

LESSON IDEA

Shifting shapes

MATHS

ART & DESIGN



Learn with
Procreate®



Lesson ideas

Use these Lesson Ideas to spark your imagination for using Procreate in the classroom. Feel free to take them further and make them your own.

Shifting Shapes

There are thousands of images to make with an ancient Chinese Tangram puzzle. Get the shapes in place and let your imagination run wild.

All you need is an iPad and the following apps:



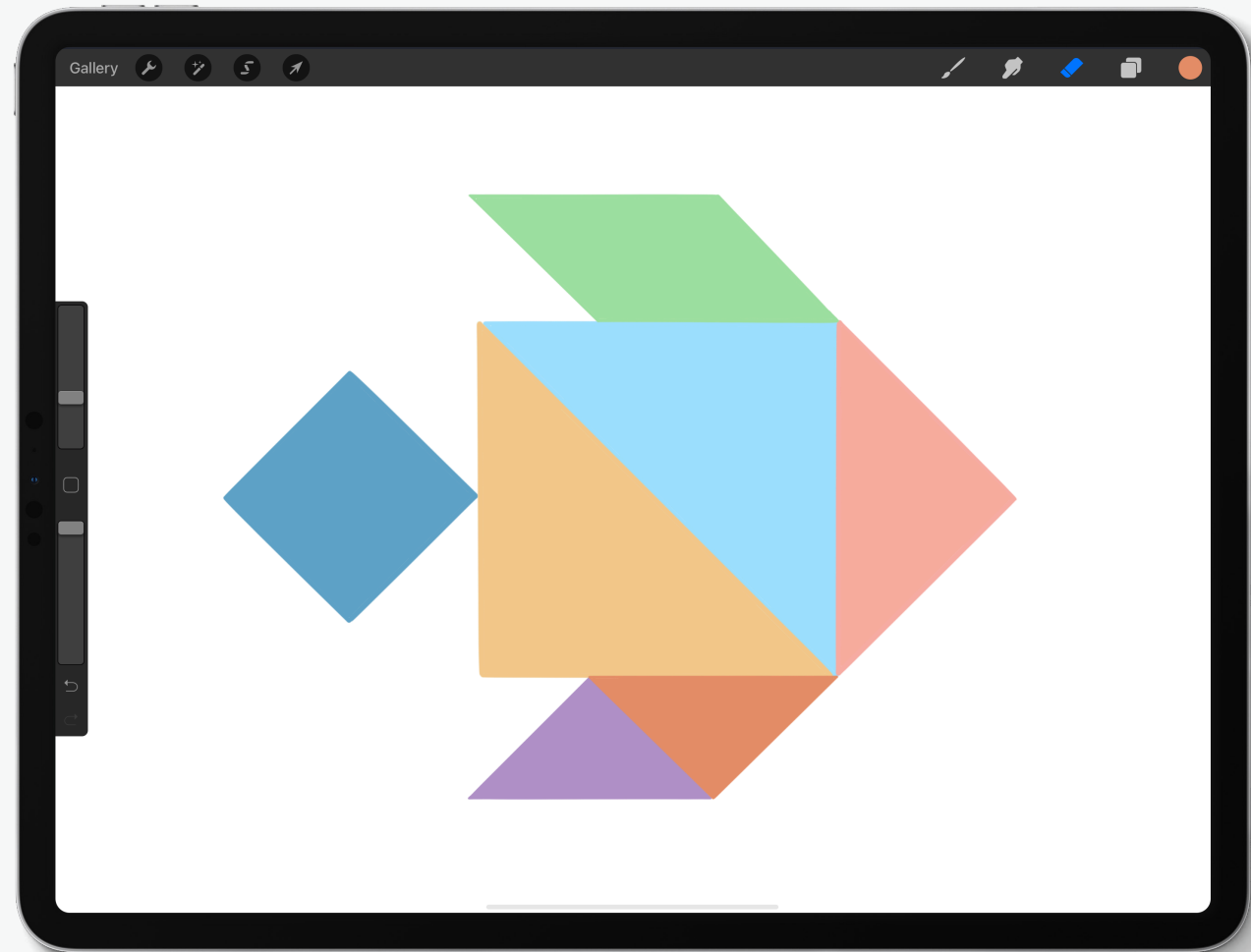
Safari



Procreate

Educational Value

- ✓ Students use geometric reasoning and creative problem solving to learn about spatial relationships.
- ✓ Students describe and draw two-dimensional shapes and composite shapes with digital technologies.
- ✓ Students understand how geometric shapes can be decomposed and recomposed into new shapes.



In this guide

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2	Getting started	
4	Draw your Tangram	
10	Break apart the pieces	
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What is a Tangram?

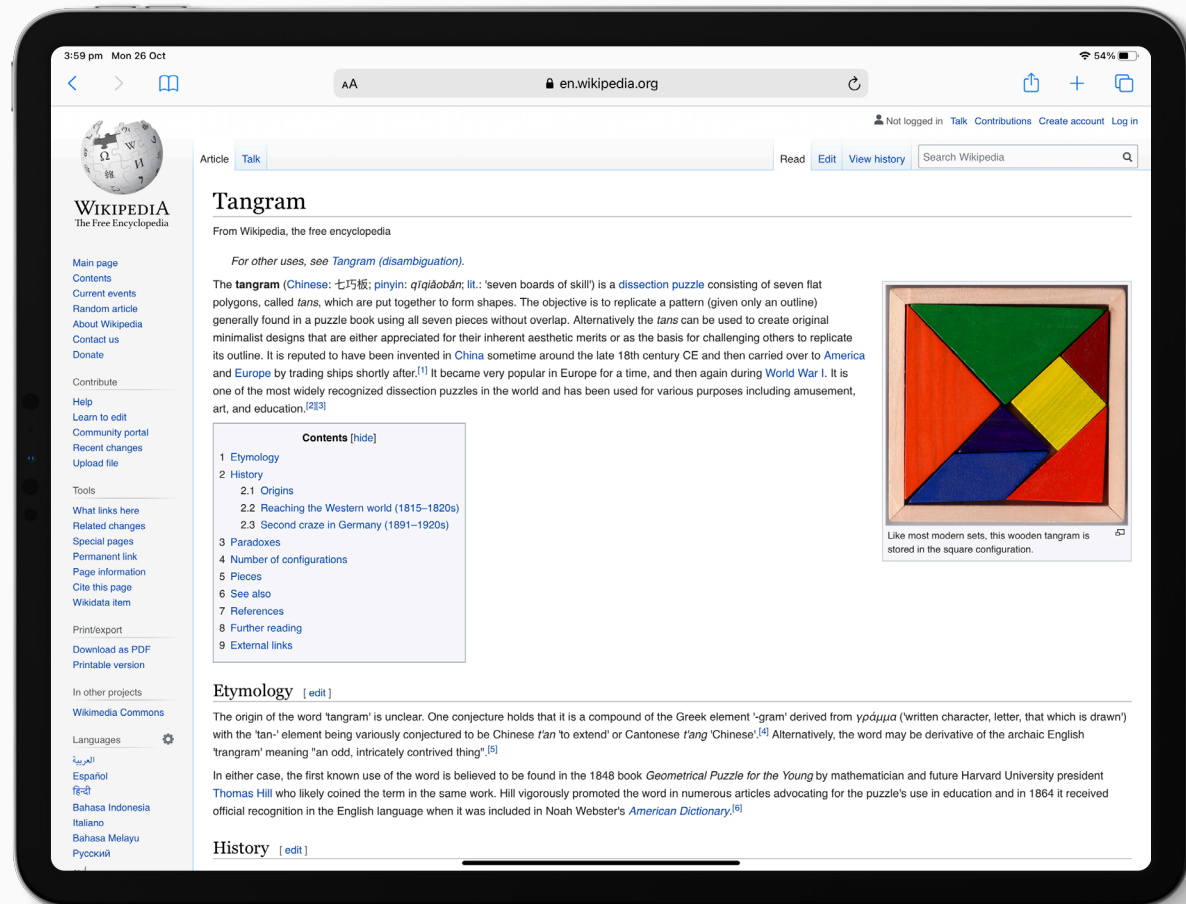
1.

Ancient Chinese geometric puzzle

A tangram is a dissection puzzle made of seven flat shapes, called tans. You can move the tans around to create all kinds of images.

RESEARCH

If you'd like to know more about the history of the tangram puzzle, use Safari to do your own research.



Safari

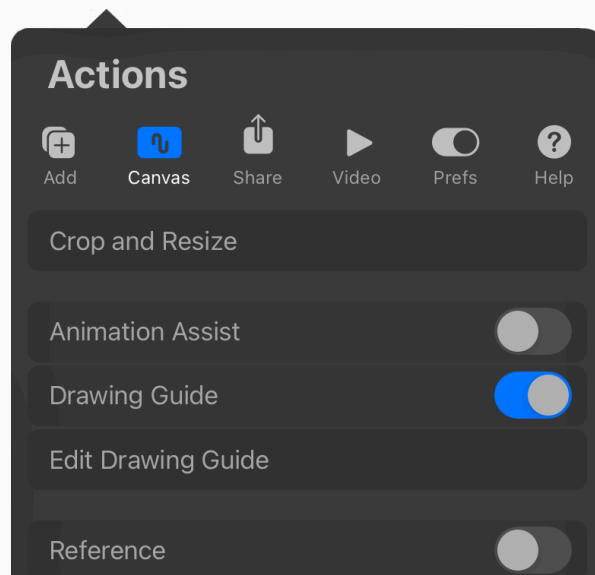


Getting started

2.

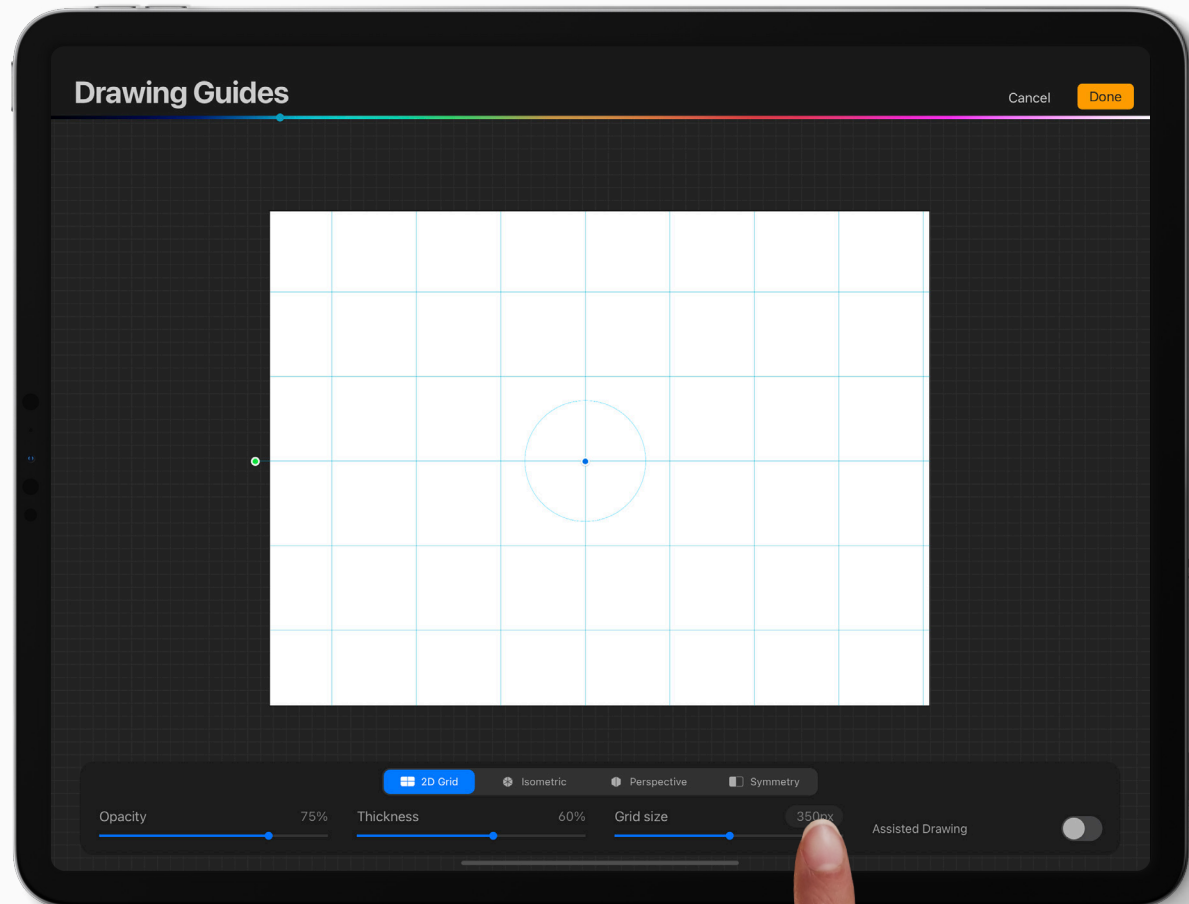
Create your canvas

- 1 Open the *Procreate* app and tap the + in the top right to create a new A4 canvas.
- 2 Open the *Actions* menu by tapping the wrench icon in the top left corner, and tap *Canvas*.
- 3 Toggle on *Drawing Guide*, and then tap *Edit Drawing Guide*.
- 4 Tap the pixel amount next to *Grid Size*.



← TOGGLE ON

← TAP TO EDIT



Edit your guides

Tap *Pixels* and enter '350' using the number pad.

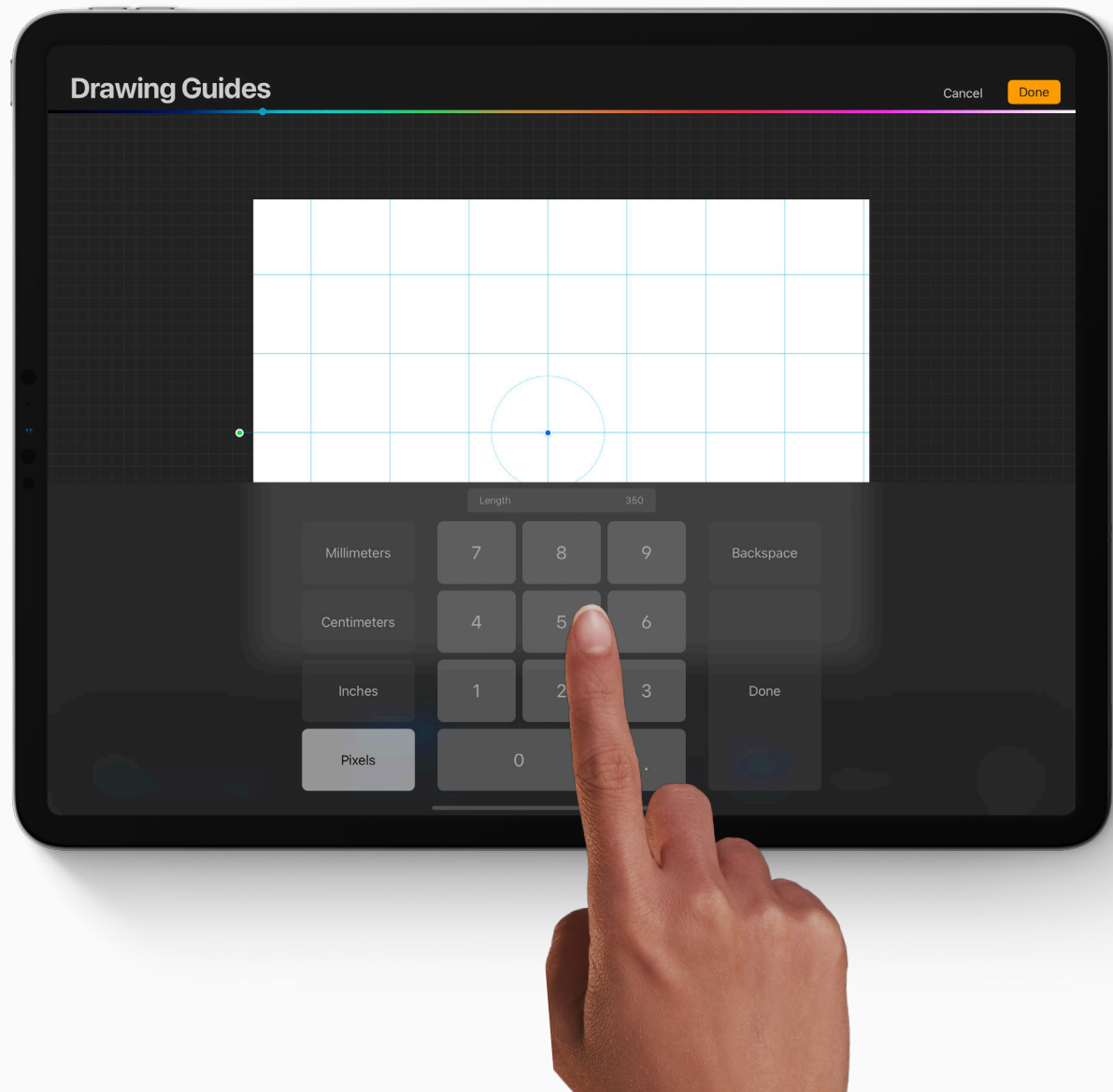
Then tap, *Done* on the number pad.

Now you have a two-dimensional grid of squares 350 pixels wide. Tap *Done* in the top right corner return to the canvas.

TOP TIP

The colored bar across the top of the Drawing Guides screen changes the color of the guides when you tap it.

Be careful not to accidentally tap on this and change the color to white when tapping *Done*.



Draw your Tangram

4.

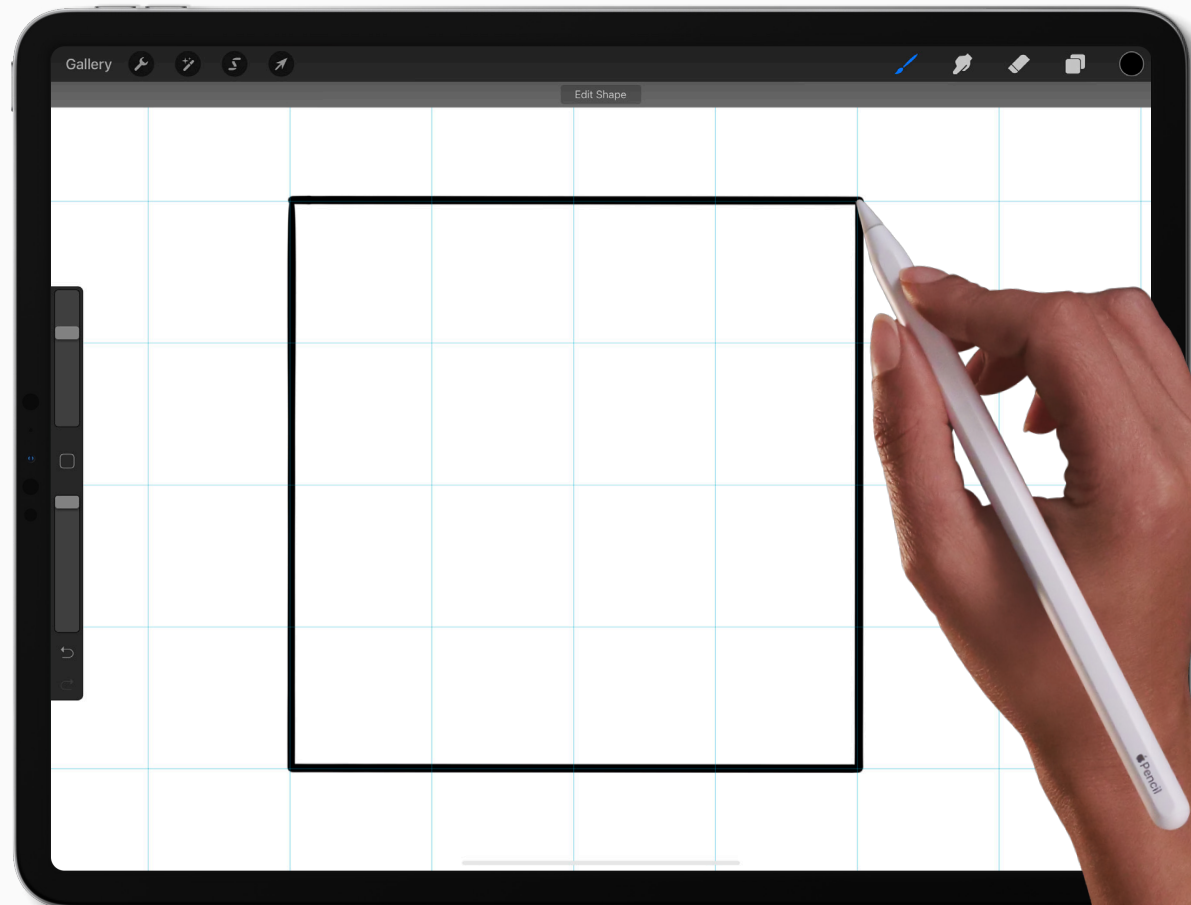
Step one

Tap the *Brush* icon in the top right menu, to select a brush.

Then draw a square in the middle of your canvas that is 4 squares wide and 4 squares high.

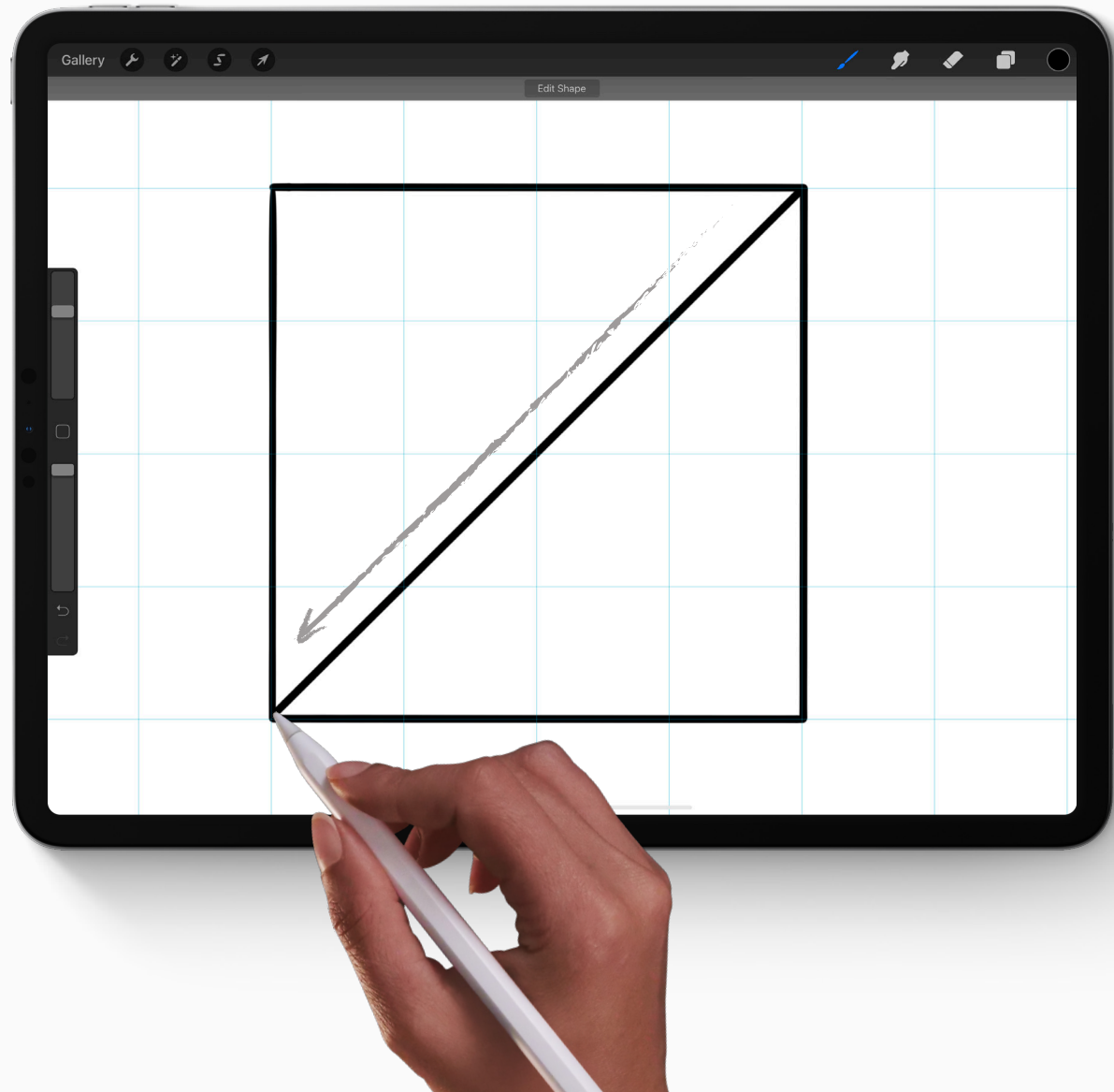
DON'T FORGET QUICKSHAPE

Once you've drawn your square, hold for a second at the end to make your lines snap into a perfect shape.



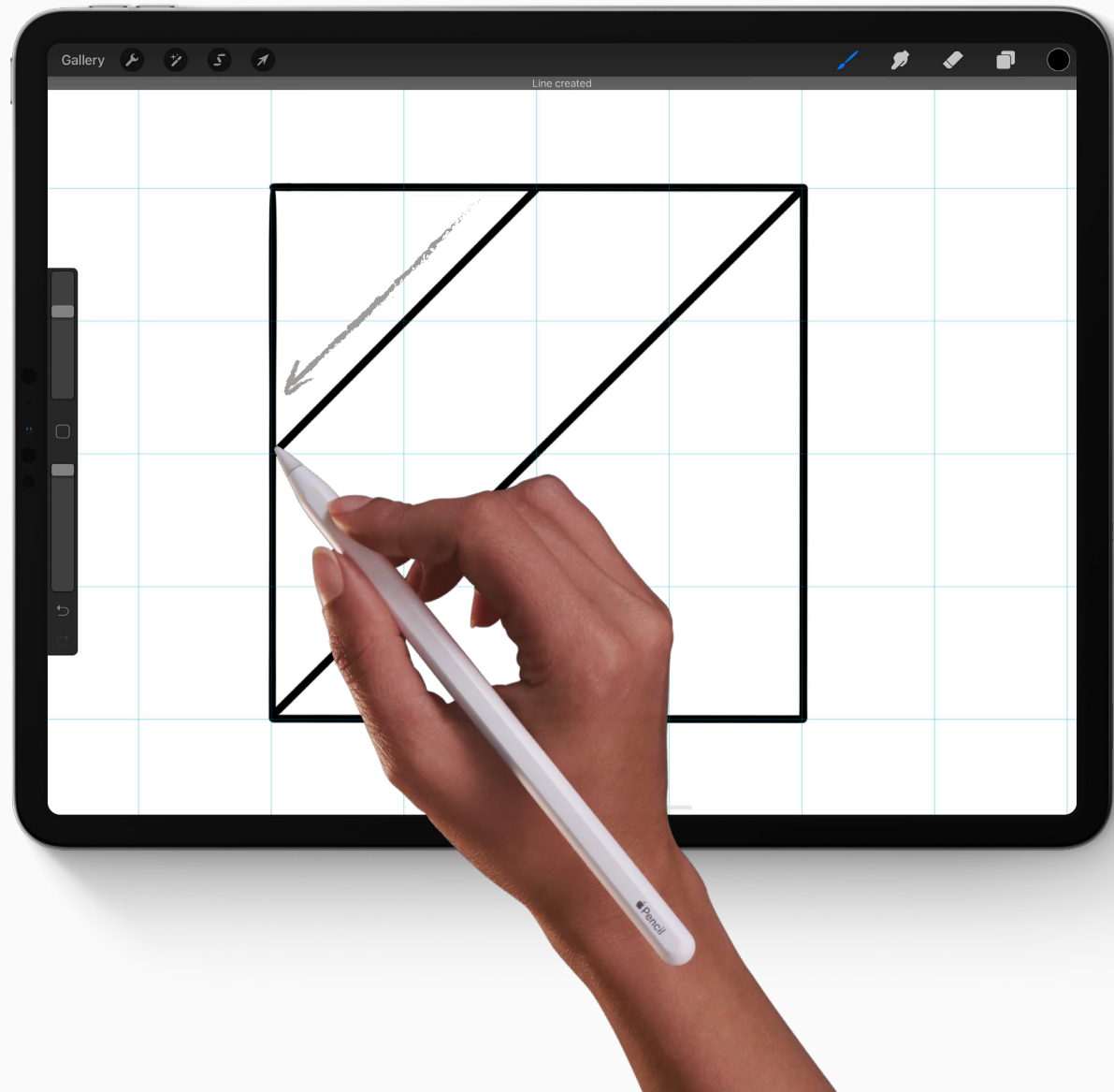
Step two

Draw a diagonal line from the top right corner to the bottom left corner of the square, creating two isosceles triangles.



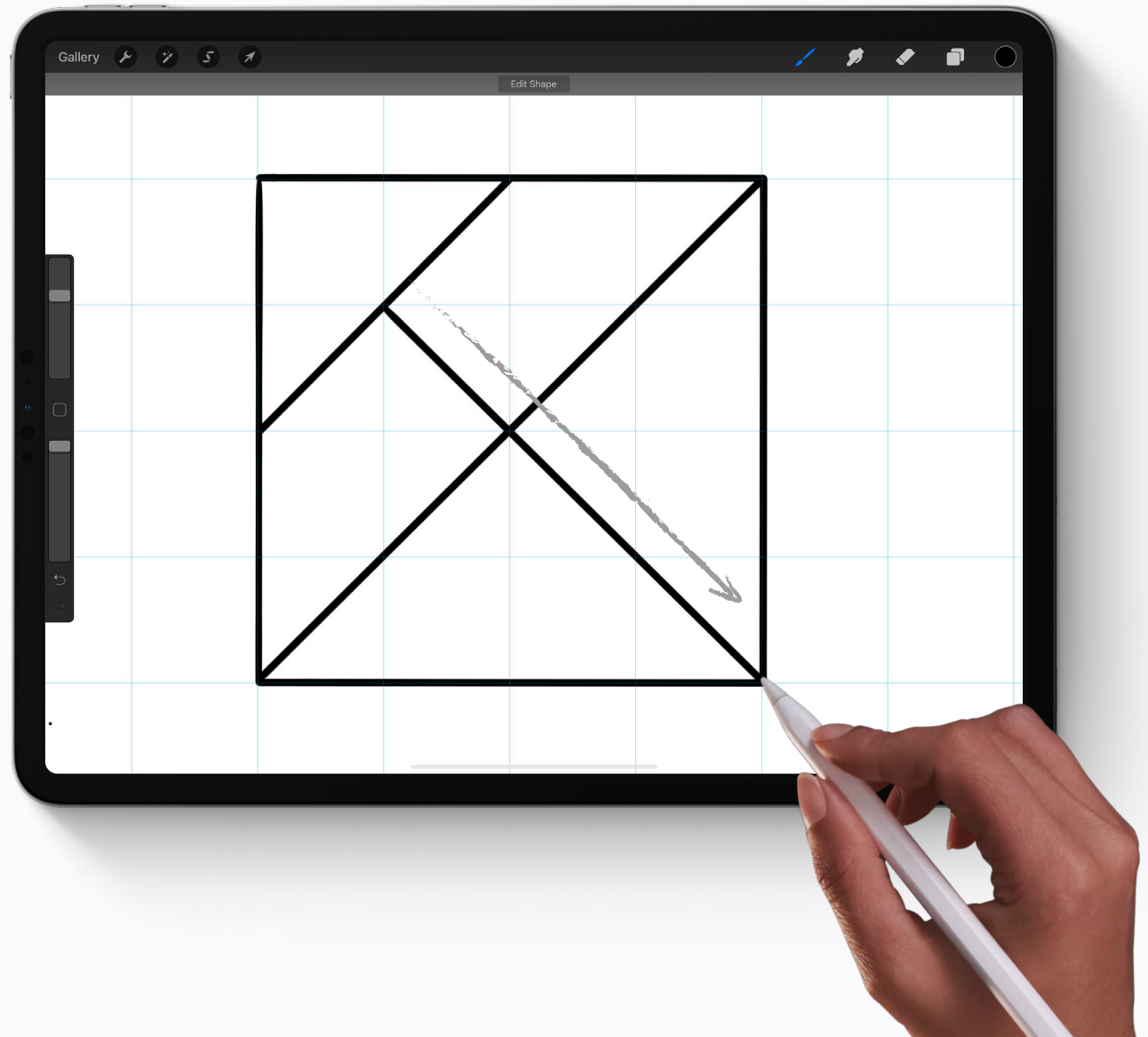
Step three

Draw a diagonal line from the middle of the top of the square, to the middle of the left side of the square, cutting the top off of one of your triangles.



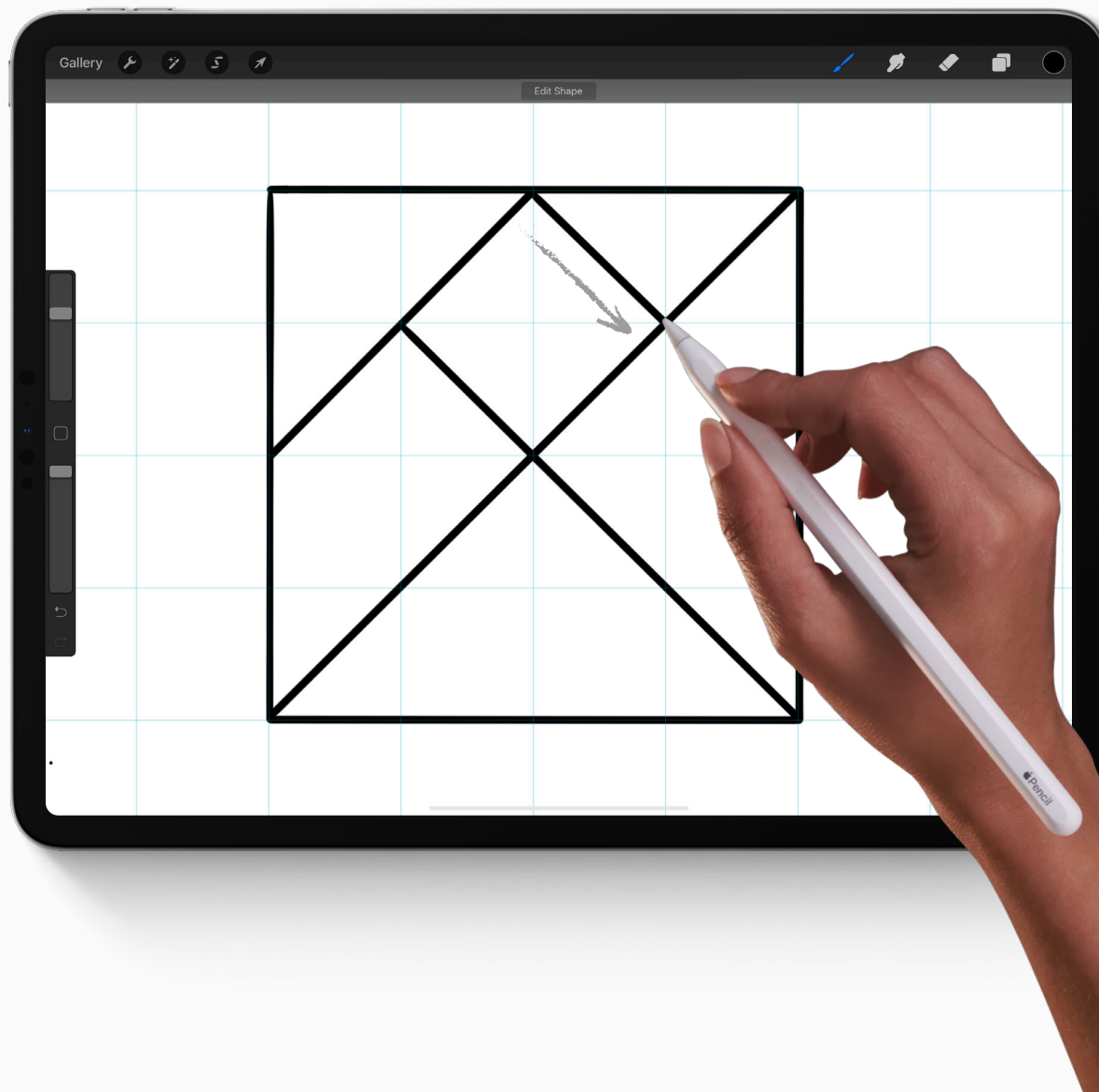
Step four

Draw a diagonal line from the middle of the new triangle in the top left, to the bottom right-hand corner of the main square.



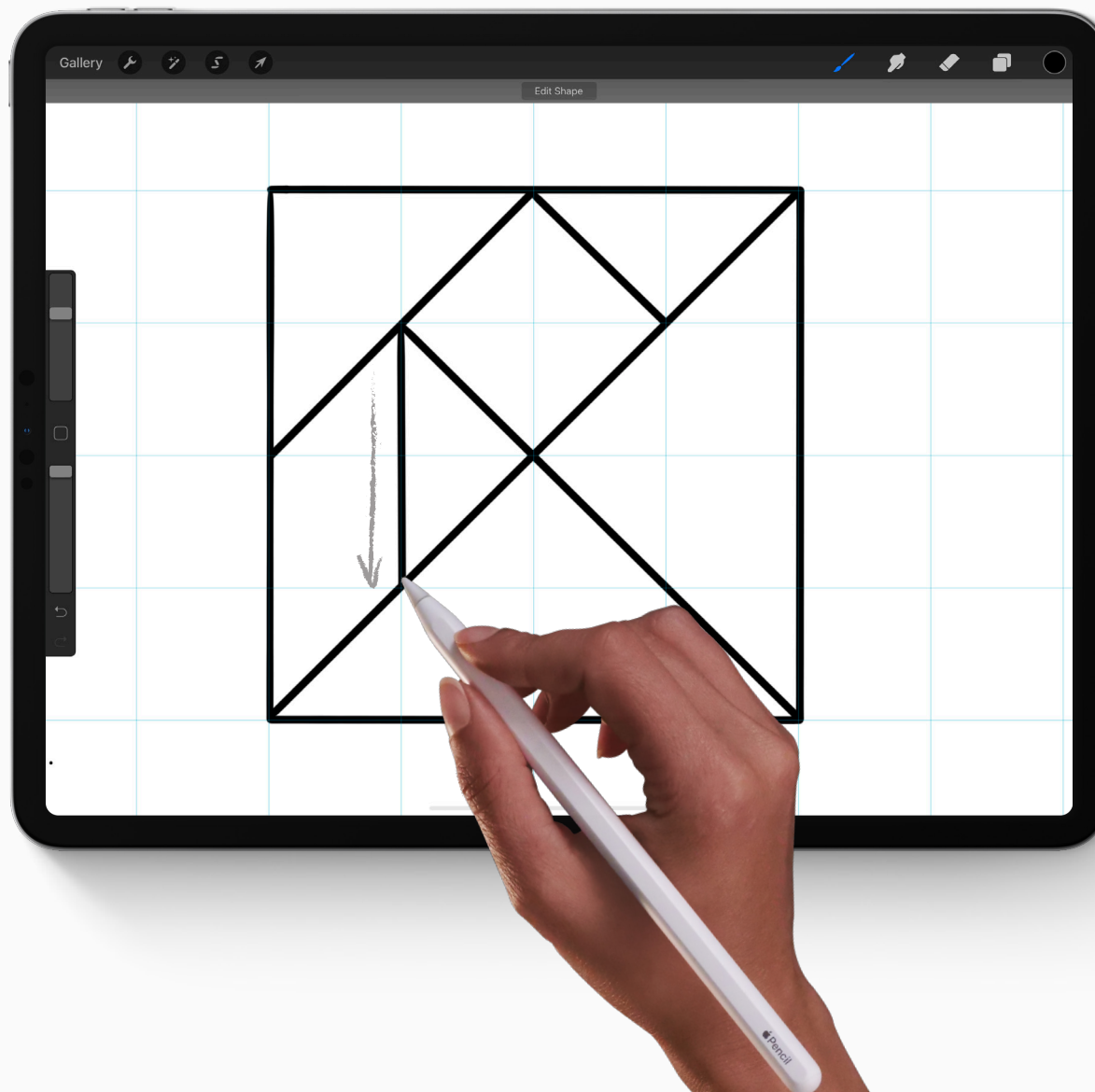
Step five

Draw a diagonal line from the middle of the top of the square towards the first line you drew, creating another triangle.



Step six

Finally, draw a vertical line from the center of the top left triangle down to the next line it runs into.



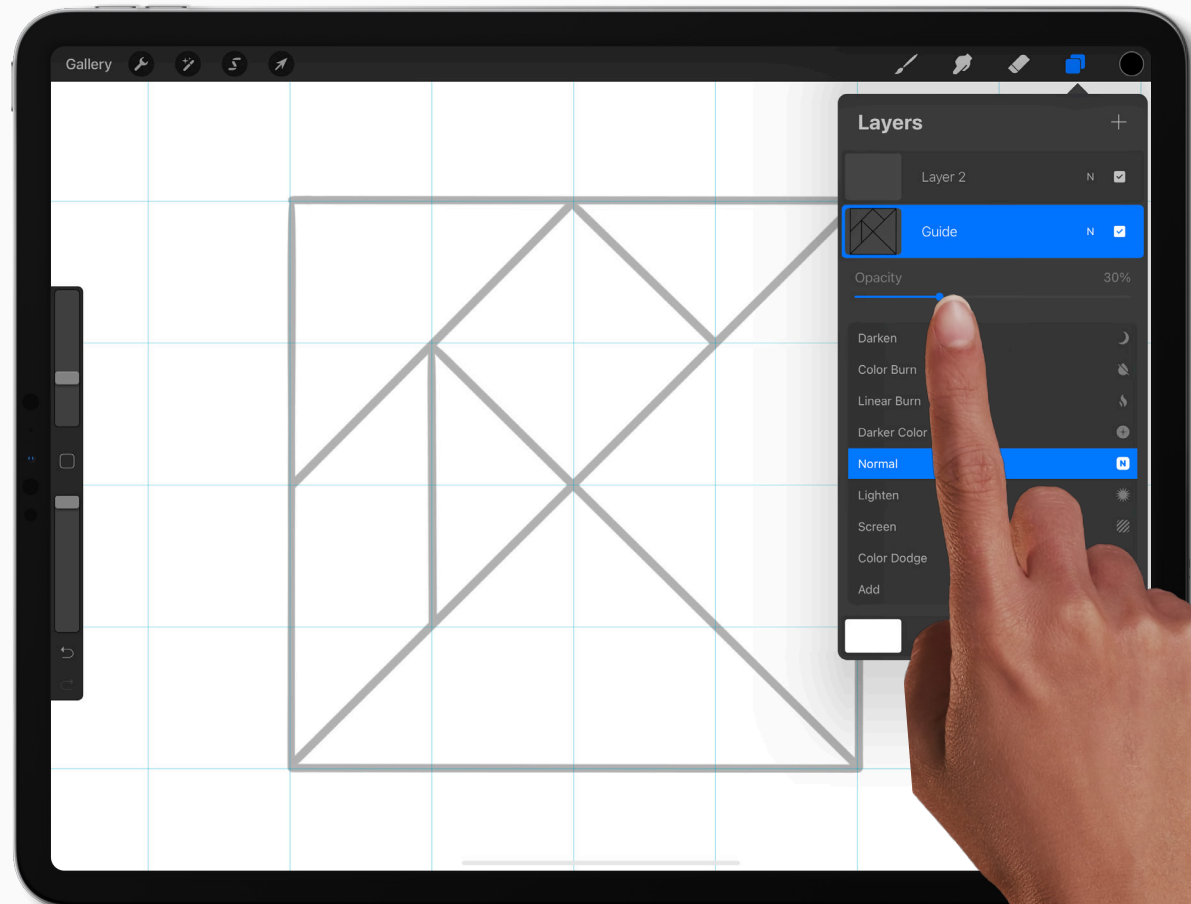
Break apart the pieces

10.

Create a new layer

Now you have drawn the plan for your tangram, it's time to create each of the pieces individually so you can move them around.

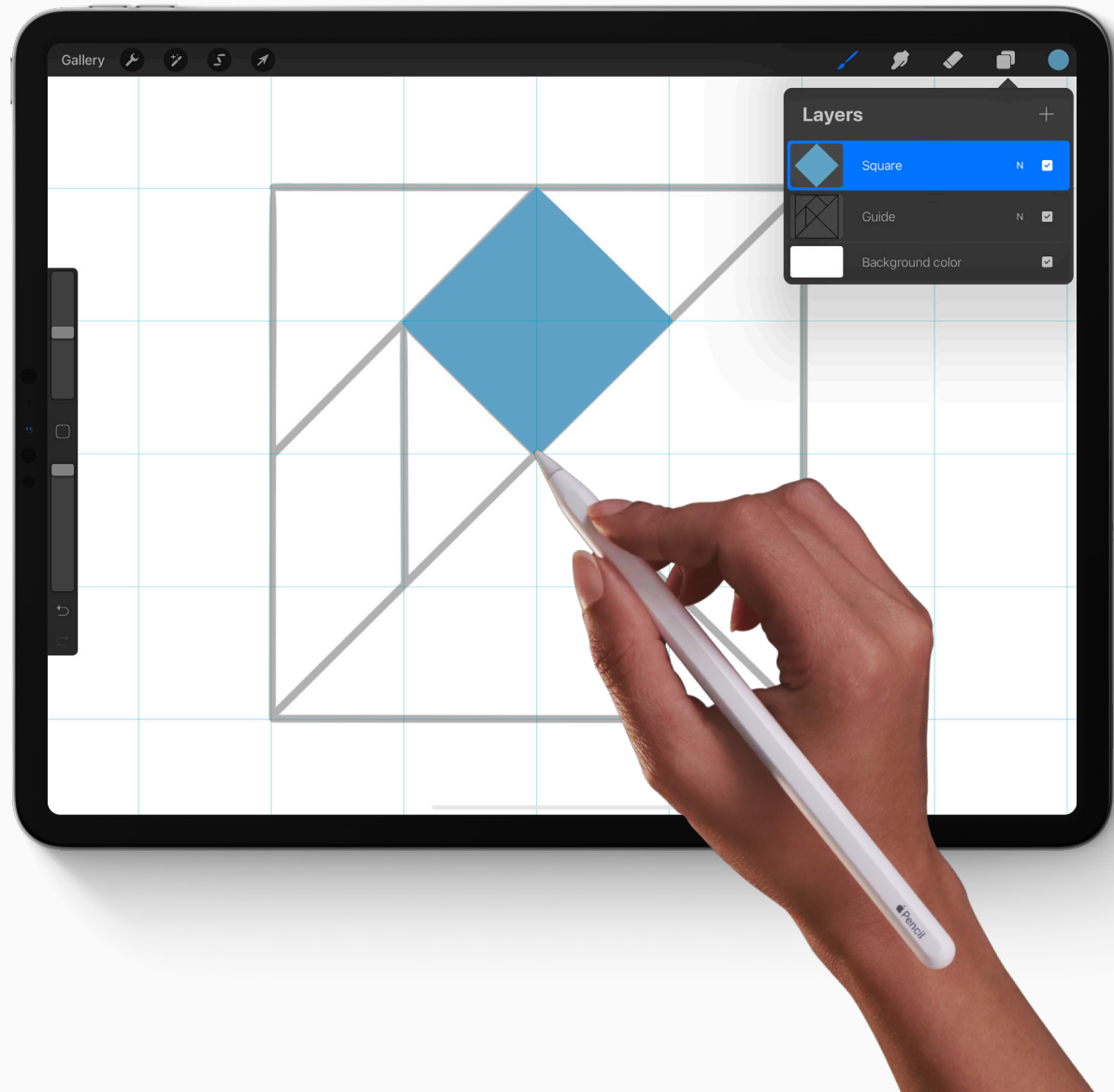
- 1 Tap the two squares in the top right corner to open the *Layers Panel*.
- 2 Tap the *N* on the Layer you've drawn on to reveal the *Blend Modes* menu.
- 3 Drag the *Opacity* slider to the left to 30%. This will make your guide faint in the background so you can paint on top of it more easily.
- 4 Tap the + icon to create a new layer above your guide.



Color your shapes

On your new layer, trace the small square in the middle of your tangram.

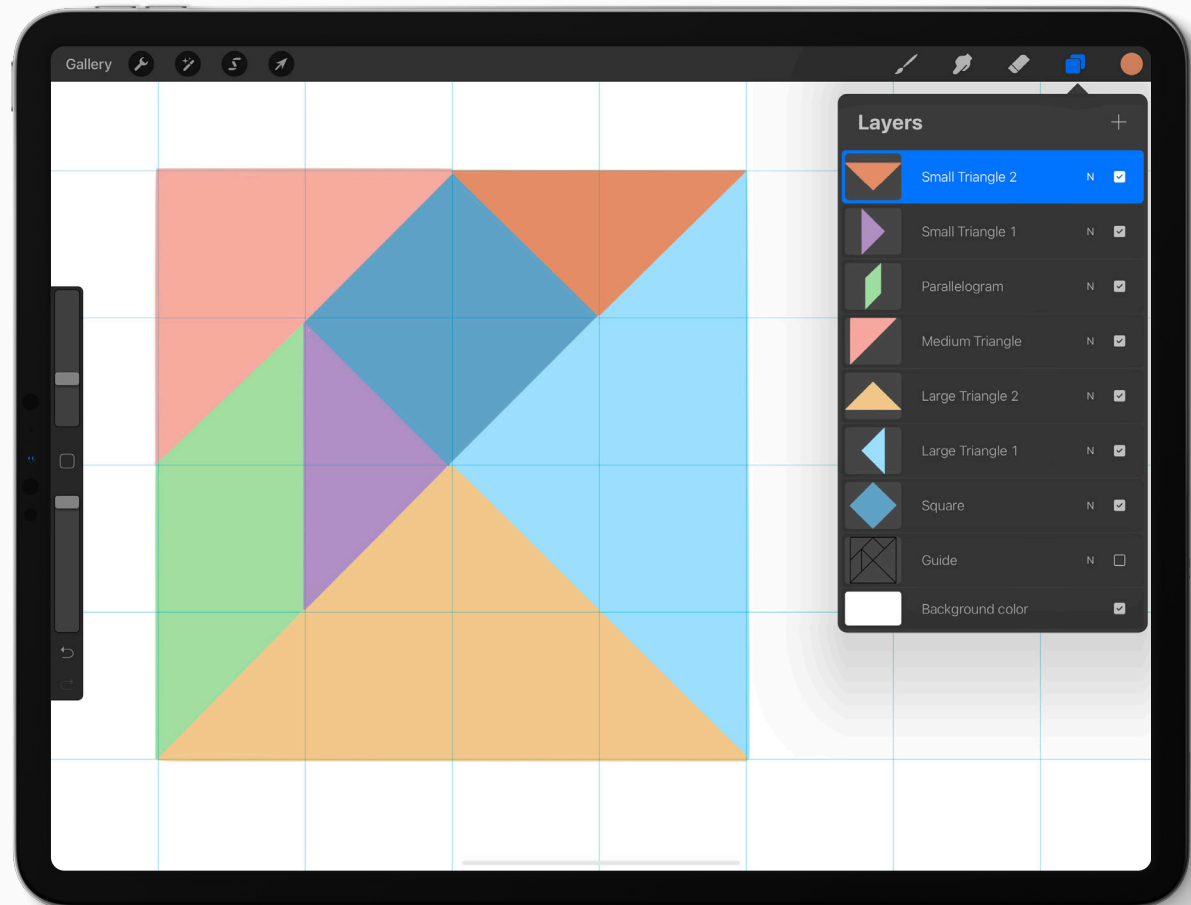
- 1 Tap the *Color Button* in the top right corner, and select a color that you would like to use.
- 2 Use ColorDrop to fill the object, by dragging your selected color to the middle of the square.
- 3 Tap your layer to open the *Layer Options* menu and rename it 'Square'.



Repeat

Repeat the process of coloring in the shapes – each on a new, named layer.

Congratulations! You have created a digital tangram set.



Using your Tangram

Transform mode

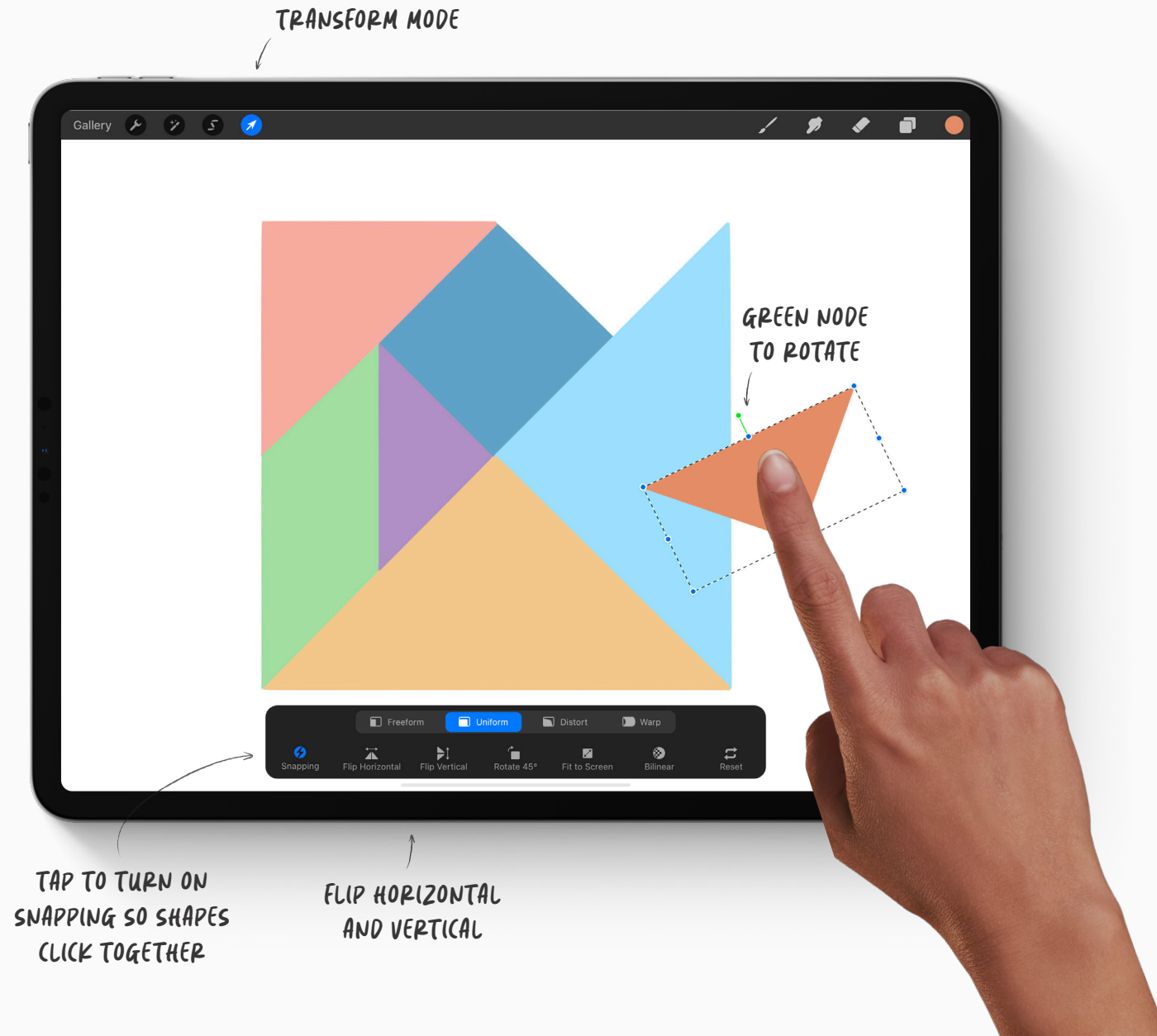
To move your tangram pieces around, first make sure the piece you would like to move is selected in the *Layers Panel*.

Then, tap the arrow icon in the top right corner to enter *Transform mode*.

Now you can move, rotate, and flip your shapes to make pictures with them.

TANGRAM RULES

When playing with tangrams there are two important rules – you cannot resize your pieces to make them bigger or smaller, or have any shapes overlapping. (But some rules *are* made to be broken...)



How many images can you make?

There are over 6500 known tangram configurations, and people are creating more every day. How many different images can you make with yours?

TOP TIP

You might like to make a copy of your tangram artwork before you get started so you always have a fresh set to work with.

To make a copy of your artwork go to the *Gallery*.

Tap *Select*, then select your artwork, and tap *Duplicate*.



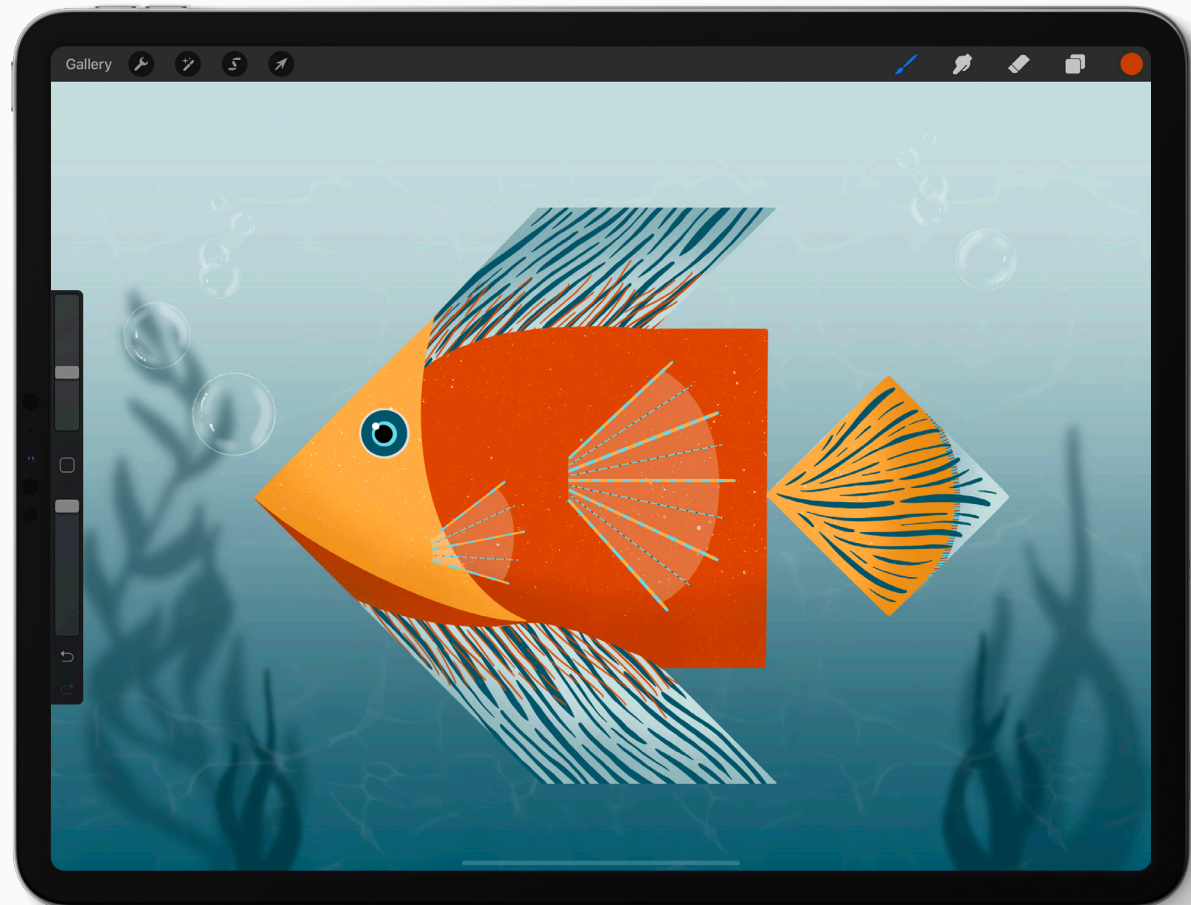
Take it further

15.

Finished artwork

Once you've rearranged your pieces into a composite shape, you can turn it into a finished artwork.

- ✳ Add a layer above your shapes to add detail and character.
- ✳ Add a layer below your shapes to create an environment.

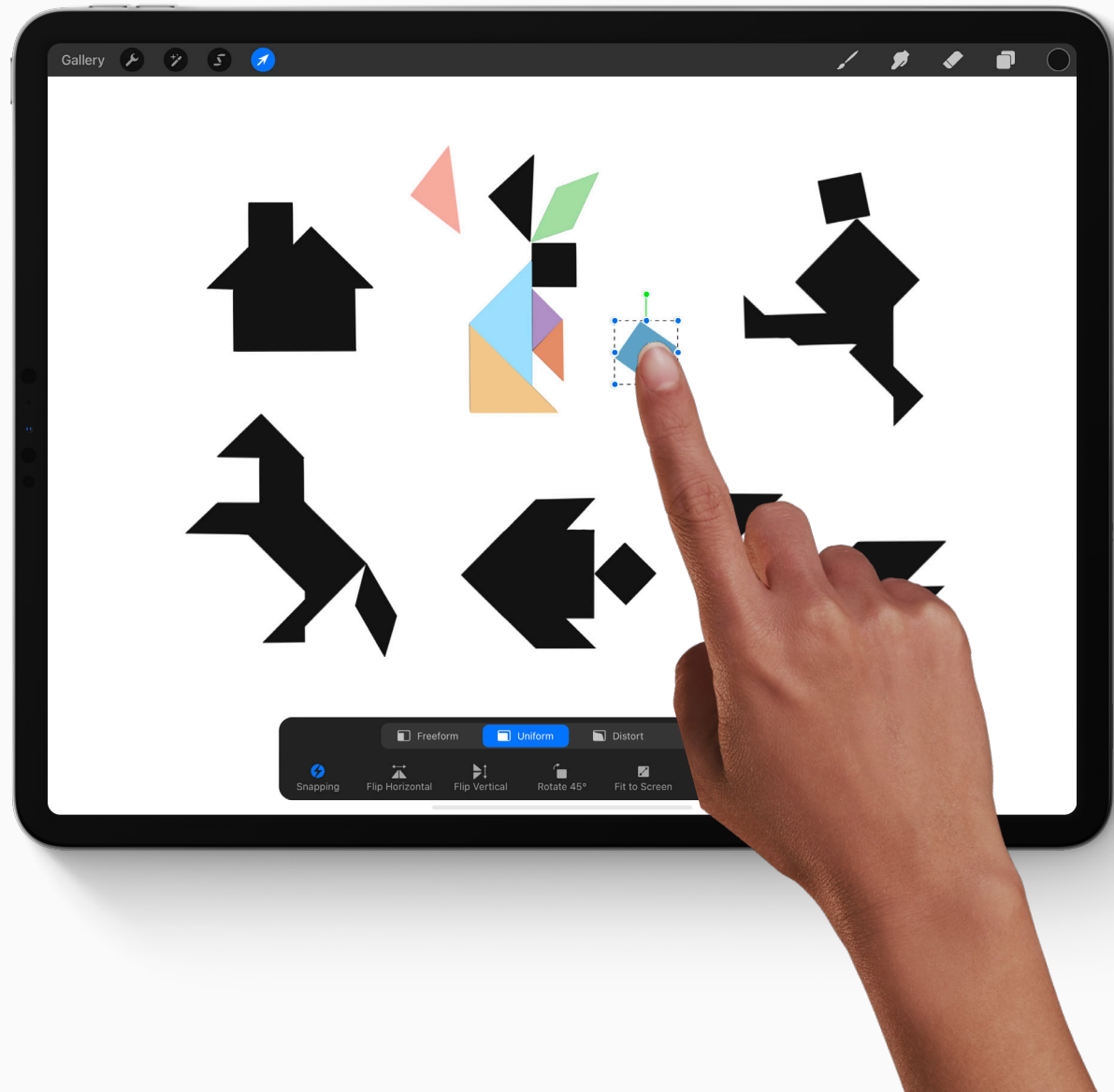


Tangram with your classmates

Color your tangram creations black and Airdrop to your classmates to use as a challenge.

- 1 In a duplicate version of your artwork, color every shape black and ensure there are no gaps giving away what shape goes where.
- 2 Tap the wrench icon to open the *Actions menu*, and tap *Share*.
- 3 Select *PNG*, and Airdrop to your friend's device to send them the image.

Once they have the image they can insert it as a base layer, and move their own tangram pieces over the top to complete the composite shapes.



Create

Artistic expression helps make education meaningful, memorable and fun. Find more creative lesson ideas at education.procreate.art

To dive deeper into the full creative potential of Procreate, see our Handbook at procreate.art/handbook



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