

Transformations in Quadrants-5th Grade

Create Congruent Triangles with transformations

5.8A Sketch the results of translations, rotations, and reflections on a Quadrant I

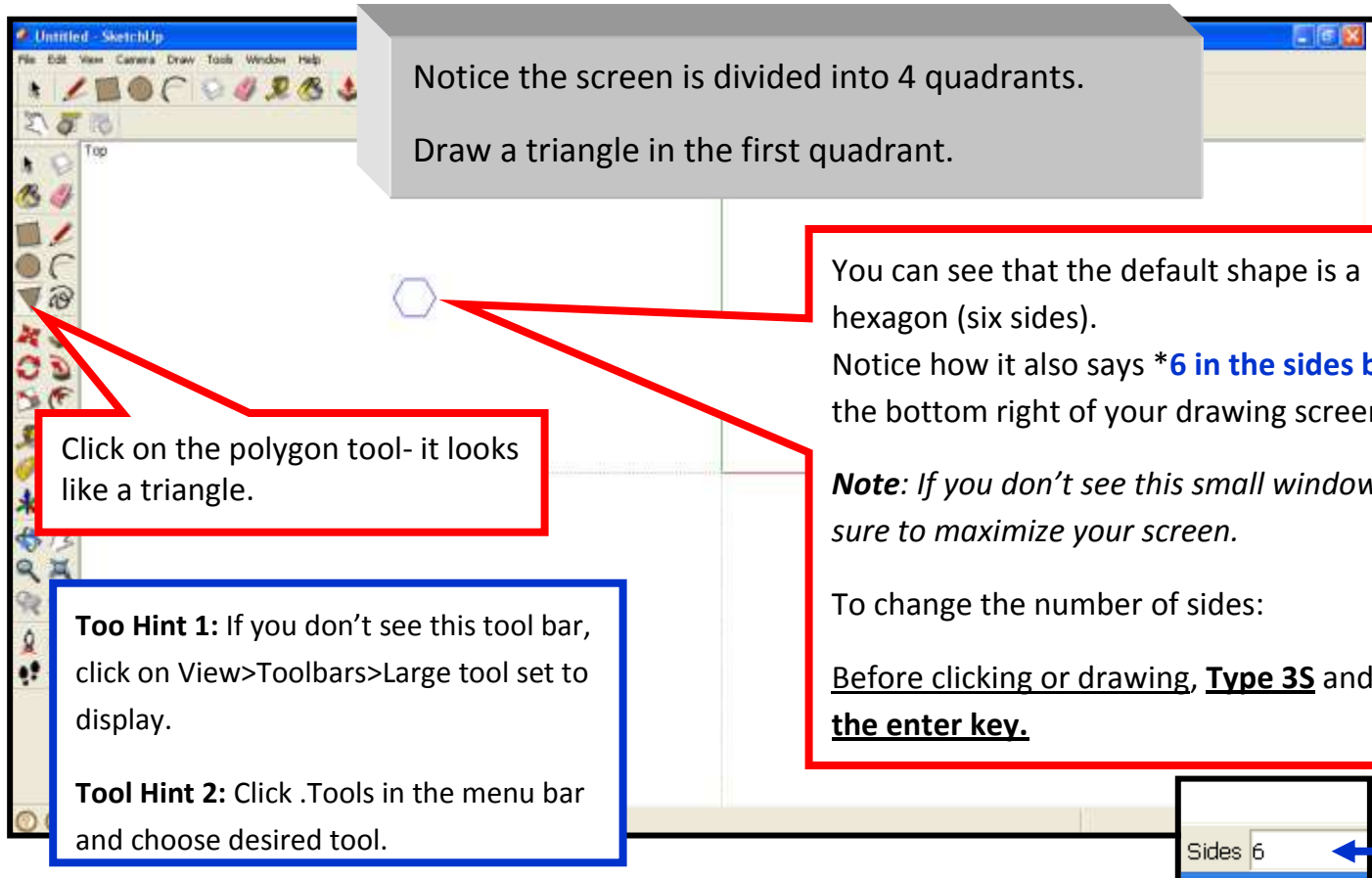
5.8B Identify transformation that generates one figure from the other when given two congruent figures on a Quadrant I coordinate grid.



Click on **Choose template**

Select **Plan View- Feet and inches**

Click on **Start using Sketch up**



Notice the screen is divided into 4 quadrants.

Draw a triangle in the first quadrant.

Click on the polygon tool- it looks like a triangle.

Too Hint 1: If you don't see this tool bar, click on View>Toolbars>Large tool set to display.

Tool Hint 2: Click .Tools in the menu bar and choose desired tool.

You can see that the default shape is a hexagon (six sides).

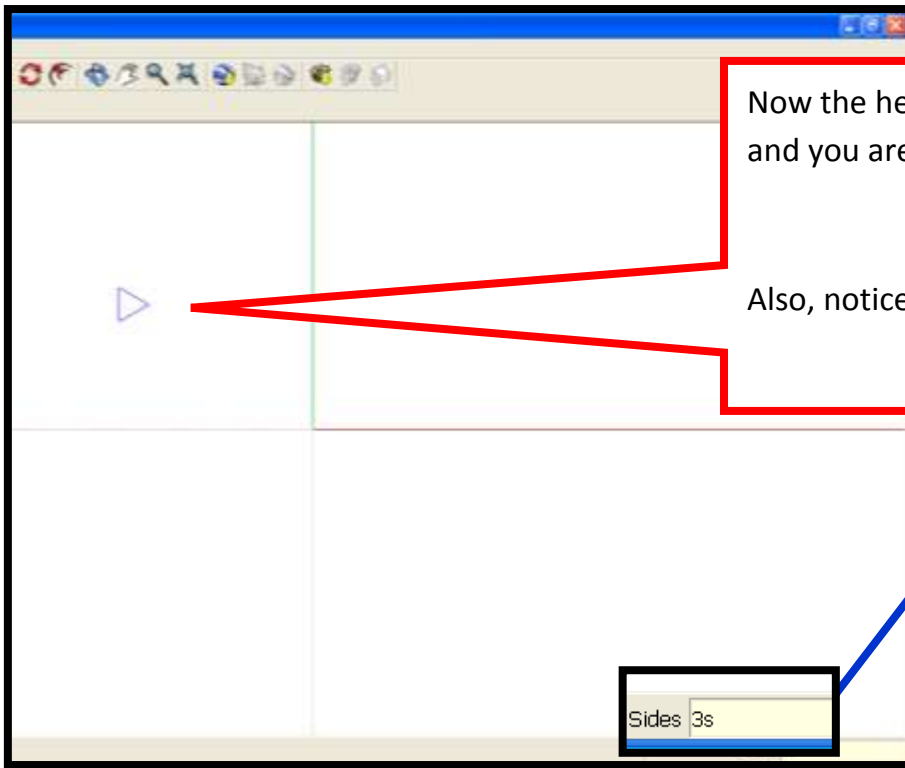
Notice how it also says ***6 in the sides box** at the bottom right of your drawing screen.

Note: If you don't see this small window, make sure to maximize your screen.

To change the number of sides:

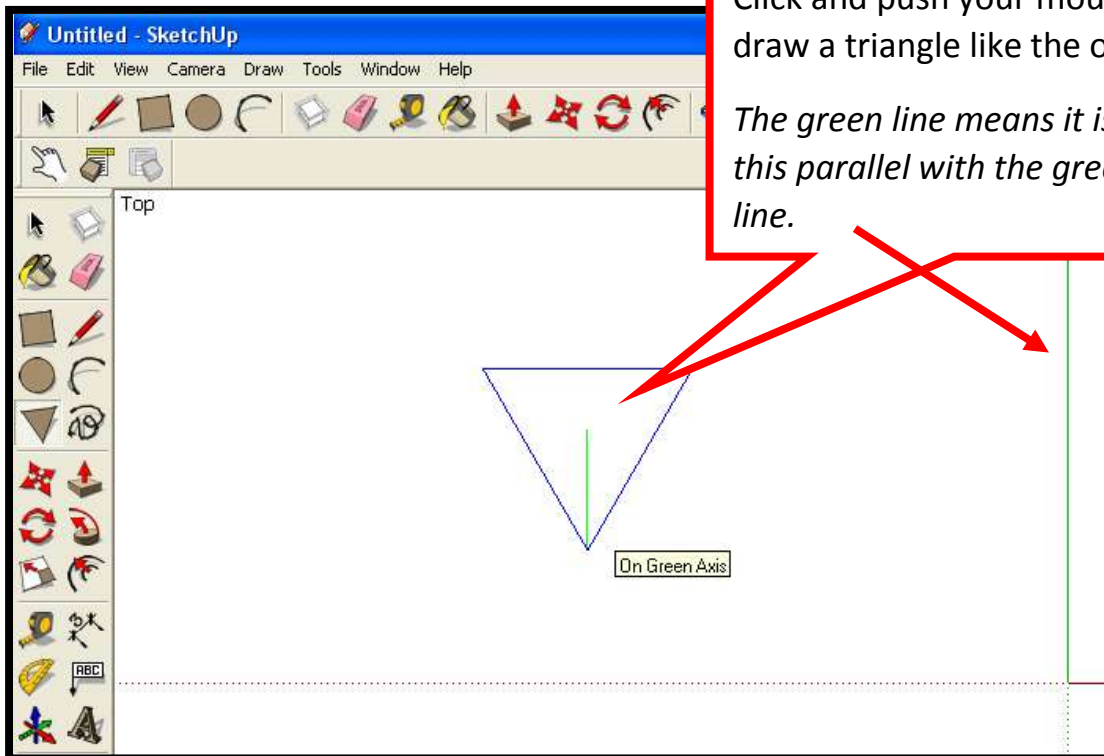
Before clicking or drawing, Type 3S and press the enter key.

Sides 6



Now the hexagon has turned into a triangle and you are ready to draw your triangle.


Also, notice how the **sides box now says 3S.**

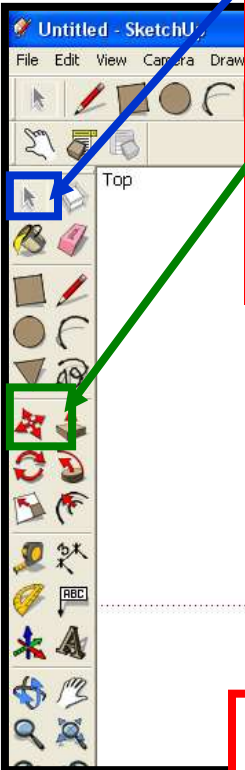


Click and push your mouse up to draw a triangle like the one shown.

The green line means it is drawing this parallel with the green axis line.

Now draw a triangle congruent to the first one in the top right quadrant.

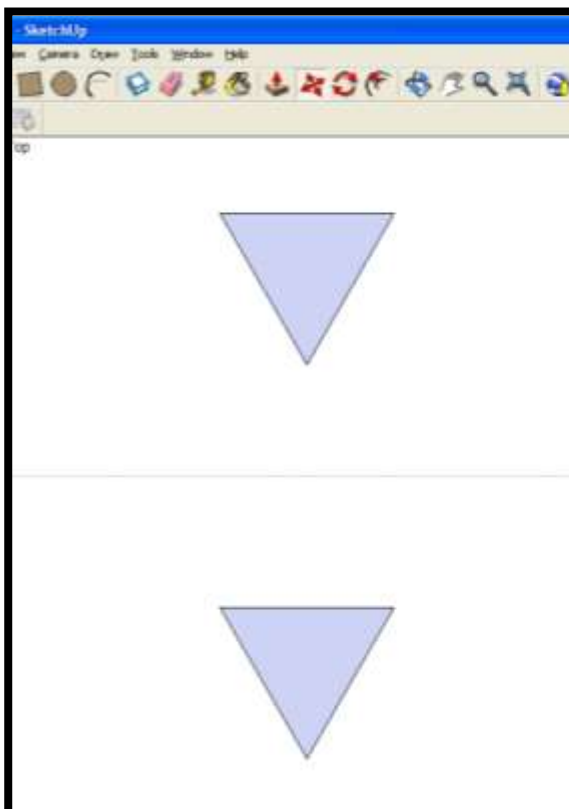
1. First, click on the **Arrow tool** or press the space bar.
2. Now click on the first rectangle to select it.
3. Next, click on the **move tool**  then click on the **bottom end point** of the triangle.
4. Now hold down the Control key with your left hand and you will see a plus sign.
5. Drag your mouse to the top right quadrant II. Click to create the triangle.



Notice how it draws a red dotted line to show it is following the red axis line.

Repeat all 5 steps to place a triangle in the bottom 2 quadrants III and IV.

Did you notice that we just performed translations of the same triangle- they are still congruent- same shape, same size.




From Point

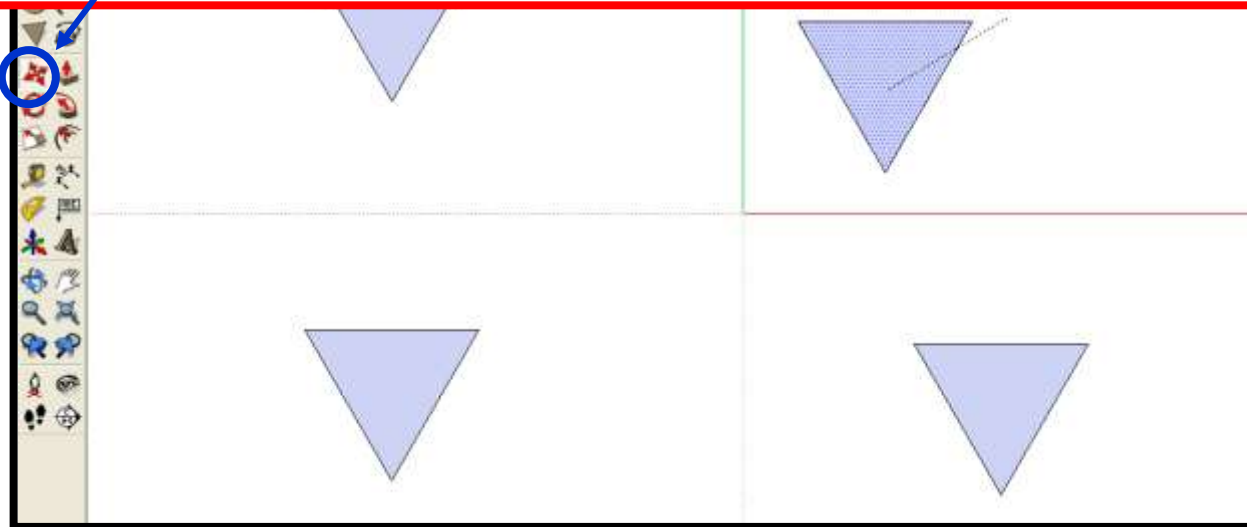
Now we can perform some transformations and show they are still congruent.

Transformation 1: Translation- slide

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Did you notice we were creating translations when we copied and moved the triangles??


Click on the **move tool**.  Now click on the 2nd triangle and slide it up, down, left and right within the quadrant. It's still congruent.

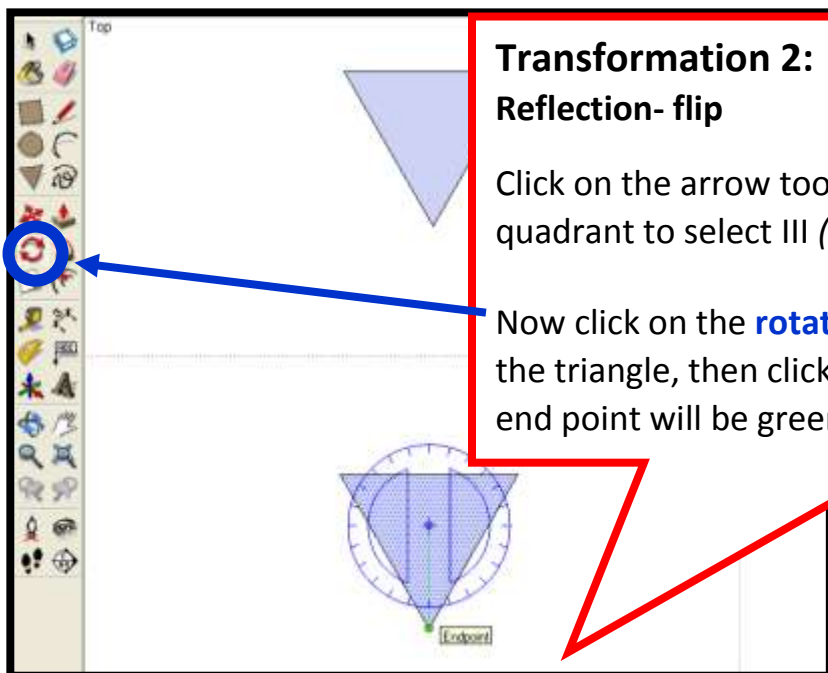


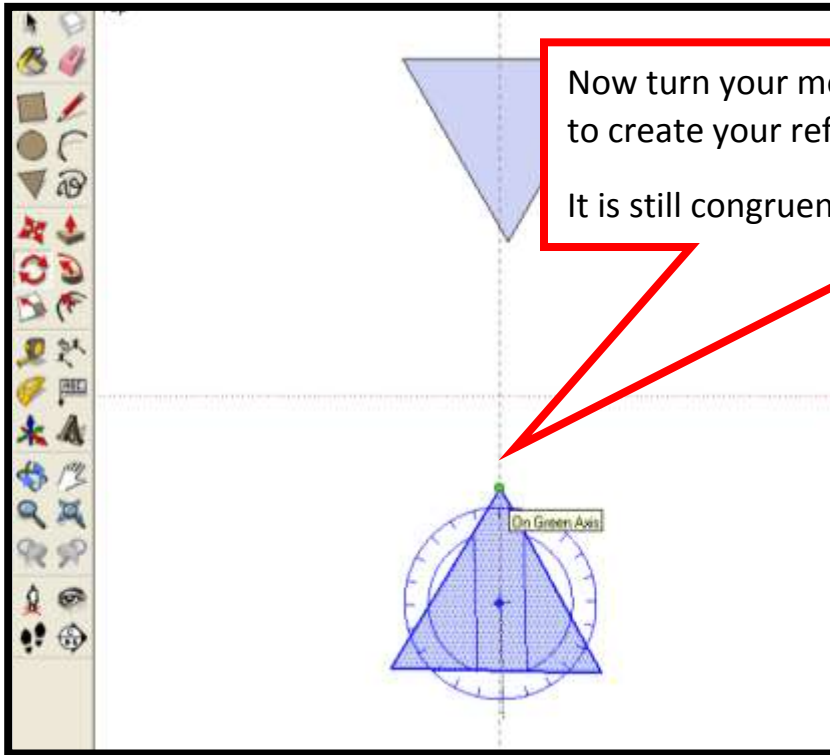
Transformation 2: Reflection- Flip

Transformation 2: Reflection- flip

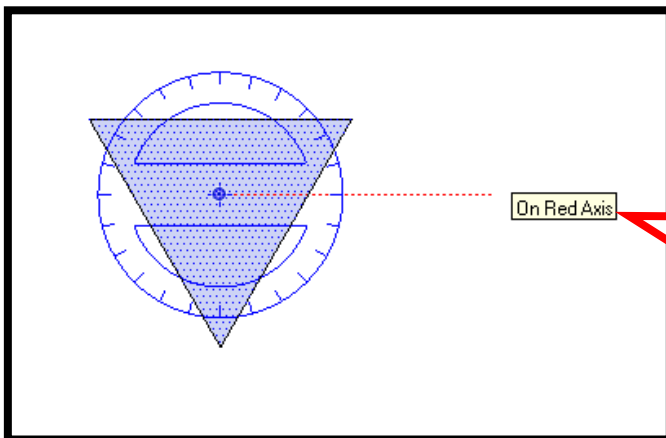
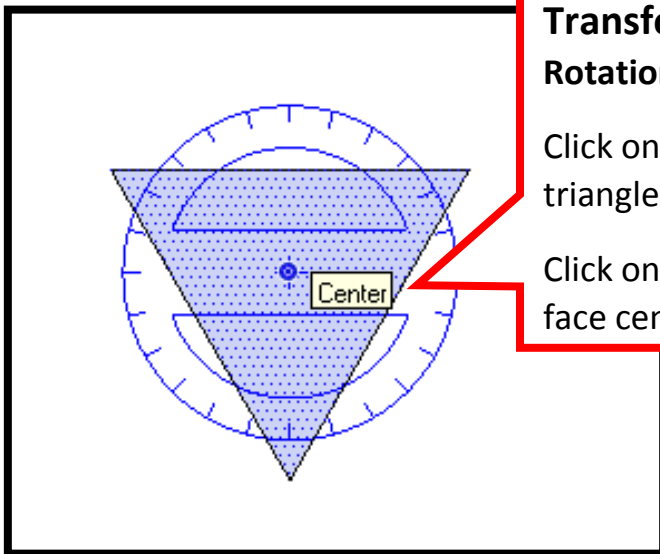
Click on the arrow tool then click on triangle in the bottom left quadrant to select III (*it will be shaded.*)

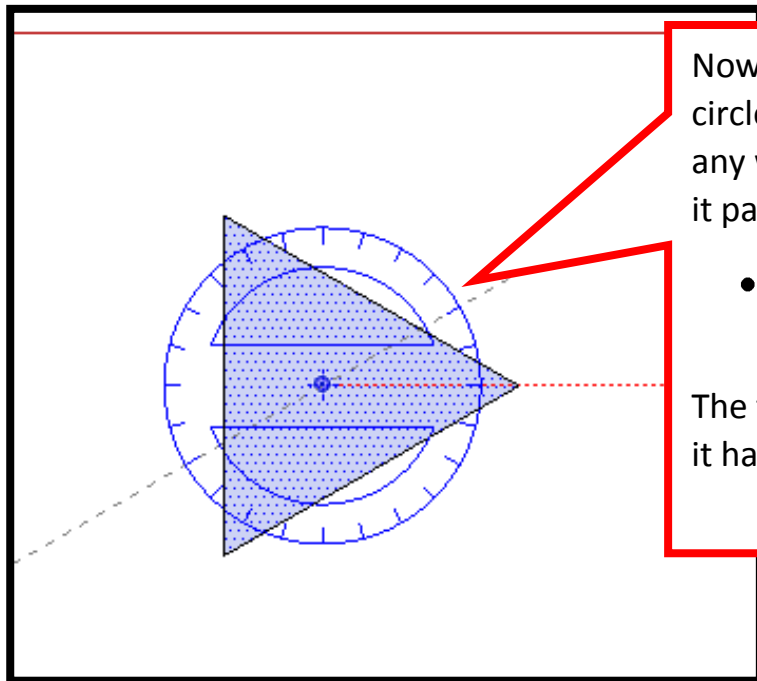
Now click on the **rotation tool** , then click on center point of the triangle, then click on the bottom endpoint (vertices.) The end point will be green.





Transformation 3: Rotation- Turn





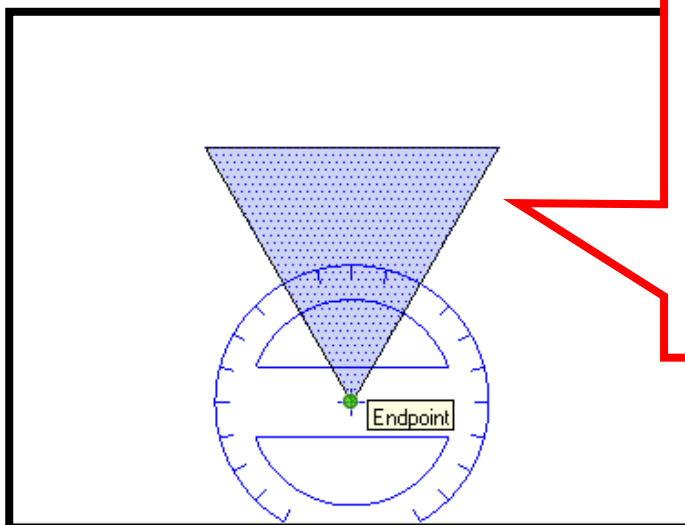
Now just drag your mouse around in a circle and it will rotate the triangle in place any way you move your mouse- but keeps it parallel to the red axis. (see the red dots.)

- Rotate the triangle to the right as shown. Click to set.

The triangle is still congruent to the others, it has just been turned to the right.

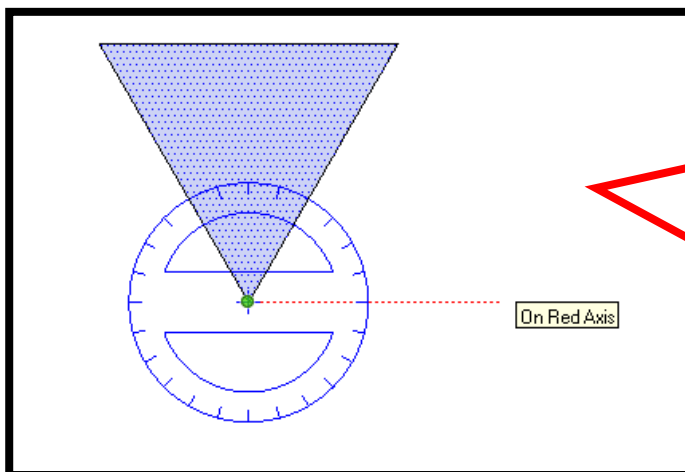
****You can also rotate from different points on the triangle.**

Try this:



After selecting the triangle so that it is shaded, click on the rotate tool again.

Now instead of clicking on the center point, click on any of the end **points** (vertices)- they will be green.



From the end point- drag the mouse outside the triangle to white space and click.

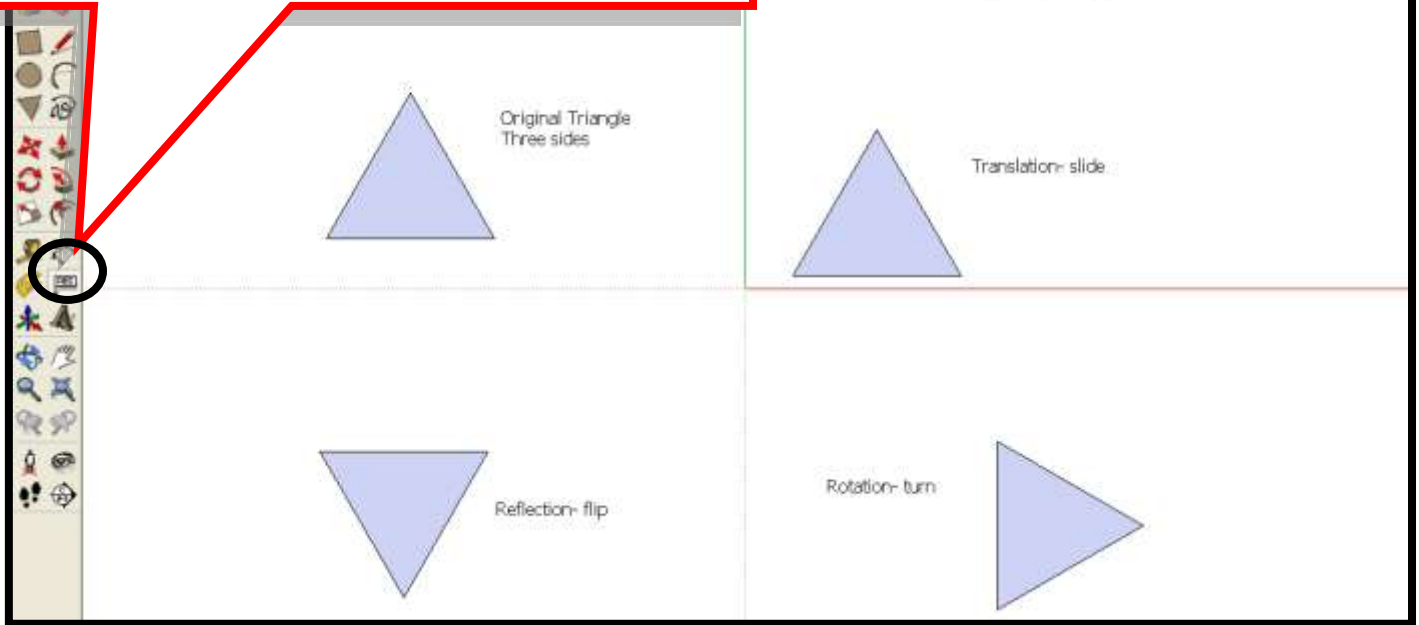
Notice it draws the guide line parallel to the red axis line.

But now when you rotate your mouse it turns it from the point instead of center.

Try it from several points.

Type a title and label each transformation

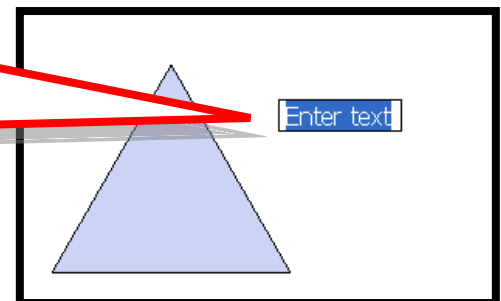
3. Click on the **ABC text tool**



1. Click in the white space right next to your triangle.

2. Click inside and it will give you a text box.

Now type a title and label each transformation as shown above.



You can save your Google Sketch up projecting as usual if you want to edit later.

You can also **export your project as a picture (.jpg)** to send it in an email or open in another application outside of Sketch up.

File>Export> as 2D or 3D Model.