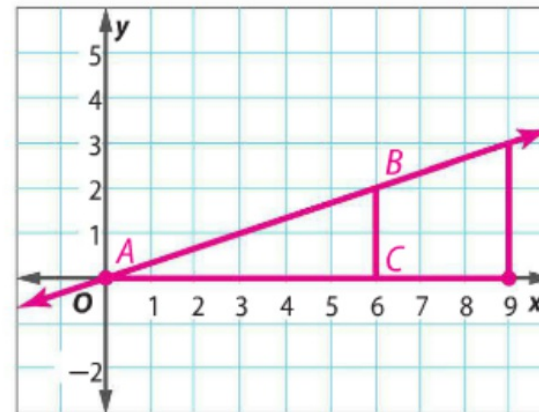Refer to the graph shown above. Triangle *ABC* is formed by the rise, run, and section of the line $y = \frac{1}{3}x$ between points *A* and *B*.

Step 1   Graph $y = \frac{1}{3}x$ on the grid paper.

Draw a right triangle using the points *A*(0, 0) and *B*(6, 2). Label the third point *C*.

What is the slope of $\overline{AB}$?

$$\frac{1}{3}$$

Step 2   Select any two different points on the line. Label them *D* and *E*. Draw another triangle from these two points.

Is the slope of $\overline{DE}$ the same as the slope of $\overline{AB}$? Explain.

Sample answer: The slope is the same because all the triangles are made from points on the same line.

Step 2 Select any two different points on the line. Label them *D* and *E*. Draw another triangle from these two points.

Is the slope of $\overline{DE}$ the same as the slope of $\overline{AB}$? Explain.

Sample answer: The slope is the same because all the triangles are made from points on the same line.

Step 3 Donte wants to expand the base of the ramp 3 feet. Graph and give the coordinates of the point that will represent the extended base of the ramp. **(9, 0)**

Create a right triangle using the line and that point. What will be the height of the new ramp? **3 feet**
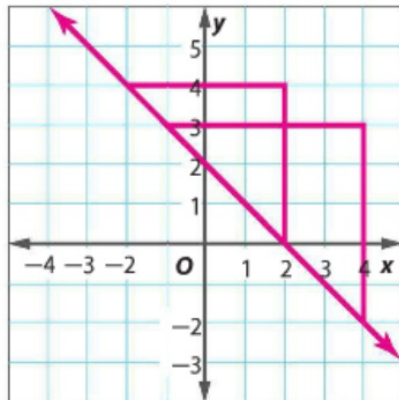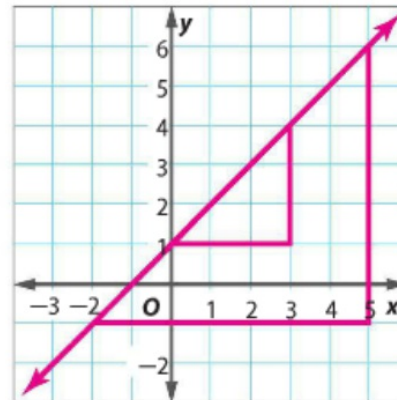
Investigate

Collaborate

Work with a partner. Draw two right triangles for each exercise using the rise, run, and portions of the line. **Sample triangles are given.**

1. $y = -x + 2$

Show your work.

2. $y = x + 1$

Analyze and Reflect

Collaborate

3. CCSS **Make a Conjecture** What do you notice about the shape and size of the pair of triangles in Exercises 1 and 2? **Sample answer: The two triangles are the same shape but different sizes.**
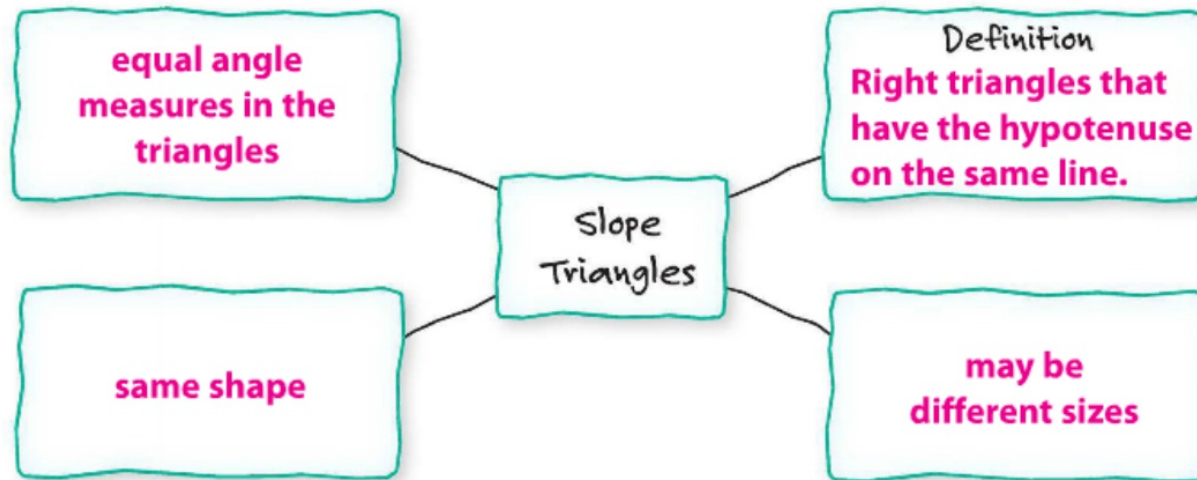
Create

Stude

Create

Sample answers are given.

4. **CCSS** **Use Math Tools** The triangles in the activity are called *slope triangles*. Complete the graphic organizer by writing three observations about slope triangles.

equal angle measures in the triangles

Definition
Right triangles that have the hypotenuse on the same line.

Slope Triangles

same shape

may be different sizes

5. **Inquiry** HOW does graphing slope triangles on the coordinate plane help you analyze them?

Sample answer: By graphing slope triangles on the coordinate plane you can tell that they have the same shape but they are different sizes.