

Algebra 1            3.6

Write an equation for a proportional relationship

Write an equation for a nonproportional relationship

linear

slope

constant of variation

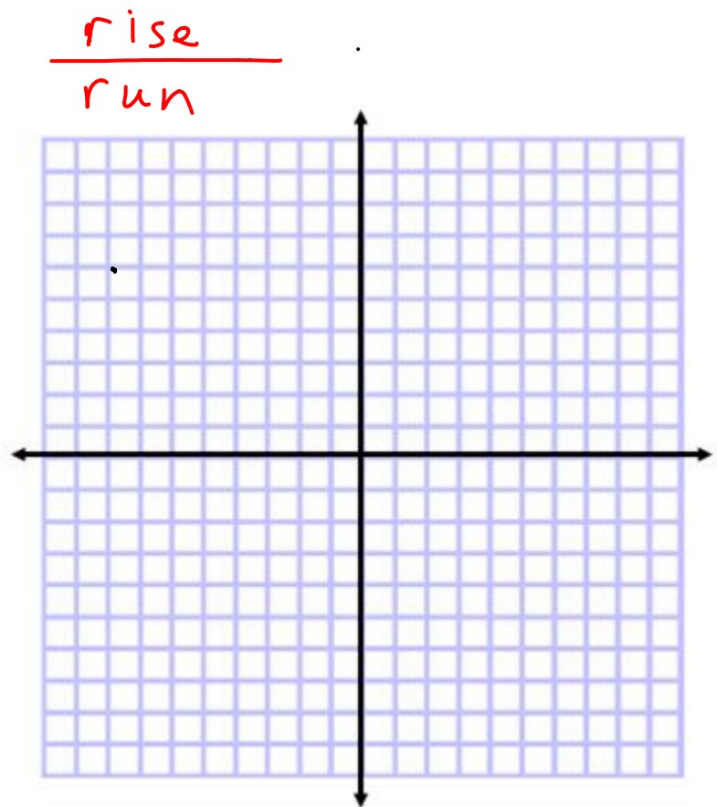
y-intercept

directly proportional

proportional

nonproportional

whiteboards(?)

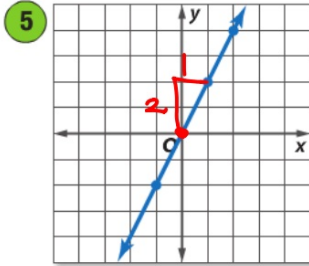


## KeyConcept Proportional Relationship

Words

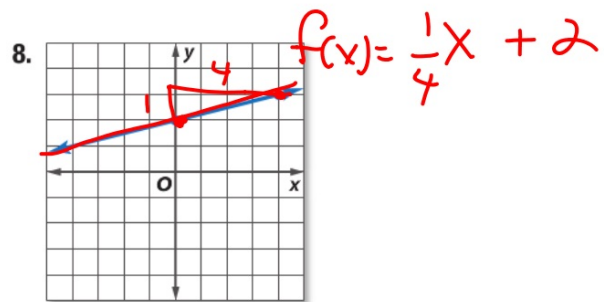
A relationship is proportional if its equation is of the form  $y = kx$ ,  $k \neq 0$ . The graph passes through  $(0, 0)$ .

yes



$$\frac{2}{1}$$

$$f(x) = 2x + 0$$



$$f(x) = \frac{1}{4}x + 2$$

For each arithmetic sequence, determine the related function. Then determine if the function is *proportional* or *nonproportional*. Explain.

9. 0, 3, 6, ...

$$y = a_1 + (n-1)d$$

$$y = 0 + (n-1) \cdot 3$$

$$= 0 + 3n - 3$$

$$y = 3n - 3$$

10. -4, 0, 4, ...

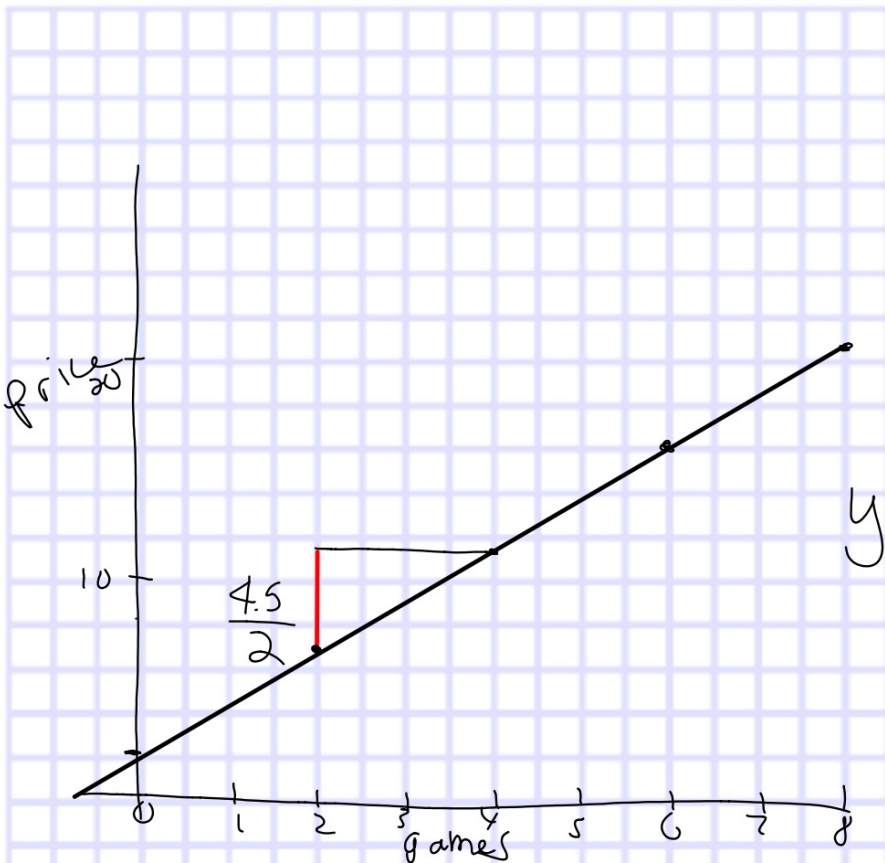
$$y = -4 + (n-1) \cdot 4$$

$$= -4 + 4n - 4$$

$$y = 4n - 8$$

11. **BOWLING** Marielle is bowling with her friends. The table shows prices for renting a pair of shoes and bowling. Write an equation to represent the total price  $y$  if Marielle buys  $x$  games.

Games Bowled	Total Price (\$)
2	7.00
4	11.50
6	16.00
8	20.50



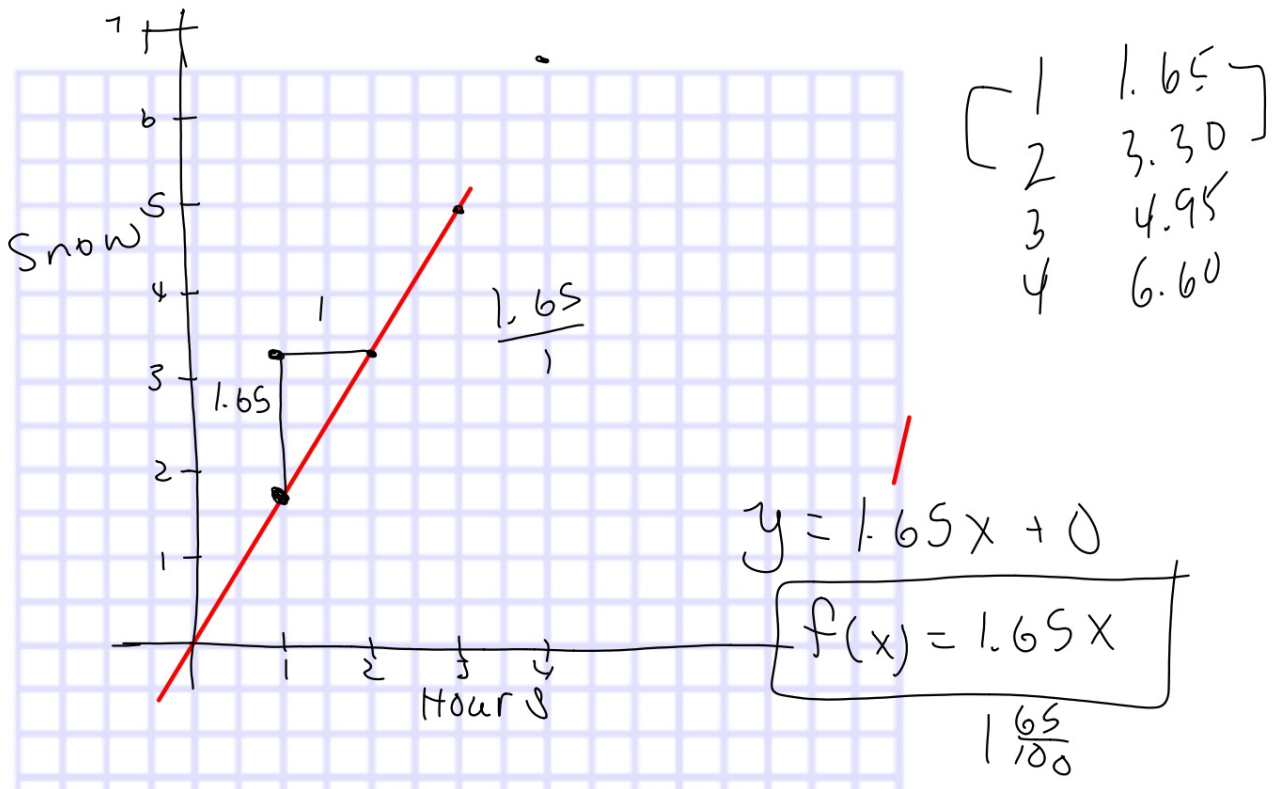
$(2, 7)$   
 $(4, 11.50)$   
 6, 16.00  
 8, 20.50

$$y = 2.25x + 2$$

12. **SNOWFALL** The total snowfall each hour of a winter snowstorm is shown in the table below.

Hour	1	2	3	4
Inches of Snowfall	1.65	3.30	4.95	6.60

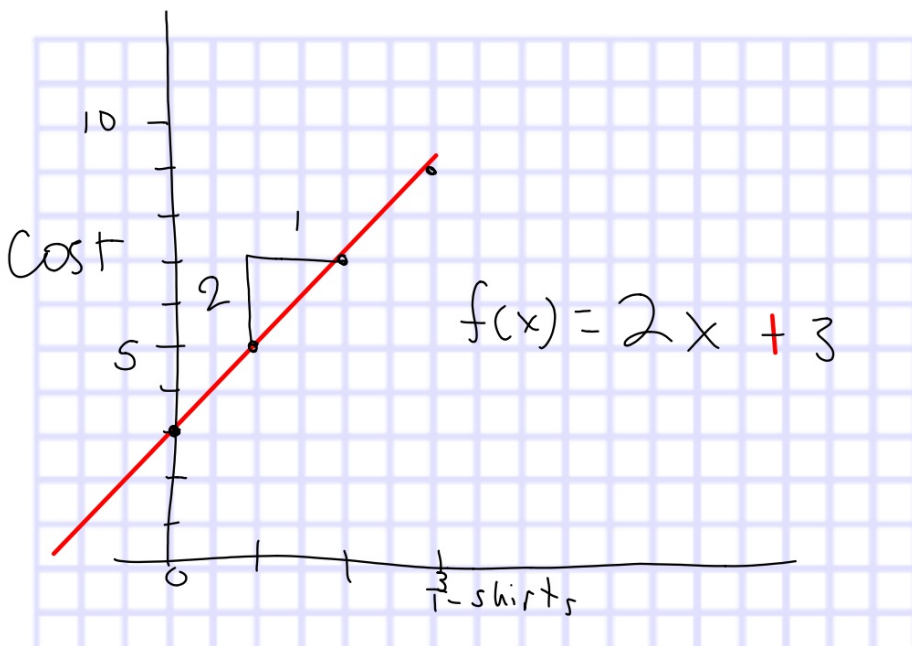
- a. Write an equation to fit the data in the table.  
 b. Describe the relationship between the hour and inches of snowfall.



**13 FUNDRAISER** The Cougar Pep Squad wants to sell T-shirts in the bookstore for the spring dance. The cost in dollars to order T-shirts in their school colors is represented by the equation  $C = 2t + 3$ .

- Make a table of values that represents this relationship.
- Rewrite the equation in function notation.
- Graph the function.

	$2 \cdot t + 3$	
0	$2 \cdot 0 + 3$	3
t.1	$2 \cdot 1 + 3$	5
2	$2 \cdot 2 + 3$	7
3	$2 \cdot 3 + 3$	9



**Guided Practice**

1. **CHARITY** A professional soccer team is donating money to a local charity for each goal they score.

Number of Goals	1	2	3	4	5
Donation (\$)	75	150	225	300	375

- A. Graph the data. What can you deduce from the pattern about the relationship between the number of goals and the money donated?
- B. Write an equation to describe this relationship.
- C. Use this equation to predict how much money will be donated for 12 goals.

