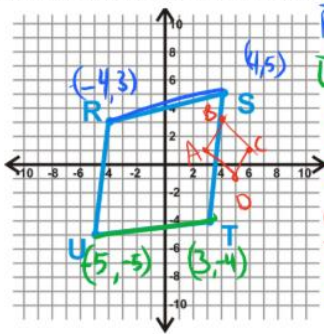


Proving shapes on the Coordinate Plane

1. Determine if the following is a parallelogram.

Using the property that opposite sides are parallel.



$$\overline{RS}: m = \frac{2}{8}$$

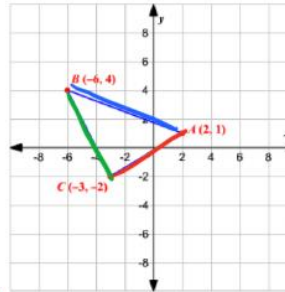
$$\overline{UT}: m = \frac{1}{8}$$

RSUT is not a parallelogram because opposite sides  $\overline{RS}$  and  $\overline{UT}$  do not have the same slope. Thus, they are not parallel.

Name \_\_\_\_\_

2. Is the following a right triangle?

Explain how you know using the slope of each line.



$$\overline{BC}: m = -\frac{6}{3}$$

$$\overline{AC}: m = \frac{3}{5}$$

$$\overline{AB}: m = -\frac{3}{8}$$

$\triangle ABC$  is not a right triangle because the adj. sides do not have opp. recip. slopes. Thus their are no  $\perp$  sides.

3. Determine if the shape ABCD with the following coordinates is a parallelogram.

A(3,1), B(4,3), C(6, 1), D(5, -1)

$$\overline{AB}: m = \frac{2}{1} \quad \overline{BC}: m = -\frac{2}{2} \quad \overline{CD}: m = \frac{2}{1} \quad \overline{AD}: m = -\frac{2}{2}$$

ABCD is a parallelogram because the opp. sides have the same. This means they are parallel.

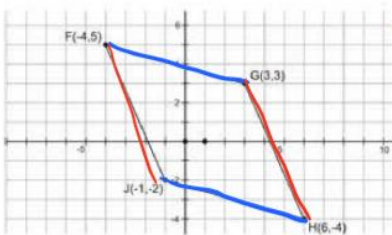
4. Determine if the shape ABC with the following coordinates is a right triangle.

A(2, 4), B(-3, -1), C(3,1)

$$\overline{AB}: m = \frac{-5}{-1} = 5 \quad \overline{BC}: m = \frac{2}{6} = \frac{1}{3} \quad \overline{CA}: m = -\frac{3}{1}$$

$\triangle ABC$  is a right triangle, because  $\overline{BC}$  and  $\overline{CA}$  have opp. recip. slopes, thus they are perpendicular.

5. Determine if the following is a parallelogram.



$$\overline{FG}: m = -\frac{2}{7}$$

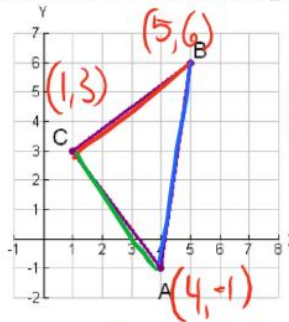
$$\overline{IH}: m = -\frac{2}{7}$$

$$\overline{FI}: m = -\frac{7}{3}$$

$$\overline{GH}: m = -\frac{7}{3}$$

FGHI is a parallelogram because opp. sides have the same slope which means they are parallel.

6. Determine if the following is a right triangle.



$$\overline{BC}: m = \frac{3}{4}$$

$$\overline{CA}: m = -\frac{4}{3}$$

$\triangle ABC$  is a right triangle because  $\overline{BC}$  and  $\overline{CA}$  have opp. recip. slopes which means they are perp.