

Vocabulary and Concept Check

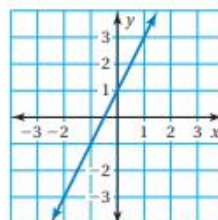
- VOCABULARY** What does it mean for x and y to vary directly?
- WRITING** What point is on the graph of every direct variation equation?
- DIFFERENT WORDS, SAME QUESTION** Which is different? Find “both” answers.

Do x and y show direct variation?

Are x and y in a proportional relationship?

Is the graph of the relationship a line?

Does y vary directly with x ?



Practice and Problem Solving

Graph the ordered pairs in a coordinate plane. Do you think that graph shows that the quantities vary directly? Explain your reasoning.

- $(-1, -1), (0, 0), (1, 1), (2, 2)$
- $(-4, -2), (-2, 0), (0, 2), (2, 4)$

Tell whether x and y show direct variation. Explain your reasoning. If so, find k .

1.

x	1	2	3	4
y	2	4	6	8

7.

x	-2	-1	0	1
y	0	2	4	6

8.

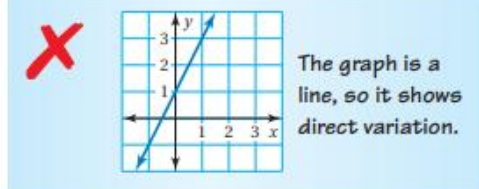
x	-1	0	1	2
y	-2	-1	0	1

9.

x	3	6	9	12
y	2	4	6	8

- $y - x = 4$
- $x = \frac{2}{5}y$
- $y + 3 = x + 6$
- $y - 5 = 2x$
- $x - y = 0$
- $\frac{x}{y} = 2$
- $8 = xy$
- $x^2 = y$

18. **ERROR ANALYSIS** Describe and correct the error in telling whether x and y show direct variation.



19. **RECYCLING** The table shows the profit y for recycling x pounds of aluminum. Graph the data. Tell whether x and y show direct variation. If so, write an equation that represents the line.

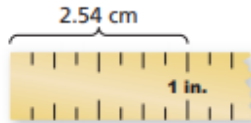
Aluminum (lb), x	10	20	30	40
Profit, y	\$4.50	\$9.00	\$13.50	\$18.00

The variables x and y vary directly. Use the values to find the constant of proportionality. Then write an equation that relates x and y .

20. $y = 72; x = 3$

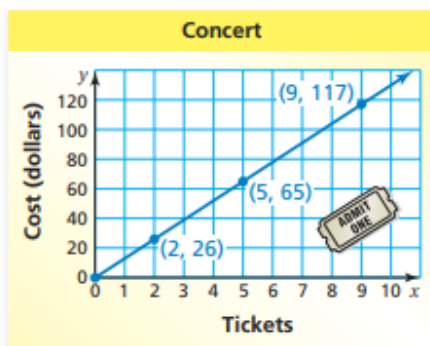
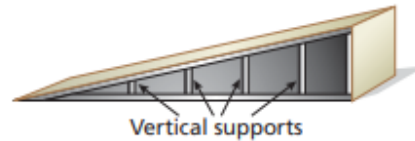
21. $y = 20; x = 12$

22. $y = 45; x = 40$



23. **MEASUREMENT** Write a direct variation equation that relates x inches to y centimeters.

24. **MODELING** Design a waterskiing ramp. Show how you can use direct variation to plan the heights of the vertical supports.



25. **REASONING** Use $y = kx$ to show why the graph of a proportional relationship always passes through the origin.

26. **TICKETS** The graph shows the cost of buying concert tickets. Tell whether x and y show direct variation. If so, find and interpret the constant of proportionality. Then write an equation and find the cost of 14 tickets.