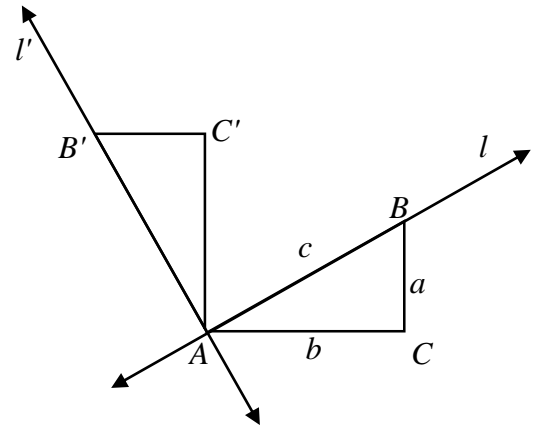


Geometry HW: Transformations – 4 Practice

- Given points $A(2, 4)$ and $B(6, 2)$. What are the values of a and b such that the translation $T_{a,b}$ maps A onto the midpoint of \overline{AB} ?
- Let \overline{AB} be a line segment.
 - What rotation would map \overline{AB} onto itself? (Be specific: what point and what angle?)
 - What reflection would map \overline{AB} onto itself? (Again, be specific: what line?)
- A *regular polygon* is a polygon where all sides are congruent and all angles are congruent (see b , c , h , and i in HW - 1 #9).
 - How many lines of symmetry does a regular polygon with n sides have?
 - Including the identity, how many rotational symmetries does a regular polygon with n sides have?
- Scalene triangle ABC is reflected over line \overline{AB} . Tell if each of the following is preserved (stays the same) or not.
 - The length of \overline{BC} .
 - The measure of $\angle B$
 - The slope of \overline{AC}
 - The orientation of $\triangle ABC$
 - The area of $\triangle ABC$
- Parallelogram $ABCD$ is rotated 60° around point A . Tell if each of the following is preserved or not.
 - The length of diagonal \overline{AC} .
 - The measure of $\angle B$
 - The slopes of \overline{BC} and \overline{AD}
 - The parallelism of \overline{BC} and \overline{AD}
 - The orientation of $ABCD$
 - The area of $\triangle ABC$
- Graph the line ℓ having equation $y = -\frac{3}{2}x + 8$ and the point $A(8, 9)$.
 - A' is the image of A after a reflection over line ℓ . What is the slope of $\overline{AA'}$? Why?
 - Find the coordinates of A' .

7. In the diagram, points A and B are on line l , which is neither horizontal nor vertical. \overline{AC} is horizontal and \overline{BC} is vertical, making $\triangle ABC$ a right triangle. Line l' and triangle $AB'C'$ are the images of line l and $\triangle ABC$ after a 90° rotation about A .



- What is the measure of $\angle BAB'$?
- What is the relationship between lines l and l' ?
- Give the lengths of $\overline{AC'}$ and $\overline{B'C'}$. Justify your answers.
- What is the slope of line l ? What is the slope of line l' ?
- How does the slope of line l' compare to the slope of line l (two words)?

8. In each of the following, the dashed triangle is the image of the solid triangle after a single transformation. Name the transformation. Be specific (Reflection over line _____;” not just “reflection”).

