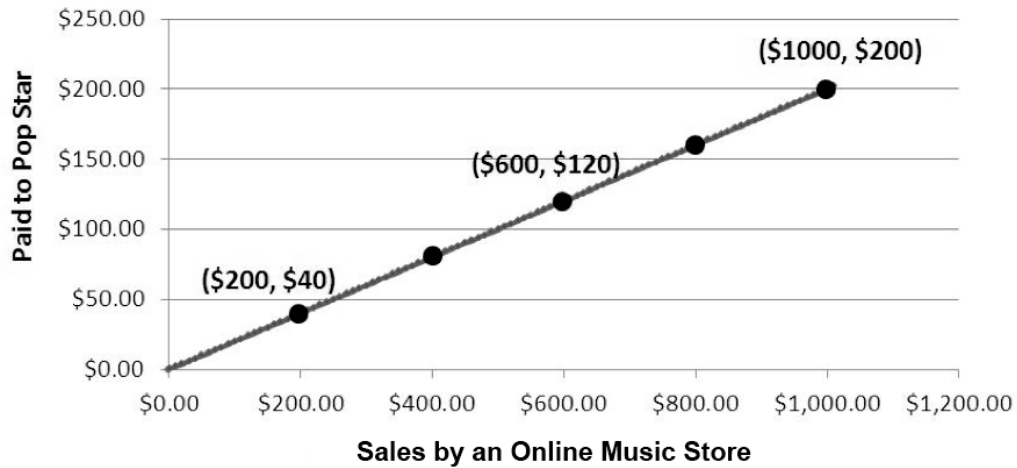




3. When a song is sold by an online music store, the store takes some of the money, and the singer gets the rest. The graph below shows how much money a pop singer makes given the total amount of money brought in by one popular online music store from sales of the song.



- 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.A.2a	Student answers incorrectly. Student is unable to complete at least two correct pairs of values in the table. Student is unable to respond or reason out the answer.	Student may or may not answer that the relationship is not proportional. Student is able to complete at least two correct pairs of values in the table. Student provides a limited expression of reasoning.	Student correctly answers that the relationship is not proportional. The table is correctly set up with at least two correct entries. Student's reasoning may contain a minor error.	Student correctly answers that the relationship is not proportional. Student provides correct setup and values on the table with two or more correct entries. Student reasons and demonstrates that there is no constant of proportionality or that the constant of proportionality changes for each pair of values.
2	7.RP.A.2a	Student answers incorrectly. Student is unable to give a complete graph or is unable to relate the proportional relationship to the graph.	Student may or may not answer that the relationship is proportional. Student provides a graph with mistakes (unlabeled axis, incorrect points). Student provides a limited expression of reasoning.	Student correctly answers that the relationship is proportional. Student labels the axes and plots points with minor errors. Student explanation is slightly incomplete.	Student correctly answers that the relationship is proportional. Student correctly labels the axes and plots the graph on the coordinate plane. Student explains that the proportional relationship is confirmed by the fact that the graph is a straight line going through the origin.

3	a 7.RP.A.2b	Student is unable to answer $k = \frac{1}{5}$ , and no work is shown.	Student is unable to answer $k = \frac{1}{5}$ . Concept of constant of proportionality is used incorrectly.	Student correctly answers $k = \frac{1}{5}$ but provides no work to support answer.	Student correctly answers $k = \frac{1}{5}$ . Student provides error-free work to support answer.
	b 7.RP.A.2c	Student is unable to write an equation or writes an equation that is not in the form $y = kx$ or even $x = ky$ for any value $k$ .	Student writes an incorrect equation, such as $y = 5x$ or $x = \frac{1}{5}y$ , or uses an incorrect value of $k$ from part (a) to write the equation in the form $y = kx$ .	Student creates an equation using the constant of proportionality but writes the equation in the form $x = 5y$ or some other equivalent equation.	Student correctly answers $y = \frac{1}{5}x$ .
	c 7.RP.A.2d	Student answers incorrectly and shows no or little understanding of analyzing graphs.	Student answers incorrectly but shows some understanding of analyzing graphs and solving equations.	Student answers \$4,000 in sales, but the student's work is incomplete. OR Student correctly demonstrates the steps taken to solve the equation from part (b) but makes a computational error.	Student answers \$4,000 in sales and makes no errors in the steps taken to arrive at the answer.
	d 7.RP.A.2d	Student is unable to describe the situation correctly.	Student is able to explain that the zero is the dollar amount to either the singers' earnings or sales but is unable to describe the relationship.	Student describes the situation correctly but with a minor error.	Student correctly explains that $(0, 0)$ represents the situation that zero sales leads to zero earnings for the singer.
	e 7.RP.A.2d	Student is unable to identify the $x$ - or $y$ -coordinates of the point.	Student identifies 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 answers $(1, \frac{1}{5})$ .

Name \_\_\_\_\_

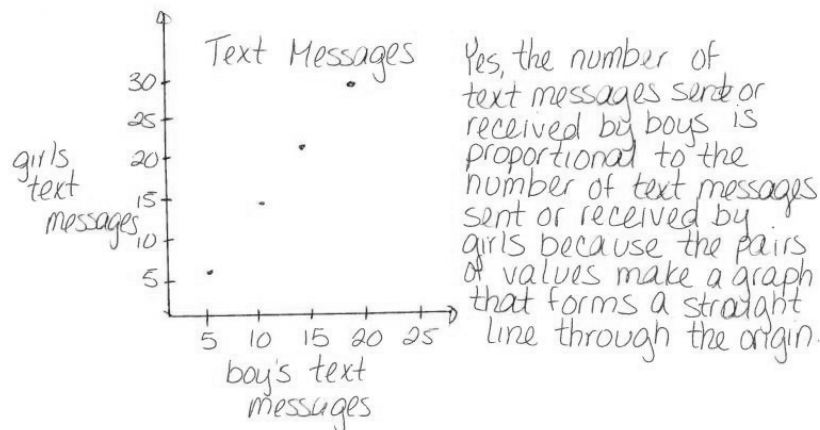
Date \_\_\_\_\_

1. Josiah and Tillery have new jobs at Yum Yum'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.

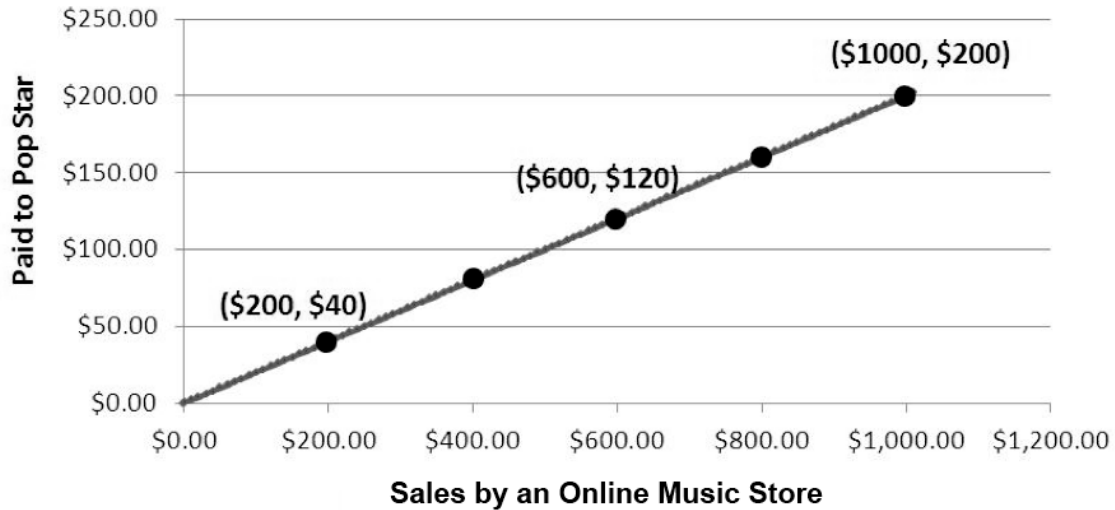
Year	J	T
1	14	7
2	16	9
3	18	11
4	20	13
5	22	15

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 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 the 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 the proportionality between dollars earned by the pop singers 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 singers,  $y$ , to dollars brought in by the 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?

$$\begin{aligned} 800 &= \frac{1}{5}x \\ \left(\frac{5}{1}\right)(800) &= \left(\frac{5}{1}\right)\left(\frac{1}{5}x\right) && \text{The sales for that} \\ & && \text{week were } \$4,000. \\ 4,000 &= x \end{aligned}$$

- 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?

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