

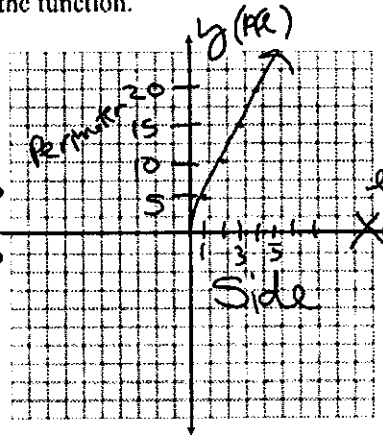
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11-14 \* p. 268 # 46

11. **Geometry** The figure at the right is a regular pentagon. The function  $P(\ell) = 5\ell$  describes the perimeter of a regular pentagon with side length  $\ell$ .

- a. Make a table of values for  $\ell = 1, 2, 3,$  and  $4$ .
- b. Graph the function.

$\ell$	$P(\ell)$
X	Y
1	$5(1) = 5$
2	$5(2) = 10$
3	$5(3) = 15$
4	$5(4) = 20$

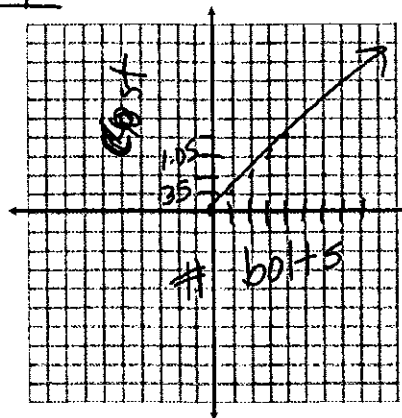


Oct 18-11:35 AM

Determine whether the function rule models discrete or continuous data. Then make a table and graph each function.

12. A hardware store sells bolts for \$0.35 apiece. The function  $C(p) = 0.35p$  relates the total cost of the bolts to the number  $p$  purchased.

$p$	$C(p) = .35p$
0	0
1	.35
2	$.35(2) = .70$
3	$.35(3) = 1.05$
4	$= 1.40$

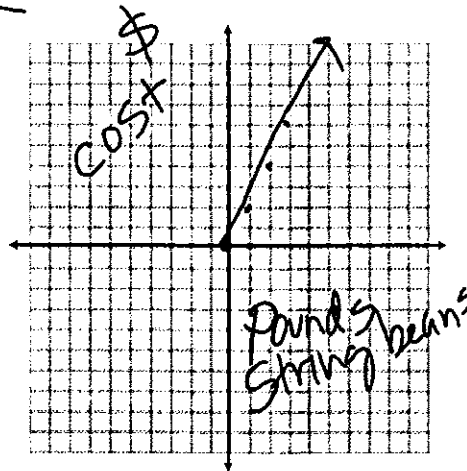


Oct 18-11:36 AM

Determine whether the function rule models discrete or continuous data. Then make a table and graph each function.

13. A supermarket sells string beans for \$2 a pound. The function  $A(n) = 2n$  relates the total cost of string beans to the number of pounds  $n$  bought.

String beans $n$	Cost $A(n) = 2n$
0	0
1	2
2	4
3	6



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Determine whether the function rule models discrete or continuous data. Then make a table and graph each function.

14. Students sell lemonade at a school fundraiser. It costs them \$0.42 to make each lemonade which they sell for \$0.75. The function  $P(c) = 0.75c - 0.42c$  relates the number of cups of lemonade sold  $c$  to the students' profit.

$c$	$P(c) = 0.75c - 0.42c$ $= 0.33c$
0	0
1	.33
2	.66
3	.99
4	1.32



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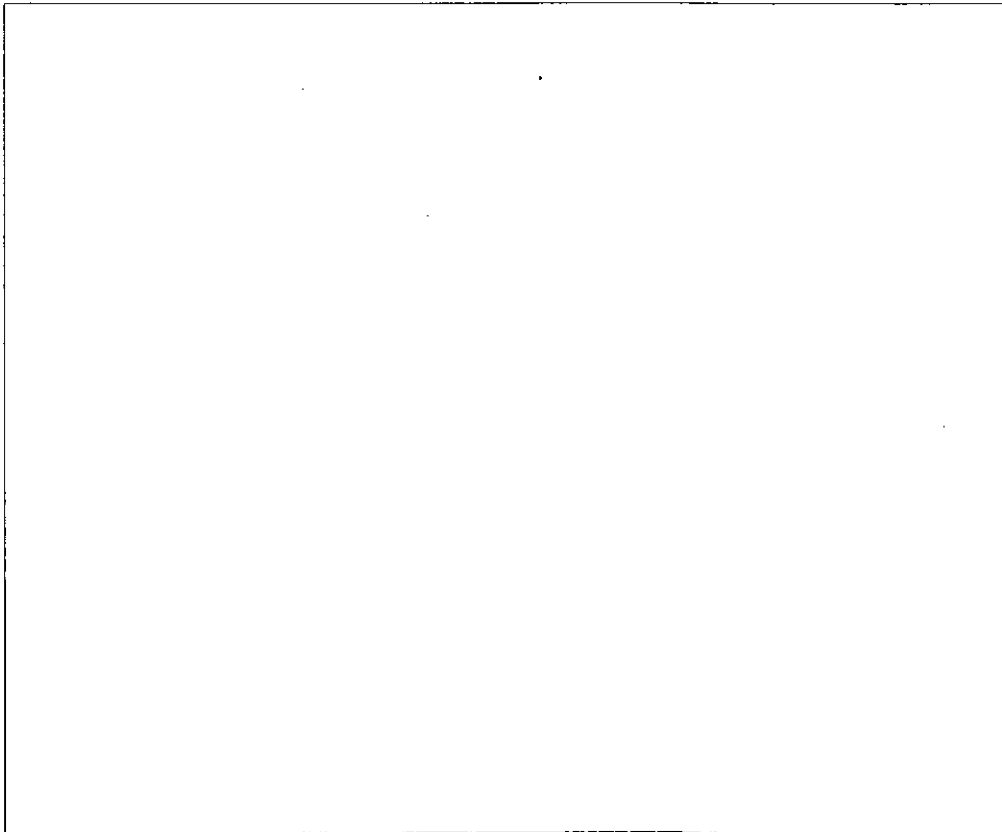
$(-1)^2$

46. Graph the equations  $y = x + 3$ ,  $y = x^2 - 3$ , and  $y = |x| + 3$  on the same coordinate plane. Describe the similarities and differences in the graphs.

$y = |x| + 3$

x	y
-2	$ -2  + 3 = 2 + 3 = 5$
-1	$ -1  + 3 = 1 + 3 = 4$
0	$ 0  + 3 = 3$
1	$ 1  + 3 = 1 + 3 = 4$
2	$ 2  + 3 = 2 + 3 = 5$

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Lesson 5-4
Day 38
Writing a Function Rule

<b>Lesson Objective</b> ▼ Write a function rule given a table or a real-world situation	<b>NAEP 2005 Strand:</b> Algebra <b>Topics:</b> Patterns, Relations, and Functions; Algebraic Representations; Variables, Expressions, and Operations <b>Local Standards:</b> _____
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Feb 27-3:10 PM

**Example**

**1 Writing a Rule from a Table** Write a function rule for the table.

x	y
1	2
2	5
3	10
4	17

*1st difference*

(Hint:) Notice how the difference is not the same until the second difference. If it takes two times to get a common difference, it will have  $x^2$  in the function rule.

$$1 \cdot 1 = 1 + 1 = 2$$

$$2 \cdot 2 = 4 + 1 = 5$$

$$3 \cdot 3 = 9 + 1 = 10$$

Ask yourself, "What can I do to 1 to get 2.2 to get 5...?" You multiply each x-value times  $x \cdot x = x^2$   and add  to get the y-value.

**Relate**  equals  plus

**Write**  =  +

A rule for the function is .

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1. Write a function rule for each table.

a.

x	f(x)
0	-2
1	-1
2	0
3	1
4	2

if the 1st differences are the same - it is linear (x)  
 $y = mx + b$   
 slope (m)

$0 + 1 = 1$   
 $1 - 0 = 1$   
 $2 - 1 = 1$

$y = mx + b$   
 $y = 1x + 2$   
 $y = 1x - 2$

To get the b-value (y-intercept) go and find the y-value when  $x = 0$

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1. Write a function rule for each table.

b.

x	y
0	0
1	2
2	4
3	6
4	8

$y = mx + b$   
 $y = 2x + 0$   
 $y = 2x$   
 $f(x) = 2x$   
 $f(n) = 2n$

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1. Write a function rule for each table.

c.

x	y
0	2
1	3
2	4
3	5
4	6

b  
m  
1  
1  
1

$$y = mx + b$$

$$y = 1x + 2$$

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**Example**

$$25x + b$$

2 Writing a Function Rule The journalism class makes \$25 per ad sold in the yearbook. If the class sells  $n$  ads, how much money will it earn?

a. Write a function rule to describe this relationship.

$$f(n) = 25n + 0 \text{ ad}$$

$$f(n) = 25n$$

n	
1	\$25
2	\$50
3	\$75

b. The class sold 6 ads. How much money did the class make?

$$f(6) = 25(6)$$

$$= \$150$$

6 ads  
cost

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$m(\text{slope})$

2. a. A carpenter buys finishing nails by the pound. Each pound of nails costs \$1.19. Write a function rule to describe this relationship.

nails by lb $x$	cost $y$
0	0
1	\$1.19
2	\$2.38
3	\$3.57

$b(y\text{-int})$

$y = 1.19x + 0$

$y = 1.19x$

$f(c) = 1.19c$

b. How much does 12 lb of finishing nails cost?

$1.19(12) = \$14.28$

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Suppose you buy a word-processing software package for \$199. You charge \$15 per hour for word processing. Write a rule to describe your profit as a function of the number of hours you work.

slope

$m$

$y = 15x - 199$

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Write the function rule for each chart. Watch out for #8 as it begins in the negative and watch out for #9, it is not consecutive.

x	f(x)
1	-3
2	-6
3	-9
4	-12

x	y
-2	-8
-1	-4
0	0
1	4

x	y
-8	64
-4	16
0	0
4	16
8	64

$-6 \div 3 = -3$   
 $-9 \div 3 = -3$   
 $m = -3$   
 $b = 0$

$y = -3x$

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 14, 18-20)

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**Write a function rule for each situation.**

10. the total cost  $t(c)$  of  $c$  ounces of cinnamon if each ounce costs \$.79
11. the total distance  $d(n)$  traveled after  $n$  hours at a constant speed of 45 miles per hour
12. the height  $f(h)$  of an object in feet when you know the height  $h$  in inches
13. a worker's earnings  $e(n)$  for  $n$  hours when the worker's hourly wage is \$6.37

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