Name _____ Date _____

1. Josiah and Tillery have new jobs at YumYum's Ice Cream Parlor. Josiah is Tillery's manager. In their first year, Josiah will be paid $14 per hour and Tillery will be paid $7 per hour. They have been told that after every year with the company, they will each be given a raise of $2 per hour. Is the relationship between Josiah's pay and Tillery's pay rate proportional? Explain your reasoning using a table.

2. A recent study claimed that in any given month, for every 5 text messages a boy sent or received, a girl sent or received 7 text messages. Is the relationship between number of text messages sent or received by boys proportional to the number of text messages sent or received by girls? Explain your reasoning using a graph on the coordinate plane.
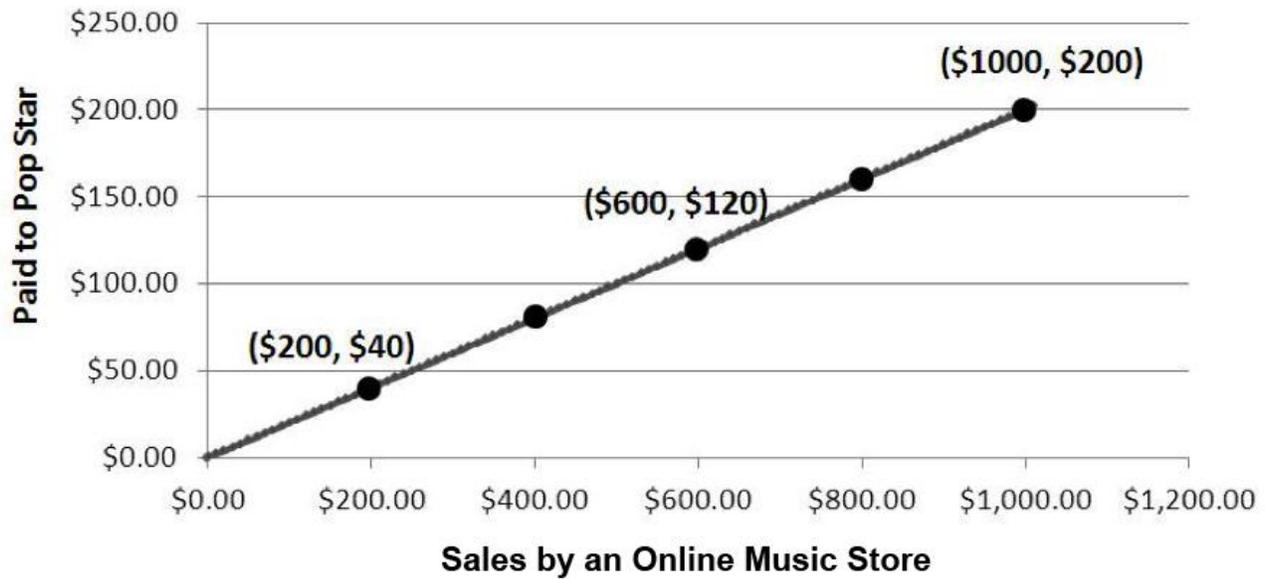
3. When a song is sold by an online music store, the store takes some of the money and the singer gets the rest. The graph below shows how much money a pop singer makes given the total amount of money brought in by one popular online music store from sales of the song.

a. Identify the constant of proportionality between dollars earned by the pop singer and dollars brought in by sales of the song.

b. Write an equation relating dollars earned by the pop singer, *y*, to dollars brought in by sales of the song, *x*.

c.   According to the proportional relationship, how much money did the song bring in from sales in the first week, if the pop star earned $800 that week?

d.   Describe what the point (0, 0) on the graph represents in terms of the situation being described by the graph.

e.   Which point on the graph represents the amount of money the pop singer gets for $1 in money brought in from sales of the song by the store?

	A Progression Toward Mastery			
Assessment Task Item	**STEP 1** Missing or incorrect answer and little evidence of reasoning or application of mathematics to solve the problem.	**STEP 2** Missing or incorrect answer but evidence of some reasoning or application of mathematics to solve the problem.	**STEP 3** A correct answer with some evidence of reasoning or application of mathematics to solve the problem, or an incorrect answer with substantial evidence of solid reasoning or application of mathematics to solve the problem.	**STEP 4** A correct answer supported by substantial evidence of solid reasoning or application of mathematics to solve the problem.
1 **7.RP.2a**	Student answered incorrectly. Student was unable to complete at least two correct pairs of values in the table. Student was unable to respond or reason out their answer.	Student may or may not have answered that the relationship was not proportional. Student was able to complete at least two correct pairs of values in the table. Student provided a limited expression of reasoning.	Student correctly answered that the relationship was not proportional. The table was correctly set up with at least two correct entries. Student's reasoning may have contained a minor error.	Student correctly answered that the relationship was not proportional. Student provided correct set-up and values of table with two or more correct entries. Student reasoned AND demonstrated that there was no constant of proportionality or that the constant of proportionality changes for each pair of values.
2 **7.RP.2a**	Student answered incorrectly. Student was unable to give a complete graph AND/OR was unable to relate the proportional relationship to the graph.	Student may or may not have answered that the relationship was proportional. Student provided a graph with mistakes (unlabeled axis, incorrect points). Student provided a limited expression of reasoning.	Student correctly answered that the relationship was proportional. Student labeled the axis AND plotted points with minor error. Student explanation was slightly incomplete.	Student correctly answered that the relationship was proportional. Student correctly labeled the axis AND plotted the graph on the coordinate plane. Student explained that the proportional relationship was confirmed by the fact that the graph was a straight line going through the origin.

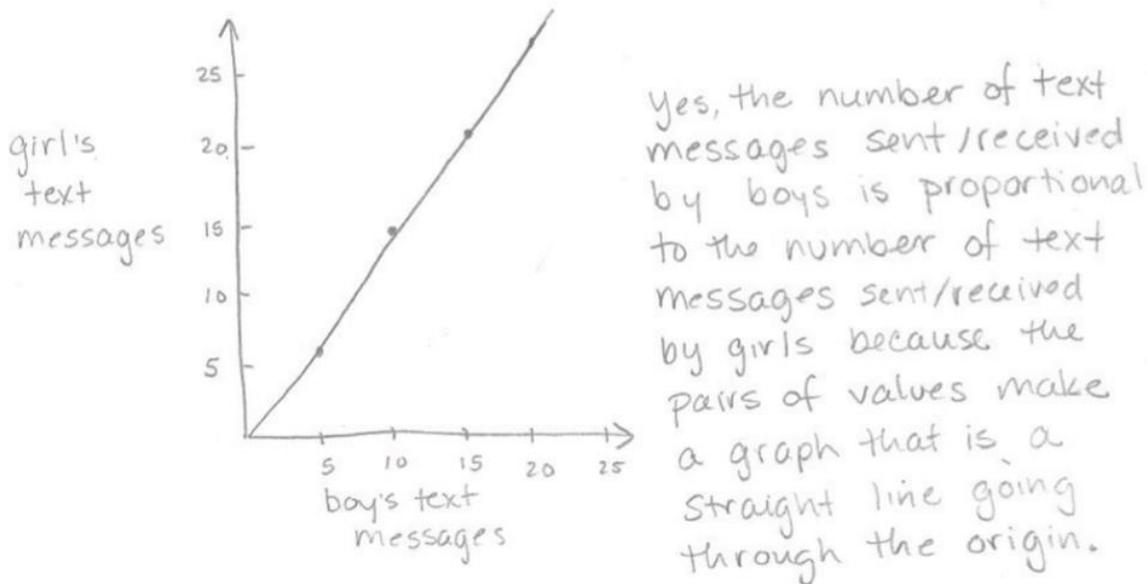| 3	a **7.RP.2b**	Student was unable to answer $k = \frac{1}{5}$ <u>AND</u> no work was shown.	Student was unable to answer $k = \frac{1}{5}$. Concept of constant of proportionality was used incorrectly.	Student correctly answered $k = \frac{1}{5}$, but provided no work to support answer.	Student correctly answered $k = \frac{1}{5}$. Student provided error-free work to support answer.
	b **7.RP.2c**	Student was unable to write an equation or wrote an equation that was not in the form $y = kx$ or even $x = ky$ for any value k.	Student wrote an incorrect equation, such as $y = 5x$, or $x = \frac{1}{5}y$, <u>AND/OR</u> used an incorrect value of k from part (a) to write the equation in the form $y = kx$.	Student created an equation using the constant of proportionality, but wrote the equation in the form $x = 5y$ or some other equivalent equation.	Student correctly answered $y = \frac{1}{5}x$.
	c **7.RP.2d**	Student answered incorrectly and shows no or little understanding of analyzing graphs.	Student answered incorrectly, but shows some understanding of analyzing graphs <u>AND/OR</u> solving equations.	Student answered *$4,000 in sales*, but student's work was incomplete <u>OR</u> the student correctly demonstrated the steps taken to solve the equation from part (b), but with a computational error.	Student answered *$4,000 in sales* <u>AND</u> had no errors in the steps taken to arrive at the answer.
	d **7.RP.2d**	Student was unable to describe the situation correctly.	Student was able to explain that the zero was the dollar amount to either the singers' earnings or sales, but was unable to describe the relationship.	Student describes the situation correctly, but with minor error.	Student correctly explains that *(0,0)* represents the situation that zero sales leads to zero earnings for the singer.
	e **7.RP.2d**	Student was unable to identify either of the *x*- or *y*-coordinate of the point.	Student answers only one of the ordered pair values correctly.	Student correctly identifies the *x*-coordinate as *1* and the *y*-coordinate as $\frac{1}{5}$, but does not put it in an ordered pair form.	Student correctly answered *(1, $\frac{1}{5}$)*.

Name _____   Date _____

1. Josiah and Tillery have new jobs at YumYum's Ice Cream Parlor. Josiah is Tillery's manager. In their first year, Josiah will be paid $14 per hour and Tillery will be paid $7 per hour. They have been told that after every year with the company, they will each be given a raise of $2 per hour. Is the relationship between Josiah's pay and Tillery's pay rate proportional? Explain your reasoning using a table. (7.RP.2a)
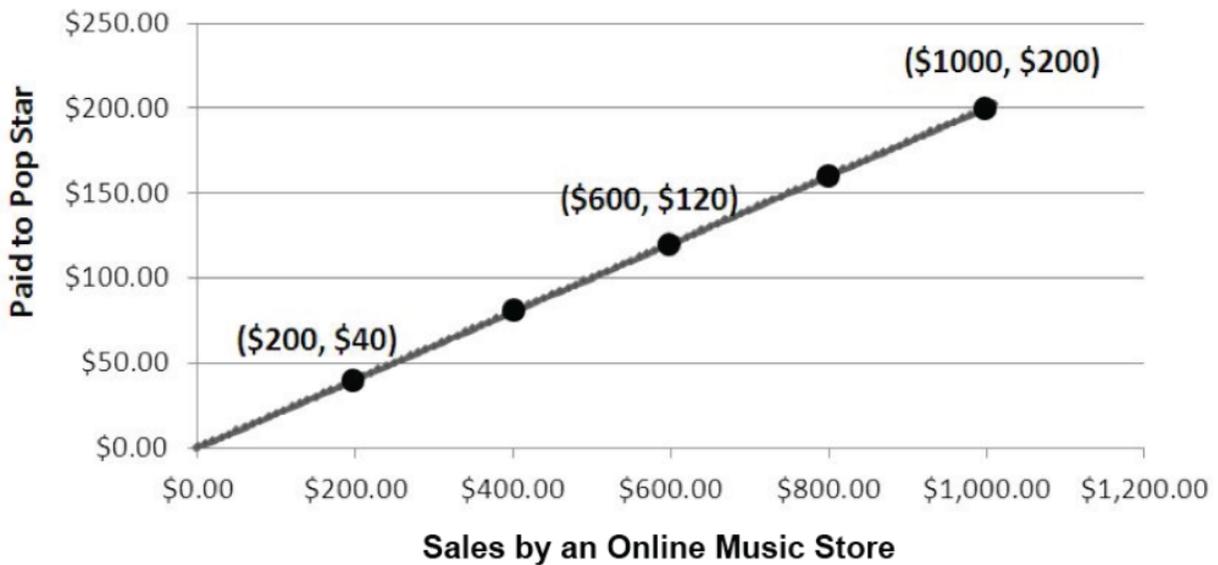
year

	J	T
1	14	7
2	16	9
3	18	11
4	20	13
5	22	15

No, the relationship between Josiah's pay rate and Tillery's pay rate is not proportional because the constant of proportionality changes for each pair of numbers.

2. A recent study claimed that in any given month, for every 5 text messages a boy sent or received, a girl sent or received 7 text messages. Is the relationship between number of text messages sent or received by boys proportional to the number of text messages sent or received by girls? Explain your reasoning using a graph on the coordinate plane. (7.RP.2a)

Yes, the number of text messages sent/received by boys is proportional to the number of text messages sent/received by girls because the pairs of values make a graph that is a straight line going through the origin.

3. When a song is sold by an online music store, the store takes some of the money and the singer gets the rest. The graph below shows how much money a pop singer makes given the total amount of money brought in by one popular online music store from sales of the song.

a. Identify the constant of proportionality between dollars earned by the pop singer and dollars brought in by sales of the song.

$$\frac{40}{200} = k$$
$$\frac{1}{5} = k$$

b. Write an equation relating dollars earned by the pop singer, *y*, to dollars brought in by sales of the song, *x*.

$$y = \frac{1}{5}x$$

c. According to the proportional relationship, how much money did the song bring in from sales in the first week, if the pop star earned $800 that week?

$$800 = \frac{1}{5}x$$
$$\times \frac{5}{1} \qquad \times \frac{5}{1}$$
$$800 \times \frac{5}{1} = x$$
$$4,000 = x$$

The sales for that week were $4,000

d. Describe what the point (0, 0) on the graph represents in terms of the situation being described by the graph.

When the sales of the song brings in zero dollars, then the singer earns zero dollars.

e. Which point on the graph represents the amount of money the pop singer gets for $1 in money brought in from sales of the song by the store?

$$\left(1, \frac{1}{5} \right)$$