



## SHAPE SEARCH

Have you ever found something special?

Have you ever lost something and could never find it?

**In this activity you will find various shapes on grid paper and defend what type of shape you think you have found. (Target 1A.3, 1B.1, 1B.2)**

1. Using a coordinate grid, consider the segment  $\overline{AB}$  formed by the points  $A(-2, 1)$  and  $B(7, 4)$ .
  - a. Using the line segment  $\overline{AB}$  as one side and coordinate geometry, create an example of each of the following shapes: Right triangle, Isosceles triangle, Square, Rectangle, Parallelogram, Rhombus, Trapezoid, and Kite. (You may divide this work among your group.)

If possible, create an example that fits only one of those types listed above.

- b. For one of the shapes you've found, prepare a defense to share as to why you know the shape is what you think it is.

2. Again, consider the points  $A(-2, 1)$  and  $B(7, 4)$  on a coordinate grid.
  - a. Choose a point not on the line segment  $\overline{AB}$ . Identify the coordinates and label this point  $C$ .
  - b. Find a point so as to create parallelogram  $ABCD$ . What are the coordinates of point  $D$ ?
  - c. Are there other possible locations for point  $D$ ? Explain your reasoning.
  - d. Explain how you know you have found a parallelogram.

3. Consider the line given by the equation  $y = -\frac{1}{2}x + 4$ .
- Find two points on the line. What are their coordinates? Label them  $E$  and  $F$ .
  - Where would the points  $G$  and  $H$  need to be to create rectangle  $EFGH$ ? Is there more than one possible location for  $G$  and  $H$ ?
  - Explain how you know you have a rectangle.

4. What type of quadrilateral is formed by the following four lines? Explain your thinking.

$$f(x) = 2x + 2$$

$$g(x) = 2x + 8$$

$$h(x) = \frac{2}{3}x - 1$$

$$k(x) = -\frac{2}{3}x + 4$$

5. What type of quadrilateral is formed by the following four lines? Explain your thinking.

$$t(x) = 2x + 4$$

$$v(x) = -\frac{1}{2}x + 4$$

$$w(x) = -\frac{1}{2}x - 1$$

$$z(x) = 2x - 6$$

6. What type of triangle is formed by the following three lines? Explain your thinking.

$$m(x) = -3x - 4$$

$$n(x) = \frac{1}{3}(x + 2) + 2$$

$$p(x) = x$$