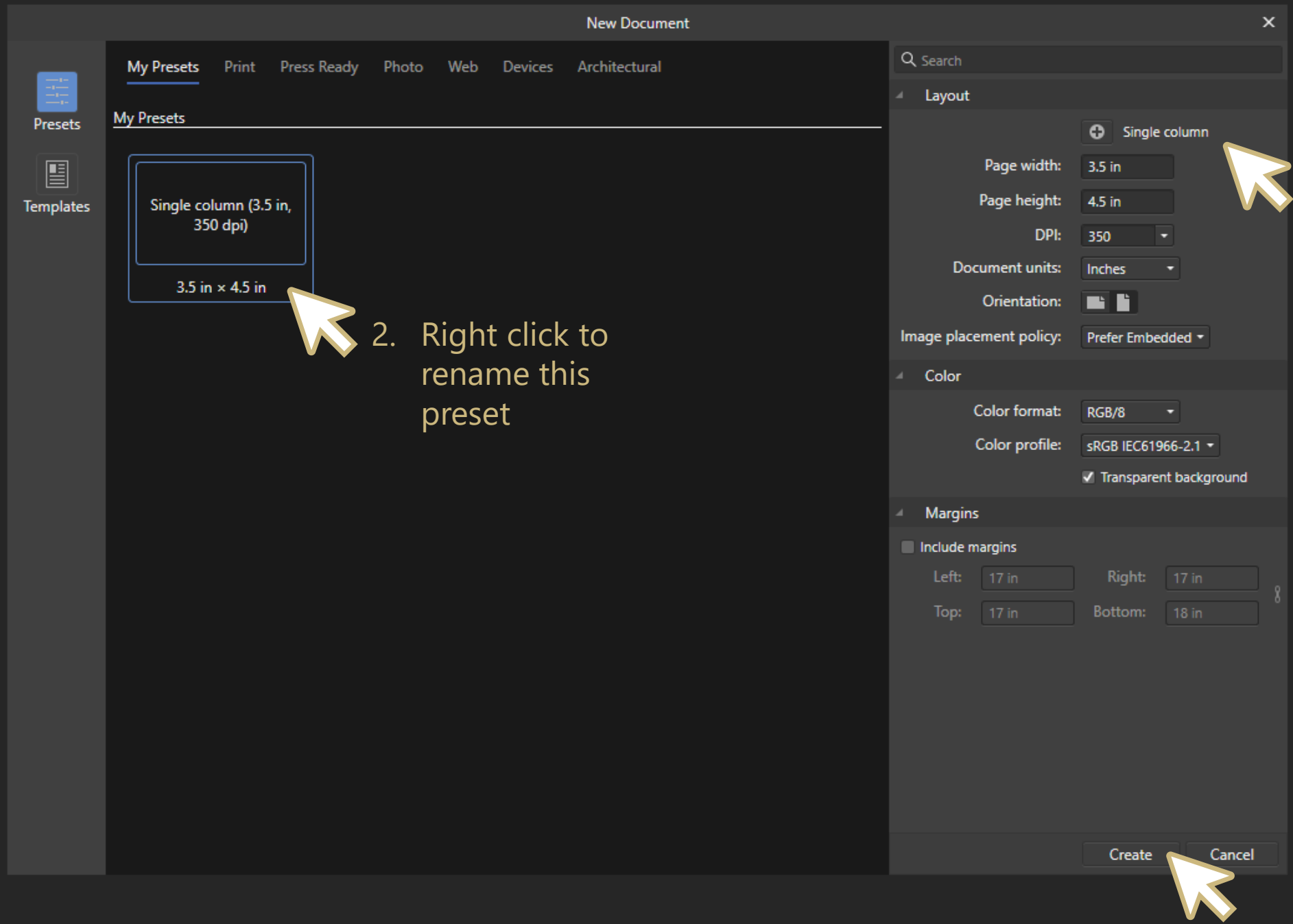

Since papers and presentations are mostly digital, default to RGB.




## Color

Keep the defaults and check *transparent background*.

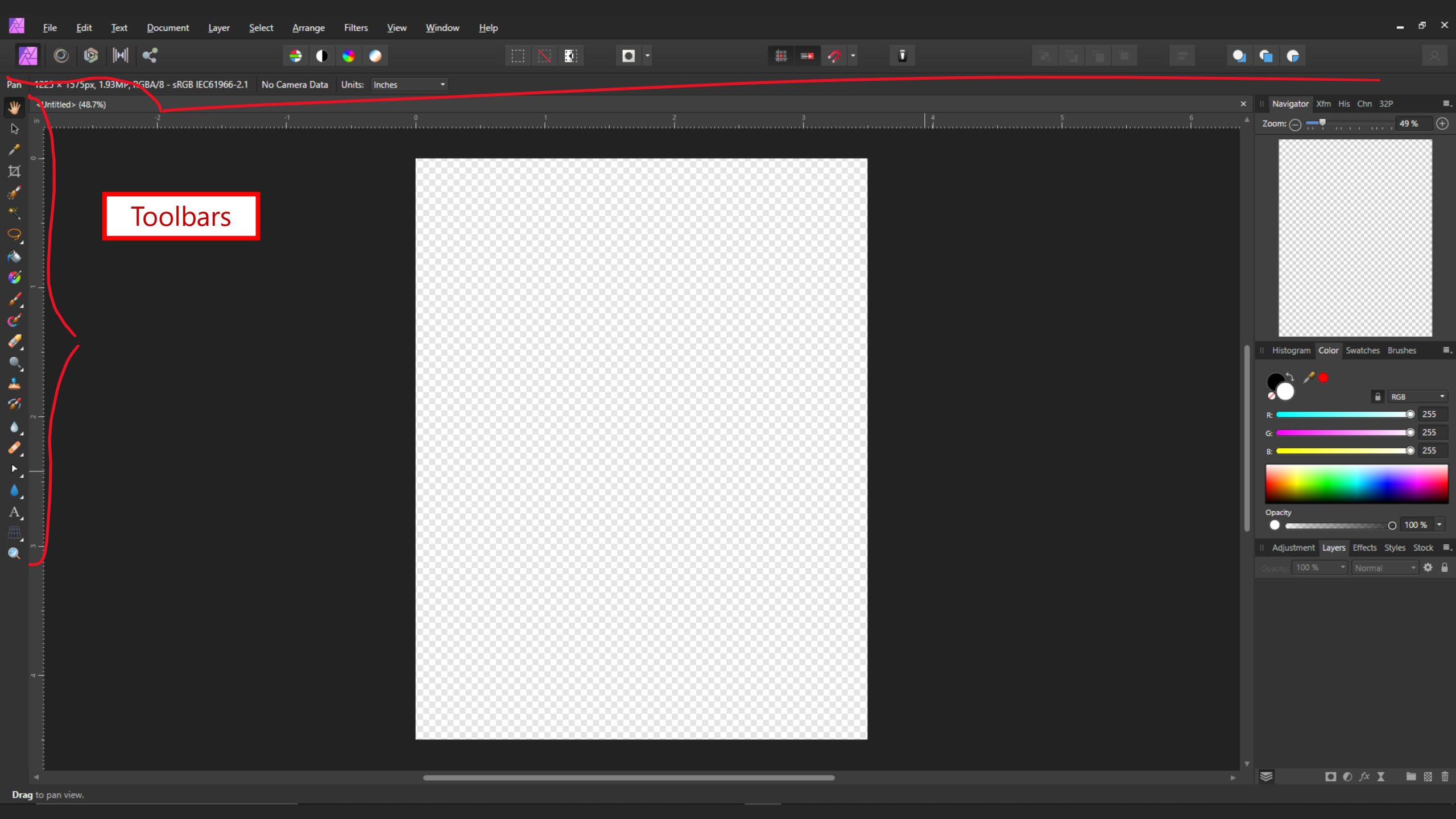
RGB/8 is satisfactory for our needs. If you're curious about RGB/16 or RGB/32, check out http://perberntsen.com/misc/technical/digitalimage.php

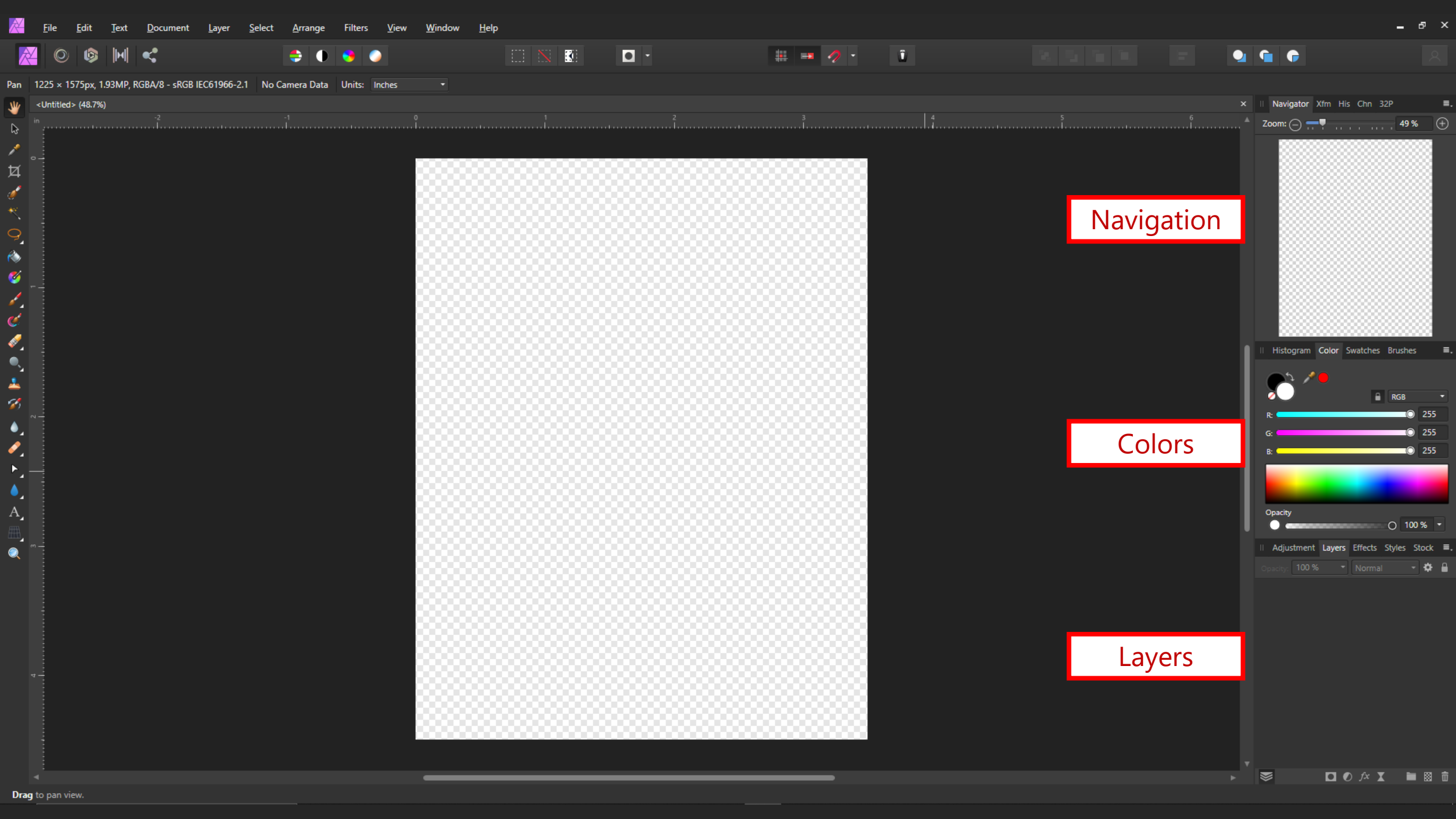



1. Click + to add this as a new preset.

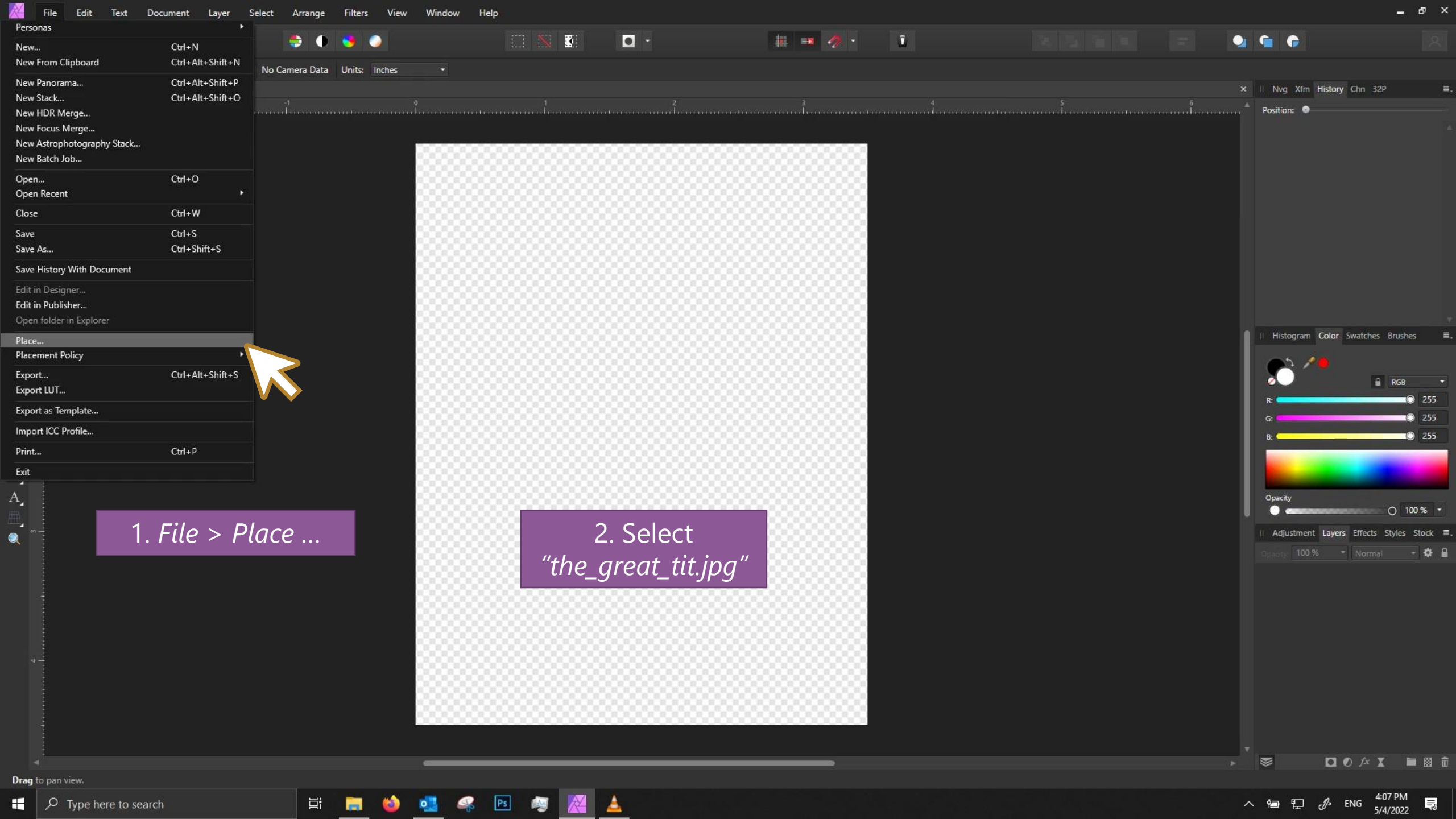
2. Right click to rename this preset

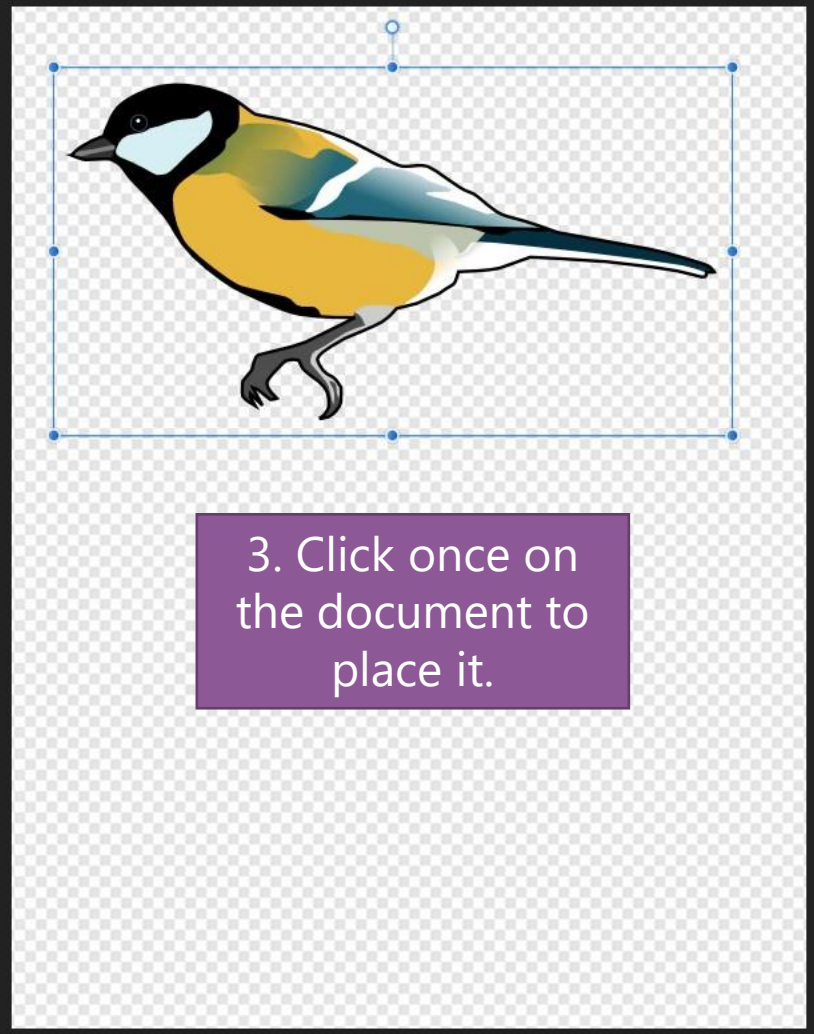
3. Click *Create* to begin.


File
Edit
Text
Document
Layer
Select
Arrange
Filters
View
Window
Help
Pan
No Camera Data
Units:
Inches
<Untitled> (48.7%)
Toolbars
Navigator
Xfm
His
Chn
32P
Zoom:
49 %
Histogram
Color
Swatches
Brushes
RGB
R:
255
G:
255
B:
255
Opacity
100 %
Adjustment
Layers
Effects
Styles
Stock
Drag to pan view.


File
Edit
Text
Document
Layer
Select
Arrange
Filters
View
Window
Help
Pan
1225 × 1575px, 1.93MP, RGBA/8 - sRGB IEC61966-2.1
No Camera Data
Units:
Inches
<Untitled> (48.7%)
Navigator
Xfm
His
Chn
32P
Zoom:
49 %
Histogram
Color
Swatches
Brushes
RGB
R:
255
G:
255
B:
255
Opacity
100 %
Adjustment
Layers
Effects
Styles
Stock
Opacity:
100 %
Normal
Navigation
Colors
Layers
Drag to pan view.

# *Placing an image*

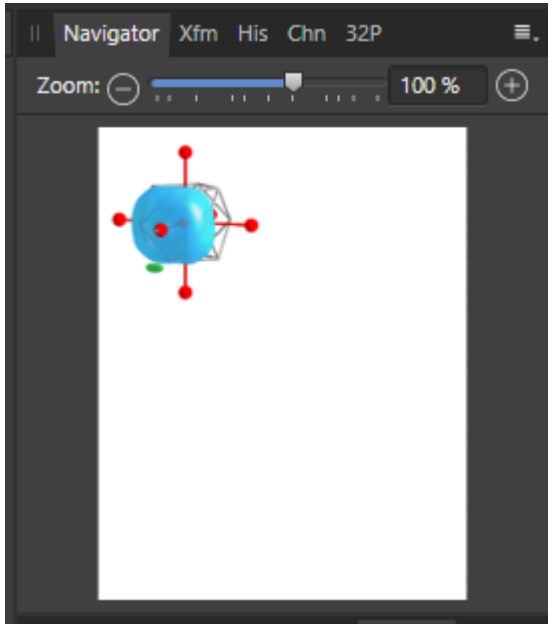

File
Edit
Text
Document
Layer
Select
Arrange
Filters
View
Window
Help
Personas
New... Ctrl+N
New From Clipboard Ctrl+Alt+Shift+N
New Panorama... Ctrl+Alt+Shift+P
New Stack... Ctrl+Alt+Shift+O
New HDR Merge...
New Focus Merge...
New Astrophotography Stack...
New Batch Job...
Open... Ctrl+O
Open Recent
Close Ctrl+W
Save Ctrl+S
Save As... Ctrl+Shift+S
Save History With Document
Edit in Designer...
Edit in Publisher...
Open folder in Explorer
Place...
Placement Policy
Export... Ctrl+Alt+Shift+S
Export LUT...
Export as Template...
Import ICC Profile...
Print... Ctrl+P
Exit
No Camera Data
Units: Inches
Nvg Xfm History Chn 32P
Position:
Histogram Color Swatches Brushes
RGB
R: 255
G: 255
B: 255
Opacity
100 %
Adjustment Layers Effects Styles Stock
1. File > Place ...
2. Select "the_great_tit.jpg"
Drag to pan view.
Type here to search
ENG
4:07 PM
5/4/2022


3. Click once on the document to place it.

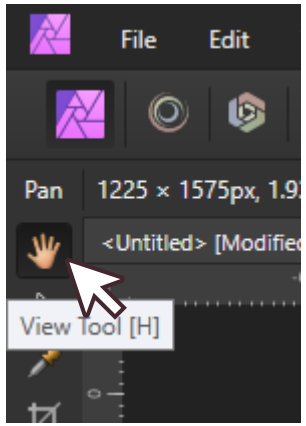
# Navigation:

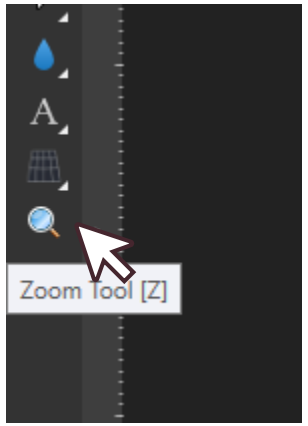
# Three ways to pan/zoom!

1. Use the *Navigator* panel
   - Type or use the scrub bar to adjust zoom.
   - Click and drag on the document preview




2. Use the *View Tool [H]* and *Zoom tool [Z]* located on the left toolbar.

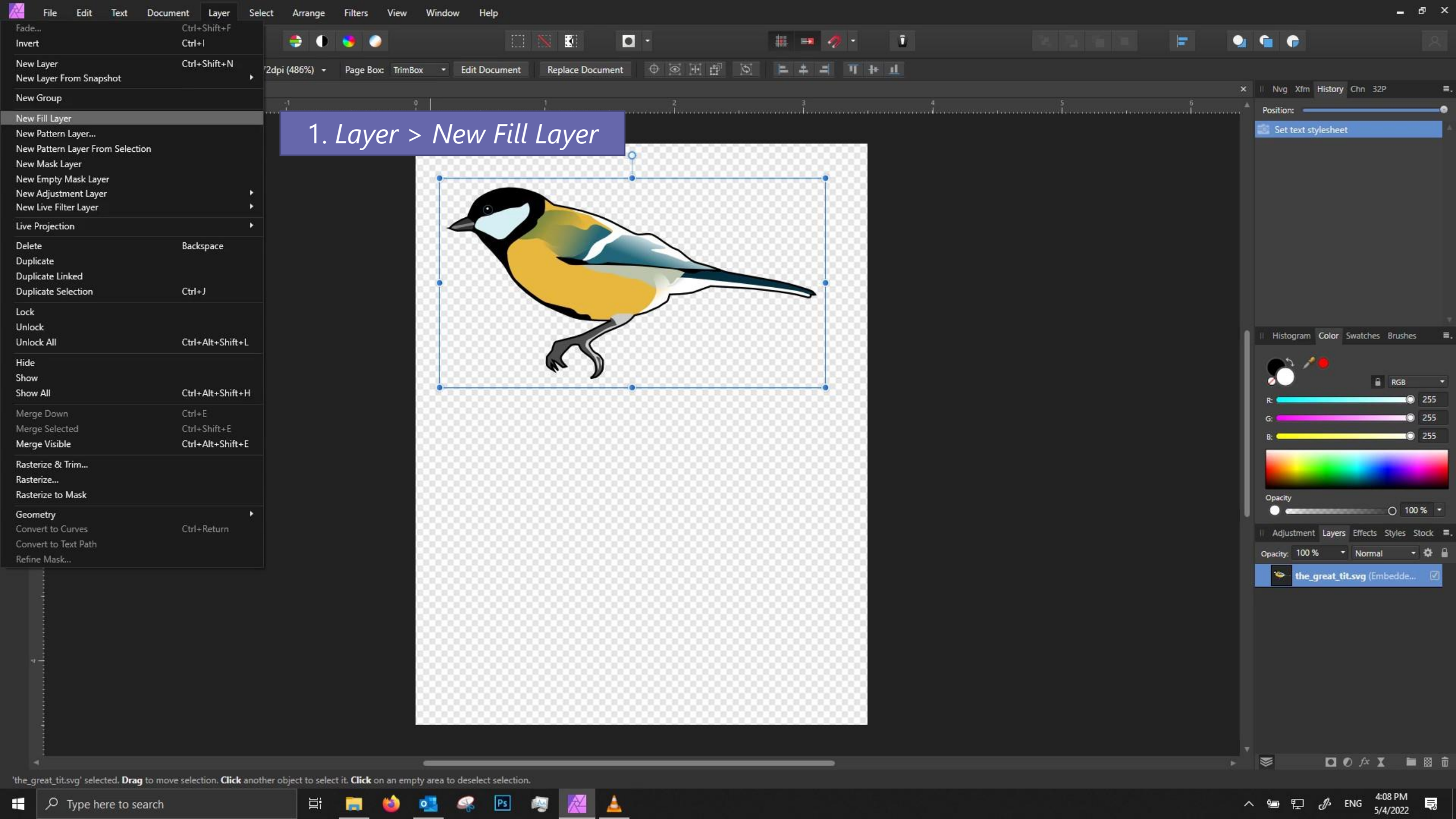



3. Shortcuts:

| | |
|---|---|
| Zoom in | *Ctrl* + = |
| Zoom out | *Ctrl* + - |
| View whole document | *Ctrl + 0* |
| Pan | Hold *Space* while clicking and dragging |

Creating a fill
layer as a
background


File Edit Text Document Layer Select Arrange Filters View Window Help
Fade... Ctrl+Shift+F
Invert Ctrl+I
New Layer Ctrl+Shift+N
New Layer From Snapshot
New Group
New Fill Layer
New Pattern Layer...
New Pattern Layer From Selection
New Mask Layer
New Empty Mask Layer
New Adjustment Layer
New Live Filter Layer
Live Projection
Delete Backspace
Duplicate
Duplicate Linked
Duplicate Selection Ctrl+J
Lock
Unlock
Unlock All Ctrl+Alt+Shift+L
Hide
Show
Show All Ctrl+Alt+Shift+H
Merge Down Ctrl+E
Merge Selected Ctrl+Shift+E
Merge Visible Ctrl+Alt+Shift+E
Rasterize & Trim...
Rasterize...
Rasterize to Mask
Geometry
Convert to Curves Ctrl+Return
Convert to Text Path
Refine Mask...
1. Layer > New Fill Layer
Page Box: TrimBox
Edit Document
Replace Document
Nvg Xfm History Chn 32P
Position:
Set text stylesheet
Histogram Color Swatches Brushes
RGB
R: 255
G: 255
B: 255
Opacity
100 %
Adjustment Layers Effects Styles Stock
Opacity: 100 %
Normal
the_great_tit.svg (Embedde...
'the_great_tit.svg' selected. Drag to move selection. Click another object to select it. Click on an empty area to deselect selection.
Type here to search
ENG
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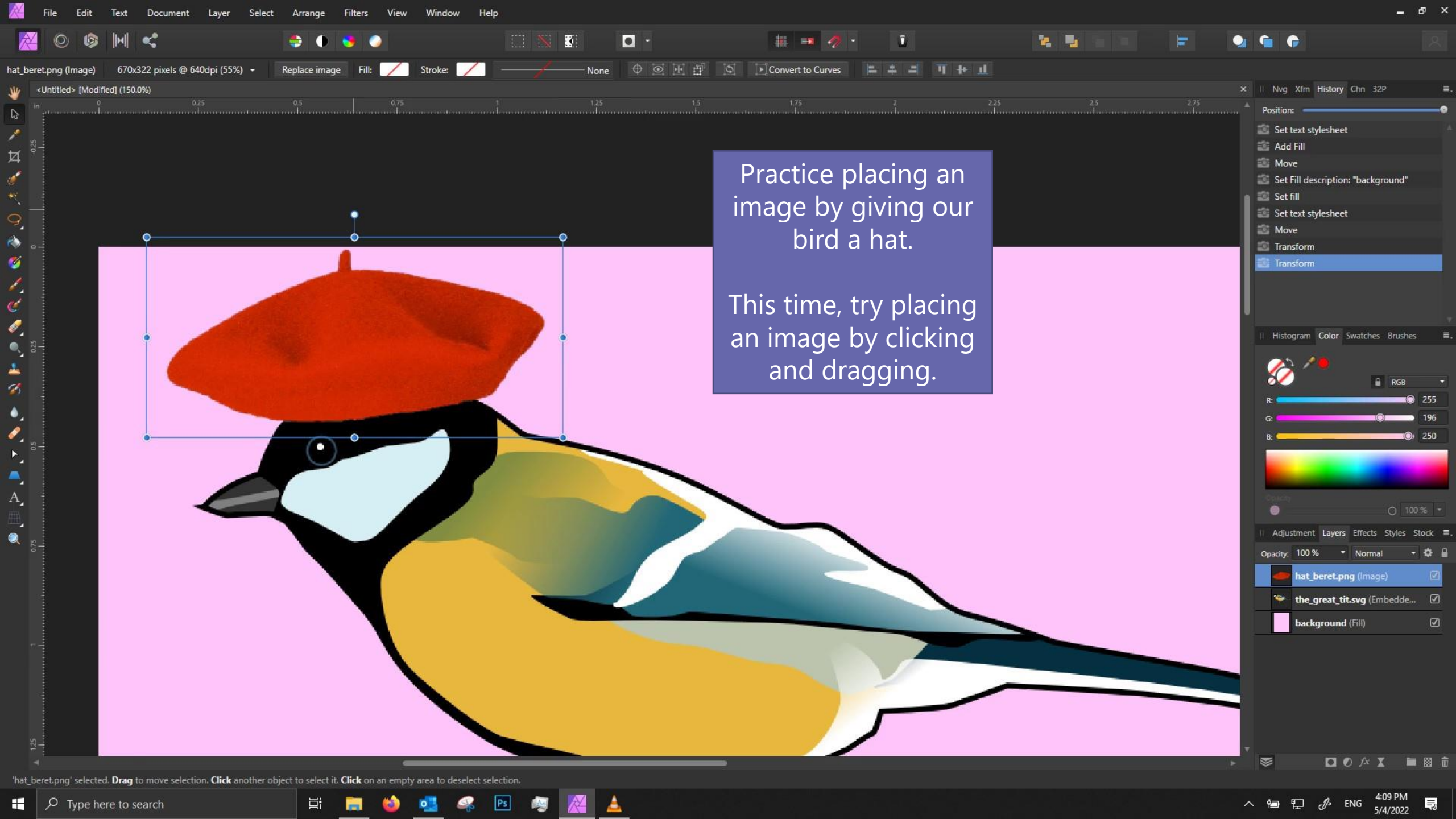
Change the color of the fill layer in the Color panel.

Move layer underneath bird layer. Rename by clicking its name.


File Edit Text Document Layer Select Arrange Filters View Window Help
hat_beret.png (Image)
670x322 pixels @ 640dpi (55%)
Replace image
Fill:
Stroke:
None
Convert to Curves
<Untitled> [Modified] (150.0%)
Practice placing an image by giving our bird a hat.
This time, try placing an image by clicking and dragging.
Nvg Xfm History Chn 32P
Position:
Set text stylesheet
Add Fill
Move
Set Fill description: "background"
Set fill
Set text stylesheet
Move
Transform
Transform
Histogram Color Swatches Brushes
RGB
R: 255
G: 196
B: 250
Opacity
100 %
Adjustment Layers Effects Styles Stock
Opacity: 100 %
Normal
hat_beret.png (Image)
the_great_tit.svg (Embedde...
background (Fill)
'hat_beret.png' selected. Drag to move selection. Click another object to select it. Click on an empty area to deselect selection.
Type here to search
ENG
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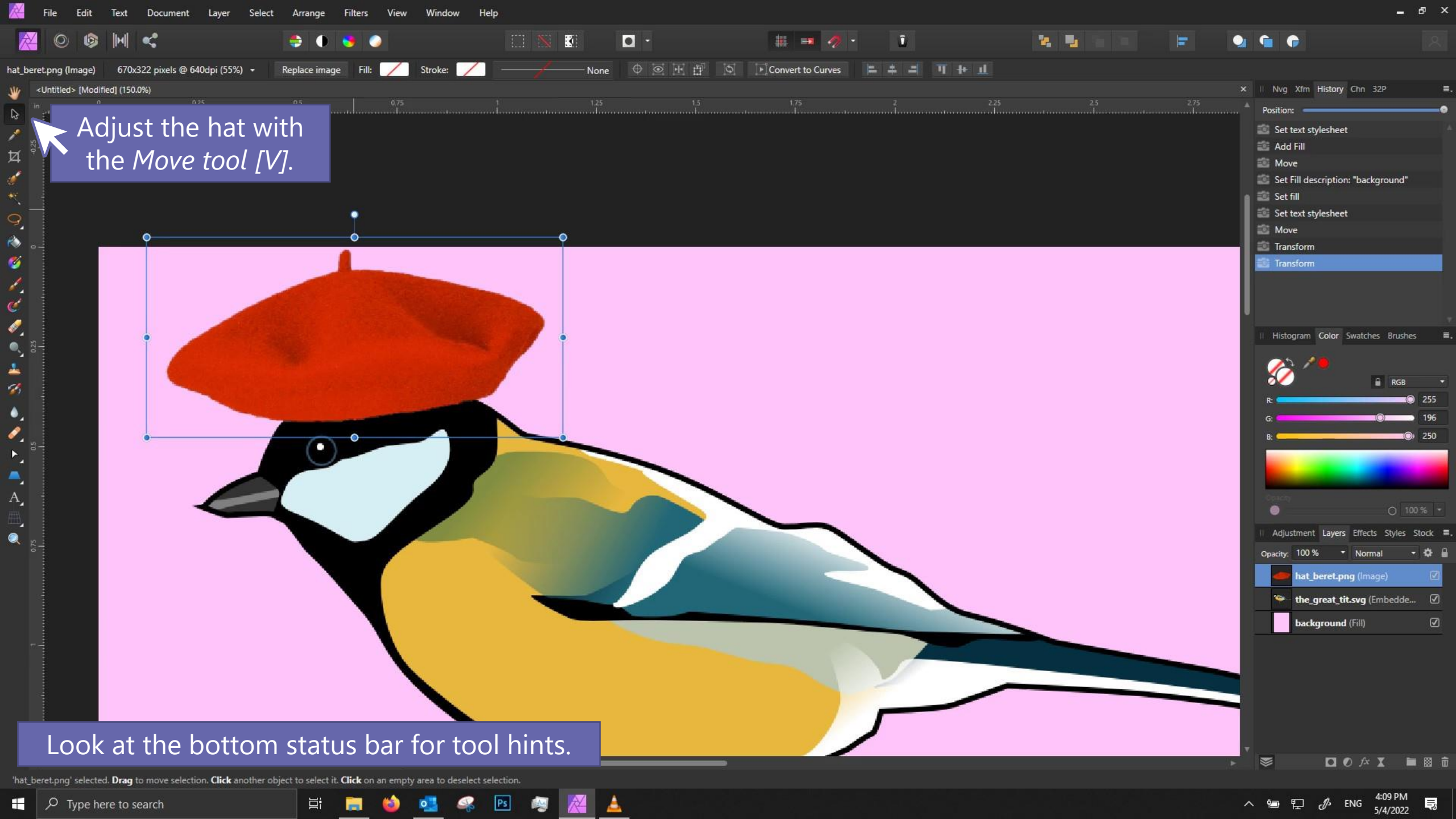
5/4/2022


File Edit Text Document Layer Select Arrange Filters View Window Help
hat_beret.png (Image) 670x322 pixels @ 640dpi (55%) Replace image Fill: Stroke: None Convert to Curves
<Untitled> [Modified] (150.0%)
Adjust the hat with the *Move tool [V]*.
Look at the bottom status bar for tool hints.
Nvg Xfm History Chn 32P
Position:
Set text stylesheet
Add Fill
Move
Set Fill description: "background"
Set fill
Set text stylesheet
Move
Transform
Transform
Histogram Color Swatches Brushes
RGB
R: 255
G: 196
B: 250
Opacity 100 %
Adjustment Layers Effects Styles Stock
Opacity: 100 % Normal
hat_beret.png (Image)
the_great_tit.svg (Embedde...
background (Fill)
'hat_beret.png' selected. Drag to move selection. Click another object to select it. Click on an empty area to deselect selection.
Type here to search
ENG
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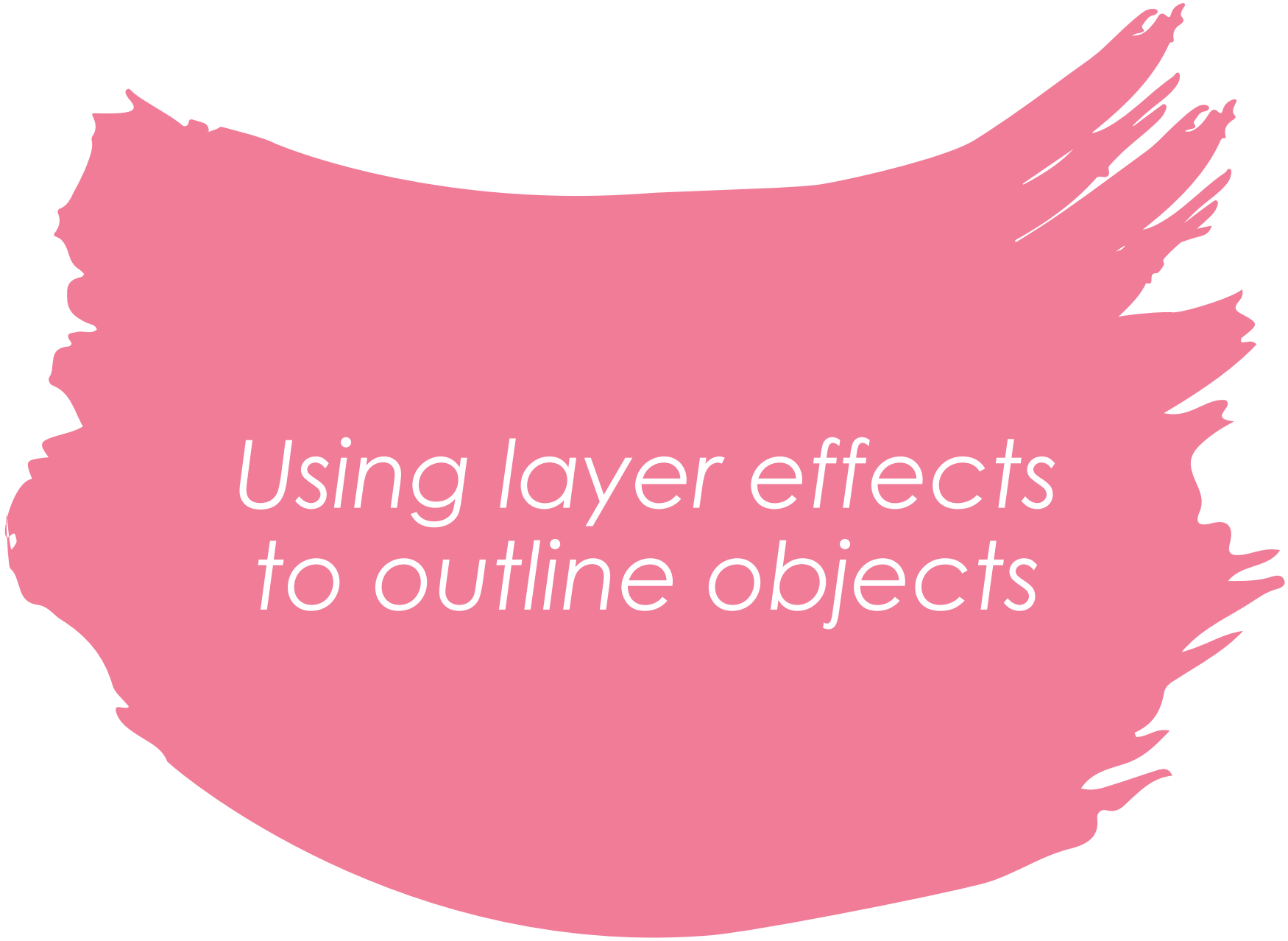
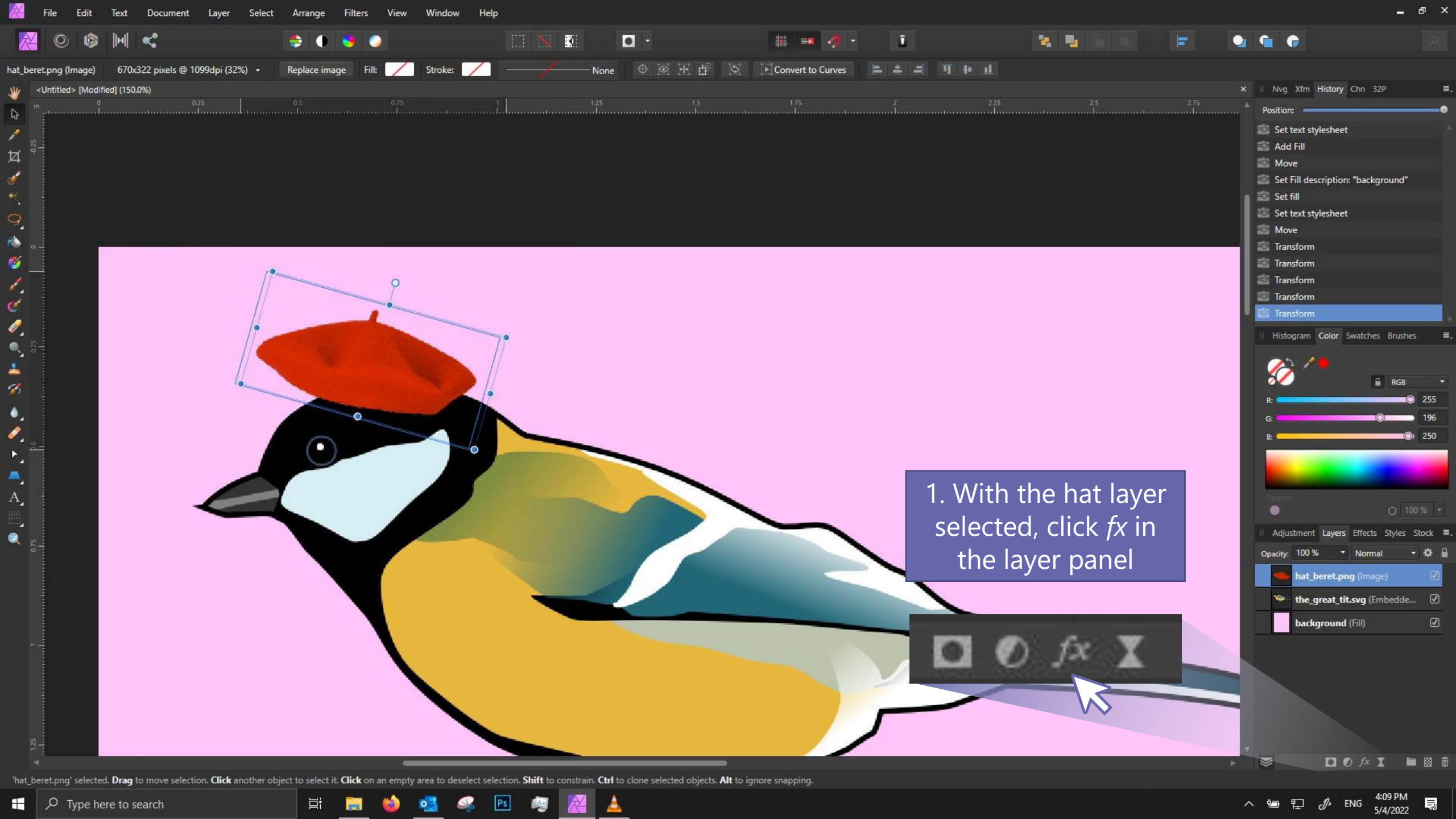
5/4/2022


Using layer effects
to outline objects


File Edit Text Document Layer Select Arrange Filters View Window Help
hat_beret.png (Image) 670x322 pixels @ 1099dpi (32%) Replace image Fill: Stroke: None Convert to Curves
<Untitled> [Modified] (150.0%)
Nvg Xfm History Chn 32P
Position:
Set text stylesheet
Add Fill
Move
Set Fill description: "background"
Set fill
Set text stylesheet
Move
Transform
Transform
Transform
Transform
Transform
Histogram Color Swatches Brushes
RGB
R: 255
G: 196
B: 250
Adjustment Layers Effects Styles Stock
Opacity: 100 % Normal
hat_beret.png (Image)
the_great_tit.svg (Embedde...
background (Fill)
1. With the hat layer selected, click fx in the layer panel
'hat_beret.png' selected. Drag to move selection. Click another object to select it. Click on an empty area to deselect selection. Shift to constrain. Ctrl to clone selected objects. Alt to ignore snapping.
Type here to search
ENG
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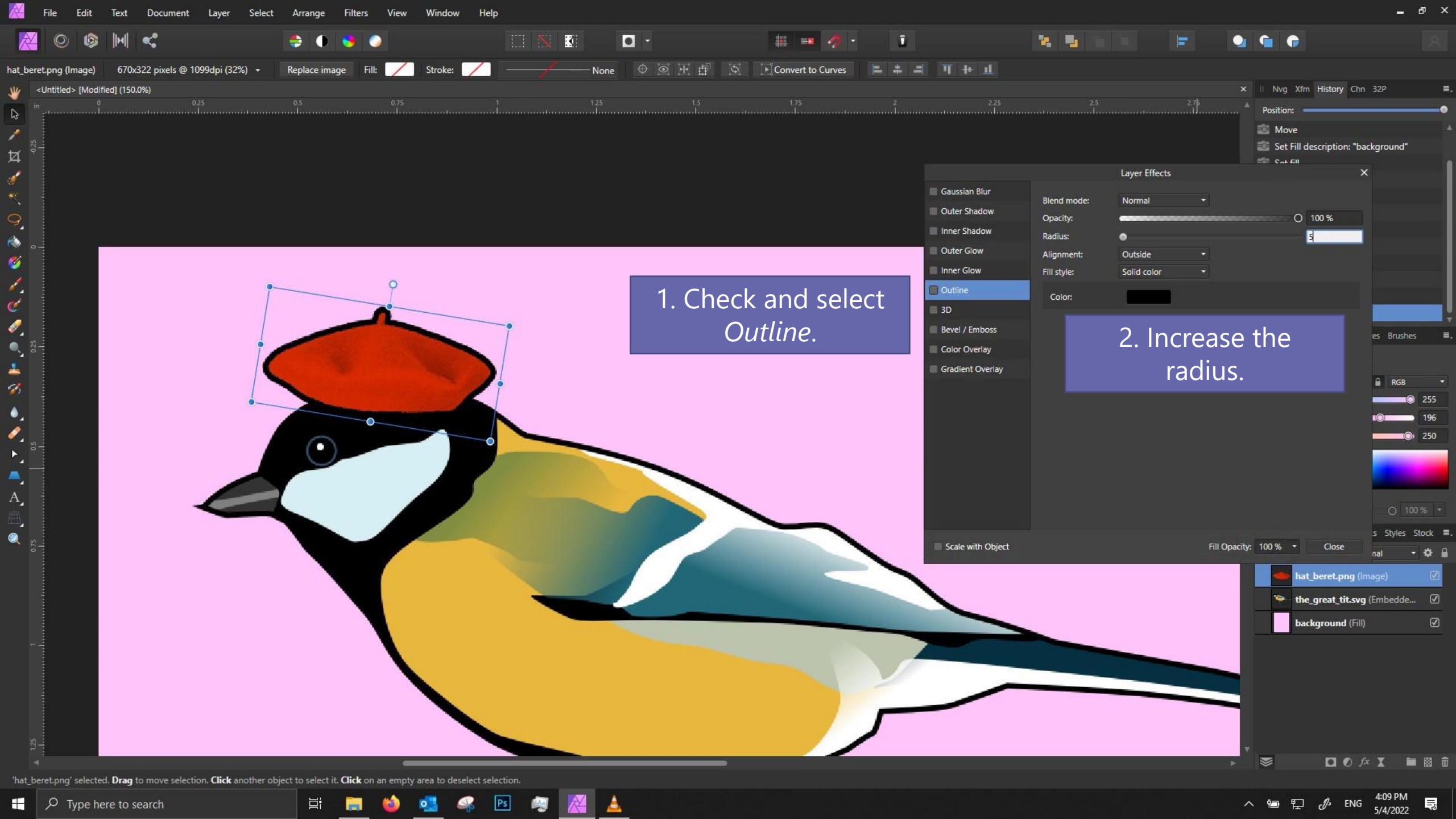
5/4/2022


File Edit Text Document Layer Select Arrange Filters View Window Help
hat_beret.png (Image)
670x322 pixels @ 1099dpi (32%)
Replace image
Fill:
Stroke:
None
Convert to Curves
<Untitled> [Modified] (150.0%)
1. Check and select *Outline*.
2. Increase the radius.
Layer Effects
Gaussian Blur
Outer Shadow
Inner Shadow
Outer Glow
Inner Glow
Outline
3D
Bevel / Emboss
Color Overlay
Gradient Overlay
Blend mode: Normal
Opacity: 100 %
Radius: 5
Alignment: Outside
Fill style: Solid color
Color:
Scale with Object
Fill Opacity: 100 %
Close
Nvg Xfm History Chn 32P
Position:
Move
Set Fill description: "background"
Brushes
RGB
255
196
250
Styles Stock
hat_beret.png (Image)
the_great_tit.svg (Embedde...
background (Fill)
'hat_beret.png' selected. Drag to move selection. Click another object to select it. Click on an empty area to deselect selection.
Type here to search
ENG
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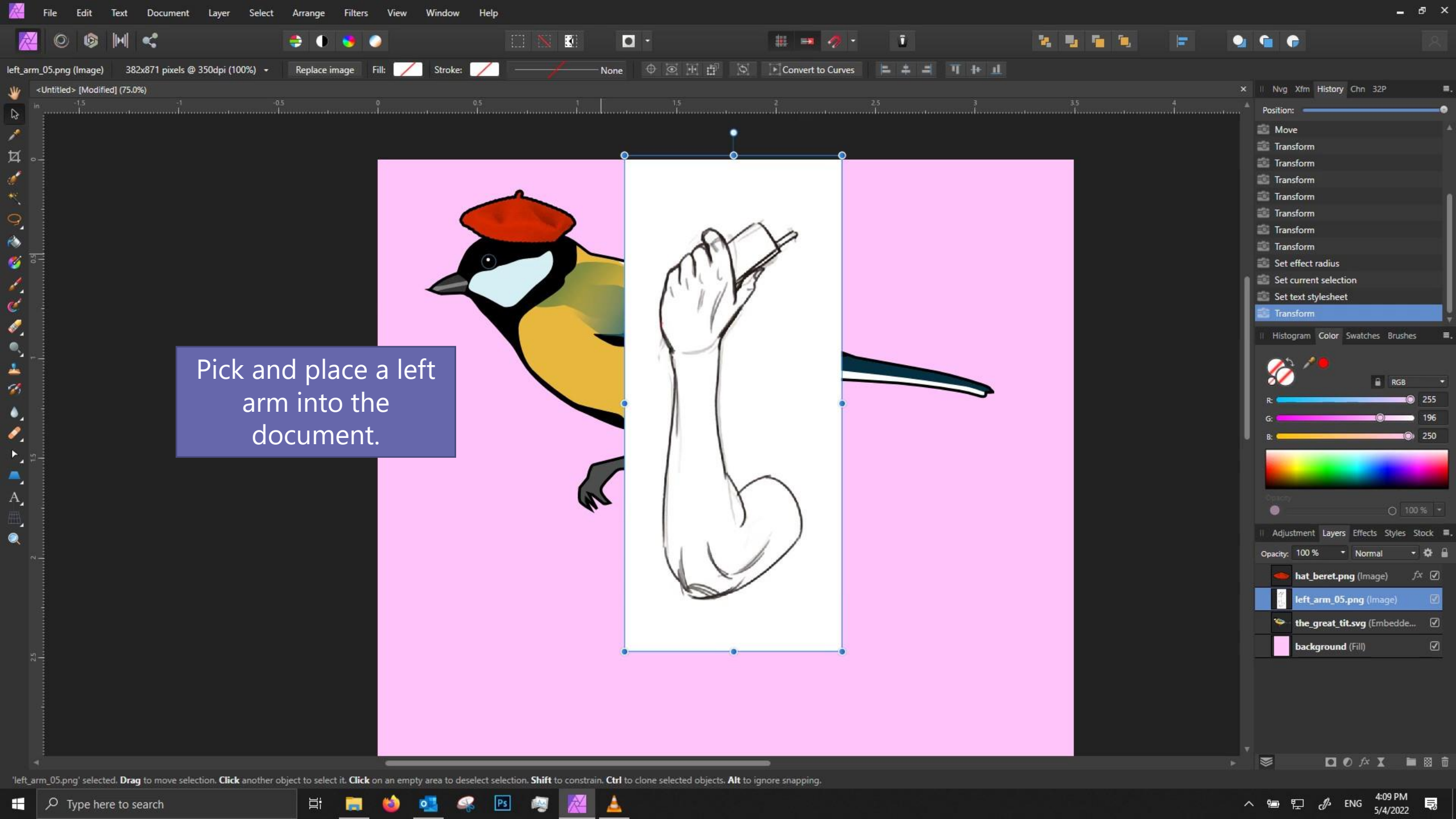
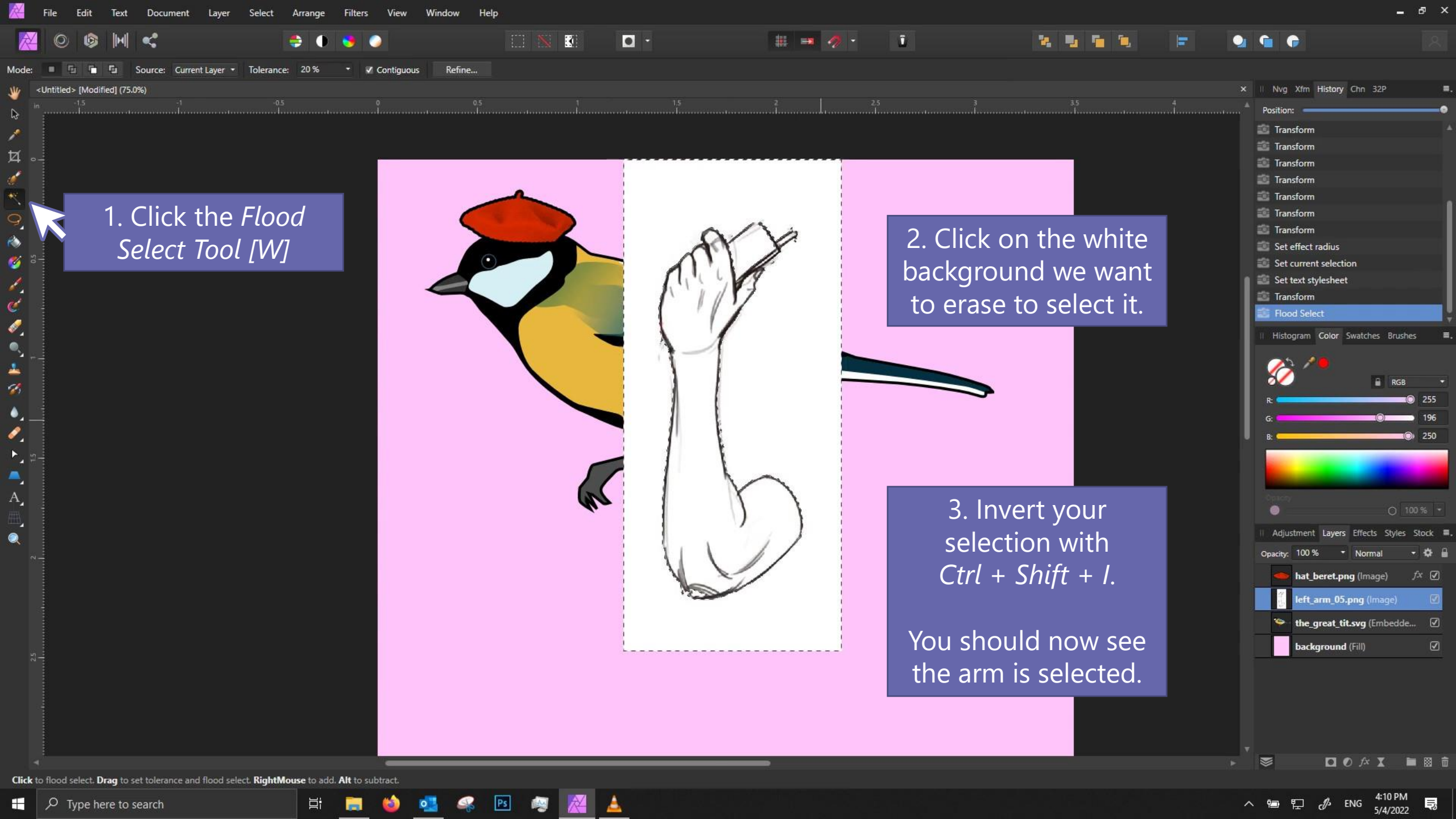
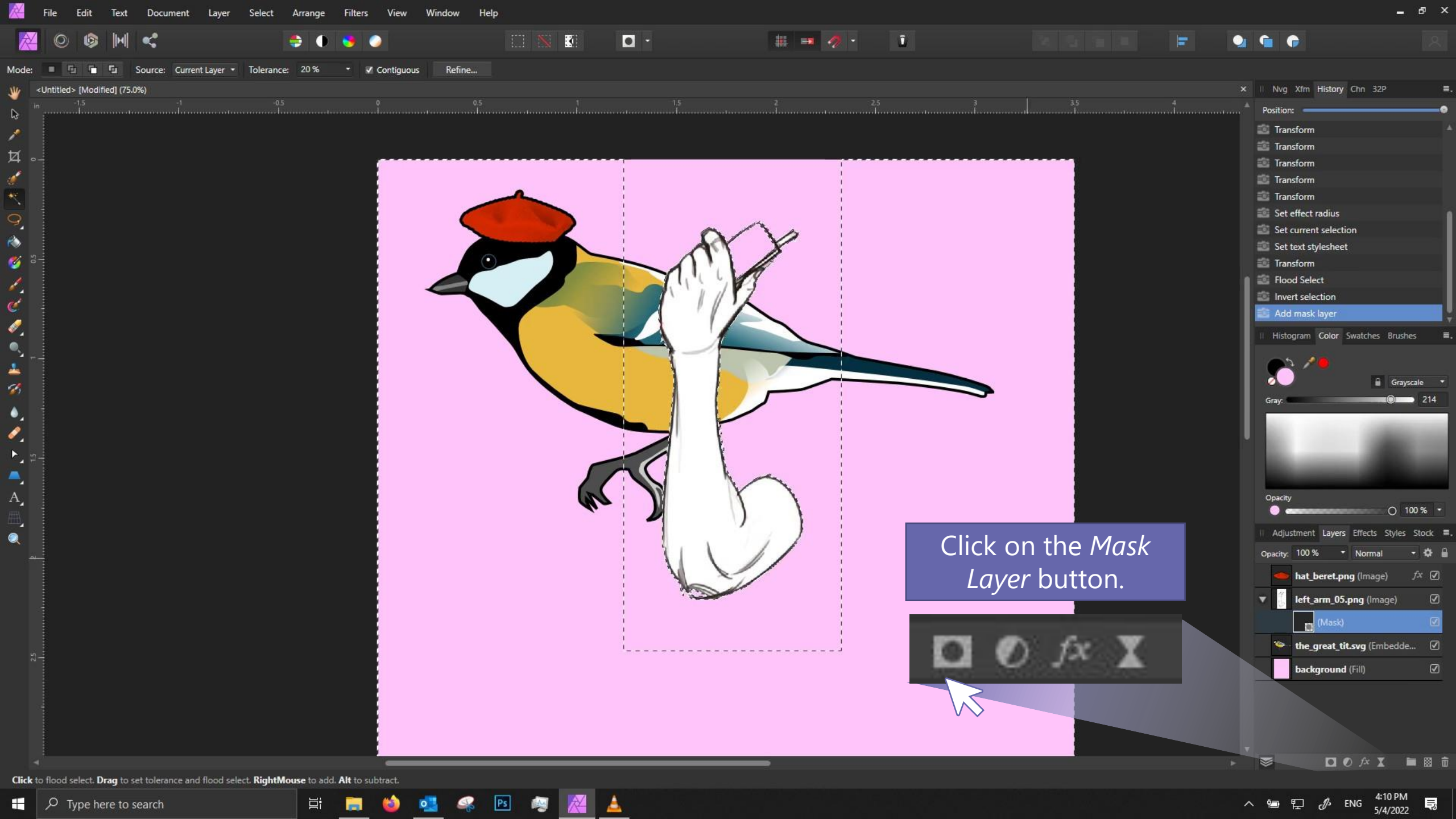
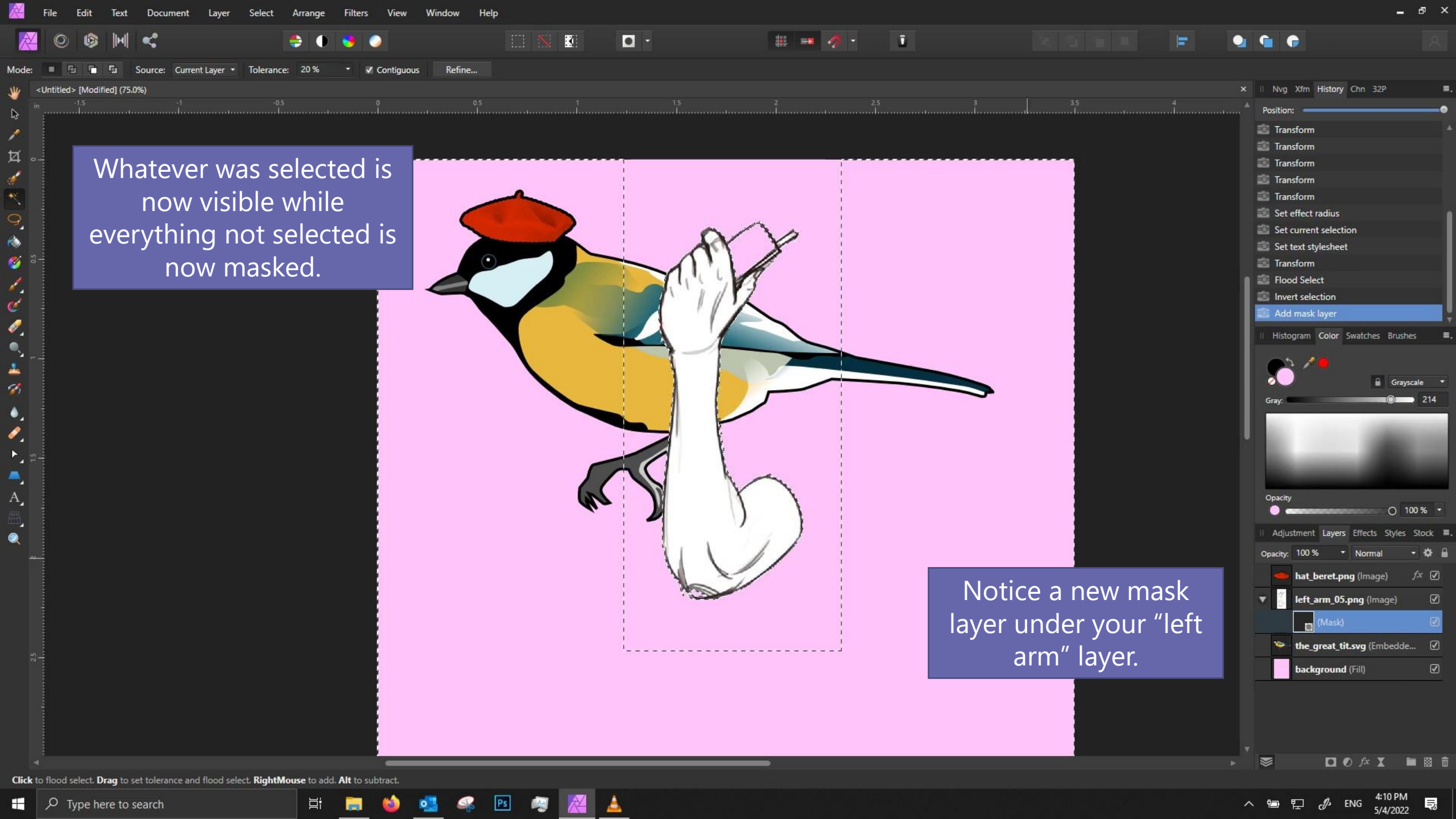
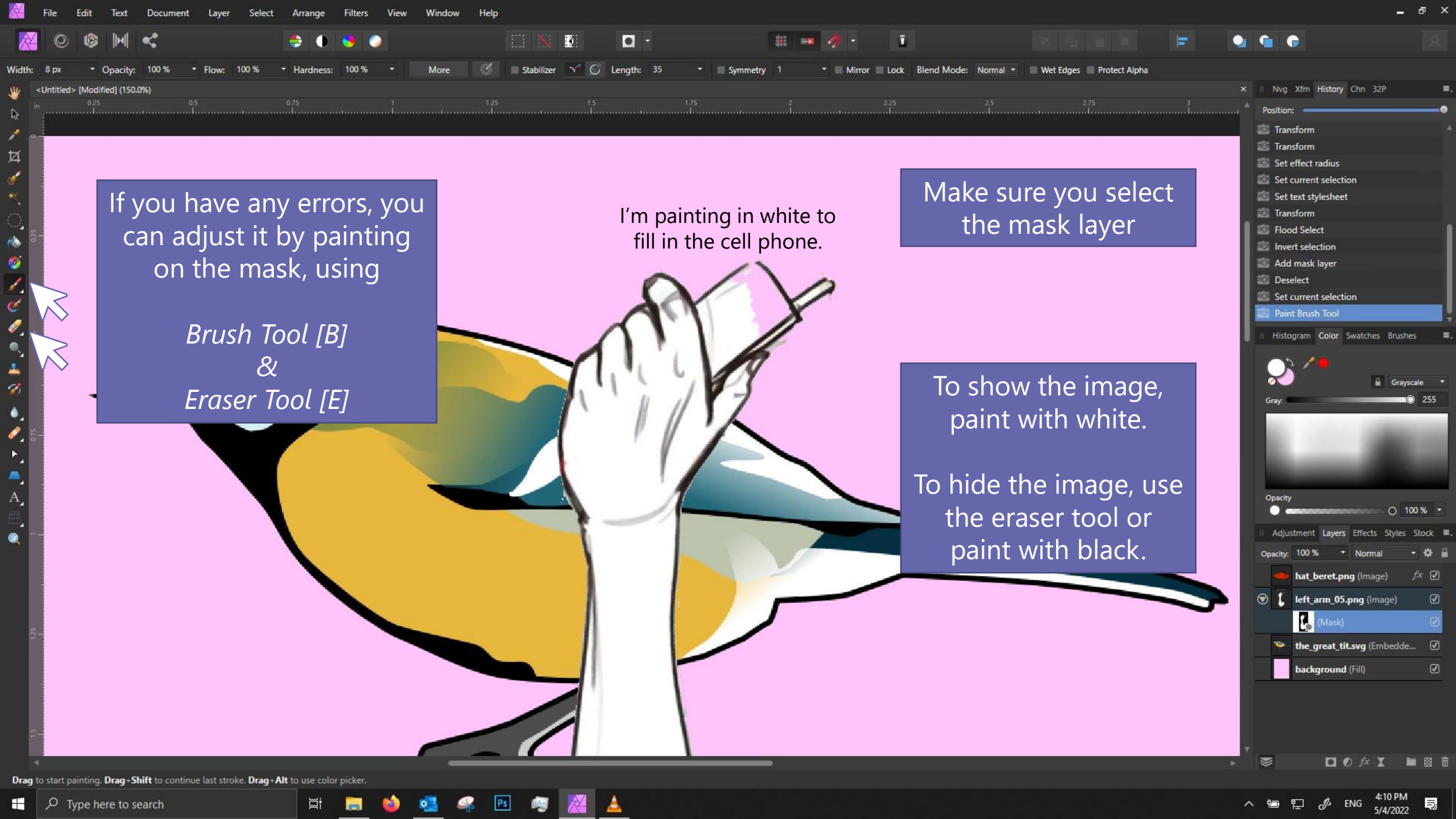
# *Removing backgrounds*
# *- PART 1 -*
# ***Flood Select** & **Mask Layers***


File Edit Text Document Layer Select Arrange Filters View Window Help
left_arm_05.png (Image)
382x871 pixels @ 350dpi (100%)
Replace image
Fill:
Stroke:
None
Convert to Curves
<Untitled> [Modified] (75.0%)
Pick and place a left arm into the document.
Nvg Xfm History Chn 32P
Position:
Move
Transform
Transform
Transform
Transform
Transform
Transform
Transform
Set effect radius
Set current selection
Set text stylesheet
Transform
Histogram Color Swatches Brushes
RGB
R: 255
G: 196
B: 250
Opacity
100 %
Adjustment Layers Effects Styles Stock
Opacity: 100 %
Normal
hat_beret.png (Image)
left_arm_05.png (Image)
the_great_tit.svg (Embedde...
background (Fill)
'left_arm_05.png' selected. Drag to move selection. Click another object to select it. Click on an empty area to deselect selection. Shift to constrain. Ctrl to clone selected objects. Alt to ignore snapping.
Type here to search
ENG
4:09 PM
5/4/2022


File Edit Text Document Layer Select Arrange Filters View Window Help
Mode: Source: Current Layer Tolerance: 20 % Contiguous Refine...
<Untitled> [Modified] (75.0%)
1. Click the Flood Select Tool [W]
2. Click on the white background we want to erase to select it.
3. Invert your selection with Ctrl + Shift + I.
You should now see the arm is selected.
Nvg Xfm History Chn 32P
Position:
Transform
Transform
Transform
Transform
Transform
Transform
Transform
Set effect radius
Set current selection
Set text stylesheet
Transform
Flood Select
Histogram Color Swatches Brushes
RGB
R: 255
G: 196
B: 250
Opacity 100 %
Adjustment Layers Effects Styles Stock
Opacity: 100 % Normal
hat_beret.png (Image)
left_arm_05.png (Image)
the_great_tit.svg (Embedde...
background (Fill)
Click to flood select. Drag to set tolerance and flood select. RightMouse to add. Alt to subtract.
Type here to search
ENG
4:10 PM
5/4/2022


File Edit Text Document Layer Select Arrange Filters View Window Help
Mode: Source: Current Layer Tolerance: 20 % Contiguous Refine...
<Untitled> [Modified] (75.0%)
Nvg Xfm History Chn 32P
Position:
Transform
Transform
Transform
Transform
Transform
Set effect radius
Set current selection
Set text stylesheet
Transform
Flood Select
Invert selection
Add mask layer
Histogram Color Swatches Brushes
Grayscale
Gray: 214
Opacity
100 %
Adjustment Layers Effects Styles Stock
Opacity: 100 % Normal
hat_beret.png (Image)
left_arm_05.png (Image)
(Mask)
the_great_tit.svg (Embedde...
background (Fill)
Click on the Mask Layer button.
Click to flood select. Drag to set tolerance and flood select. RightMouse to add. Alt to subtract.
Type here to search
ENG
4:10 PM
5/4/2022


File Edit Text Document Layer Select Arrange Filters View Window Help
Mode: Source: Current Layer Tolerance: 20 % Contiguous Refine...
<Untitled> [Modified] (75.0%)
Whatever was selected is now visible while everything not selected is now masked.
Notice a new mask layer under your “left arm” layer.
Nvg Xfm History Chn 32P
Position:
Transform
Transform
Transform
Transform
Transform
Set effect radius
Set current selection
Set text stylesheet
Transform
Flood Select
Invert selection
Add mask layer
Histogram Color Swatches Brushes
Grayscale
Gray: 214
Opacity
100 %
Adjustment Layers Effects Styles Stock
Opacity: 100 % Normal
hat_beret.png (Image)
left_arm_05.png (Image)
(Mask)
the_great_tit.svg (Embedde...
background (Fill)
Click to flood select. Drag to set tolerance and flood select. RightMouse to add. Alt to subtract.
Type here to search
ENG
4:10 PM
5/4/2022


File Edit Text Document Layer Select Arrange Filters View Window Help
Width: 8 px Opacity: 100 % Flow: 100 % Hardness: 100 % More Stabilizer Length: 35 Symmetry 1 Mirror Lock Blend Mode: Normal Wet Edges Protect Alpha
<Untitled> [Modified] (150.0%)
If you have any errors, you can adjust it by painting on the mask, using
Brush Tool [B]
&
Eraser Tool [E]
I'm painting in white to fill in the cell phone.
Make sure you select the mask layer
To show the image, paint with white.
To hide the image, use the eraser tool or paint with black.
Nvg Xfm History Chn 32P
Position:
Transform
Transform
Set effect radius
Set current selection
Set text stylesheet
Transform
Flood Select
Invert selection
Add mask layer
Deselect
Set current selection
Paint Brush Tool
Histogram Color Swatches Brushes
Grayscale
Gray: 255
Opacity
100 %
Adjustment Layers Effects Styles Stock
Opacity: 100 % Normal
hat_beret.png (Image)
left_arm_05.png (Image)
(Mask)
the_great_tit.svg (Embedde...
background (Fill)
Drag to start painting. Drag+Shift to continue last stroke. Drag+Alt to use color picker.
Type here to search
ENG
4:10 PM
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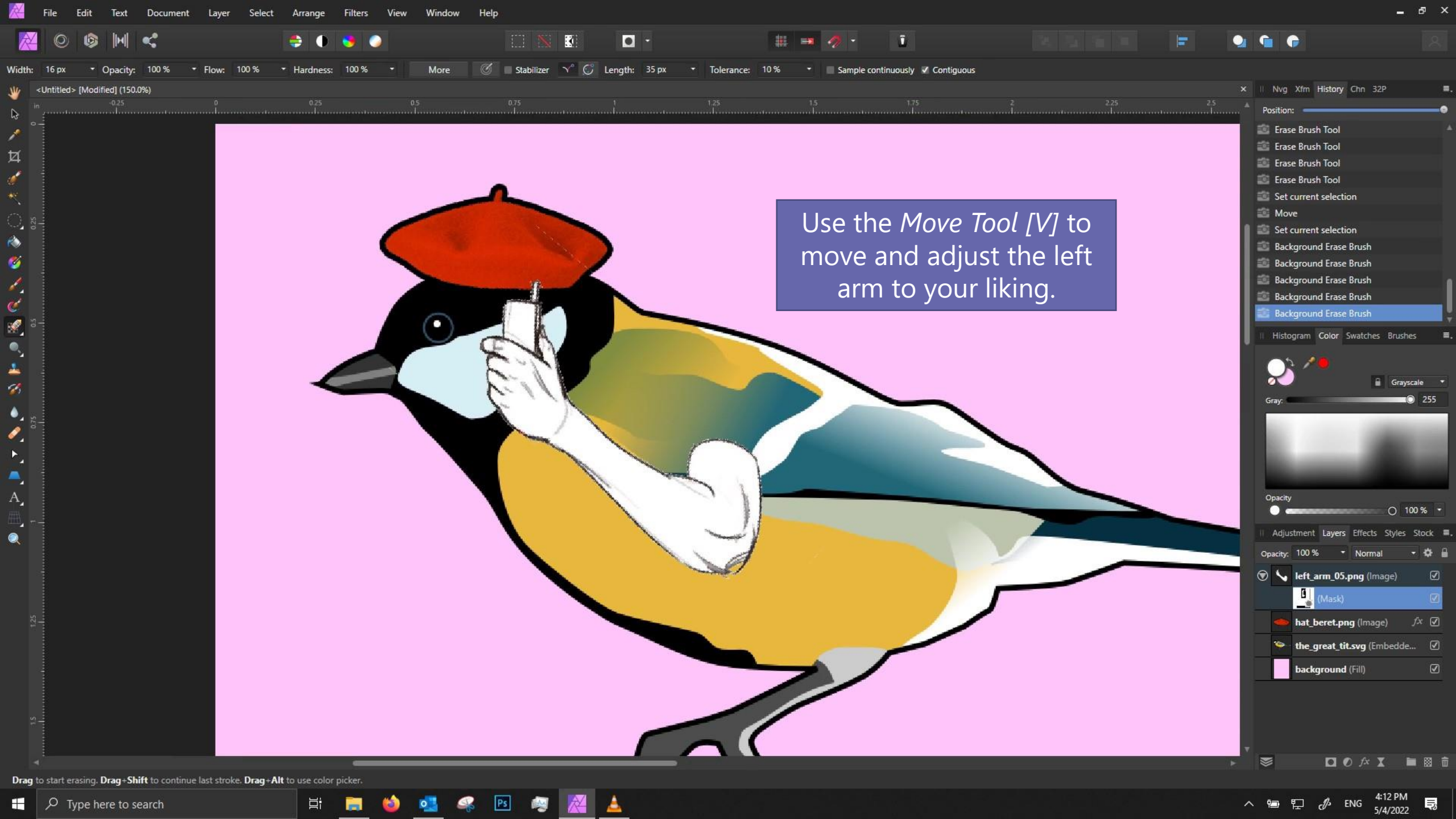
# WHY USE MASKS?

Masks are *non-destructive* editing, meaning if you want to revert a change, you can easily do it.

If you erase the image directly instead of the mask, there’s no way to get it back except by undo-ing, which can get impossible after a while.


File Edit Text Document Layer Select Arrange Filters View Window Help
Width: 16 px Opacity: 100 % Flow: 100 % Hardness: 100 % More Stabilizer Length: 35 px Tolerance: 10 % Sample continuously Contiguous
<Untitled> [Modified] (150.0%)
Use the *Move Tool [V]* to move and adjust the left arm to your liking.
Nvg Xfm History Chn 32P
Position:
Erase Brush Tool
Erase Brush Tool
Erase Brush Tool
Erase Brush Tool
Set current selection
Move
Set current selection
Background Erase Brush
Background Erase Brush
Background Erase Brush
Background Erase Brush
Background Erase Brush
Histogram Color Swatches Brushes
Grayscale
Gray: 255
Opacity
100 %
Adjustment Layers Effects Styles Stock
Opacity: 100 % Normal
left_arm_05.png (Image)
(Mask)
hat_beret.png (Image)
the_great_tit.svg (Embedde...
background (Fill)
Drag to start erasing. Drag+Shift to continue last stroke. Drag+Alt to use color picker.
Type here to search
ENG
4:12 PM
5/4/2022

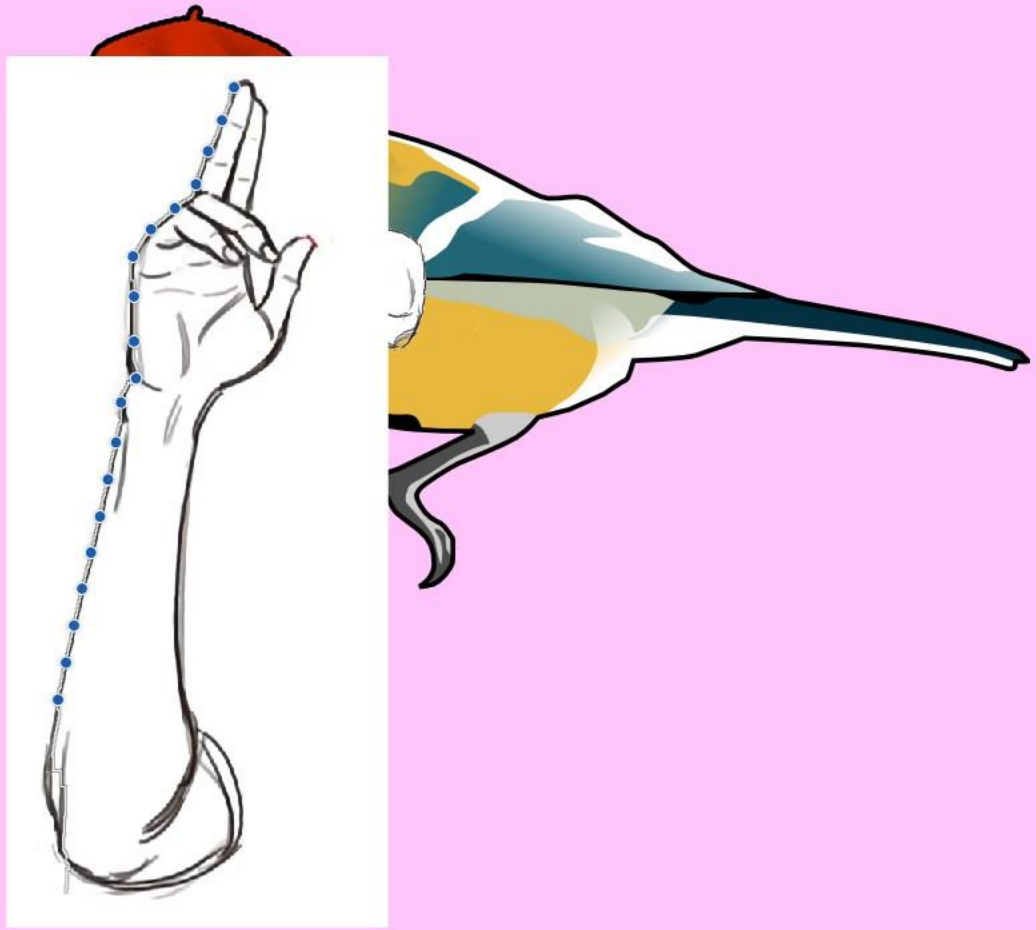
# Selection shortcuts

| | |
|---|---|
| Select all | *Ctrl + A* |
| Deselect all | *Ctrl + D* |
| Invert Selection | *Ctrl + Shift + I* |
| Select all pixels in a layer | *Ctrl + Click layer thumbnail* |

# *Removing backgrounds*
# *- PART 2 -*
# ***Lasso Select** &*
# ***Quick Mask Mode***

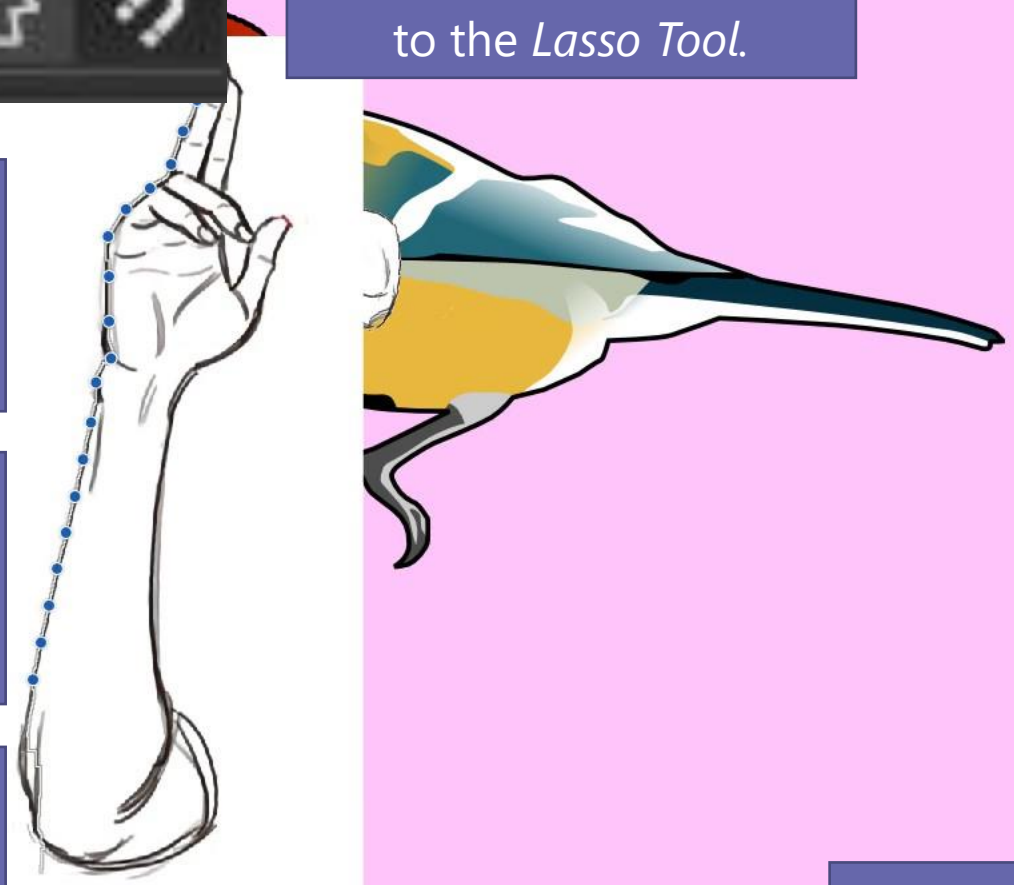
1. Choose and place a right arm into your document.

2. Select the *Lasso Tool [L]*



**Click** to add magnetic edges. **Click+Shift** to add straight edges. **Drag** to add free hand edges / move marquee. **Double-Click** to close the selection.

There are three modes to the *Lasso Tool*.

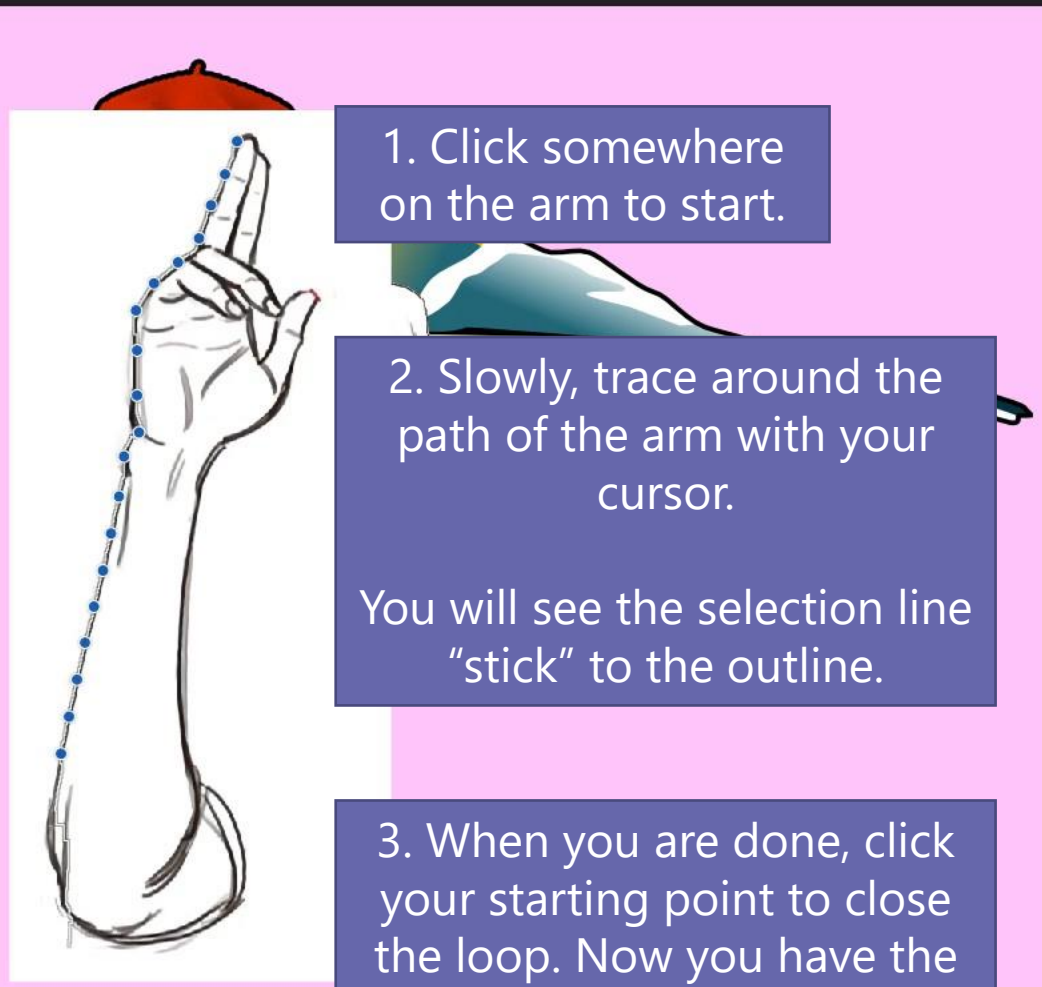


**1. Freehand**
Not recommended unless you have a touchscreen or tablet.

**2. Polyline**
Creates a polygon with vertices at your click points.

**3. Magnetic**
Draws a selection line between areas of high contrast.

Let's use the Magnetic mode.



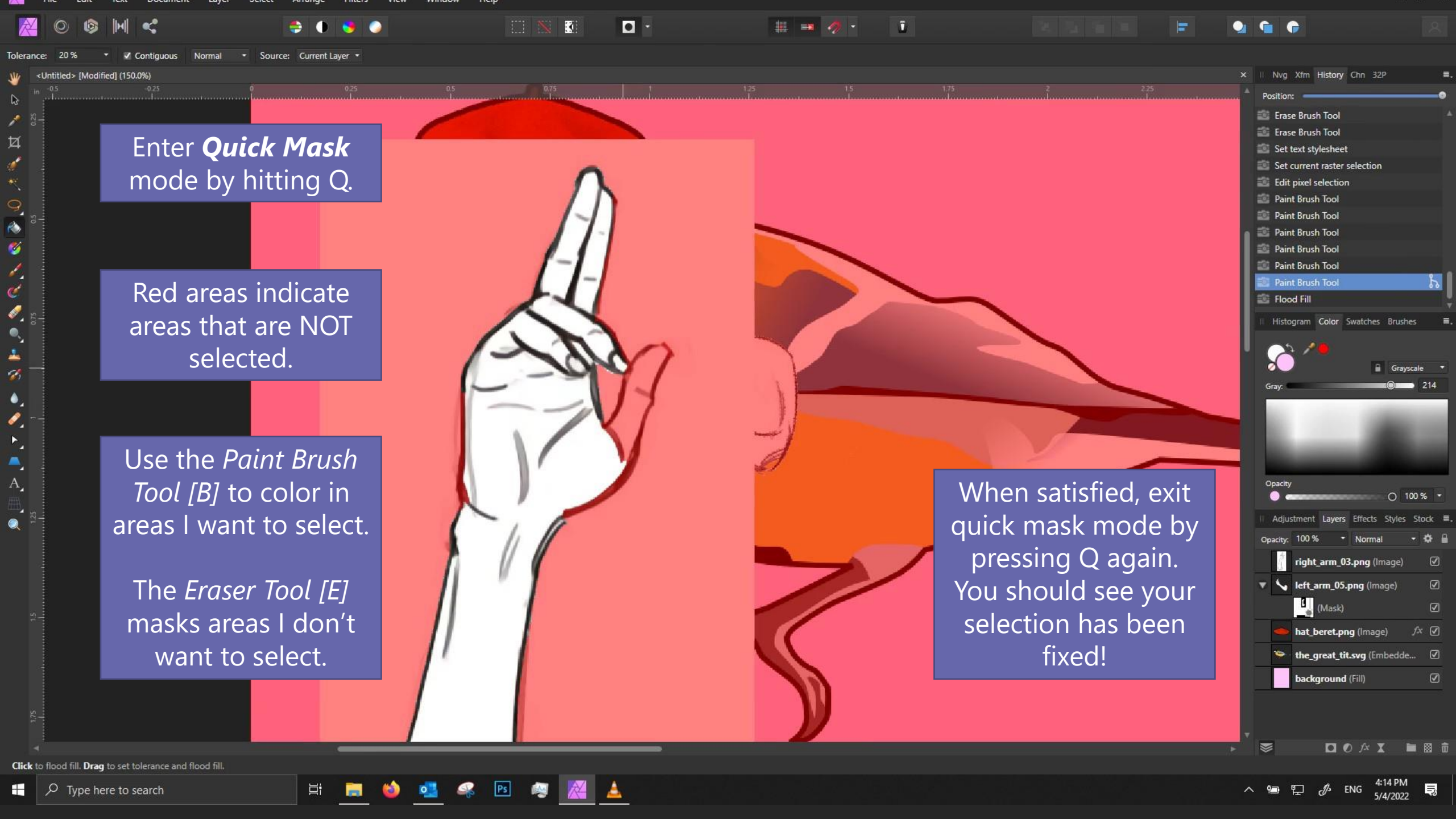
1. Click somewhere on the arm to start.

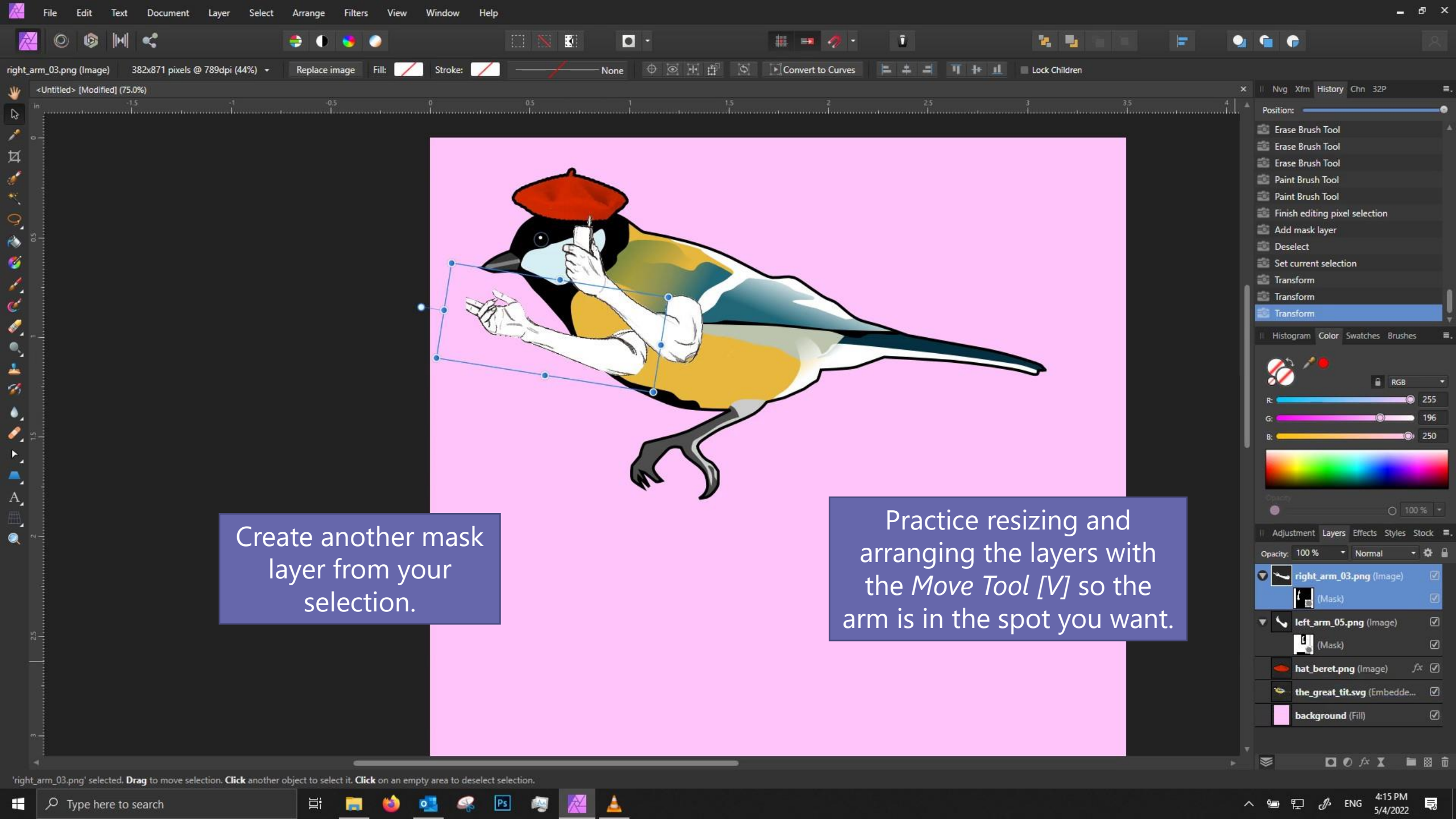
2. Slowly, trace around the path of the arm with your cursor.

You will see the selection line “stick” to the outline.

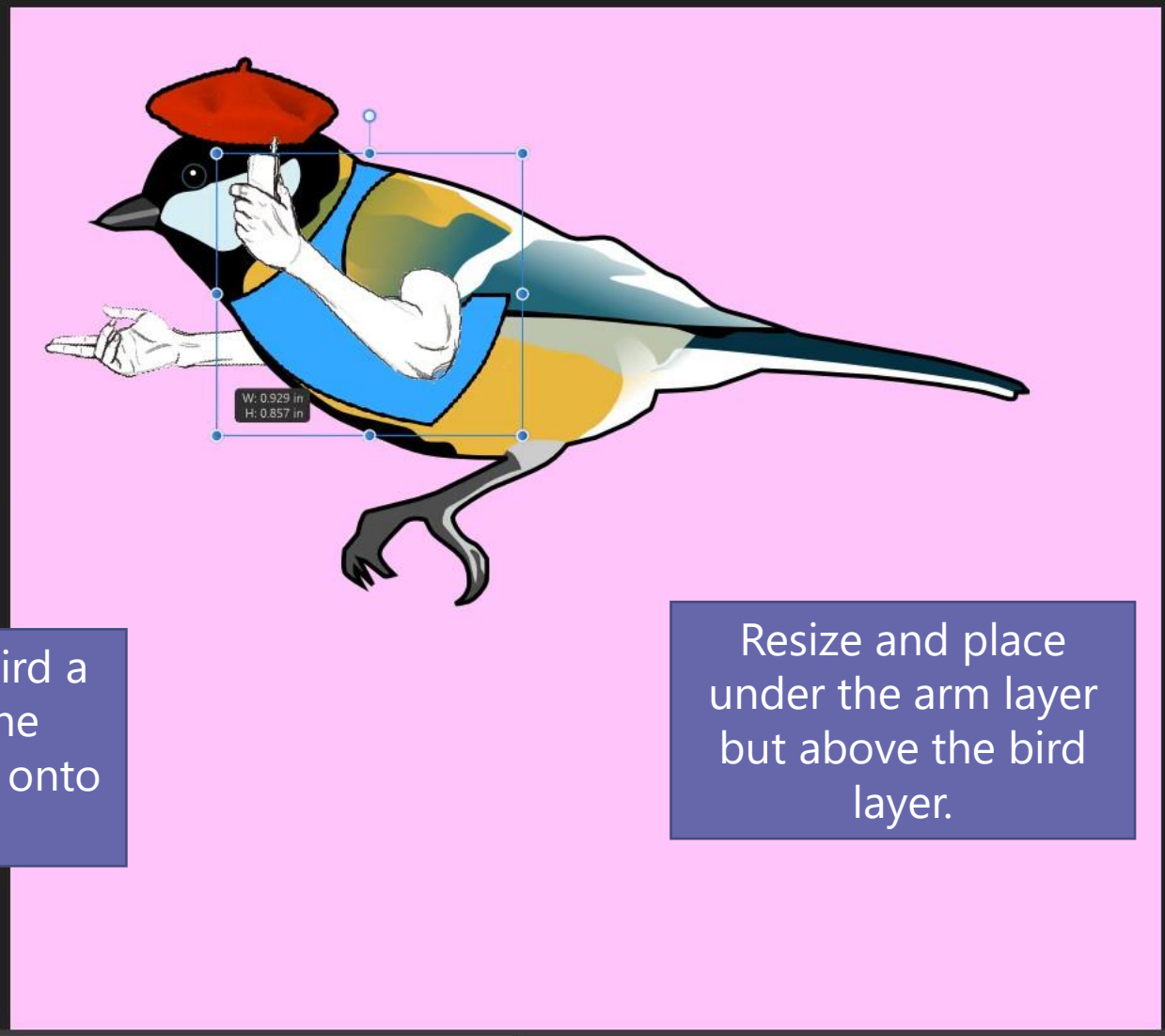
3. When you are done, click your starting point to close the loop. Now you have the arm selected.

But wait! It’s not perfect! How do I fix this?


Enter ***Quick Mask*** mode by hitting Q.
Red areas indicate areas that are NOT selected.
Use the *Paint Brush Tool [B]* to color in areas I want to select.
The *Eraser Tool [E]* masks areas I don't want to select.
When satisfied, exit quick mask mode by pressing Q again. You should see your selection has been fixed!


File Edit Text Document Layer Select Arrange Filters View Window Help
right_arm_03.png (Image) 382x871 pixels @ 789dpi (44%) Replace image Fill: Stroke: None Convert to Curves Lock Children
<Untitled> [Modified] (75.0%)
Create another mask layer from your selection.
Practice resizing and arranging the layers with the *Move Tool [V]* so the arm is in the spot you want.
Erase Brush Tool
Erase Brush Tool
Erase Brush Tool
Paint Brush Tool
Paint Brush Tool
Finish editing pixel selection
Add mask layer
Deselect
Set current selection
Transform
Transform
Transform
right_arm_03.png (Image)
(Mask)
left_arm_05.png (Image)
(Mask)
hat_beret.png (Image)
the_great_tit.svg (Embedde...
background (Fill)
'right_arm_03.png' selected. Drag to move selection. Click another object to select it. Click on an empty area to deselect selection.
Type here to search
ENG
4:15 PM
5/4/2022

# *Changing colors with adjustment layers*




Let's give our bird a shirt. Place the "bird_shirt.png" onto our bird.

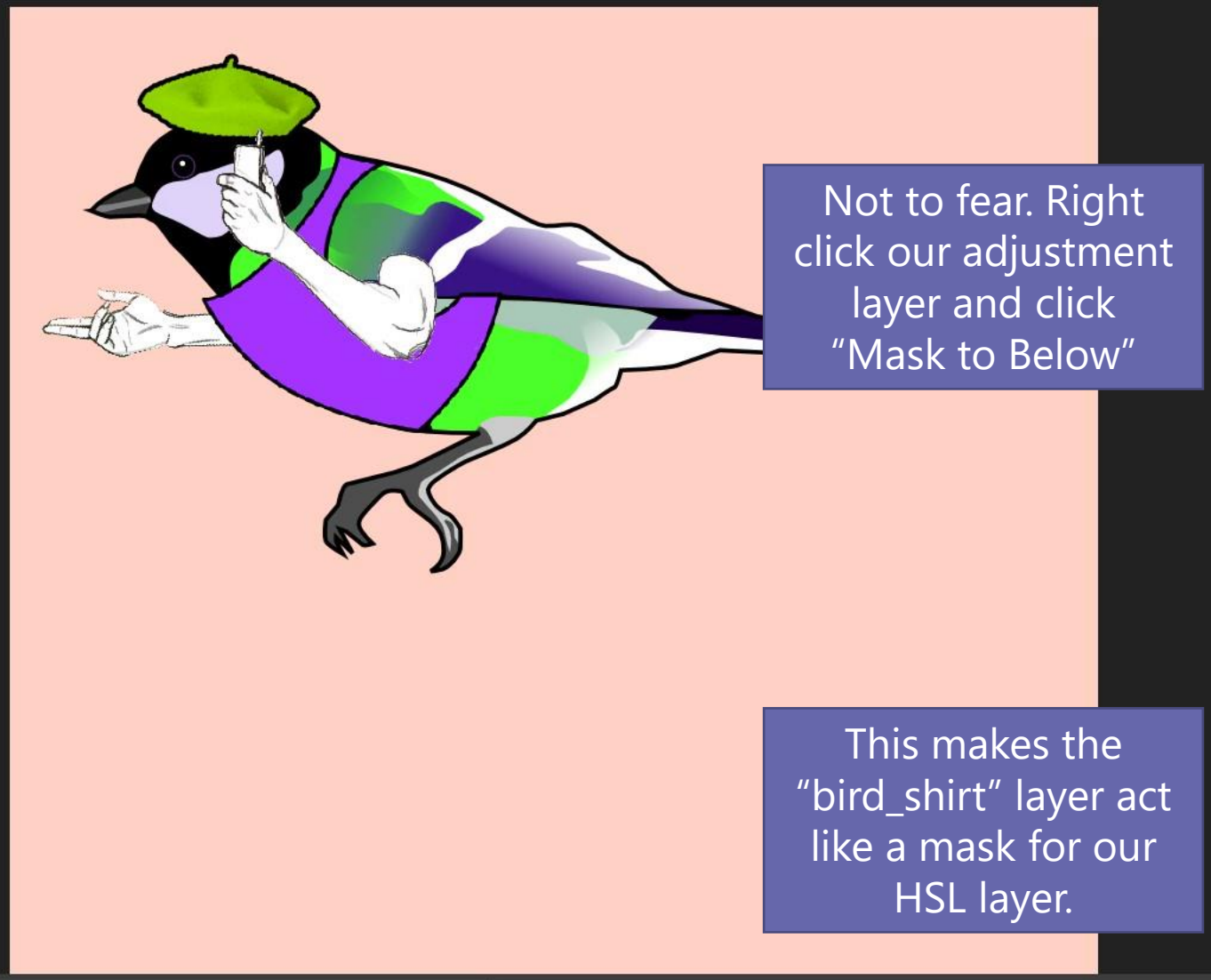
Resize and place under the arm layer but above the bird layer.

Let's change the shirt color with an adjustment layer.

1. Press *Ctrl* + *Shift* + *U* to create a new HSL shift adjustment layer.
(Hue, Saturation, Luminosity)

2. Play with the sliders until you get the color you want

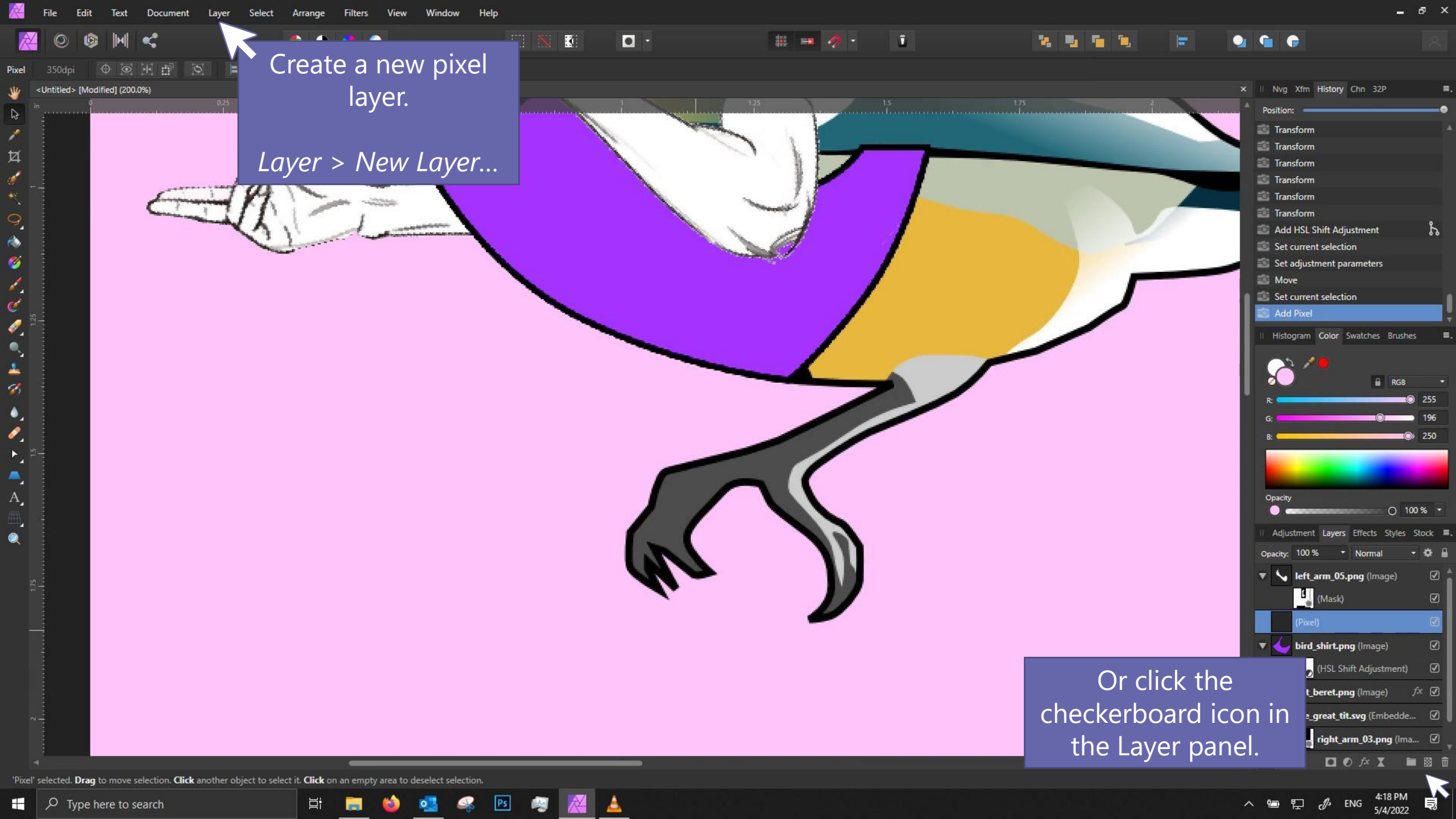
Oh no! This changes our WHOLE image.

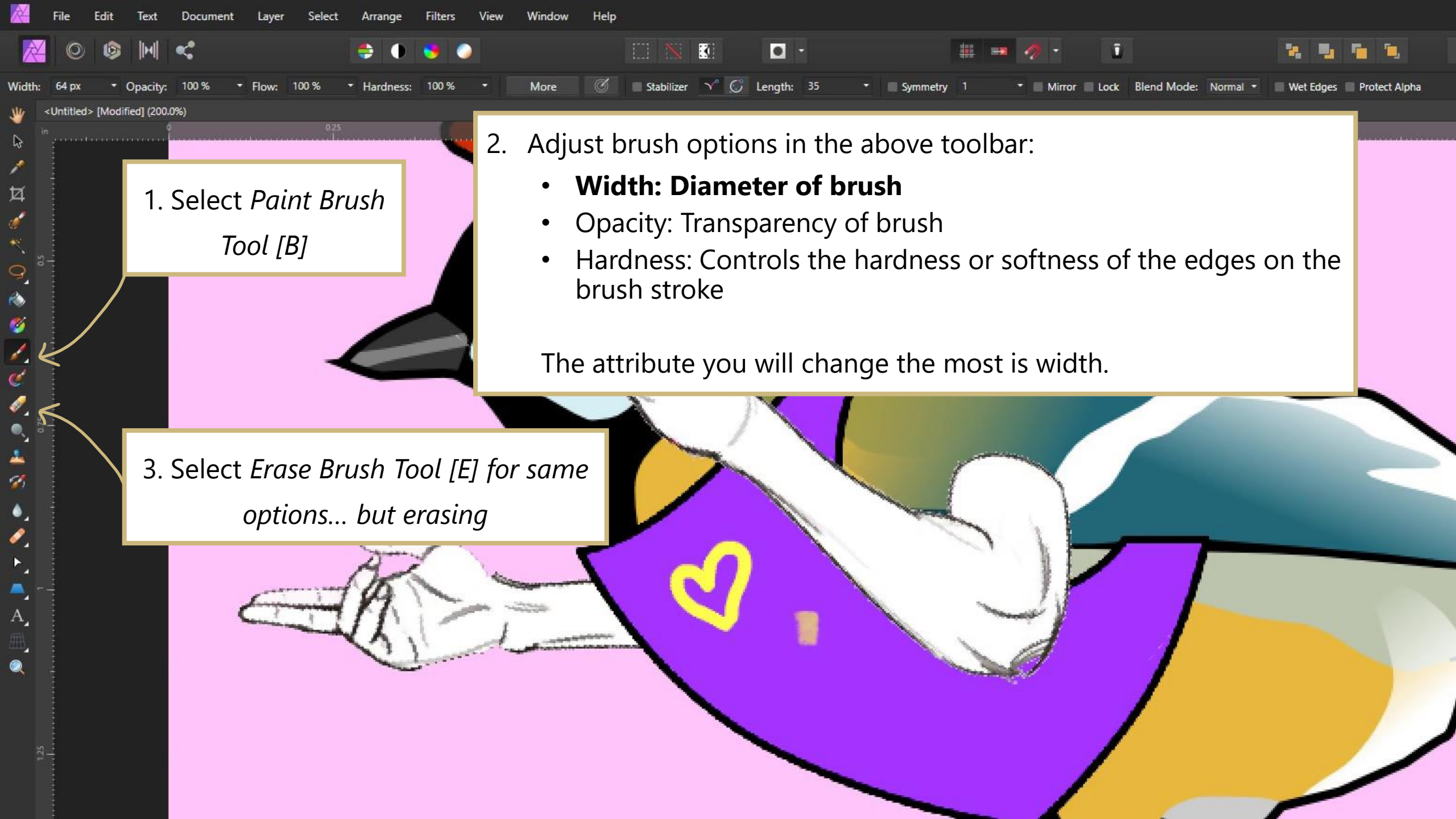


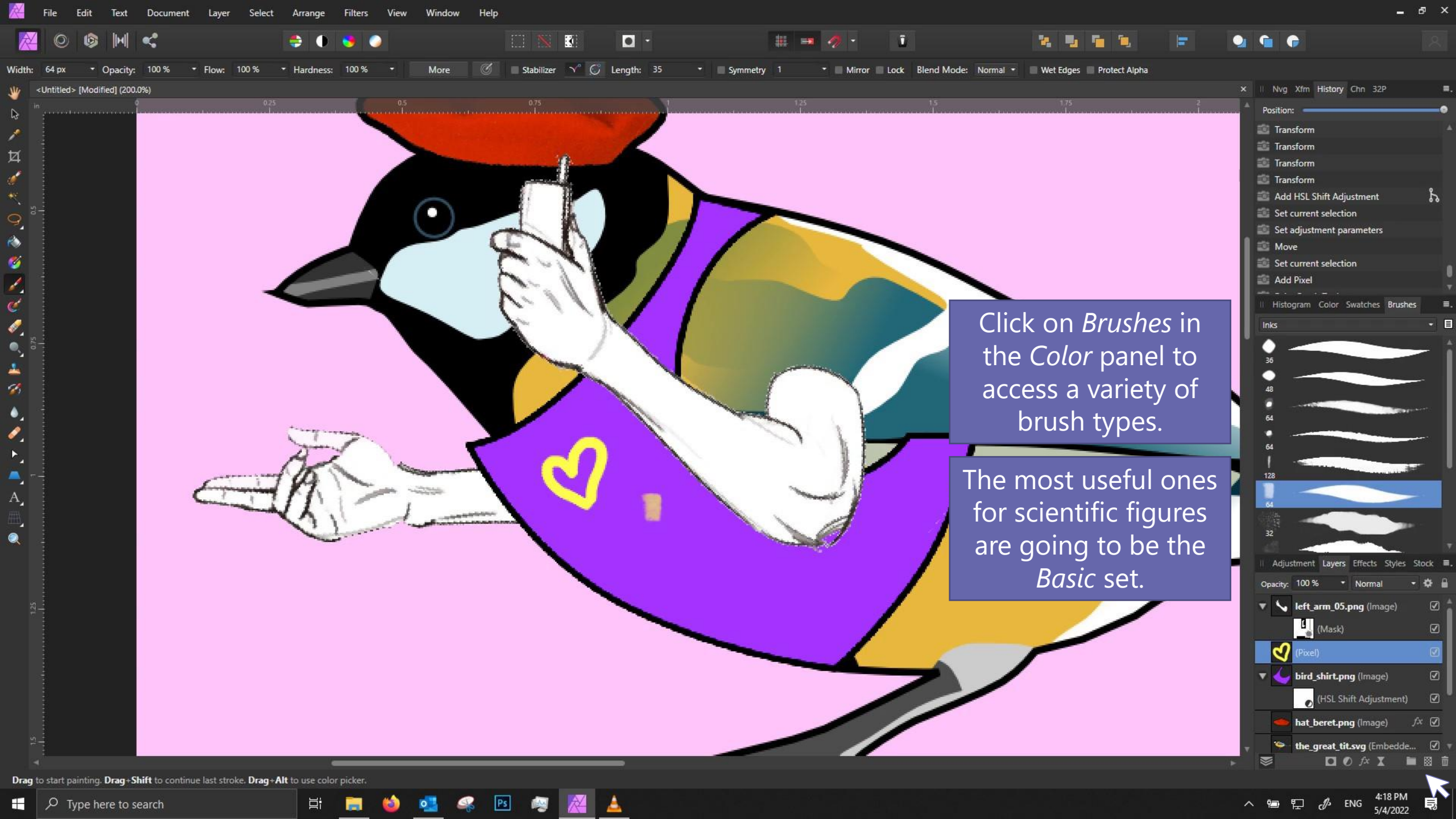
Not to fear. Right click our adjustment layer and click “Mask to Below”

This makes the “bird_shirt” layer act like a mask for our HSL layer.

# *Drawing and erasing*

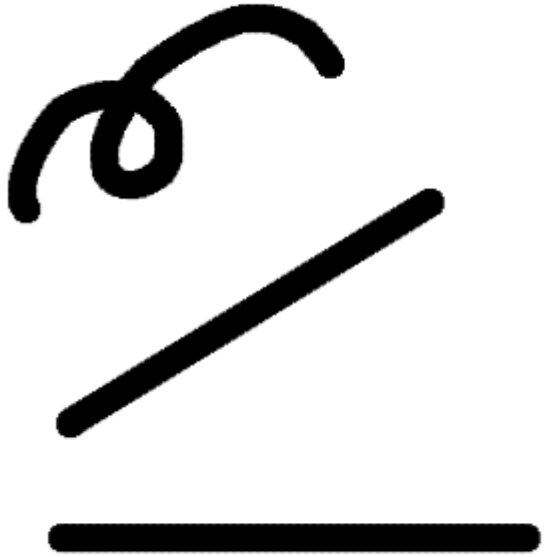

File
Edit
Text
Document
Layer
Select
Arrange
Filters
View
Window
Help
Create a new pixel layer.
Layer > New Layer...
<Untitled> [Modified] (200.0%)
Nvg
Xfm
History
Chn
32P
Position:
Transform
Transform
Transform
Transform
Transform
Transform
Add HSL Shift Adjustment
Set current selection
Set adjustment parameters
Move
Set current selection
Add Pixel
Histogram
Color
Swatches
Brushes
RGB
R: 255
G: 196
B: 250
Opacity
100 %
Adjustment
Layers
Effects
Styles
Stock
Opacity: 100 %
Normal
left_arm_05.png (Image)
(Mask)
(Pixel)
bird_shirt.png (Image)
(HSL Shift Adjustment)
t_beret.png (Image)
e_great_tit.svg (Embedde...
right_arm_03.png (Ima...
Or click the checkerboard icon in the Layer panel.
'Pixel' selected. Drag to move selection. Click another object to select it. Click on an empty area to deselect selection.
Type here to search
ENG
4:18 PM
5/4/2022


File Edit Text Document Layer Select Arrange Filters View Window Help
Width: 64 px Opacity: 100 % Flow: 100 % Hardness: 100 % More Stabilizer Length: 35 Symmetry 1 Mirror Lock Blend Mode: Normal Wet Edges Protect Alpha
<Untitled> [Modified] (200.0%)
1. Select *Paint Brush Tool [B]*
2. Adjust brush options in the above toolbar:
- **Width: Diameter of brush**
- Opacity: Transparency of brush
- Hardness: Controls the hardness or softness of the edges on the brush stroke
The attribute you will change the most is width.
3. Select *Erase Brush Tool [E] for same options… but erasing*

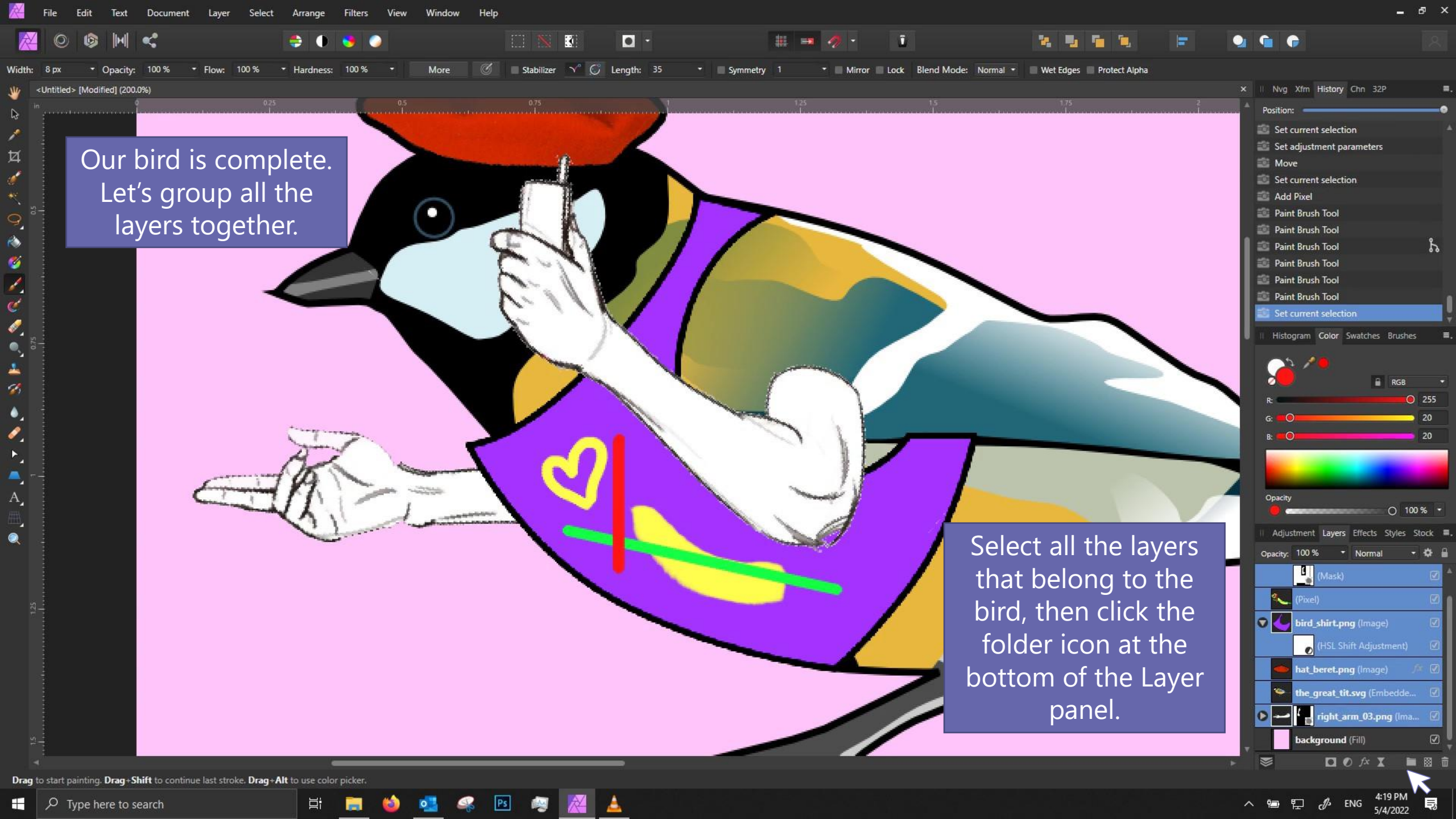

File Edit Text Document Layer Select Arrange Filters View Window Help
Width: 64 px Opacity: 100 % Flow: 100 % Hardness: 100 % More Stabilizer Length: 35 Symmetry 1 Mirror Lock Blend Mode: Normal Wet Edges Protect Alpha
<Untitled> [Modified] (200.0%)
Nvg Xfm History Chn 32P
Position:
Transform
Transform
Transform
Transform
Add HSL Shift Adjustment
Set current selection
Set adjustment parameters
Move
Set current selection
Add Pixel
Histogram Color Swatches Brushes
Inks
36
48
64
64
128
64
32
Adjustment Layers Effects Styles Stock
Opacity: 100 % Normal
left_arm_05.png (Image)
(Mask)
(Pixel)
bird_shirt.png (Image)
(HSL Shift Adjustment)
hat_beret.png (Image)
the_great_tit.svg (Embedde...
Click on Brushes in the Color panel to access a variety of brush types.
The most useful ones for scientific figures are going to be the Basic set.
Drag to start painting. Drag+Shift to continue last stroke. Drag+Alt to use color picker.
Type here to search
ENG
4:18 PM
5/4/2022

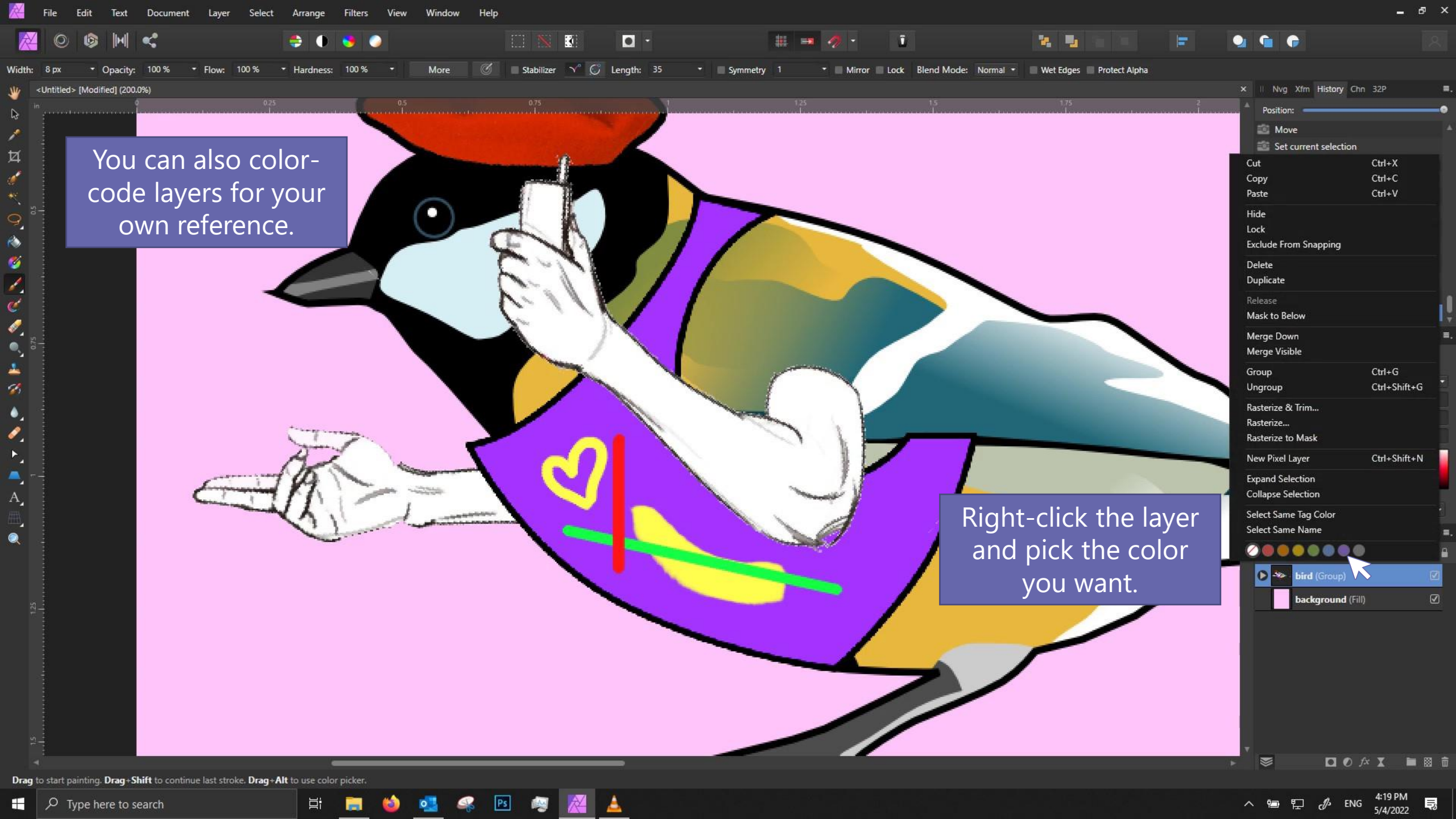
# Drawing tips

1. When drawing with a mouse, zoom in and go slowly.
2. For straight lines
    - Click once at your starting position.
    - Hold shift, then click & release at your ending position.
3. For perfectly horizontal/vertical lines
    - Click and hold
    - Hold shift, then drag your cursor vertically/horizontally.
    - Release when done!



Layer
management


File Edit Text Document Layer Select Arrange Filters View Window Help
Width: 8 px Opacity: 100 % Flow: 100 % Hardness: 100 % More Stabilizer Length: 35 Symmetry 1 Mirror Lock Blend Mode: Normal Wet Edges Protect Alpha
<Untitled> [Modified] (200.0%)
Our bird is complete. Let's group all the layers together.
Select all the layers that belong to the bird, then click the folder icon at the bottom of the Layer panel.
Nvg Xfm History Chn 32P
Position:
Set current selection
Set adjustment parameters
Move
Set current selection
Add Pixel
Paint Brush Tool
Paint Brush Tool
Paint Brush Tool
Paint Brush Tool
Paint Brush Tool
Paint Brush Tool
Set current selection
Histogram Color Swatches Brushes
RGB
R: 255
G: 20
B: 20
Opacity
100 %
Adjustment Layers Effects Styles Stock
Opacity: 100 %
Normal
(Mask)
(Pixel)
bird_shirt.png (Image)
(HSL Shift Adjustment)
hat_beret.png (Image)
the_great_tit.svg (Embedde...
right_arm_03.png (Ima...
background (Fill)
Drag to start painting. Drag+Shift to continue last stroke. Drag+Alt to use color picker.
Type here to search
ENG
4:19 PM
5/4/2022


File Edit Text Document Layer Select Arrange Filters View Window Help
Width: 8 px Opacity: 100 % Flow: 100 % Hardness: 100 % More Stabilizer Length: 35 Symmetry 1 Mirror Lock Blend Mode: Normal Wet Edges Protect Alpha
<Untitled> [Modified] (200.0%)
Nvg Xfm History Chn 32P
Position:
Move
Set current selection
Cut Ctrl+X
Copy Ctrl+C
Paste Ctrl+V
Hide
Lock
Exclude From Snapping
Delete
Duplicate
Release
Mask to Below
Merge Down
Merge Visible
Group Ctrl+G
Ungroup Ctrl+Shift+G
Rasterize & Trim...
Rasterize...
Rasterize to Mask
New Pixel Layer Ctrl+Shift+N
Expand Selection
Collapse Selection
Select Same Tag Color
Select Same Name
bird (Group)
background (Fill)
You can also color-code layers for your own reference.
Right-click the layer and pick the color you want.
Drag to start painting. Drag+Shift to continue last stroke. Drag+Alt to use color picker.
Type here to search
ENG
4:19 PM
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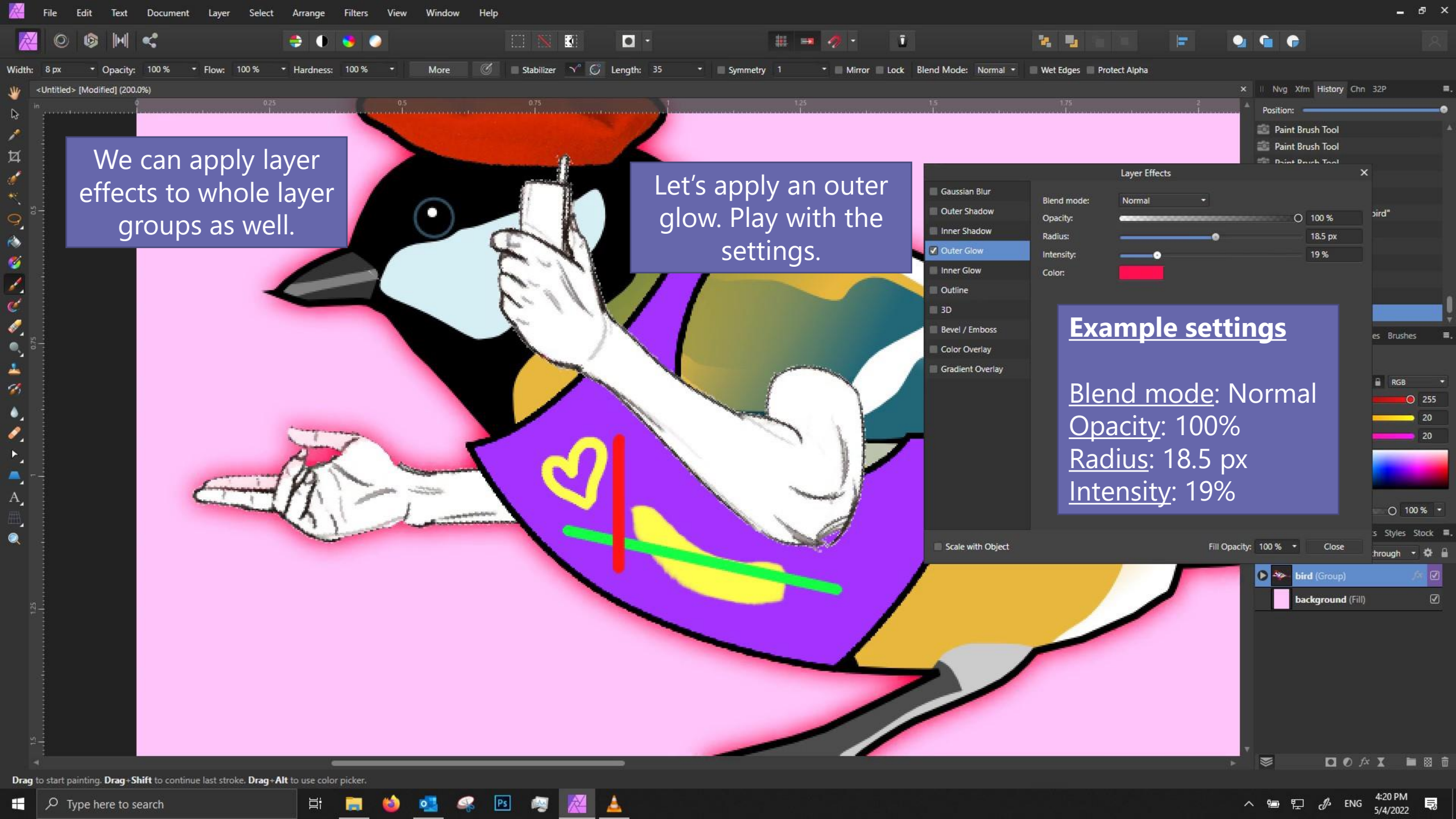
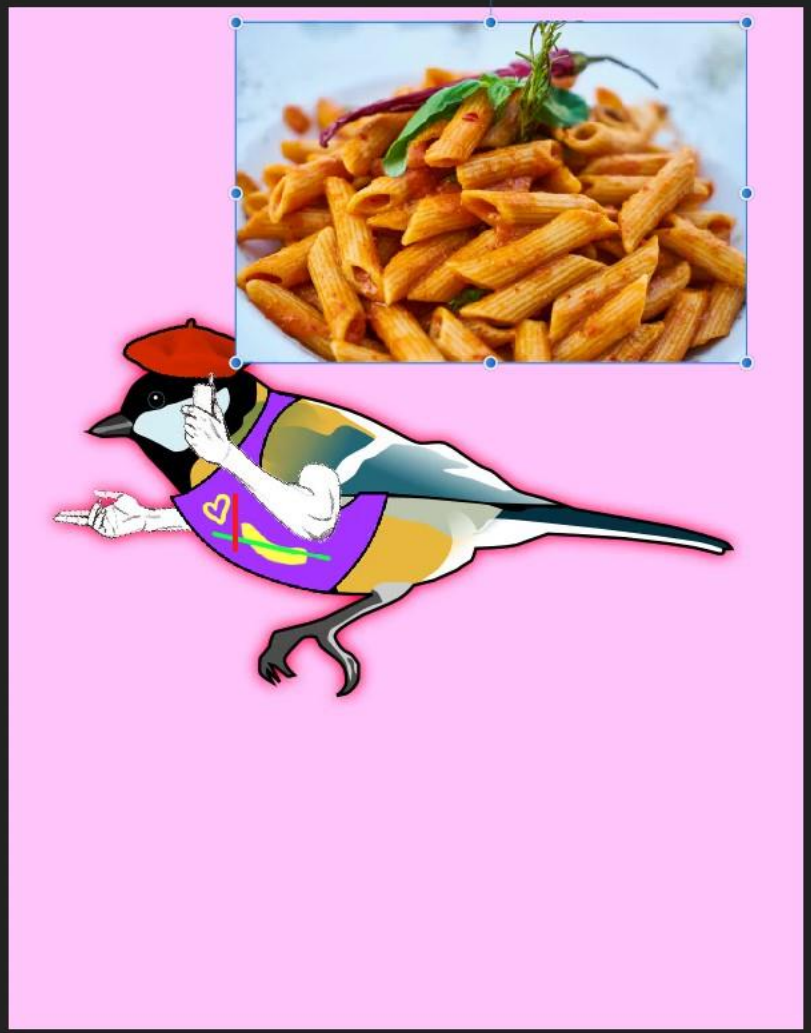
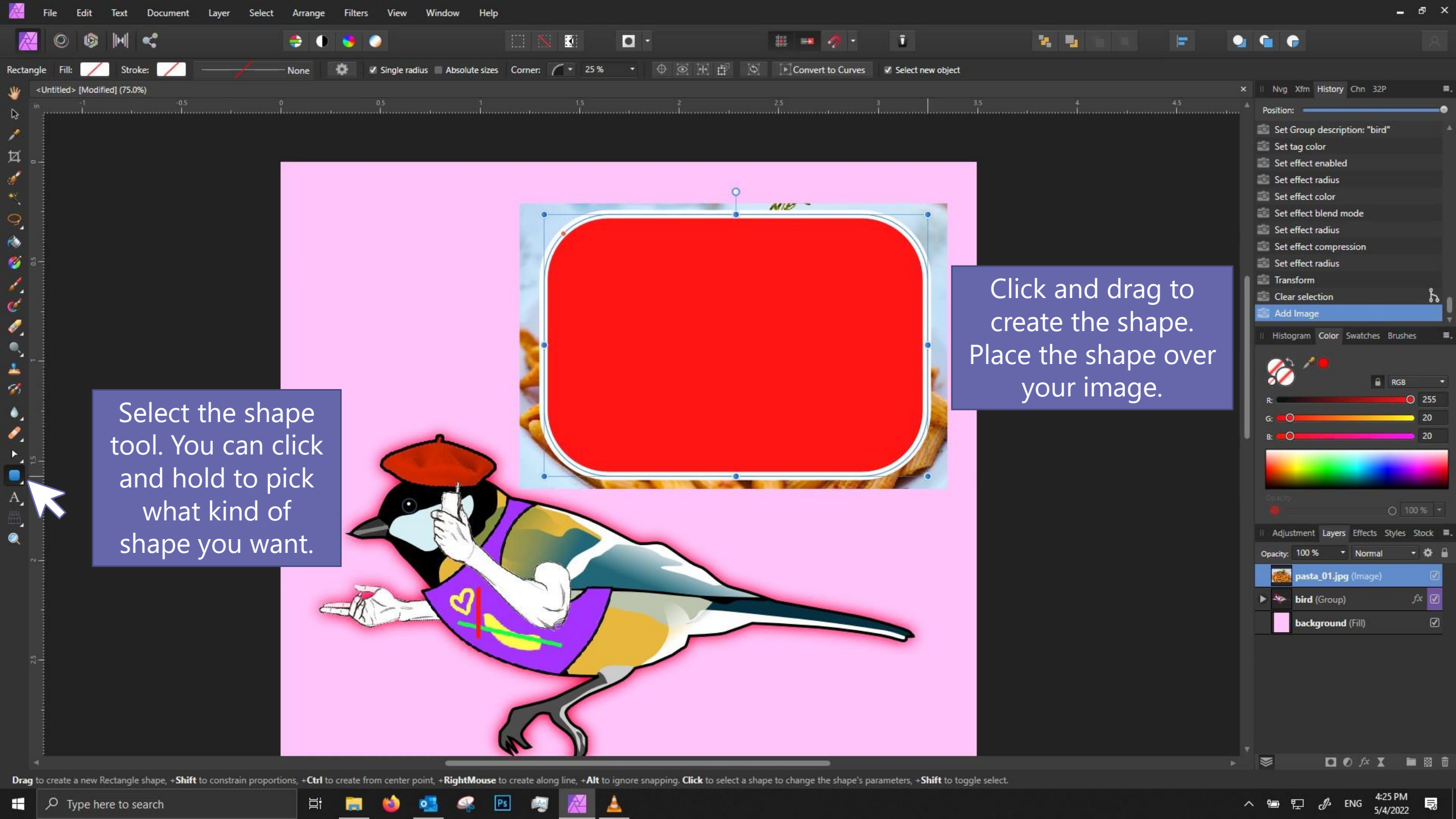

We can apply layer effects to whole layer groups as well.
Let's apply an outer glow. Play with the settings.
Example settings
Blend mode: Normal
Opacity: 100%
Radius: 18.5 px
Intensity: 19%
Layer Effects
Gaussian Blur
Outer Shadow
Inner Shadow
Outer Glow
Inner Glow
Outline
3D
Bevel / Emboss
Color Overlay
Gradient Overlay
Blend mode: Normal
Opacity: 100 %
Radius: 18.5 px
Intensity: 19 %
Color:
Scale with Object
Fill Opacity: 100 %
Close
bird (Group)
background (Fill)

# *Working with shapes and vectors*

Let's create a pop-out bubble of something our bird is thinking.



Place the pasta image (or any other image you'd like) into the document.


File Edit Text Document Layer Select Arrange Filters View Window Help
Rectangle Fill: Stroke: None Single radius Absolute sizes Corner: 25 % Convert to Curves Select new object
<Untitled> [Modified] (75.0%)
Nvg Xfm History Chn 32P
Position:
Set Group description: "bird"
Set tag color
Set effect enabled
Set effect radius
Set effect color
Set effect blend mode
Set effect radius
Set effect compression
Set effect radius
Transform
Clear selection
Add Image
Histogram Color Swatches Brushes
RGB
R: 255
G: 20
B: 20
Opacity: 100 %
Adjustment Layers Effects Styles Stock
Opacity: 100 % Normal
pasta_01.jpg (Image)
bird (Group)
background (Fill)
Click and drag to create the shape. Place the shape over your image.
Select the shape tool. You can click and hold to pick what kind of shape you want.
Drag to create a new Rectangle shape, +Shift to constrain proportions, +Ctrl to create from center point, +RightMouse to create along line, +Alt to ignore snapping. Click to select a shape to change the shape's parameters, +Shift to toggle select.
Type here to search
ENG
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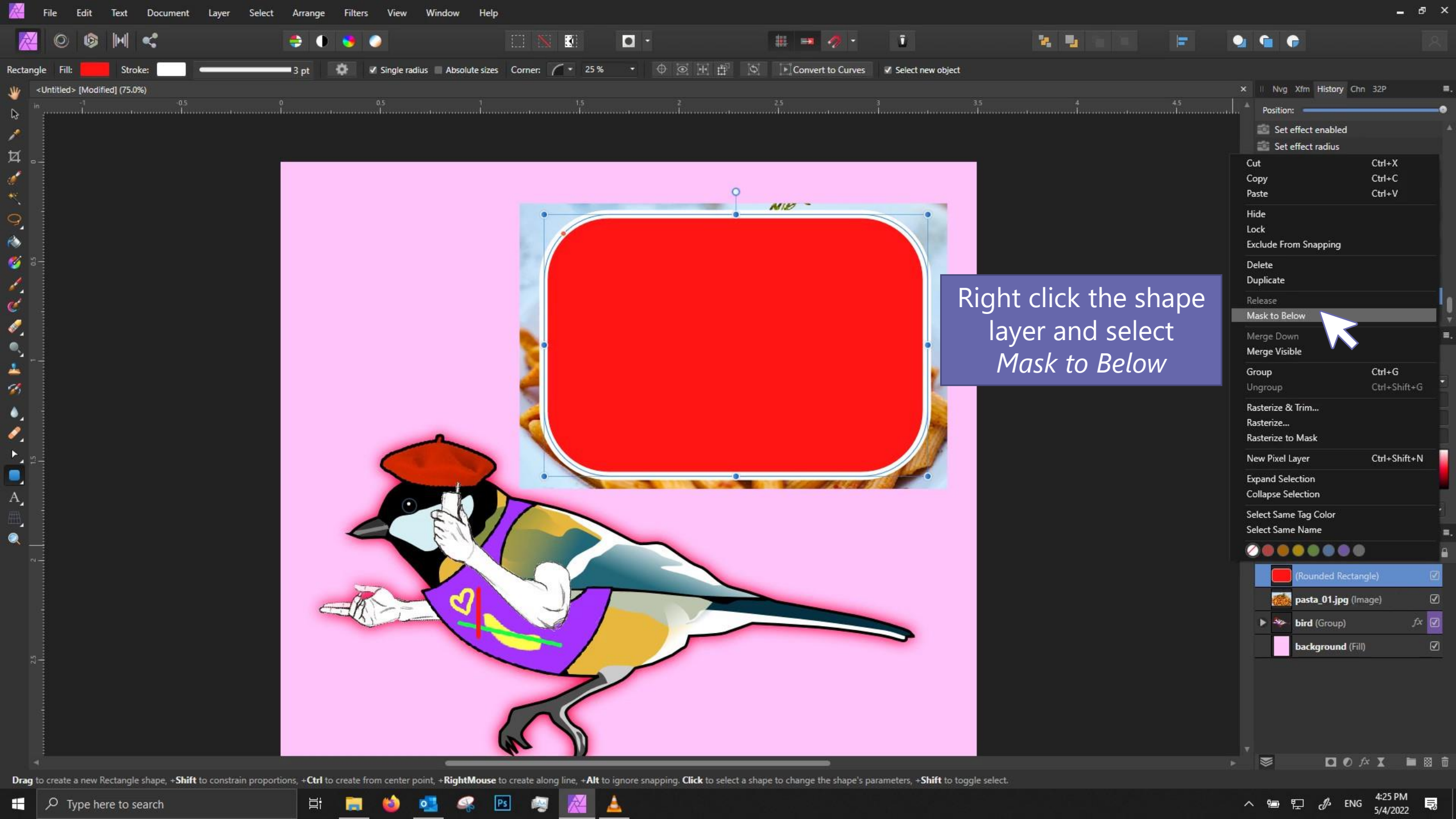

File Edit Text Document Layer Select Arrange Filters View Window Help
Rectangle Fill: Stroke: 3 pt Single radius Absolute sizes Corner: 25 % Convert to Curves Select new object
<Untitled> [Modified] (75.0%)
Nvg Xfm History Chn 32P
Position:
Set effect enabled
Set effect radius
Cut Ctrl+X
Copy Ctrl+C
Paste Ctrl+V
Hide
Lock
Exclude From Snapping
Delete
Duplicate
Release
Mask to Below
Merge Down
Merge Visible
Group Ctrl+G
Ungroup Ctrl+Shift+G
Rasterize & Trim...
Rasterize...
Rasterize to Mask
New Pixel Layer Ctrl+Shift+N
Expand Selection
Collapse Selection
Select Same Tag Color
Select Same Name
(Rounded Rectangle)
pasta_01.jpg (Image)
bird (Group)
background (Fill)
Right click the shape layer and select Mask to Below
Drag to create a new Rectangle shape, +Shift to constrain proportions, +Ctrl to create from center point, +RightMouse to create along line, +Alt to ignore snapping. Click to select a shape to change the shape's parameters, +Shift to toggle select.
Type here to search
ENG
4:25 PM
5/4/2022

Practice applying layer effects. Here, I'm adding another outer glow.

Layer Effects

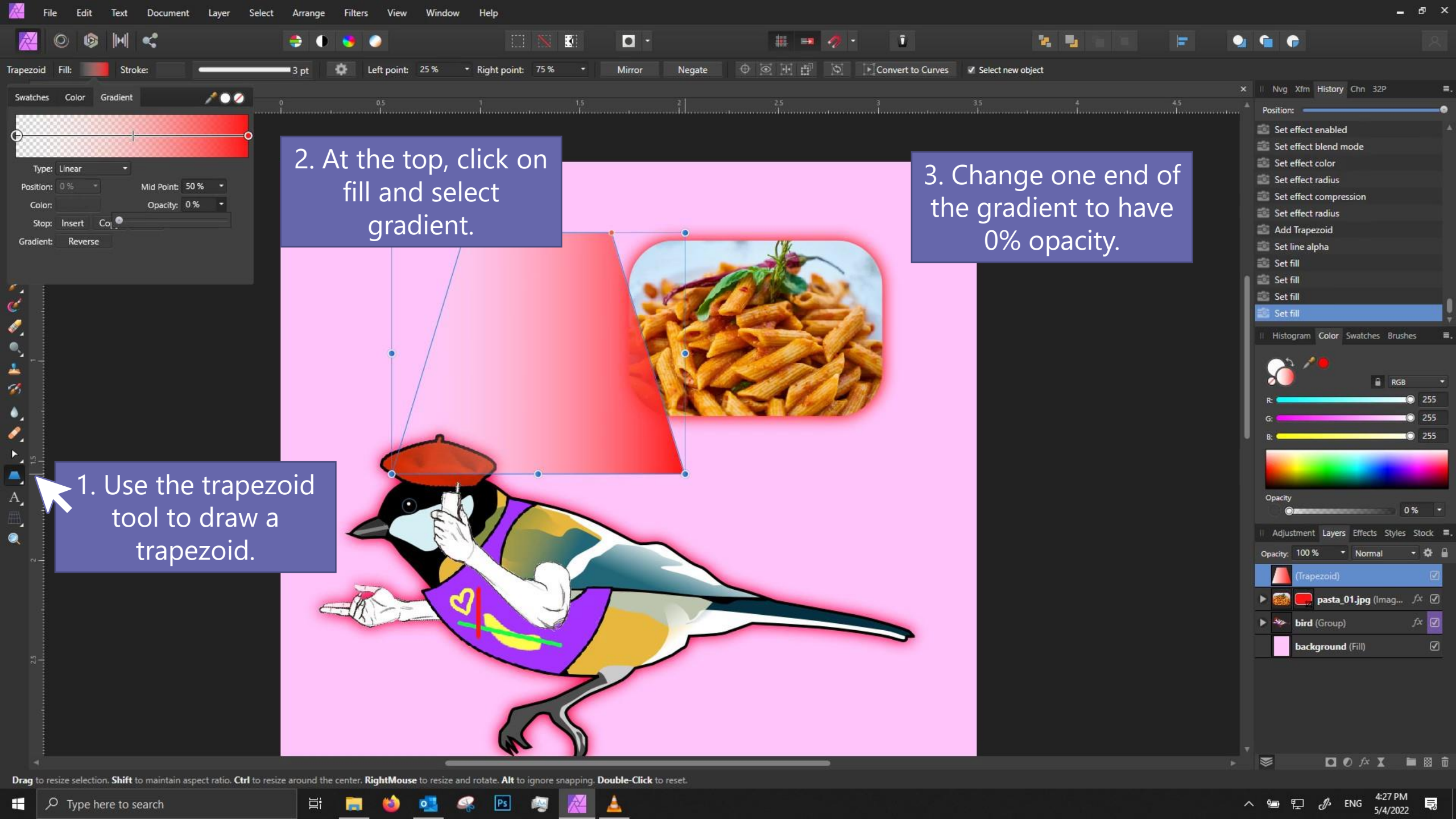
- Gaussian Blur
- Outer Shadow
- Inner Shadow
- Outer Glow
- Inner Glow
- Outline
- 3D
- Bevel / Emboss
- Color Overlay
- Gradient Overlay

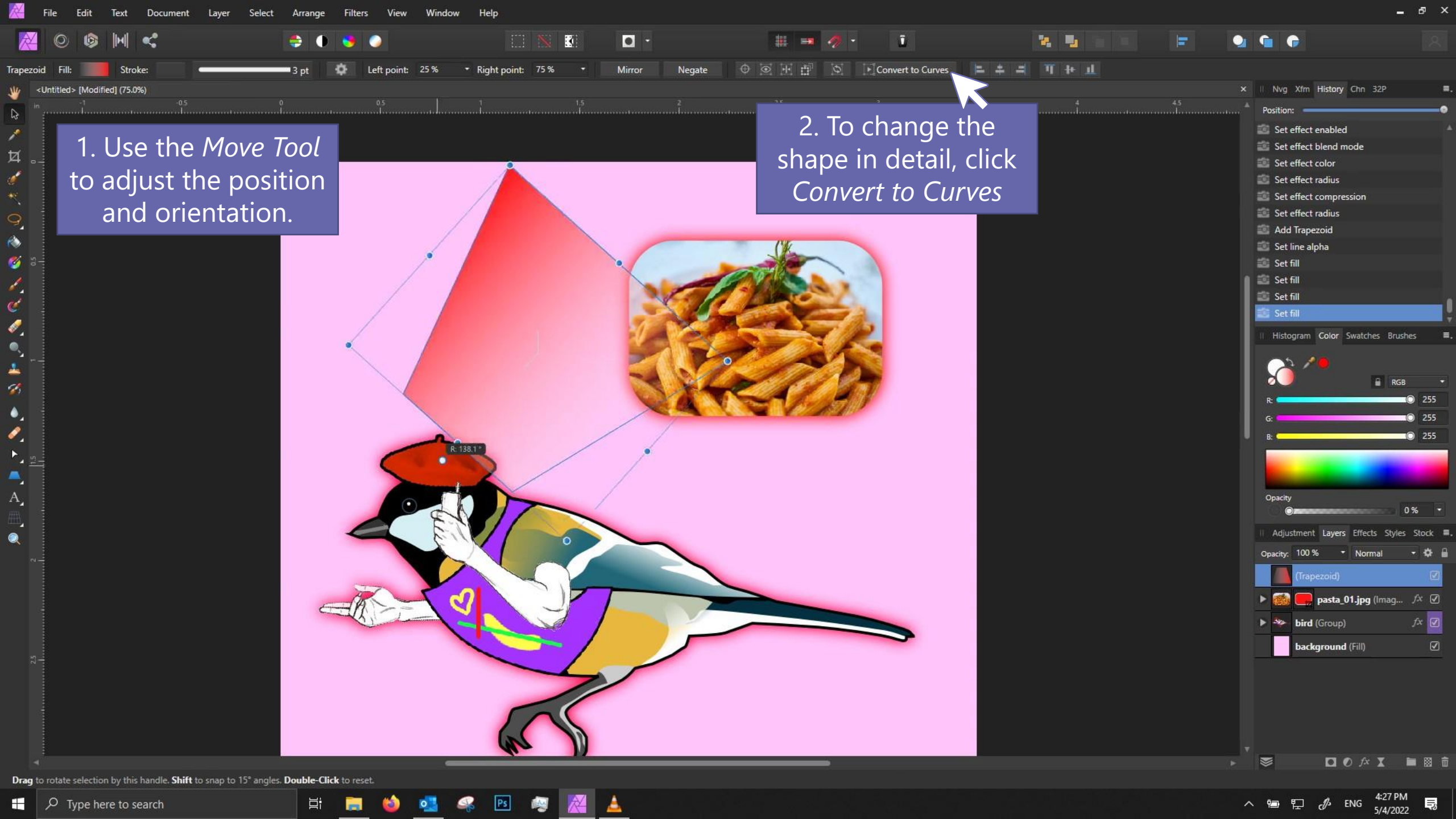
Blend mode: Normal
Opacity: 100 %
Radius: 22.7 px
Intensity: 50 %
Color:

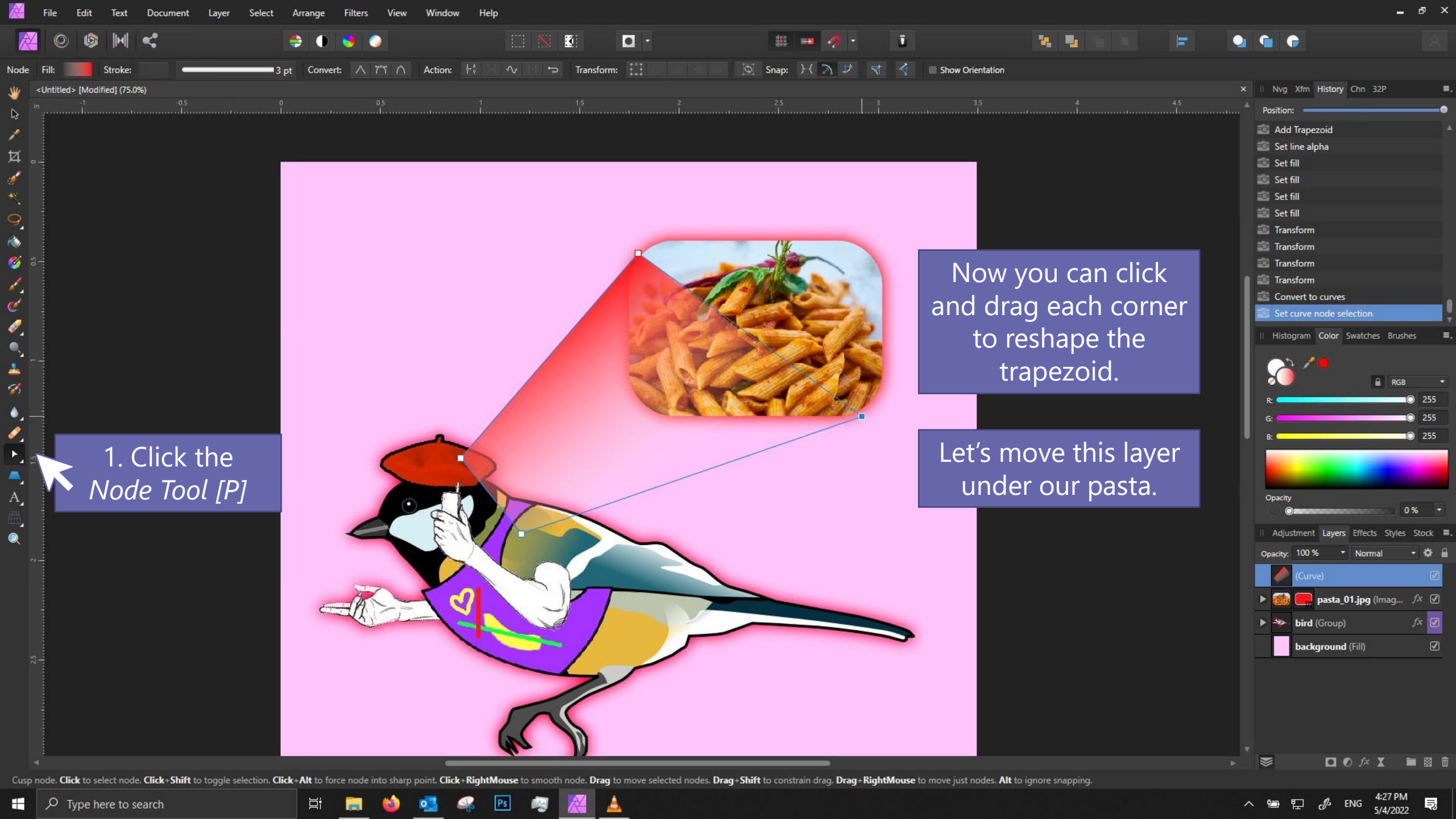
Scale with Object
Fill Opacity: 100 %
Close

pasta_01.jpg (Imag...
bird (Group)
background (Fill)

Creating a
gradient pop-out
effect


File Edit Text Document Layer Select Arrange Filters View Window Help
Trapezoid Fill: Stroke: 3 pt Left point: 25 % Right point: 75 % Mirror Negate Convert to Curves Select new object
Swatches Color Gradient
Type: Linear
Position: 0 % Mid Point: 50 %
Color: Opacity: 0 %
Stop: Insert
Gradient: Reverse
2. At the top, click on fill and select gradient.
3. Change one end of the gradient to have 0% opacity.
1. Use the trapezoid tool to draw a trapezoid.
Nvg Xfm History Chn 32P
Position:
Set effect enabled
Set effect blend mode
Set effect color
Set effect radius
Set effect compression
Set effect radius
Add Trapezoid
Set line alpha
Set fill
Set fill
Set fill
Set fill
Histogram Color Swatches Brushes
RGB
R: 255
G: 255
B: 255
Opacity
0 %
Adjustment Layers Effects Styles Stock
Opacity: 100 % Normal
(Trapezoid)
pasta_01.jpg (Imag...
bird (Group)
background (Fill)
Drag to resize selection. Shift to maintain aspect ratio. Ctrl to resize around the center. RightMouse to resize and rotate. Alt to ignore snapping. Double-Click to reset.
Type here to search
ENG
4:27 PM
5/4/2022


File Edit Text Document Layer Select Arrange Filters View Window Help
Trapezoid Fill: Stroke: 3 pt Left point: 25 % Right point: 75 % Mirror Negate Convert to Curves
<Untitled> [Modified] (75.0%)
1. Use the *Move Tool* to adjust the position and orientation.
2. To change the shape in detail, click *Convert to Curves*
R: 138.1 °
Nvg Xfm History Chn 32P
Position:
Set effect enabled
Set effect blend mode
Set effect color
Set effect radius
Set effect compression
Set effect radius
Add Trapezoid
Set line alpha
Set fill
Set fill
Set fill
Set fill
Histogram Color Swatches Brushes
RGB
R: 255
G: 255
B: 255
Opacity
0 %
Adjustment Layers Effects Styles Stock
Opacity: 100 % Normal
(Trapezoid)
pasta_01.jpg (Imag...
bird (Group)
background (Fill)
Drag to rotate selection by this handle. Shift to snap to 15° angles. Double-Click to reset.
Type here to search
ENG
4:27 PM
5/4/2022


File Edit Text Document Layer Select Arrange Filters View Window Help
Node Fill: Stroke: 3 pt Convert: Action: Transform: Snap: Show Orientation
<Untitled> [Modified] (75.0%)
Nvg Xfm History Chn 32P
Position:
Add Trapezoid
Set line alpha
Set fill
Set fill
Set fill
Set fill
Transform
Transform
Transform
Transform
Convert to curves
Set curve node selection
Histogram Color Swatches Brushes
RGB
R: 255
G: 255
B: 255
Opacity
0 %
Adjustment Layers Effects Styles Stock
Opacity: 100 %
Normal
(Curve)
pasta_01.jpg (Imag...
bird (Group)
background (Fill)
1. Click the Node Tool [P]
Now you can click and drag each corner to reshape the trapezoid.
Let's move this layer under our pasta.
Cusp node. Click to select node. Click+Shift to toggle selection. Click+Alt to force node into sharp point. Click+RightMouse to smooth node. Drag to move selected nodes. Drag+Shift to constrain drag. Drag+RightMouse to move just nodes. Alt to ignore snapping.
Type here to search
ENG
4:27 PM
5/4/2022

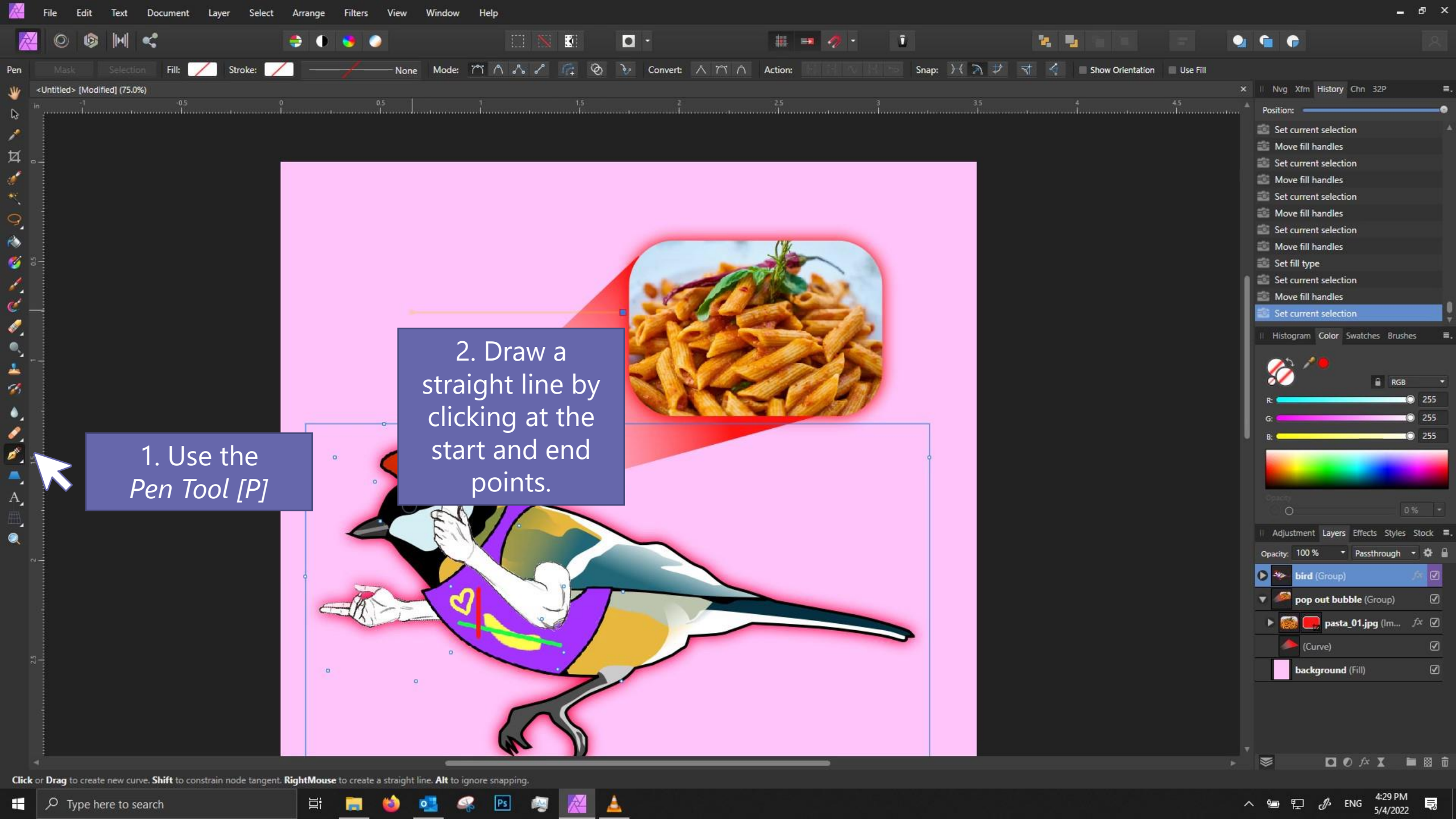
You can also change the gradient type in this upper toolbar.

1. Click the *Gradient Tool [G]*

2. Click and drag the dots to adjust the orientation of the gradient.

**Click** an object to select it. **Drag** handles to change the selection's fill.

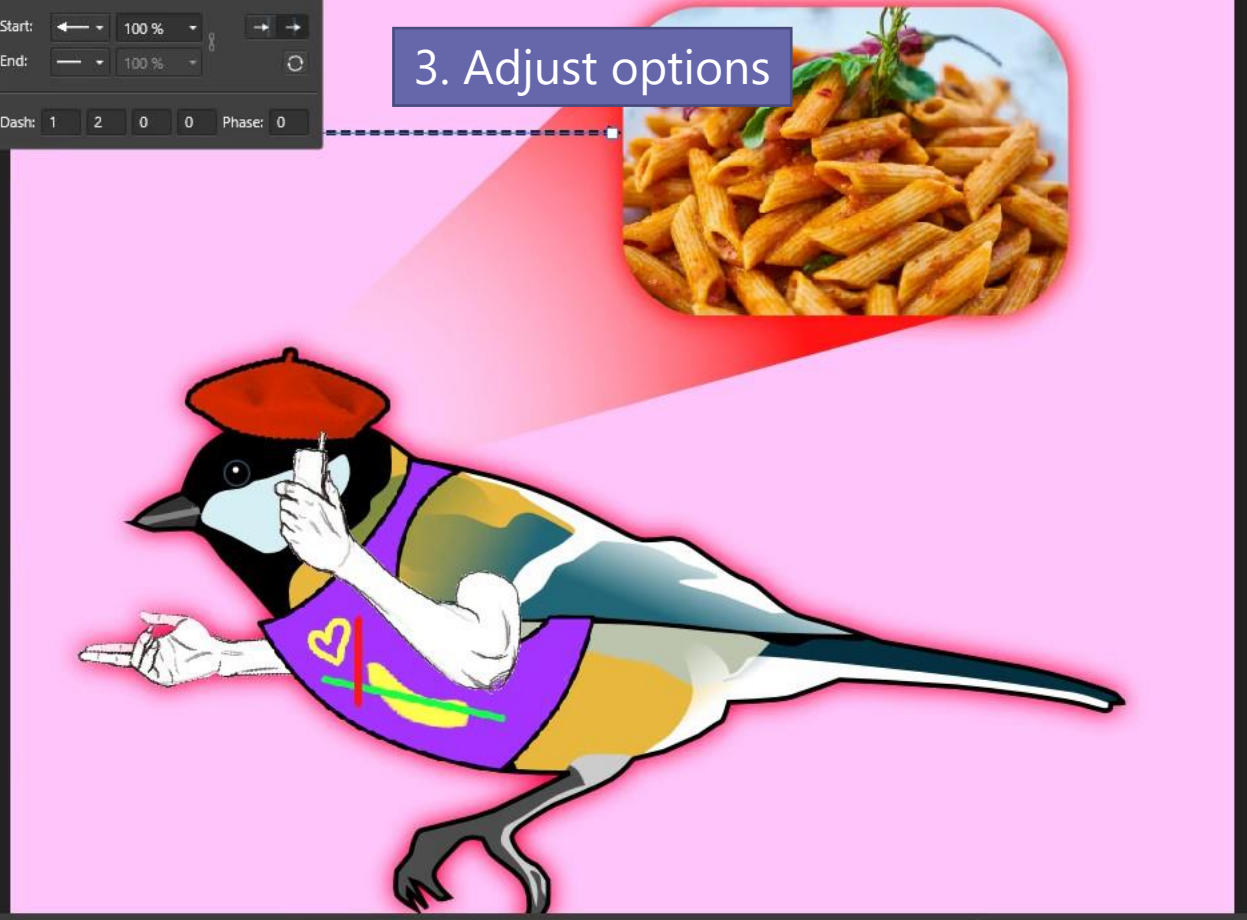
Lines, including dashed and arrows


File Edit Text Document Layer Select Arrange Filters View Window Help
Pen
Fill:
Stroke:
None
Mode:
Convert:
Action:
Snap:
Show Orientation
Use Fill
<Untitled> [Modified] (75.0%)
Nvg Xfm History Chn 32P
Position:
Set current selection
Move fill handles
Set current selection
Move fill handles
Set current selection
Move fill handles
Set current selection
Move fill handles
Set fill type
Set current selection
Move fill handles
Set current selection
Histogram Color Swatches Brushes
RGB
R: 255
G: 255
B: 255
Adjustment Layers Effects Styles Stock
Opacity: 100 %
Passthrough
bird (Group)
pop out bubble (Group)
pasta_01.jpg (Im...
(Curve)
background (Fill)
1. Use the Pen Tool [P]
2. Draw a straight line by clicking at the start and end points.
Click or Drag to create new curve. Shift to constrain node tangent. RightMouse to create a straight line. Alt to ignore snapping.
Type here to search
ENG
4:29 PM
5/4/2022

1. Change stroke to black.

2. Click the button with the line and “pt”

3. Adjust options

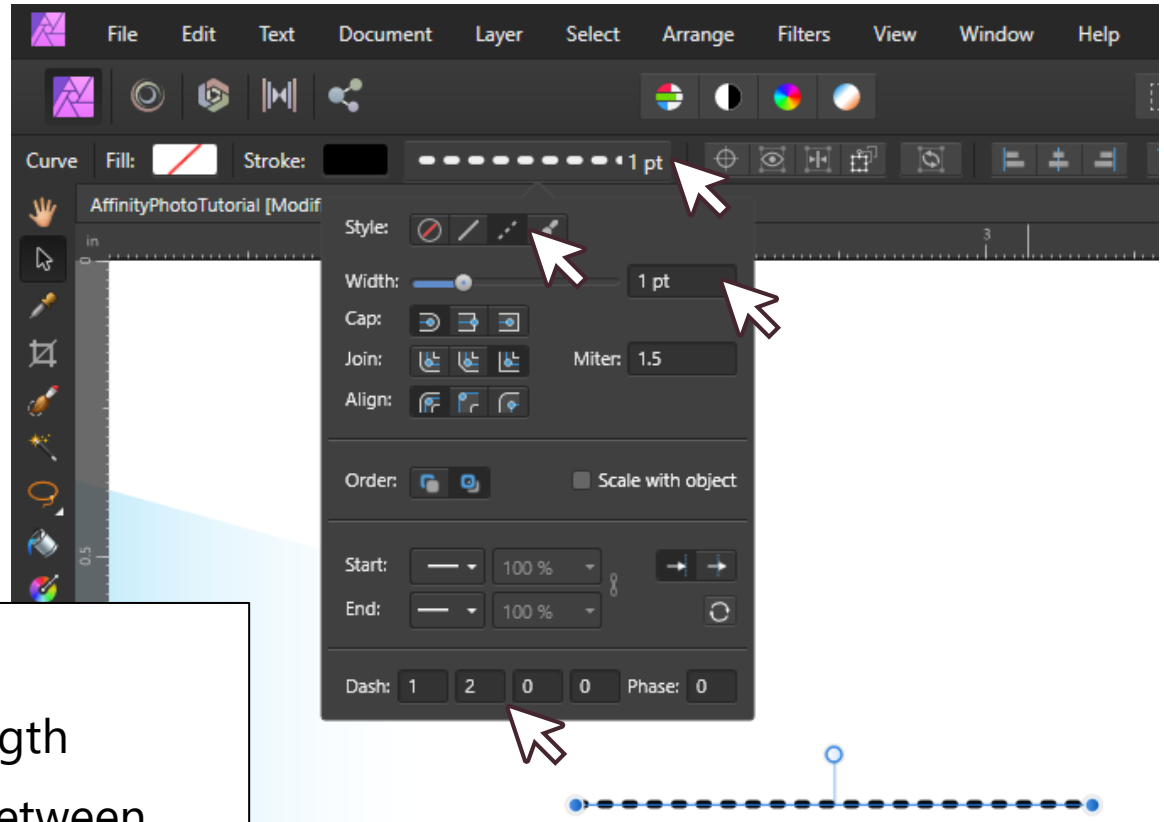




Click or Drag to extend curve from end. Click+RightMouse or Drag+RightMouse to create a straight line. Drag+Shift to constrain node tangent. Alt to ignore snapping. Ctrl to use Node Tool.

# Creating dotted lines and arrows

1. On the upper toolbar, click the box with a line and “0 pt”.
2. Under Style, click the dotted line.
3. Adjust the Width to your satisfaction.




**Dash:**

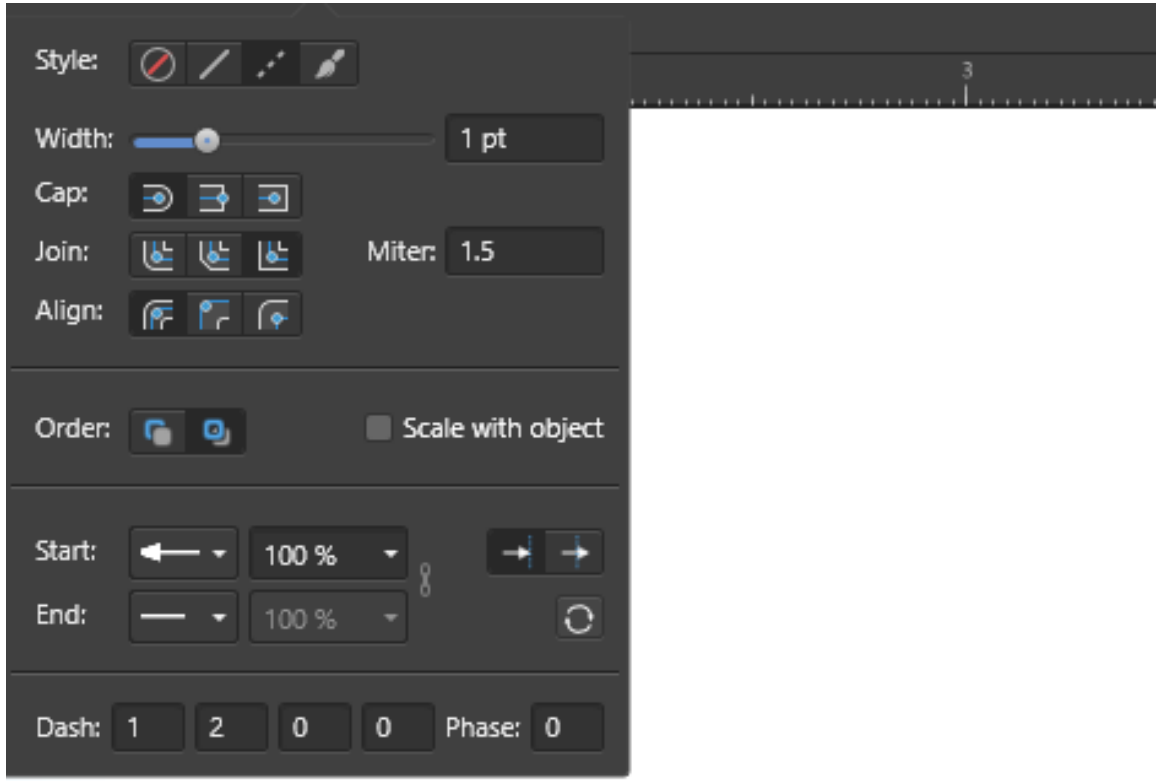
- 1st number: Ratio of dash length
- 2nd number: Ratio of space between dashes

You won’t need the 3rd and 4th number.

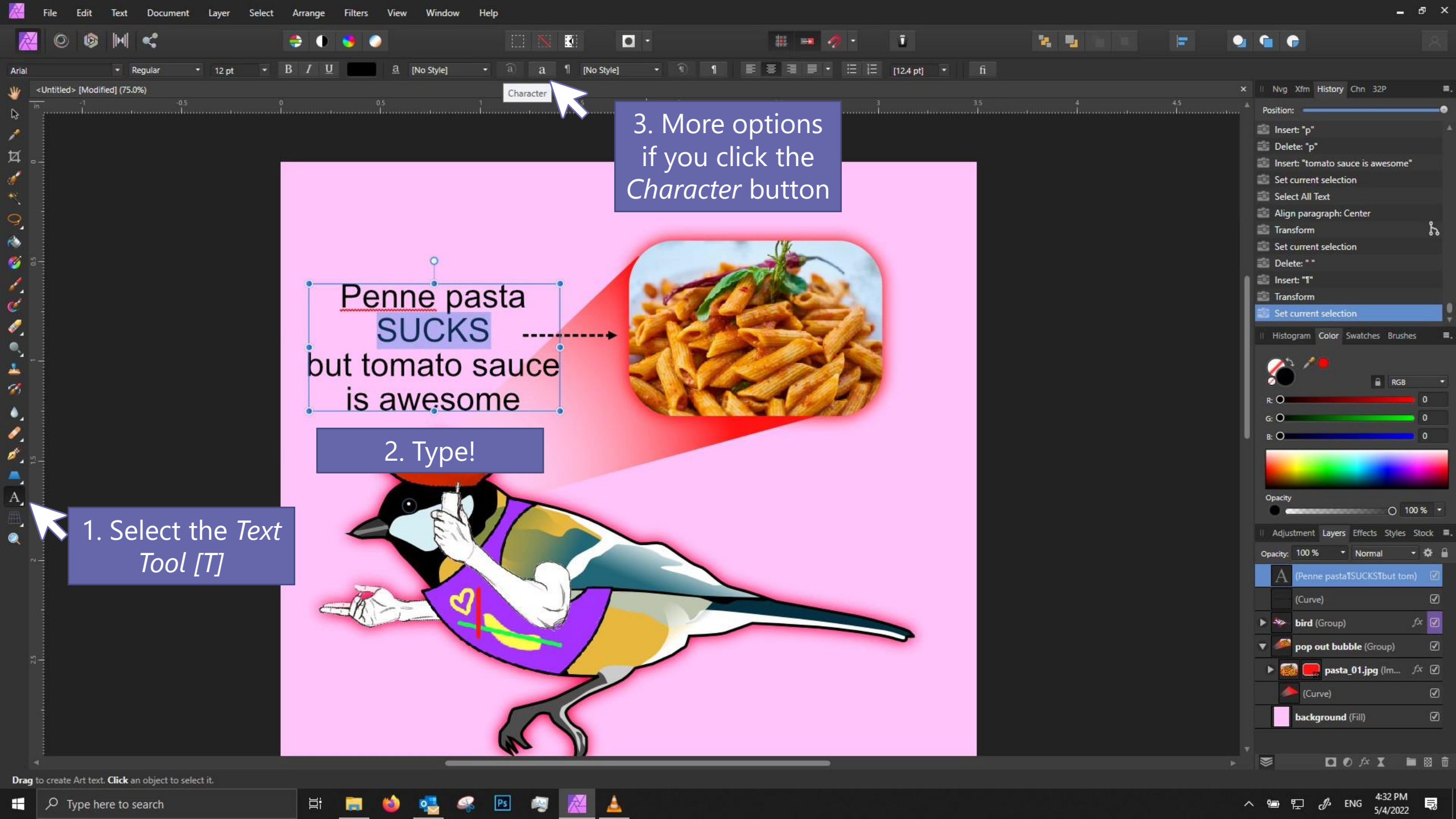
# Creating dotted lines and arrows

Cap, Join, and Align determine how Affinity draws the line on your path.

Use this panel to adjust arrow heads.



Text!


File Edit Text Document Layer Select Arrange Filters View Window Help
Arial Regular 12 pt [No Style] [No Style] [12.4 pt]
<Untitled> [Modified] (75.0%)
Character
3. More options if you click the *Character* button
Penne pasta SUCKS but tomato sauce is awesome
2. Type!
1. Select the *Text Tool [T]*
Nvg Xfm History Chn 32P
Position:
Insert: "p"
Delete: "p"
Insert: "tomato sauce is awesome"
Set current selection
Select All Text
Align paragraph: Center
Transform
Set current selection
Delete: " "
Insert: "T"
Transform
Set current selection
Histogram Color Swatches Brushes
RGB
R: 0
G: 0
B: 0
Opacity
100 %
Adjustment Layers Effects Styles Stock
Opacity: 100 %
Normal
(Penne pasta¶SUCKS¶but tom)
(Curve)
bird (Group)
pop out bubble (Group)
pasta_01.jpg (Im...
(Curve)
background (Fill)
Drag to create Art text. Click an object to select it.
Type here to search
ENG
4:32 PM
5/4/2022

Penne pasta SUCKS but tomato sauce is awesome

Highlight characters to change their aspects uniquely.

Unfortunately, the super/subscript are unreliable in Affinity Photo, and ugly in Photoshop.

A workaround:

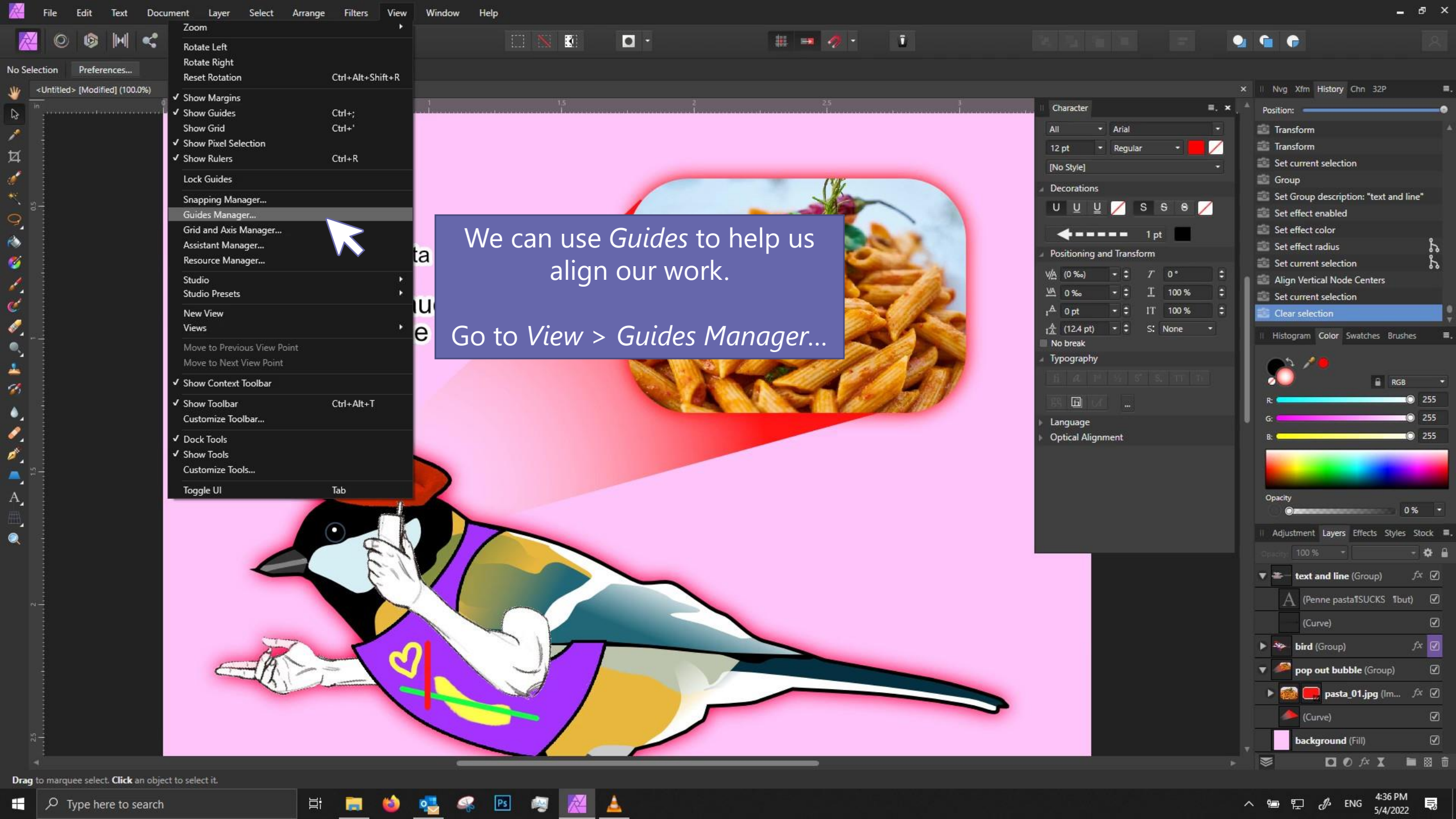
1. Reduce the super/subscript text by 2 pts.
2. Change the vertical position of the text by +2 pt/-2 pt.

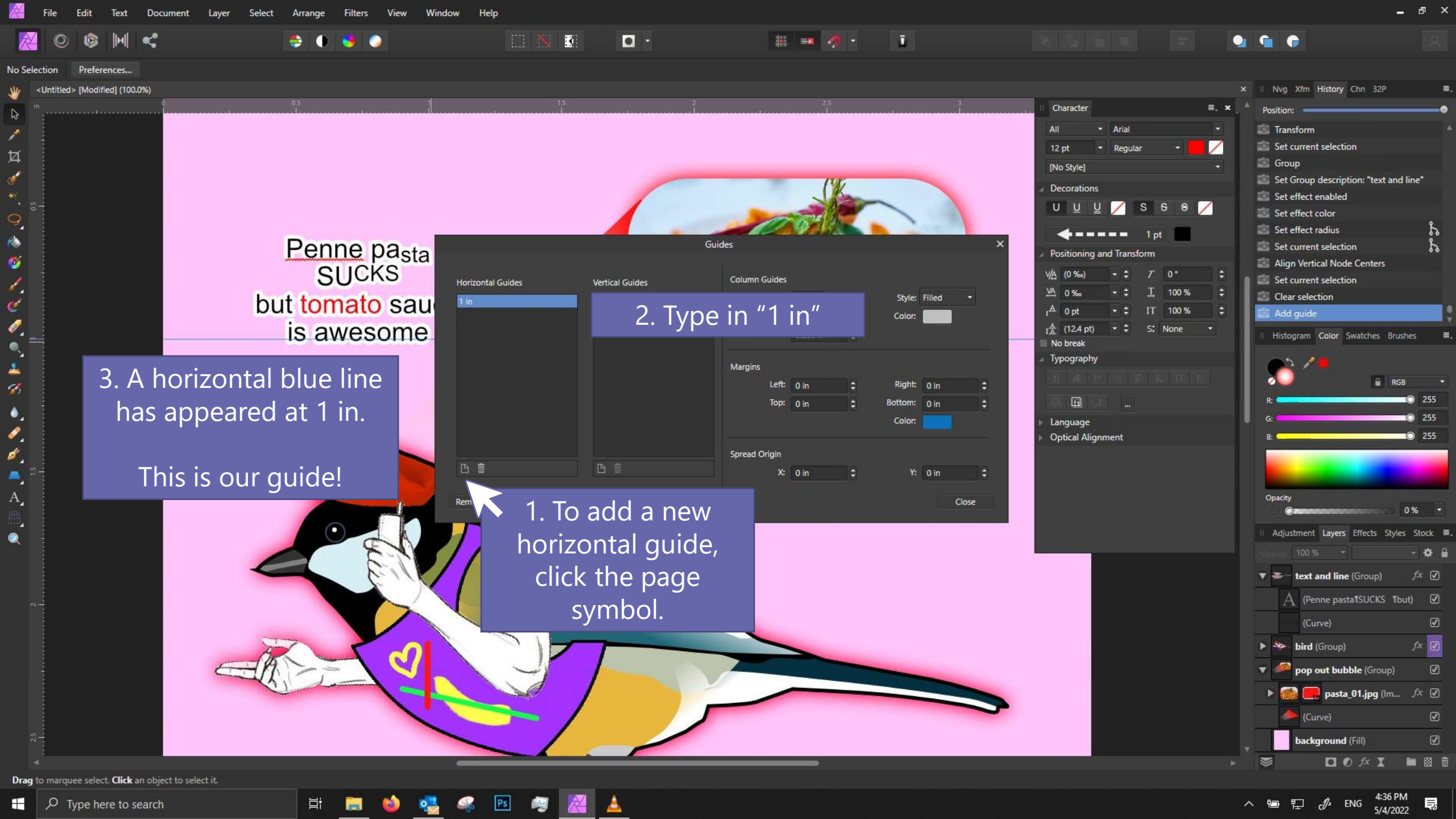
Group the arrow and text layers and add a white outline!

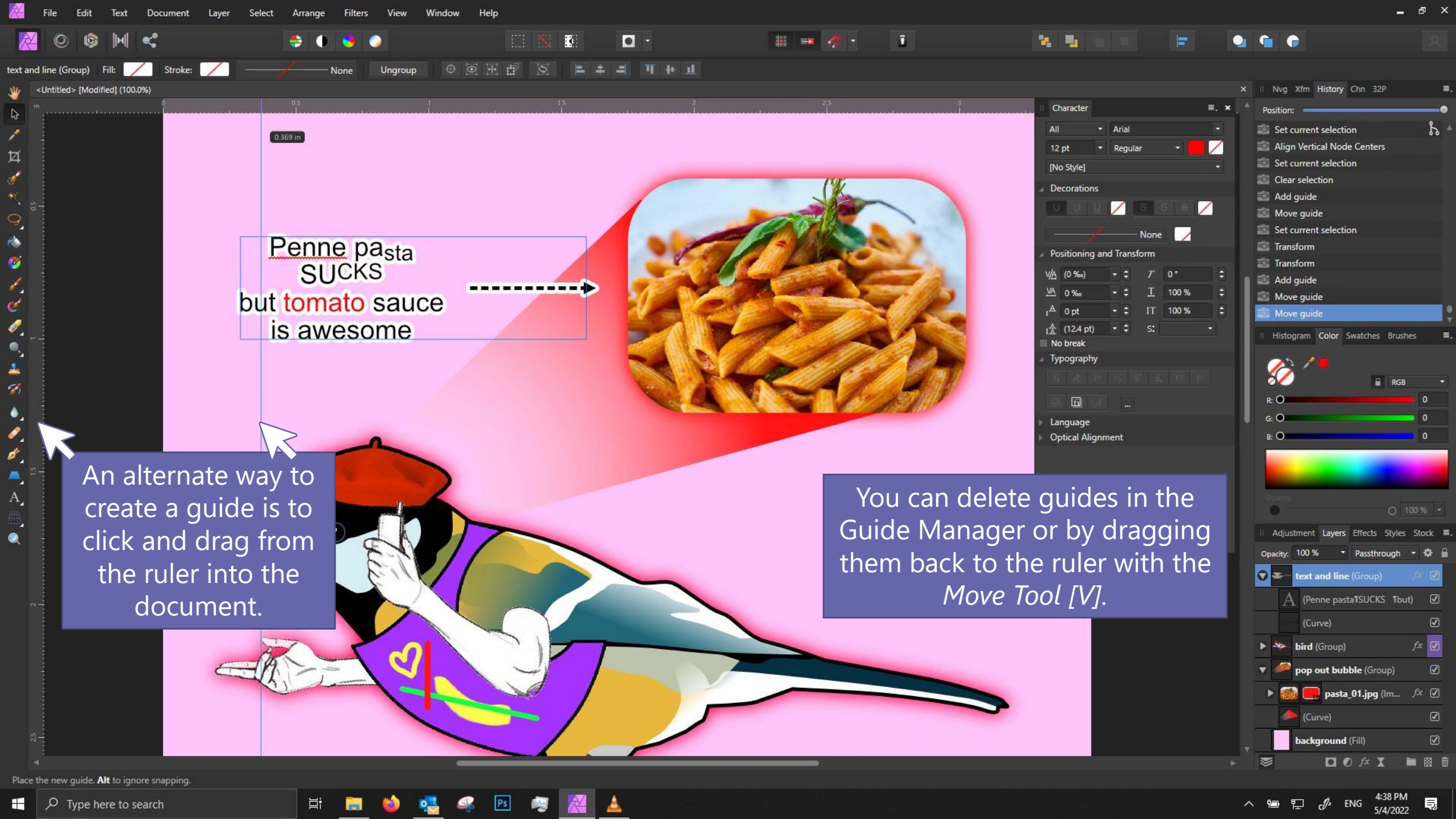
Penne pasta SUCKS but tomato sauce is awesome

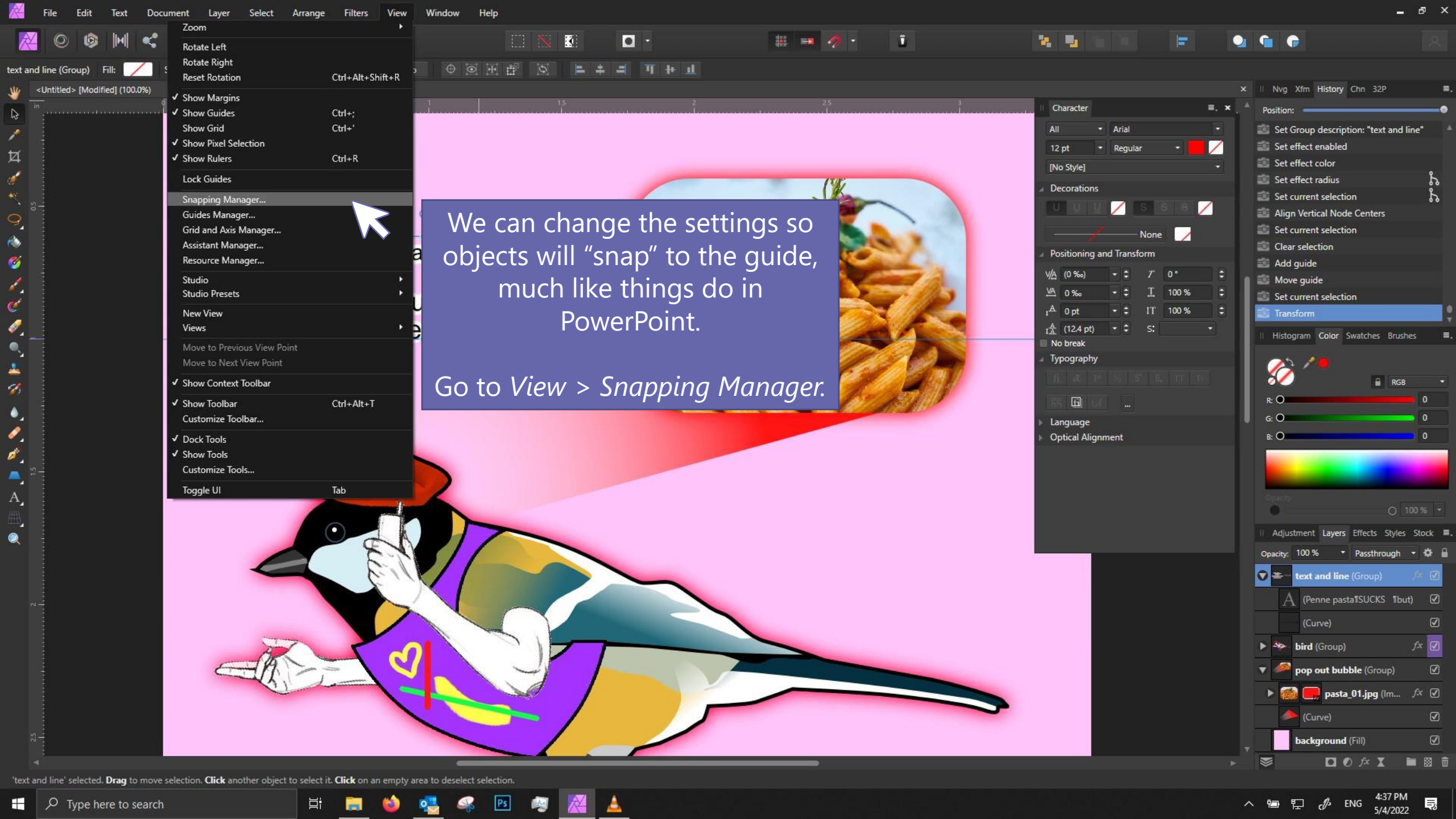
Alignment and &
Guides

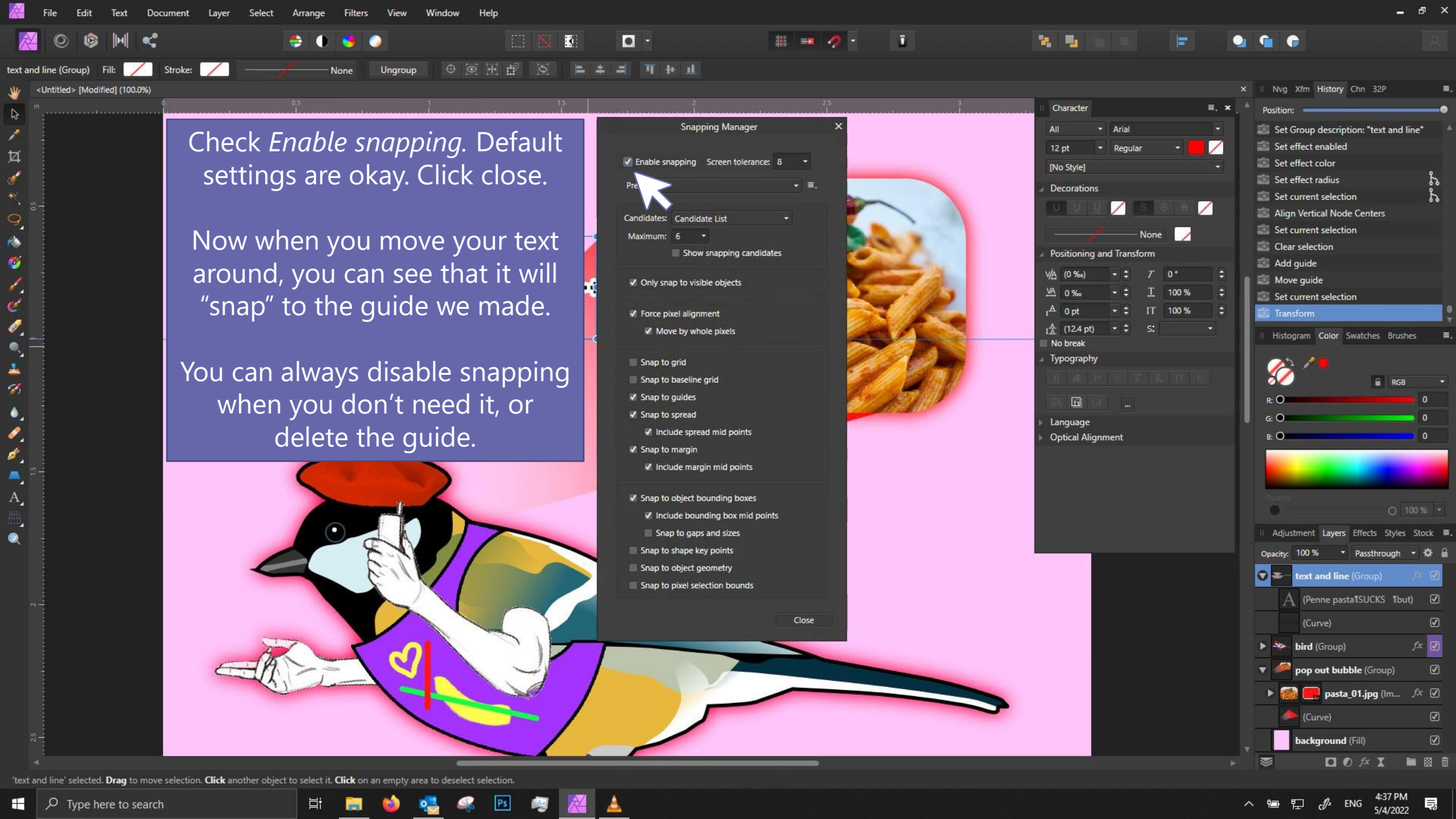
When you select two or more objects, you can adjust the alignment of objects with respect to each other using this tool.


File Edit Text Document Layer Select Arrange Filters View Window Help
Zoom
Rotate Left
Rotate Right
Reset Rotation Ctrl+Alt+Shift+R
Show Margins
Show Guides Ctrl+;
Show Grid Ctrl+'
Show Pixel Selection
Show Rulers Ctrl+R
Lock Guides
Snapping Manager...
Guides Manager...
Grid and Axis Manager...
Assistant Manager...
Resource Manager...
Studio
Studio Presets
New View
Views
Move to Previous View Point
Move to Next View Point
Show Context Toolbar
Show Toolbar Ctrl+Alt+T
Customize Toolbar...
Dock Tools
Show Tools
Customize Tools...
Toggle UI Tab
We can use Guides to help us align our work.
Go to View > Guides Manager...
Character
Decorations
Positioning and Transform
Typography
Language
Optical Alignment
Histogram Color Swatches Brushes
Adjustment Layers Effects Styles Stock
text and line (Group)
bird (Group)
pop out bubble (Group)
pasta_01.jpg
background (Fill)
Drag to marquee select. Click an object to select it.
Type here to search
ENG 4:36 PM 5/4/2022

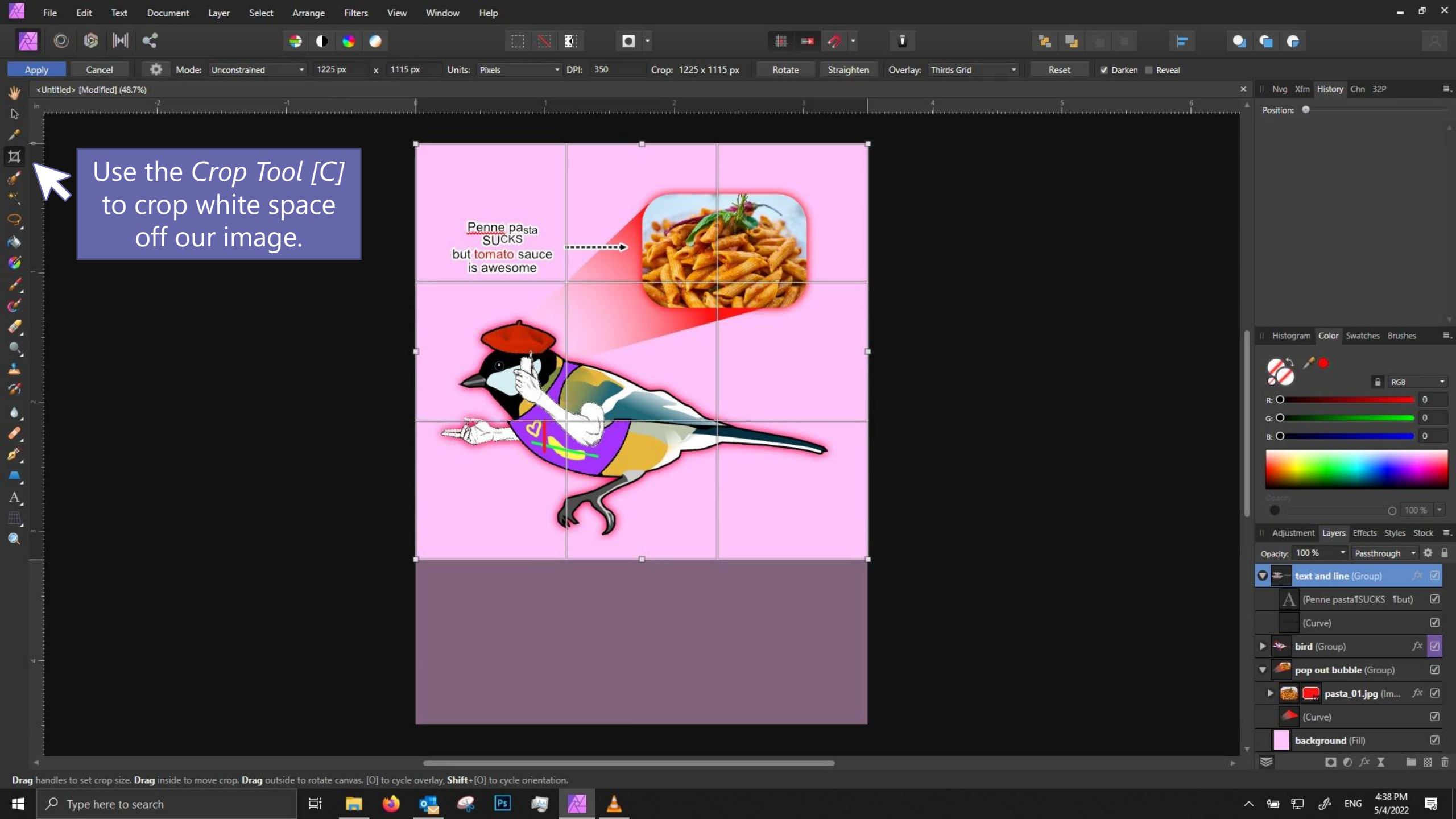

Penne pasta
SUCKS
but tomato sau
is awesome
Guides
Horizontal Guides
1 in
Vertical Guides
Column Guides
Style: Filled
Color:
Margins
Left: 0 in
Right: 0 in
Top: 0 in
Bottom: 0 in
Color:
Spread Origin
X: 0 in
Y: 0 in
Close
2. Type in “1 in”
3. A horizontal blue line has appeared at 1 in.
This is our guide!
1. To add a new horizontal guide, click the page symbol.


File Edit Text Document Layer Select Arrange Filters View Window Help
text and line (Group) Fill: Stroke: None Ungroup
<Untitled> [Modified] (100.0%)
0.369 in
Penne pasta
SUCKS
but tomato sauce
is awesome
An alternate way to create a guide is to click and drag from the ruler into the document.
You can delete guides in the Guide Manager or by dragging them back to the ruler with the *Move Tool [V]*.
Character
Decorations
Positioning and Transform
Typography
Language
Optical Alignment
Nvg Xfm History Chn 32P
Position:
Set current selection
Align Vertical Node Centers
Set current selection
Clear selection
Add guide
Move guide
Set current selection
Transform
Transform
Add guide
Move guide
Move guide
Histogram Color Swatches Brushes
RGB
R: 0
G: 0
B: 0
Adjustment Layers Effects Styles Stock
Opacity: 100 % Passthrough
text and line (Group)
(Penne pasta SUCKS but)
(Curve)
bird (Group)
pop out bubble (Group)
pasta_01.jpg (Im...
(Curve)
background (Fill)
Place the new guide. Alt to ignore snapping.
Type here to search
ENG
4:38 PM
5/4/2022


File Edit Text Document Layer Select Arrange Filters View Window Help
Zoom
Rotate Left
Rotate Right
Reset Rotation Ctrl+Alt+Shift+R
Show Margins
Show Guides Ctrl+;
Show Grid Ctrl+'
Show Pixel Selection
Show Rulers Ctrl+R
Lock Guides
Snapping Manager...
Guides Manager...
Grid and Axis Manager...
Assistant Manager...
Resource Manager...
Studio
Studio Presets
New View
Views
Move to Previous View Point
Move to Next View Point
Show Context Toolbar
Show Toolbar Ctrl+Alt+T
Customize Toolbar...
Dock Tools
Show Tools
Customize Tools...
Toggle UI Tab
We can change the settings so objects will "snap" to the guide, much like things do in PowerPoint.
Go to View > Snapping Manager.
Character
Decorations
Positioning and Transform
Typography
Language
Optical Alignment
History
Set Group description: "text and line"
Set effect enabled
Set effect color
Set effect radius
Set current selection
Align Vertical Node Centers
Set current selection
Clear selection
Add guide
Move guide
Set current selection
Transform
Color
Swatches
Brushes
Layers
Effects
Styles
Stock
text and line (Group)
bird (Group)
pop out bubble (Group)
pasta_01.jpg
background (Fill)
'text and line' selected. Drag to move selection. Click another object to select it. Click on an empty area to deselect selection.
Type here to search
ENG
4:37 PM
5/4/2022

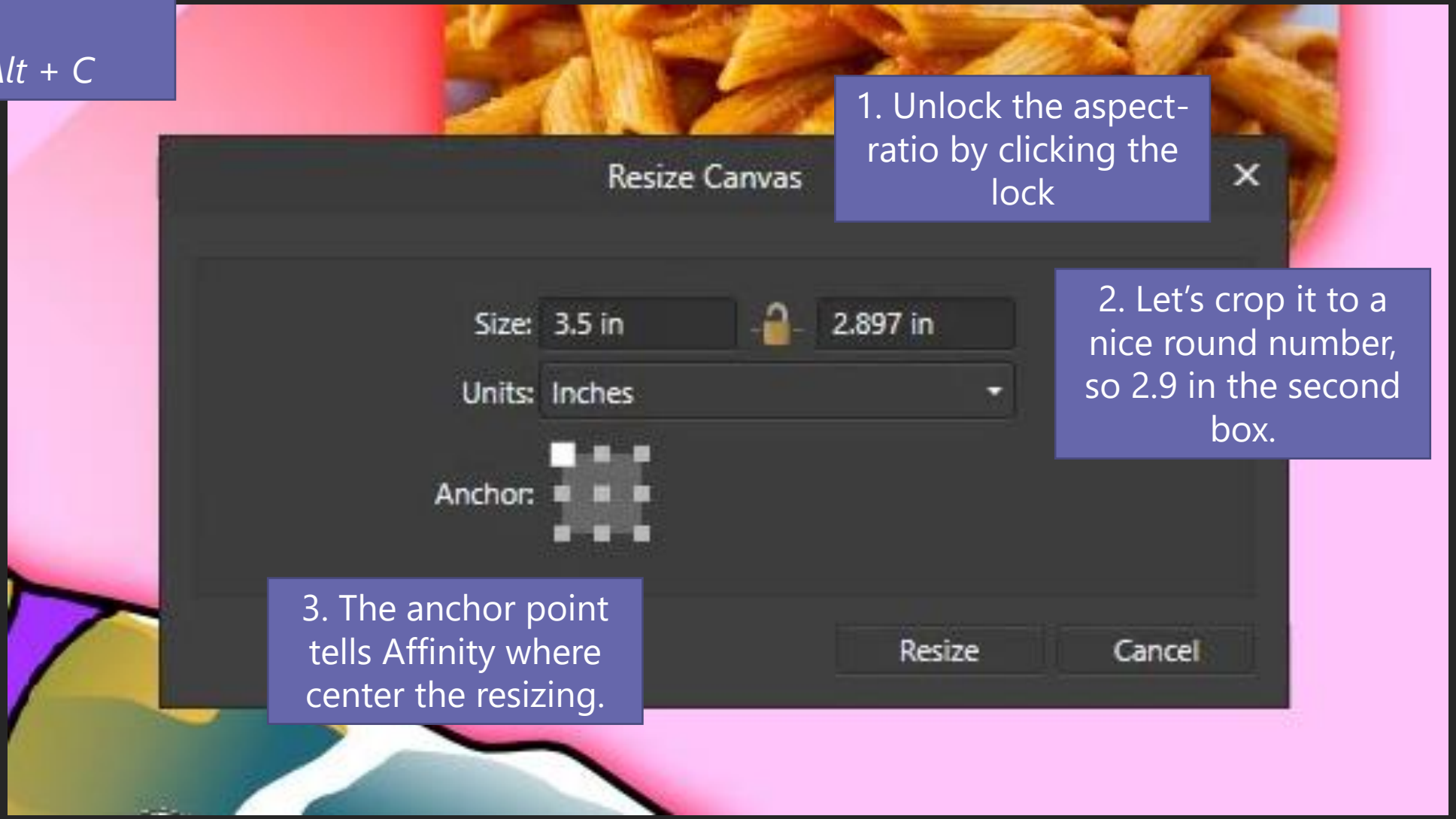

Check *Enable snapping*. Default settings are okay. Click close.
Now when you move your text around, you can see that it will "snap" to the guide we made.
You can always disable snapping when you don't need it, or delete the guide.
Snapping Manager
Enable snapping
Screen tolerance: 8
Candidates: Candidate List
Maximum: 6
Show snapping candidates
Only snap to visible objects
Force pixel alignment
Move by whole pixels
Snap to grid
Snap to baseline grid
Snap to guides
Snap to spread
Include spread mid points
Snap to margin
Include margin mid points
Snap to object bounding boxes
Include bounding box mid points
Snap to gaps and sizes
Snap to shape key points
Snap to object geometry
Snap to pixel selection bounds
Close

# *Finishing touches*


Use the *Crop Tool [C]* to crop white space off our image.
Penne pasta SUCKS but tomato sauce is awesome
File Edit Text Document Layer Select Arrange Filters View Window Help
Apply Cancel Mode: Unconstrained 1225 px x 1115 px Units: Pixels DPI: 350 Crop: 1225 x 1115 px Rotate Straighten Overlay: Thirds Grid Reset Darken Reveal
<Untitled> [Modified] (48.7%)
Nvg Xfm History Chn 32P
Position:
Histogram Color Swatches Brushes
RGB
R: 0
G: 0
B: 0
100 %
Adjustment Layers Effects Styles Stock
Opacity: 100 % Passthrough
text and line (Group)
(Penne pasta¶SUCKS ¶but)
(Curve)
bird (Group)
pop out bubble (Group)
pasta_01.jpg (Im...
(Curve)
background (Fill)
Drag handles to set crop size. Drag inside to move crop. Drag outside to rotate canvas. [O] to cycle overlay, Shift+[O] to cycle orientation.
Type here to search
ENG
4:38 PM
5/4/2022

Let's check the size of our canvas.

*Ctrl + Alt + C*



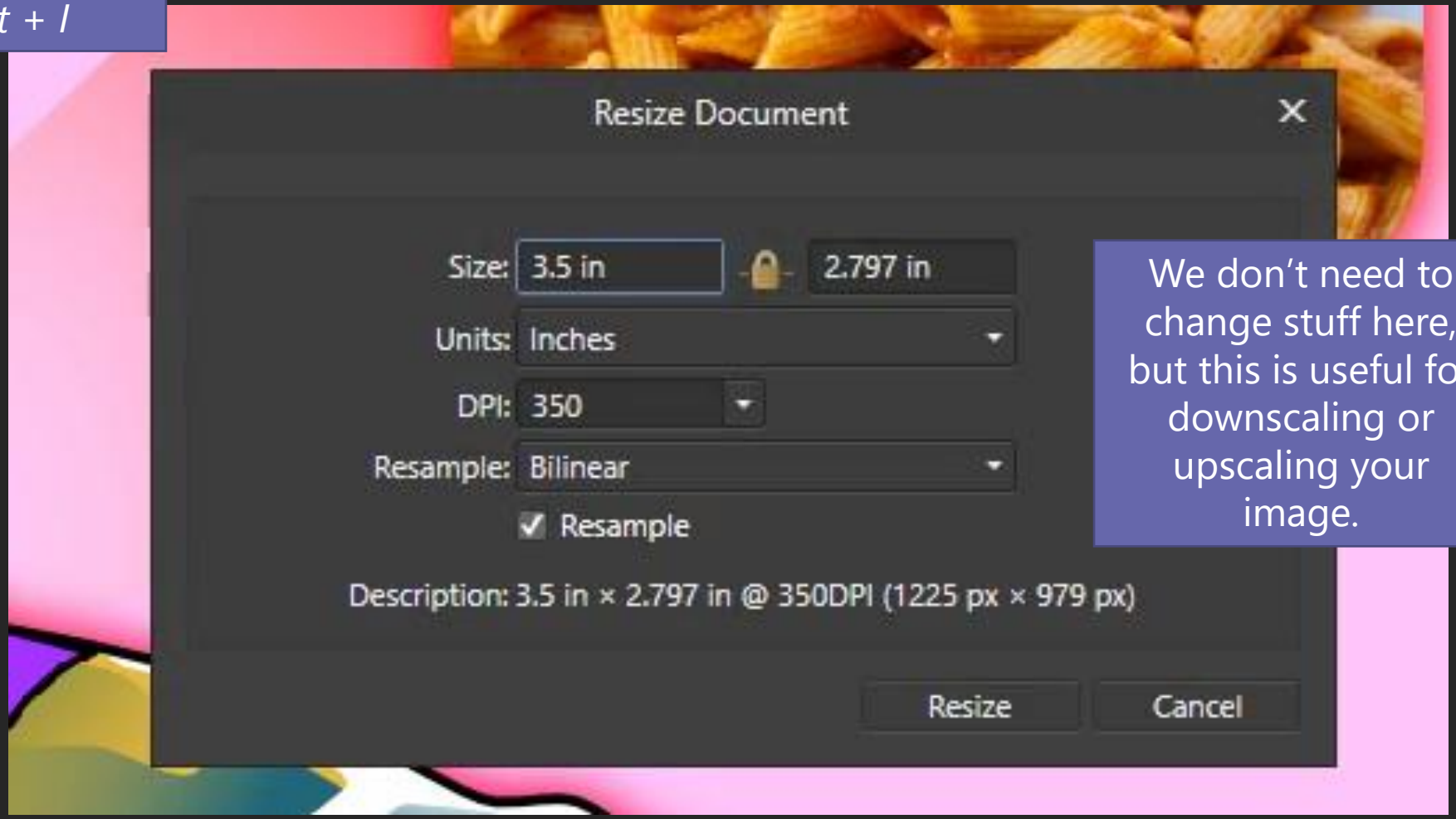

1. Unlock the aspect-ratio by clicking the lock

2. Let's crop it to a nice round number, so 2.9 in the second box.

3. The anchor point tells Affinity where center the resizing.

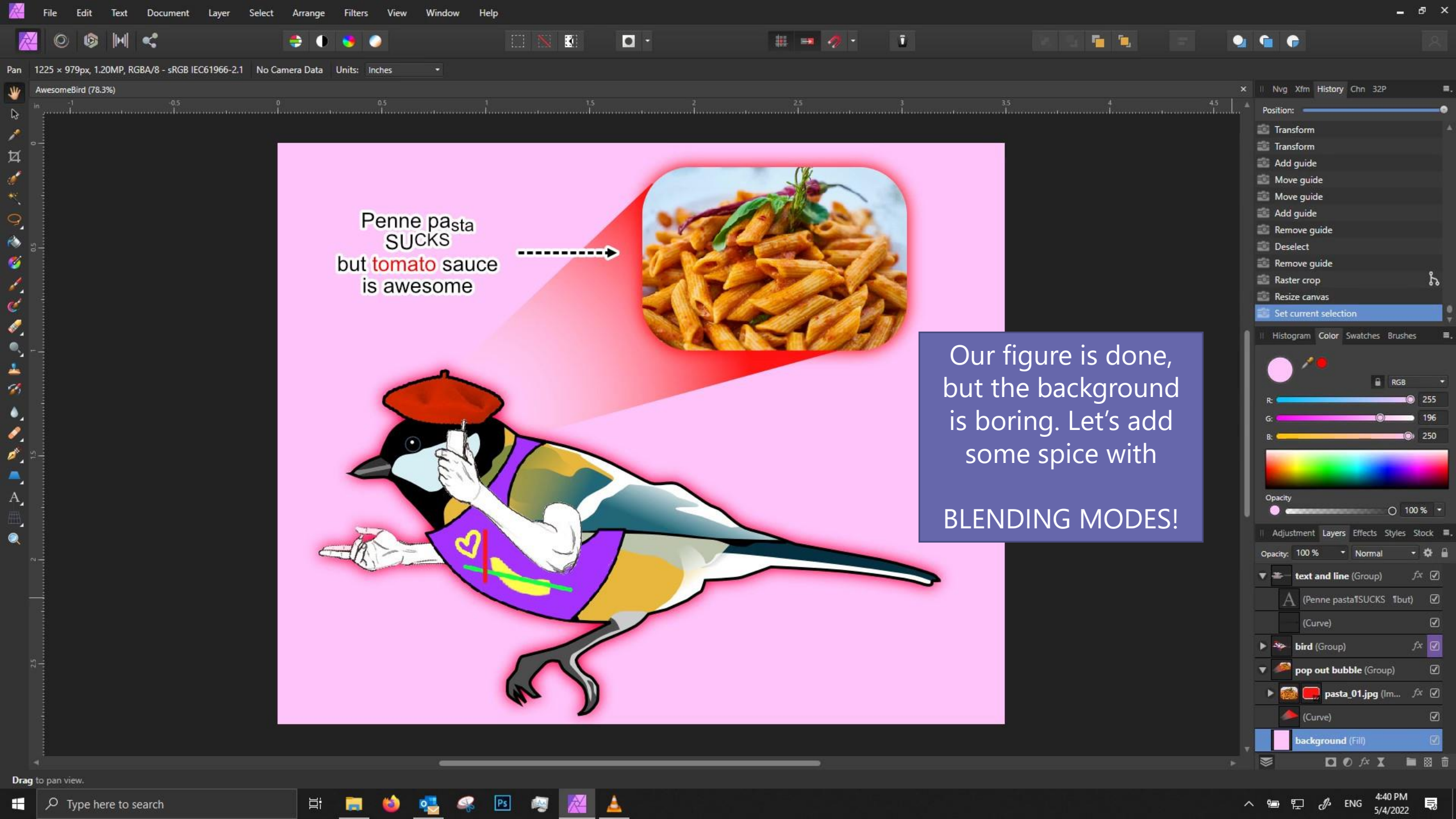
Let's check the size of our document.

*Ctrl + Alt + I*




We don't need to change stuff here, but this is useful for downscaling or upscaling your image.

# *Blending modes*


File Edit Text Document Layer Select Arrange Filters View Window Help
Pan 1225 × 979px, 1.20MP, RGBA/8 - sRGB IEC61966-2.1 No Camera Data Units: Inches
AwesomeBird (78.3%)
Penne pasta SUCKS but tomato sauce is awesome
Our figure is done, but the background is boring. Let's add some spice with
BLENDING MODES!
Nvg Xfm History Chn 32P
Position:
Transform
Transform
Add guide
Move guide
Move guide
Add guide
Remove guide
Deselect
Remove guide
Raster crop
Resize canvas
Set current selection
Histogram Color Swatches Brushes
RGB
R: 255
G: 196
B: 250
Opacity
100 %
Adjustment Layers Effects Styles Stock
Opacity: 100 % Normal
text and line (Group)
(Penne pasta SUCKS but)
(Curve)
bird (Group)
pop out bubble (Group)
pasta_01.jpg (Im...
(Curve)
background (Fill)
Drag to pan view.
Type here to search
ENG
4:40 PM
5/4/2022

Let's place the pasta picture again.

In the Layer panel, click on "Normal" and see how the image changes when you change the mode.

Pick the one you want. Experiment with how changing the opacity changes the image.

Put the new pasta layer underneath the bird but over the fill layer.

For extra experimenting, try changing the Blending mode of the gradient.

For scientific figures, I have my gradients default to "Normal" or "Multiply"

# Saving and exporting files

1. For editable files, save as .aphoto or .psd.
2. To save an image file, go to *File* > *Export*

*Most common image files*

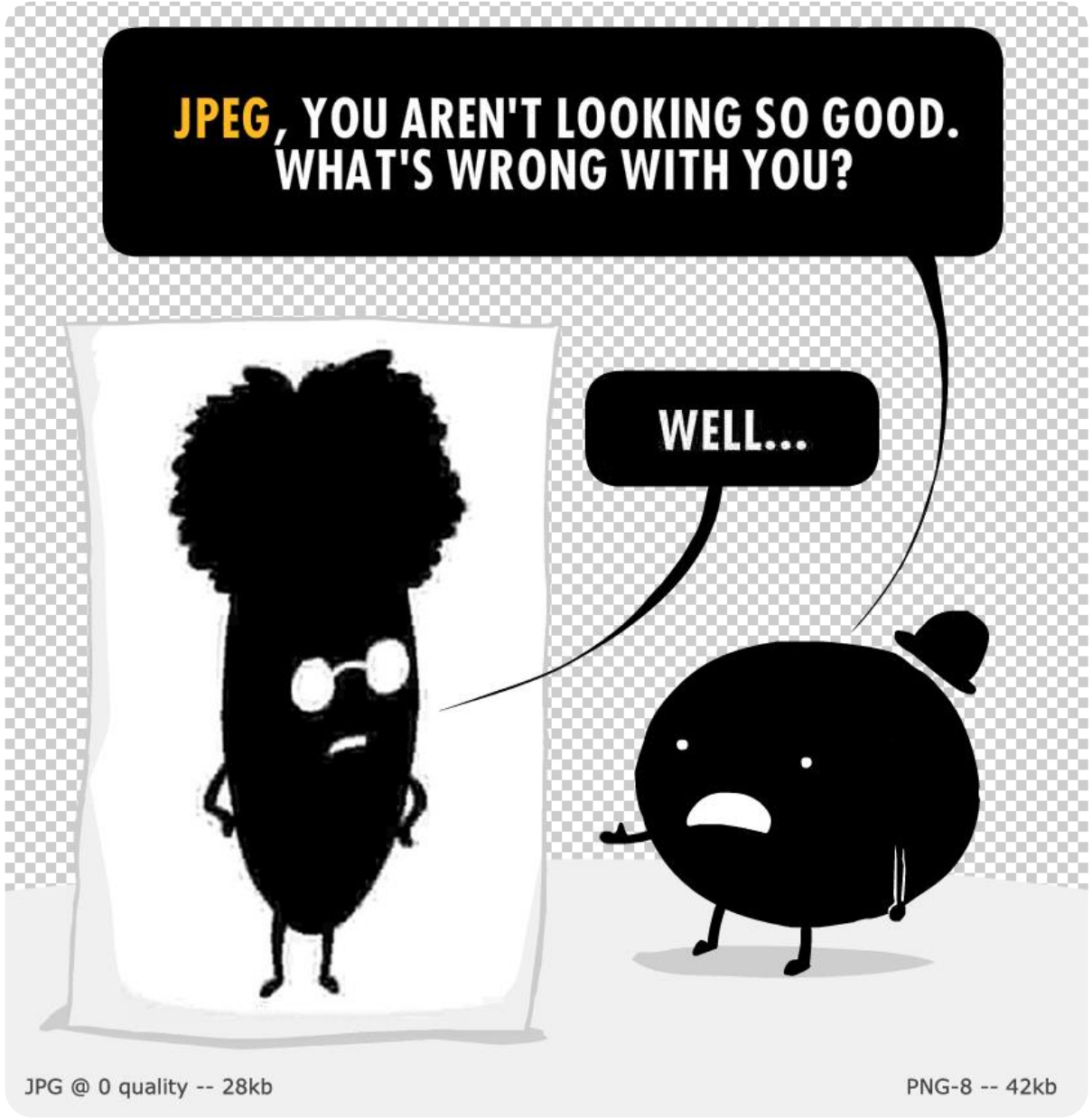
- **PNG** – Great for most things! My default, though photos in png can get quite large in file size. Also supports transparency.
- **JPG** – May introduce artifacts. Only recommended if you want to save space, and usually with photos rather than illustrations.
- **TIF** – Big files. Usually for print.

**JPG**

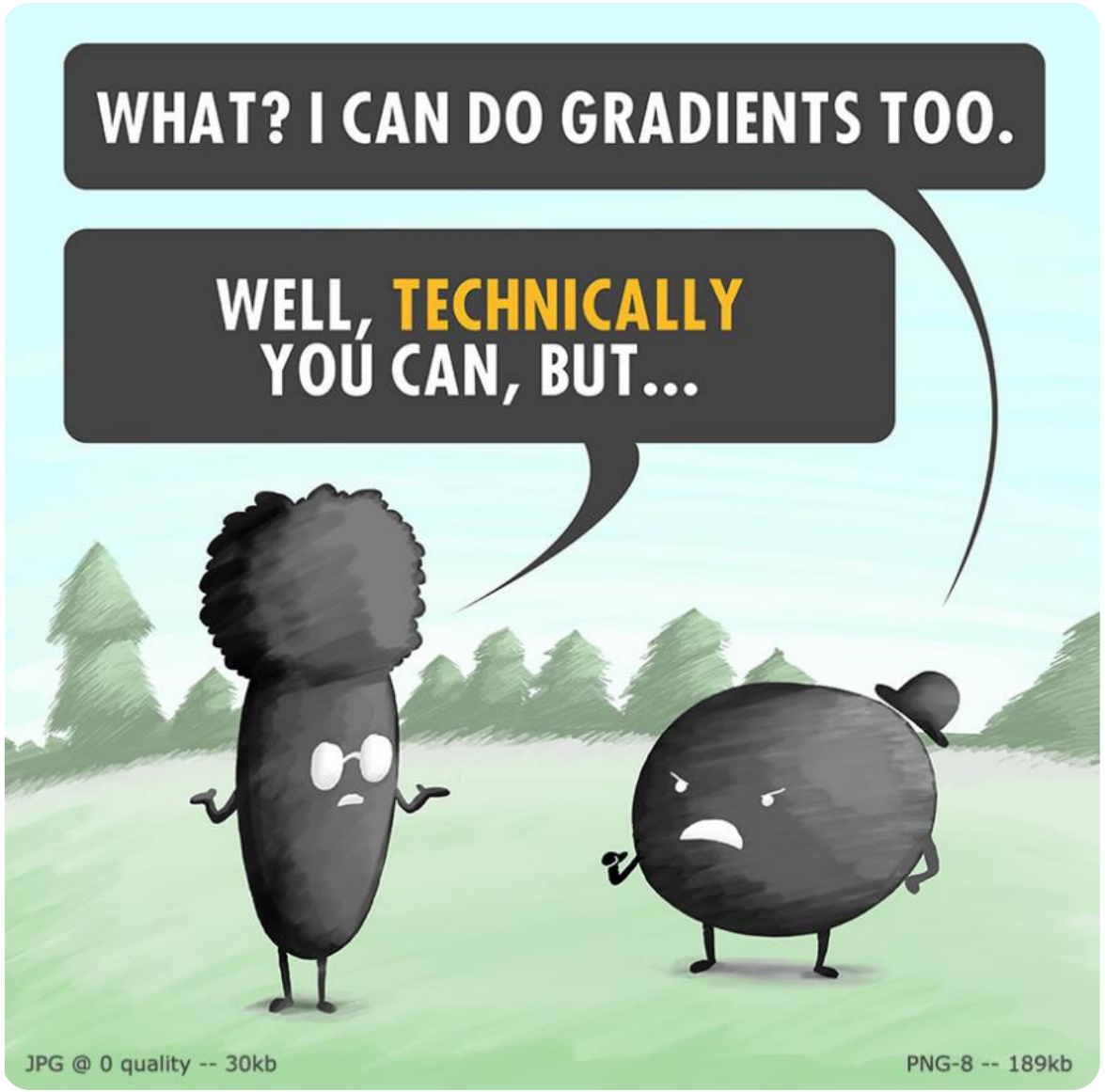
**528KB**

**PNG**

**4.16MB**



https://tapas.io/episode/188280



https://tapas.io/episode/188280

Congrats! Now you know some Affinity Photo/Photoshop basics and can make some *rad* scientific figures.