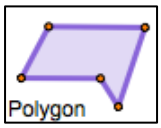
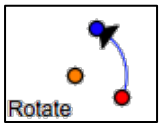
Rotation Challenges 2 Name(s):

RESTRICT THE DOMAIN

1. Open geometricfunctions.org/links/rotate-family/ and tap "Investigate 2."
2. Use the 

tool to create an interesting shape for x to follow.
3. Use the 

tool, attaching independent variable x to the polygon. (You already know the three parts of a function—independent variable, rule, and dependent variable—so this sketch has a single Rotate tool to make all three parts.)
4. Use the **Animate** tool to animate variable x around the polygon. Because x stays attached to the the polygon, the polygon is called the *restricted domain* of x.

Q1 Adjust the shape of the polygon, the center point, and the angle of rotation so the traces make an interesting shape. Draw your picture on the left. (Remember to mark point C.) Write the angle and what you noticed or wondered on the right.

My picture:	Angle I used: θ = What I noticed or wondered:

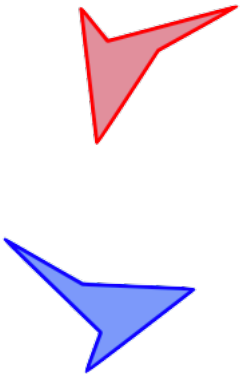
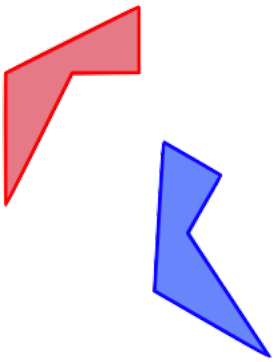
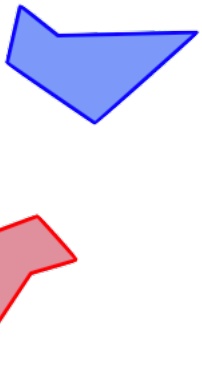
Q2 On page 2 use the same tools, but change your polygon shape, your center point, and your angle of rotation to make a different picture.

My picture:	Angle I used: θ = What I noticed or wondered:

5. On page 3 restrict x to the red polygon and construct a rotate function.

6. Adjust the center and angle to make the trace of your dependent variable exactly match the blue polygon.

Q3 On the picture below, mark where you put the center point, and write down the angle you used. Do the same thing for the polygons on page 4 and page 5.

Page 3	Page 4	Page 5
		
Angle of rotation: θ =	Angle of rotation: θ =	Angle of rotation: θ =

Q4 On page 6 is a rotation puzzle that has only two points. Try to solve it. Explain below how you figured it out. Include a drawing.

Q5 On page 7 use the Circle tool, along with your other tools, to make an interesting rotation design that includes at least four rotations. Animate your design, and draw it here.

Q6 On page 8 there are 8 suspects. You have evidence that the crime was committed by a dependent variable of the rotation family. Your job is to figure out which two suspects belong to the rotation family, and which of them is the dependent variable. Explain in the space below how you found the suspect.