

**Problem-Based Task: Rhyme Time****Coaching Sample Responses**

- a. Suppose a triangle were drawn with the vertices  $A(3,500, 1,500)$ ,  $B(3,500, 1,000)$ , and  $C(1,000, 1,000)$ . What would be the length of  $AB$ ?

To find the length of  $AB$ , subtract the  $y$ -coordinate of vertex  $B(1,000)$  from the  $y$ -coordinate of vertex  $A(1,500)$ .

$$1500 - 1000 = 500$$

The length of  $AB$  would be 500.

- b. Using the same triangle, what would be the length of  $BC$ ?

To find the length of  $BC$ , subtract the  $x$ -coordinate of vertex  $C(1,000)$  from the  $x$ -coordinate of vertex  $B(3,500)$ .

$$3500 - 1000 = 2500$$

The length of  $BC$  would be 2,500.

- c. Suppose a similar triangle were drawn with vertex  $E$  at the  $y$ -intercept of the line, and the vertices  $D(0, 1,000)$  and  $C(1,000, 1,000)$ . What would be the length of  $DC$ ?

To find  $DC$ , subtract the  $x$ -coordinate of vertex  $D(0)$  from the  $x$ -coordinate of vertex  $C(1,000)$ .

$$1000 - 0 = 1000$$

The length of  $DC$  would be 1,000.

- d. What proportion could be set up to solve for  $ED$ ?

In similar triangles  $ABC$  and  $EDC$ , side  $AB$  corresponds to side  $ED$ , and side  $BC$  corresponds to side  $DC$ . Therefore, because  $AB = 500$ ,  $BC = 2500$ , and  $DC = 1000$ , you can set up the proportion

$$\frac{500}{2500} = \frac{ED}{1000} \text{ to solve for } ED.$$

- e. What would be the length of  $ED$ ?

Solve the proportion for the length of  $ED$ .

$$\frac{500}{2500} = \frac{ED}{1000}$$

$$2500 \cdot ED = 500 \cdot 1000$$

$$2500 \cdot ED = 500,000$$

$$\frac{2500 \cdot ED}{2500} = \frac{500,000}{2500}$$

$$ED = 200$$

The length of  $ED$  would be 200.

- f. What is the exact amount of the Rhymes' appearance fee?

To find the exact amount of the Rhymes' appearance fee, determine the  $y$ -intercept of the line. Because  $ED = 200$ , and because the coordinates of point  $D$  are  $(0, 1,000)$ , the coordinates of point  $E$  must be  $(0, (1000 - 200))$ , or  $(0, 800)$ , so the  $y$ -intercept is 800. Therefore, the fee is \$800.

### Recommended Closure Activity

Select one or more of the essential questions for a class discussion or as a journal entry prompt.