



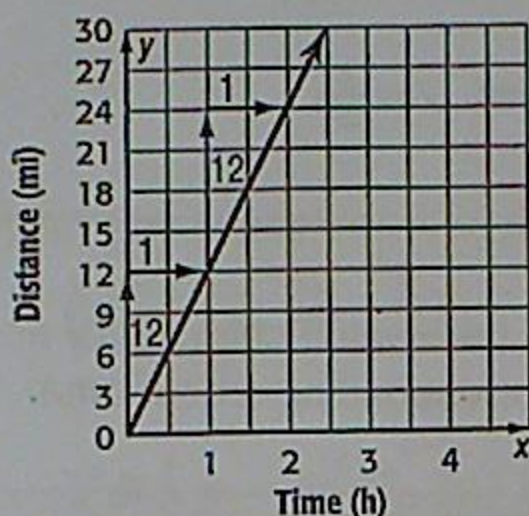
Example



2. A cyclist can ride 3 miles in 0.25 hour. Assume that the distance biked in miles y varies directly with time in hours x . This situation can be represented by $y = 12x$. Graph the equation. How far can the cyclist ride per hour?

Make a table of values. Then graph the equation $y = 12x$. In a direct variation equation, m represents the slope. So, the slope of the line is $\frac{12}{1}$.

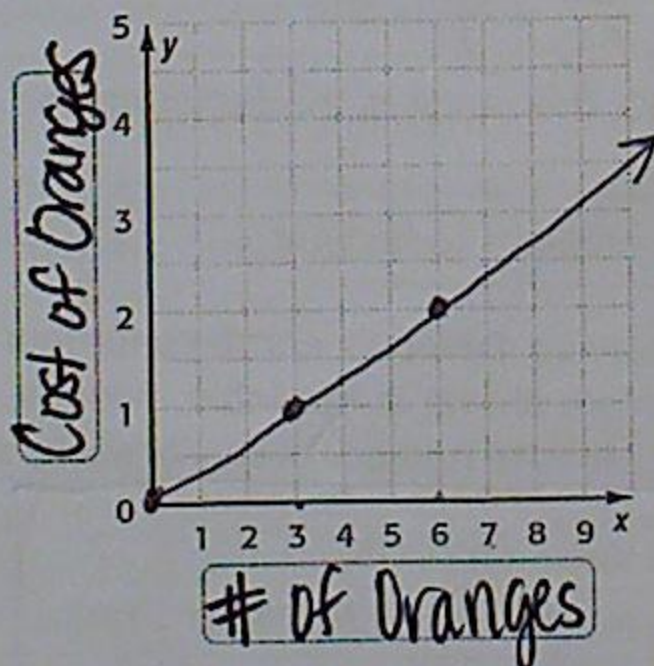
Hours, x	$y = 12x$	Miles, y
0	$y = 12(0)$	0
1	$y = 12(1)$	12
2	$y = 12(2)$	24



The unit rate is the slope of the line. So, the cyclist can ride 12 miles per hour.

Got It? Do this problem to find out.

- b. A grocery store sells 6 oranges for \$2. Assume that the cost of the oranges varies directly with the number of oranges. This situation can be represented by $y = \frac{1}{3}x$. Graph the equation. What is the cost per orange?



$$\begin{array}{r} \$2 \div 6 \\ \hline 6 \text{ oranges} \end{array} = \$0.33\dots$$

y varies directly with x

x	Equation	y
0	$y = \frac{1}{3}(0)$	0
1	$y = \frac{1}{3}(1)$	$\frac{1}{3}$
2	$y = \frac{1}{3}(2)$	$\frac{2}{3}$
3	$y = \frac{1}{3}(3)$	1

(6, 2)

Show your work.

b. about 33¢ per orange

Key Concept

Compare Direct Variations

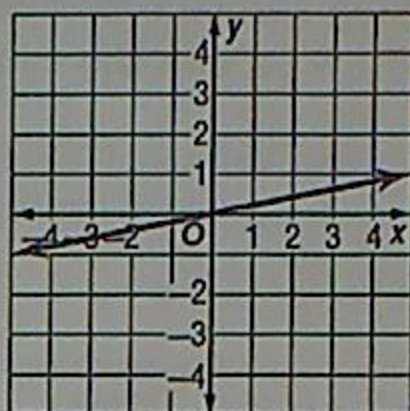
Work Zone

You can use tables, graphs, words, or equations to represent and compare proportional relationships.

Table

x	15	20	25	30
y	3	4	5	6

Graph



Words y varies directly with x

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

STOP and Reflect

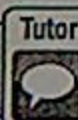
In a proportional relationship, how is the unit rate represented on a graph? Explain below.

When the x -value changes by an amount A , the y -value will change by the corresponding amount mA .

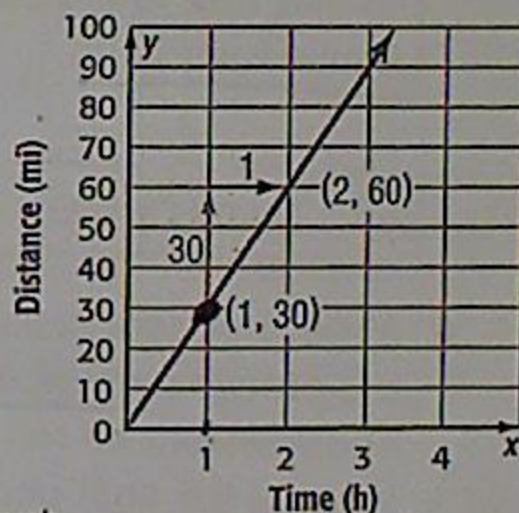
$$y = mx$$



Example



- 3.** The distance d in miles covered by a rabbit in t hours can be represented by the equation $d = 35t$. The distance covered by a grizzly bear is shown on the graph. Which animal is faster? Explain.



Rabbit $d = 35t$

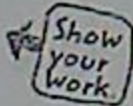
The slope or unit rate is 35 mph.

Grizzly Bear Find the slope of the graph.

$$\frac{\text{rise}}{\text{run}} = \frac{30}{1} \text{ or } 30$$

Since $35 > 30$, the rabbit is the faster animal.

Find where your x is equal to 1
(1, 30)



Got It? Do this problem to find out.

c. The job he has now because $\$7.50 > \7.35 .

- c. **Financial Literacy** Damon's earnings for four weeks from a part time job are shown in the table. Assume that his earnings vary directly with the number of hours worked.

x	Time Worked (h)	15	12	22	9
y	Total Pay (\$)	112.50	90.00	165.00	67.50

He can take a job that will pay him $\$7.35$ per hour worked. Which job has the better pay? Explain.

(22, 165.00)
 $\frac{165}{22} = 7.50$
 $\$7.50$