

Translation: You will need to be able to translate a figure when given a rule, translate to a given point, and write a rule when given the pre-image and image.

1. Plot the points:

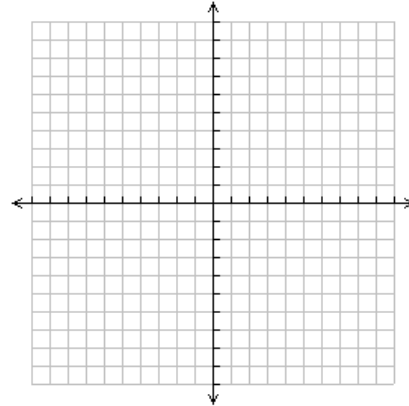
B (-7, -4)

E (-8, -8)

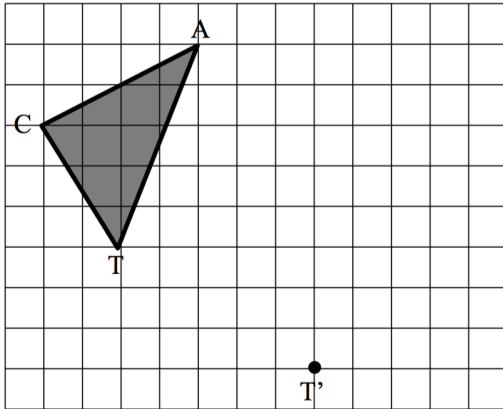
A (-3, -9)

R (-4, -5)

Translate: $(x, y) \rightarrow (x+5, y+6)$

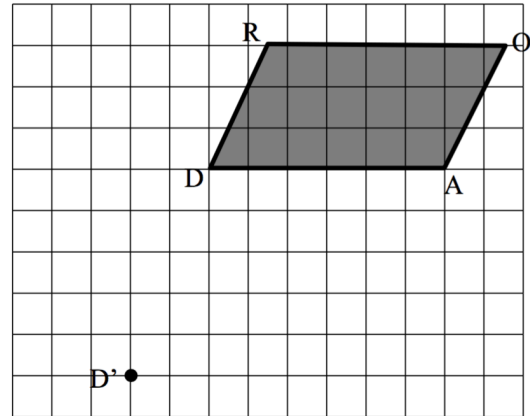


2. Translate $CAT \rightarrow C'A'T'$



Write the rule:

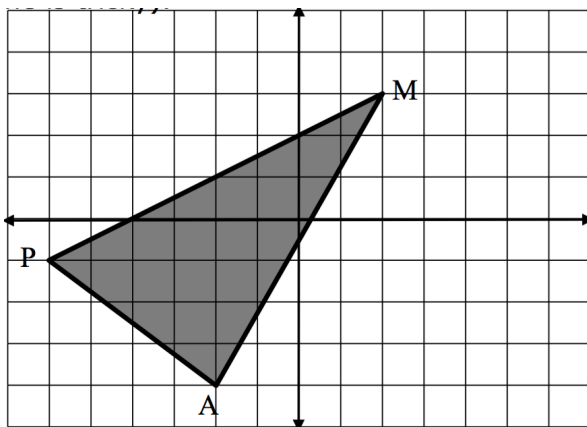
3. Translate $ROAD \rightarrow R'O'A'D'$



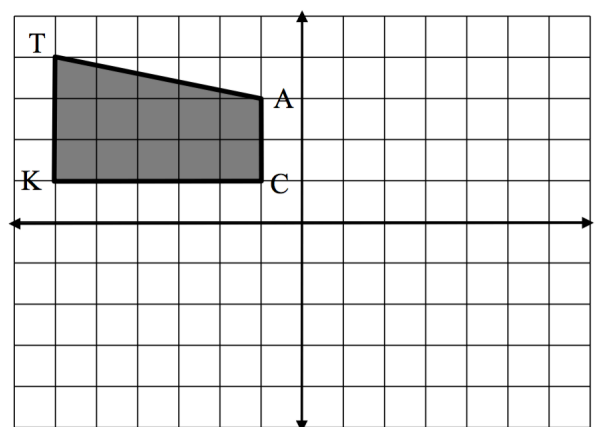
Write the rule:

Reflections: You will need to be able to reflect over an axis, over a given horizontal or vertical line, or over a line in the form $y = mx + b$.

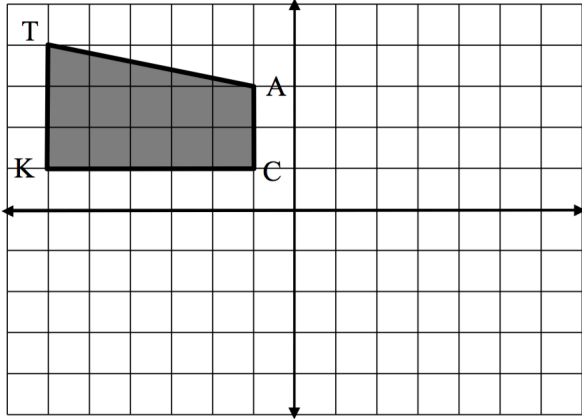
4. Reflect MAP over the y-axis.



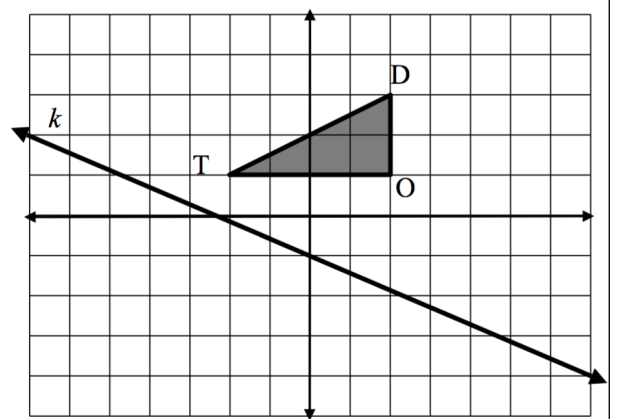
5. Reflect TACK over $y = -1$



6. Reflect TACK over $y = x$

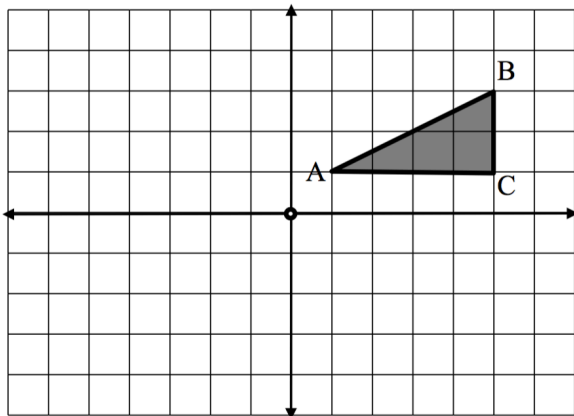


7. Reflect DOT over the given line.

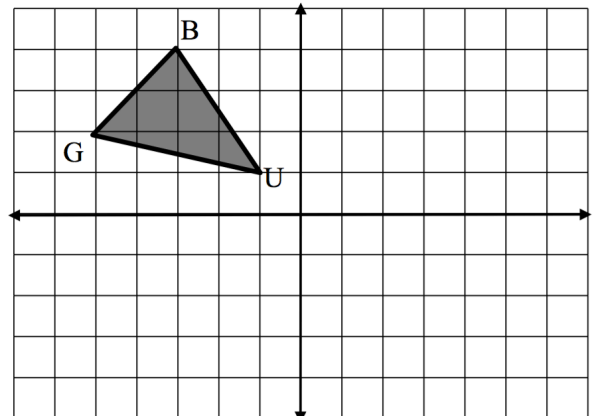


Rotation: You will need to be able to rotate a figure around the origin, or around a given point.

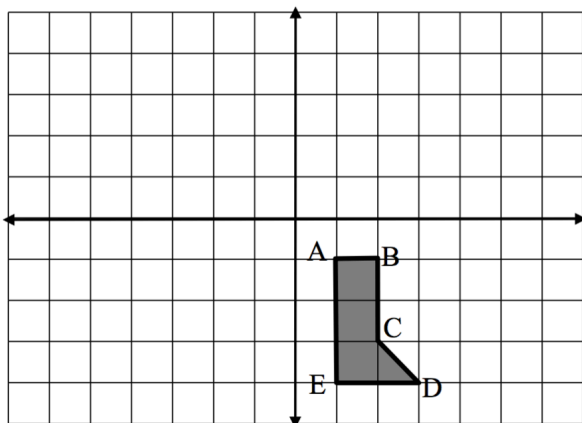
8. Rotate ABC 180° about the origin



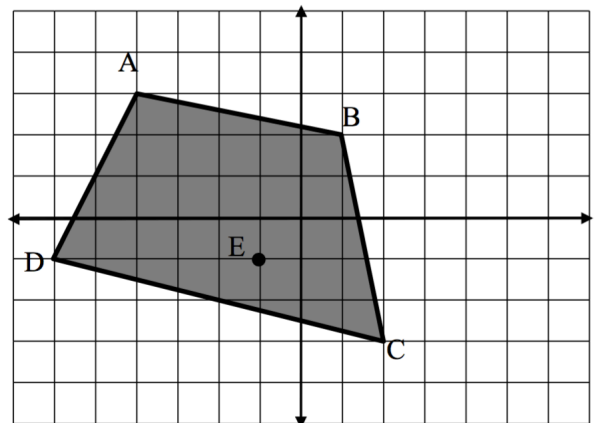
9. Rotate BUG 90° clockwise around the origin



10. Rotate ABCDE 90° clockwise around the point $(-1, -1)$

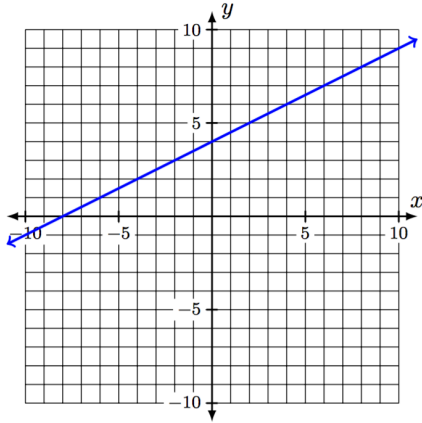


11. Rotate ABCD 90° clockwise around point E

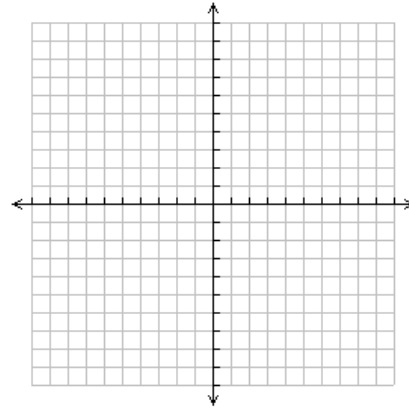


Perpendicular Lines: You will need to be able to write and/or graph the slope of a line that is perpendicular to a given line or equation.

12. Draw a line that is perpendicular to the given line.



13. Graph the line $y = \frac{1}{3}x - 2$, then graph a line that is perpendicular to it.



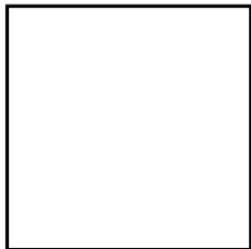
14. Give the slope of a line that is perpendicular to $y = -\frac{2}{3}x + 4$
15. Give the slope of a line that is perpendicular to $y = 2x - 5$

Symmetry & Rotational Symmetry: You will need to determine how many and where the lines of symmetry are for a given figure. You will need to be able to find the angle of rotational symmetry for a given figure.

For each figure:

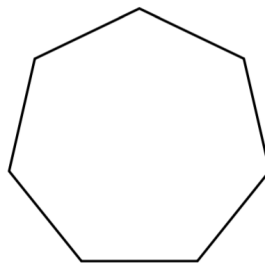
- draw all lines of symmetry and determine the total number of lines of symmetry
- give the angle of rotation if there is rotational symmetry.

16.



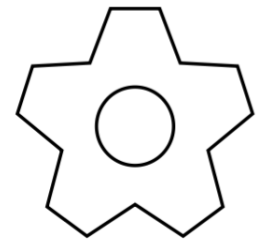
a. b.

17.



a. b.

18.



a. b.

19. How many lines of symmetry will a regular 38-gon have? What is the angle of rotation?

20. How many lines of symmetry will a regular 14-gon have? What is the angle of rotation?