1. If you can travel 144 miles on 4.5 gallons of gas, how many miles per gallon can you travel?

$\frac{144}{4.5} = 32$ mpg

2. CD Express offers 4 CDs $60. Music Place offers 6 CDs for $75. Which store offers the better buy?

$\frac{60}{4} = \$15$ each $\qquad \frac{75}{6} = \$12.50$ each

Music Place

3. Doug entered a canoe race. He rowed $3\frac{1}{2}$ miles in $\frac{1}{2}$ hour. What is his average speed in miles per hour?

$3\frac{1}{2} \div \frac{1}{2} = 7$ mph

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4. Solve the given proportion.

$$\frac{44}{p} = \frac{11}{5}$$

P = 20

$\frac{220}{11} = \frac{11p}{11}$

5. Evan paid $1.12 for a dozen eggs at his local grocery store. Determine the cost of 3 eggs.

$1.12 \div 12 = 0.093 \times 3 = \$0.28$

OR $\frac{\$1.12}{12 \text{ eggs}} = \frac{\$x}{3 \text{ eggs}}$ $\qquad 12x = 3.36$ $\qquad x = \$0.28$

6. Mary can read 10 pages in 15 minutes. At this rate, how many pages can she read in 1 hour? = 60 min.

$\frac{15 \text{ min}}{10 \text{ pgs.}} = \frac{60 \text{ min}}{x \text{ pgs}}$

$\frac{15x}{15} = \frac{600}{15}$ $\qquad x = 40$ pages

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7. Does the table represent a proportional relationship? Explain how you know.

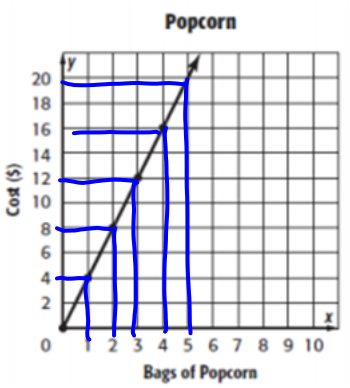
Cost Per Lunch

Number of Lunches	1	2	3	4
Total Cost	$2.75	$5.50	$8.25	$11

2.75 2.75 2.75 2.75

Yes, the unit rates are all $2.75 per lunch.

8. Does the graph represent a proportional relationship? Explain how you know.



Yes, it starts at zero and is a straight line.

$y = 4x$

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9. Which situation represents a proportional relationship between the hours worked and amount earned for Matt and Jane? Explain. (Example 4)

Matt's Earnings ($)	12	20	31
Time (h)	1	2	3

12 10

Jane's Earnings ($)	12	24	36
Time (h)	1	2	3

12 12 12

Jane's - she always earns $12 per hour.

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10. Does the table represent a direct variation? If yes, state the constant of proportionality.

2 2 3

x	1	2	3	4	5
y	2	4	9	12	15

No - there is no constant

11. Does the table represent a direct variation? If yes, state the constant of proportionality.

2 2 2 2 2

x	1	2	3	4	5
y	2	4	6	8	10

$y = 2x$

Yes $k = 2$

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12. Identify the constant of proportionality in the equation:

$y = 5x$

$k = 5$

13. "y varies directly as x". If y = 3 when x = 24, find y when x = 10.

$\frac{y}{x}$ $\frac{3}{24} = \frac{x}{10}$

$\frac{24x}{24} = \frac{30}{24}$

$x = 1.25$

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14. A model of a car has a scale of 3 cm = 2 m. The length of the actual hood of the car is 1 m. What is the length of the hood of the model?

$\frac{3}{2} = \frac{x}{1}$

$\frac{2x}{2} = \frac{3}{2}$

$x = 1.5\text{ cm}$

15. A blueprint of a house has a scale of 1in=6 ft. The living room has dimensions of 3 inches by 4 inches on the blueprint. What is the actual area of the living room?

$A = lw$

$3\text{in} = 18\text{ft}$

$4\text{in} = 24\text{ft}$

$18 \times 24 = 432\text{ft}^2$

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16. The number of girls in a class varied directly as the number of boys. One class had 3 boys and 21 girls. If another class had 5 boys, how many girls were in this class?

$\frac{3\text{ boys}}{21\text{ girls}} = \frac{5\text{boys}}{x\text{ girls}}$

$\frac{105}{3} = \frac{3x}{3}$

$x = 35\text{girls}$

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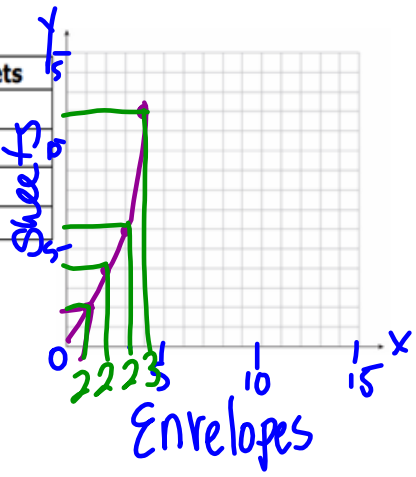
17. Daisy made an envelope from sheets of paper. The table below shows the number of envelopes made by the number of sheets. Graph the relationship to determine if the numbers in the table represent a proportional relationship. Explain how you know.

Number of envelopes	Number of sheets
1	2
2	4
3	6
4	12



No, it is not a straight line.

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