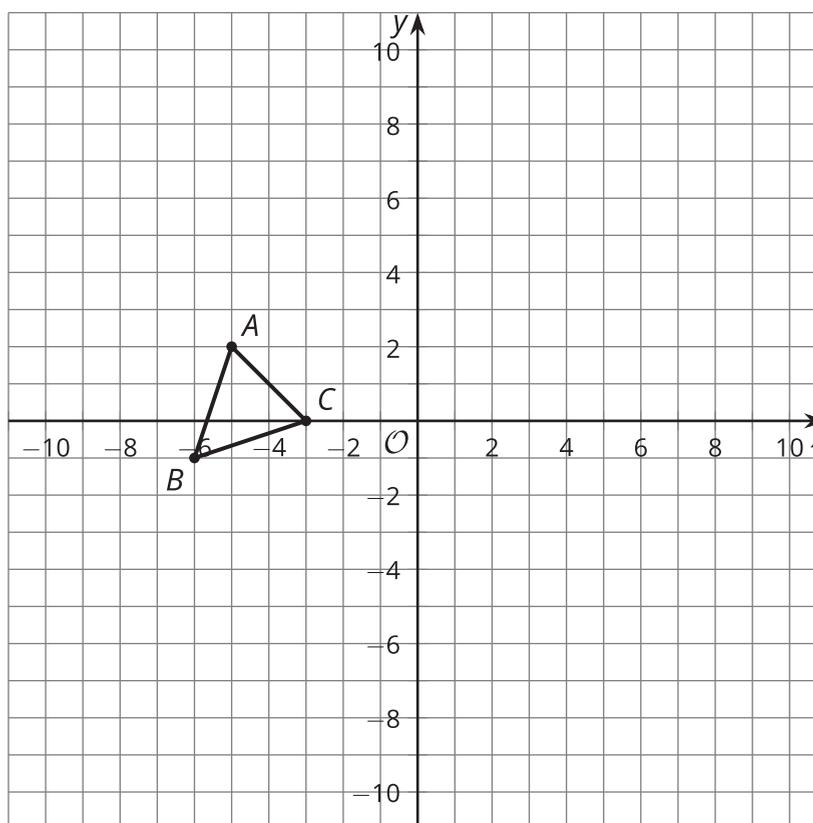


## Lesson 1 Practice Problems

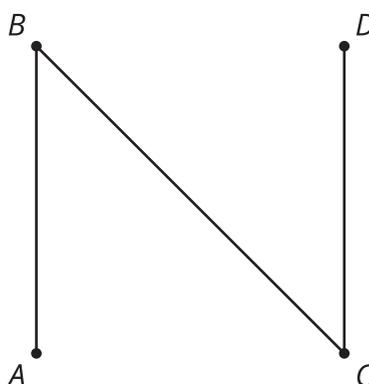
1. Reflect triangle  $ABC$  over the line  $x = -3$ .

Translate the image by the directed line segment from  $(0, 0)$  to  $(4, 1)$ .

What are the coordinates of the vertices in the final image?



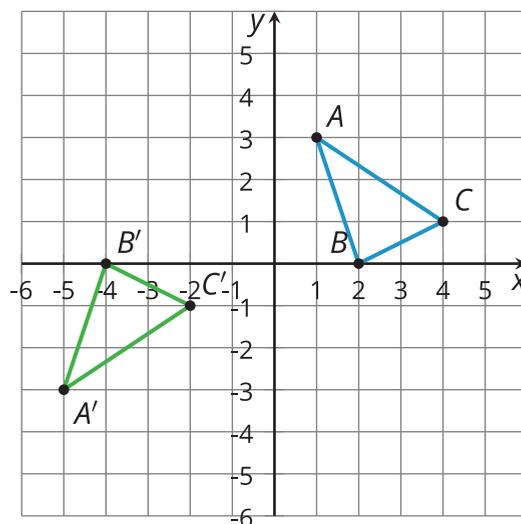
2. Three line segments form the letter N. Rotate the letter N counterclockwise around the midpoint of segment  $BC$  by 180 degrees. Describe the result.



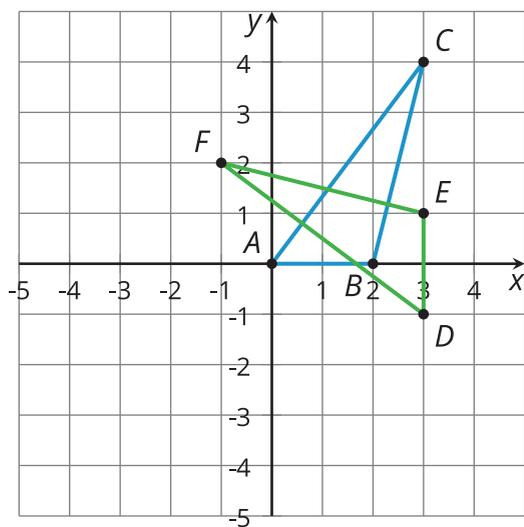
(From Unit 1, Lesson 14.)

3. Triangle  $ABC$  has coordinates  $A = (1, 3)$ ,  $B = (2, 0)$ , and  $C = (4, 1)$ . The image of this triangle after a sequence of transformations is triangle  $A'B'C'$  where  $A' = (-5, -3)$ ,  $B' = (-4, 0)$ , and  $C' = (-2, -1)$ .

Write a sequence of transformations that takes triangle  $ABC$  to triangle  $A'B'C'$ .



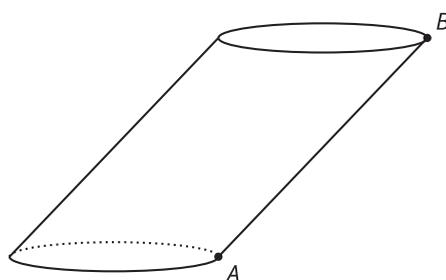
4. Prove triangle  $ABC$  is congruent to triangle  $DEF$ .



5. The density of water is 1 gram per  $\text{cm}^3$ . An object floats in water if its density is less than water's density, and it sinks if its density is greater than water's. Will a 1.17 gram diamond in the shape of a pyramid whose base has area  $2 \text{ cm}^2$  and whose height is 0.5 centimeters sink or float? Explain your reasoning.

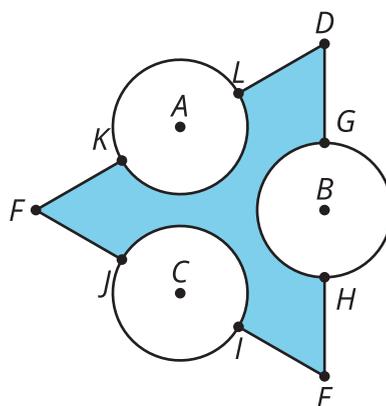
(From Unit 5, Lesson 17.)

6. *Technology required.* An oblique cylinder with a base of radius 2 units is shown. The top of the cylinder can be obtained by translating the base by the directed line segment  $AB$  which has length 16 units. The segment  $AB$  forms a  $30^\circ$  angle with the plane of the base. What is the volume of the cylinder?



(From Unit 5, Lesson 11.)

7. This design began from the construction of an equilateral triangle. Record at least 3 rigid transformations (rotation, reflection, translation) you see in the design.



(From Unit 1, Lesson 22.)