

## 5.3 - Function Rules, Tables, and Graphs

**1 EXAMPLE** Model the function rule  $y = \frac{1}{3}x + 2$  using a table of values and a graph.

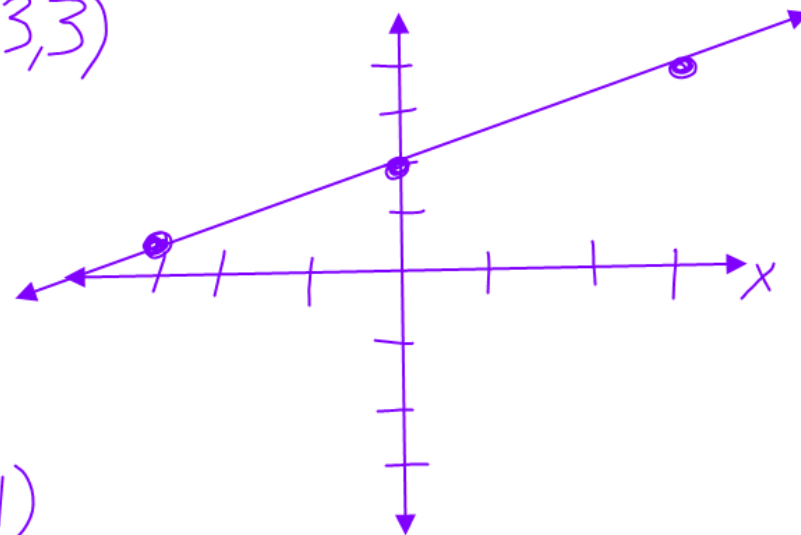
linear function

**Step 1:** Choose input value for  $x$ .  
Evaluate to find  $y$ .

**Step 2:** Plot the points for the ordered pairs.

**Step 3:** Join the points to form a line.

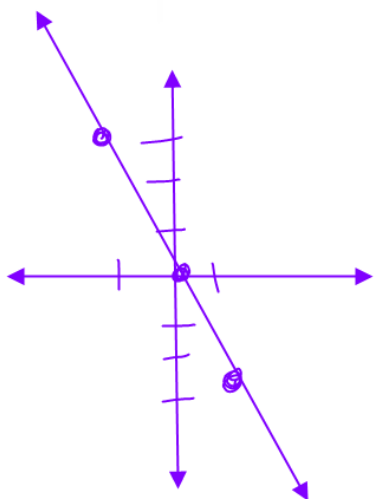
$x$	$\frac{1}{3}x + 2$	$y$
3	$\frac{1}{3} \cdot 3 + 2$	3 (3,3)
0	$\frac{1}{3}(0) + 2$	2 (0,2)
-3	$\frac{1}{3} \cdot -3 + 2$ <del>1</del> $-1 + 2$	1 (-3,1)



**Model each rule with a table of values and a graph.**

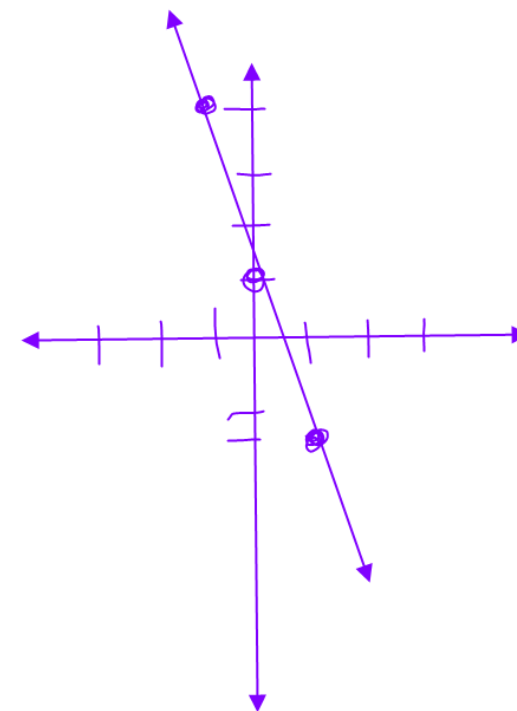
1.  $f(x) = -3x$

x	y
1	-3
0	0
-1	3



2.  $f(x) = -3x + 1$

x	y
-1	$-3(-1) + 1$ 4
0	$0 + 1$ 1
1	$-3(1) + 1$ -2



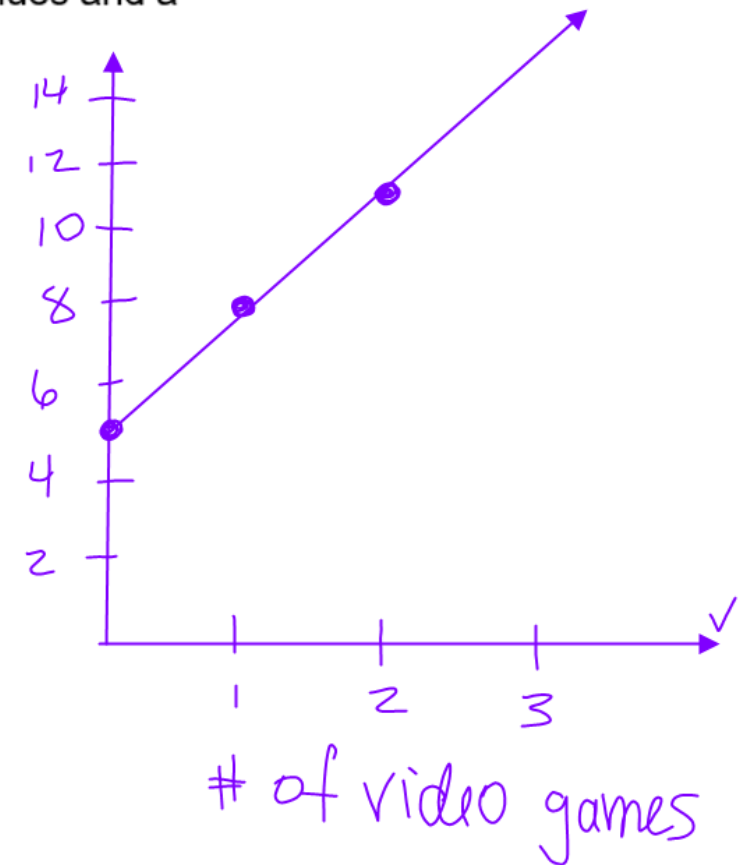
**2 EXAMPLE** At the local video store you can rent a video game for \$3.

It costs you \$5 a month to operate your video game player. The total monthly cost  $C(v)$  depends on the number of video games  $v$  you rent.

Use the function rule  $C(v) = 5 + 3v$  to make a table of values and a graph.

$v$	$5 + 3v$	$C$
0	$5 + 0$	5
1	$5 + 3(1)$	8
2	$5 + 3(2)$	11
3	$5 + 3(3)$	14

cost

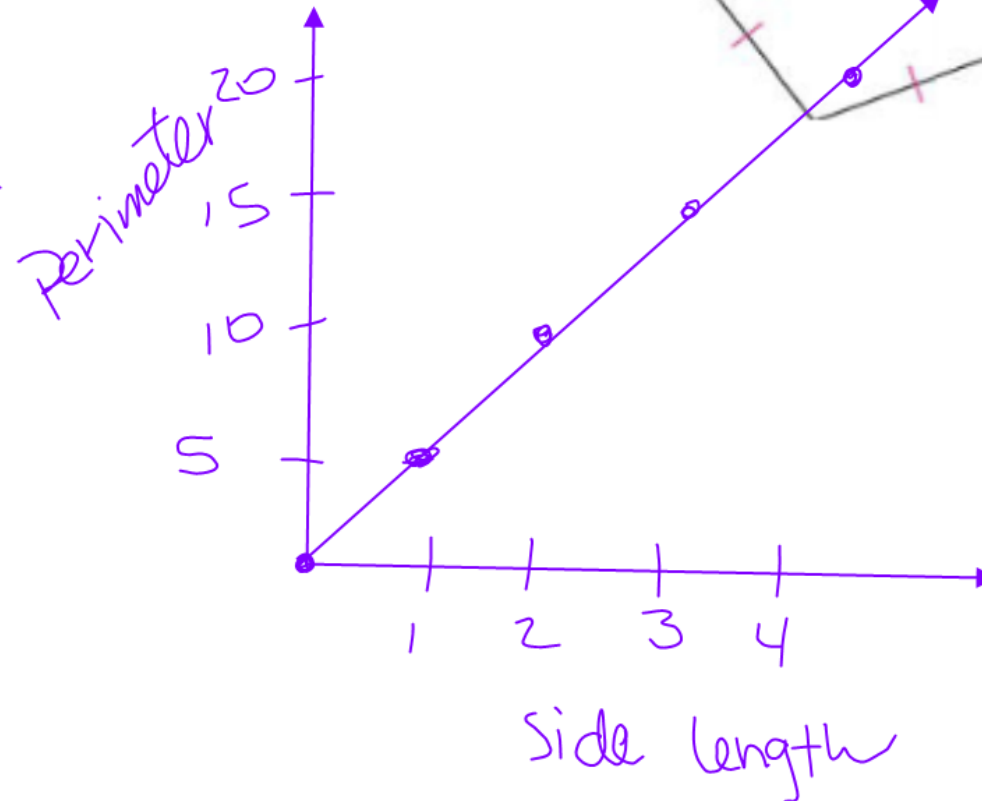




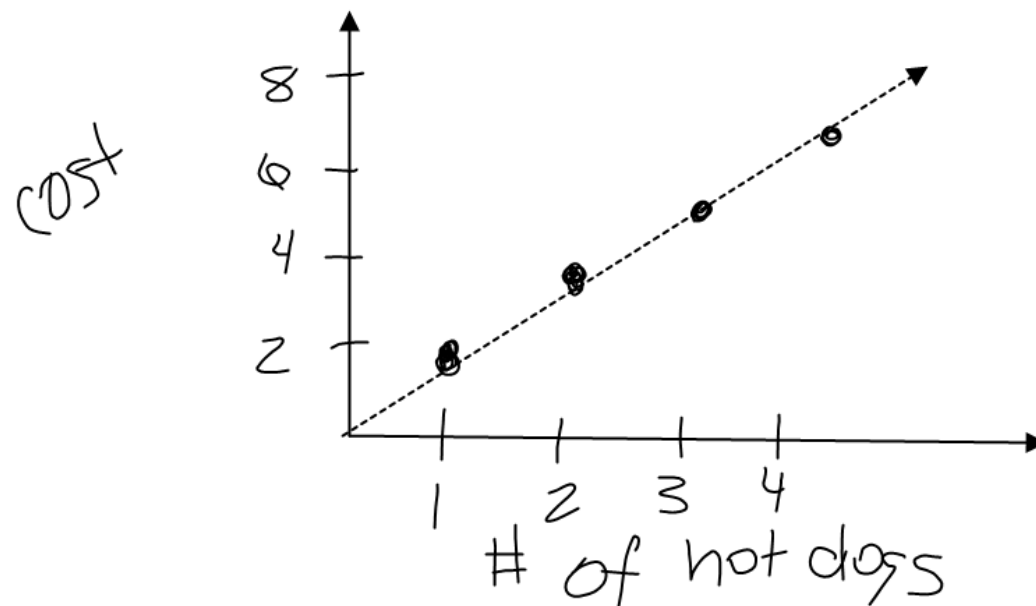
**11. Geometry** The figure at the right is a regular pentagon. The function  $P(\ell) = 5\ell$  describes the perimeter of a regular pentagon with side length  $\ell$ .

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

$\ell$	$P$
1	5
2	10
3	15
4	20

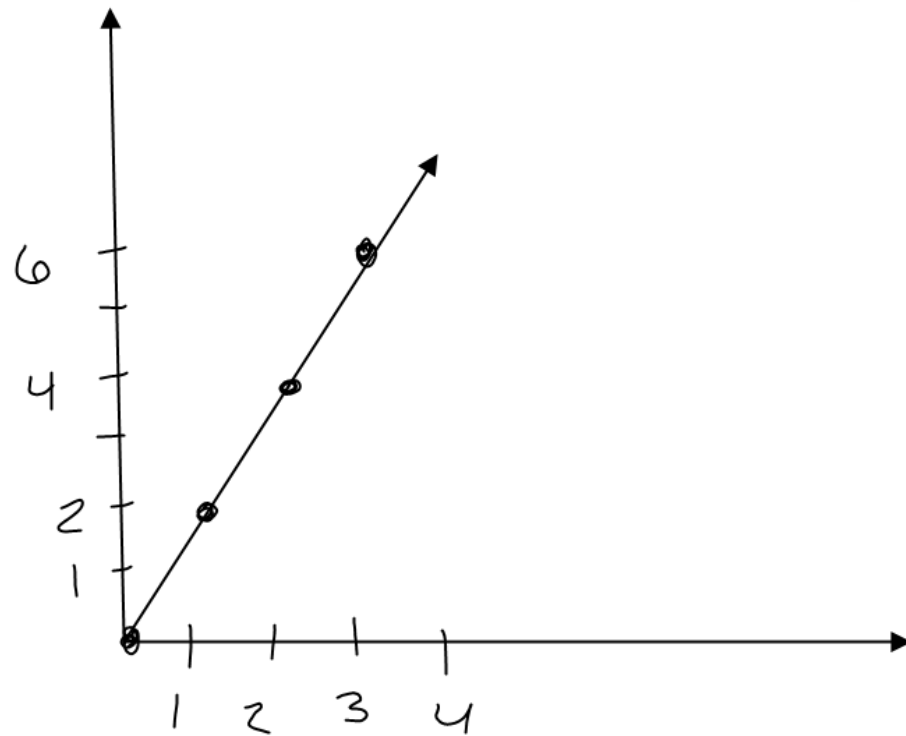


**3 EXAMPLE** At a ball game they charge \$2 for a hotdog. The function  $C(h) = 2h$  describes the cost of  $h$  hotdogs. Use the points for each input value. Connect the points with a dashed line.



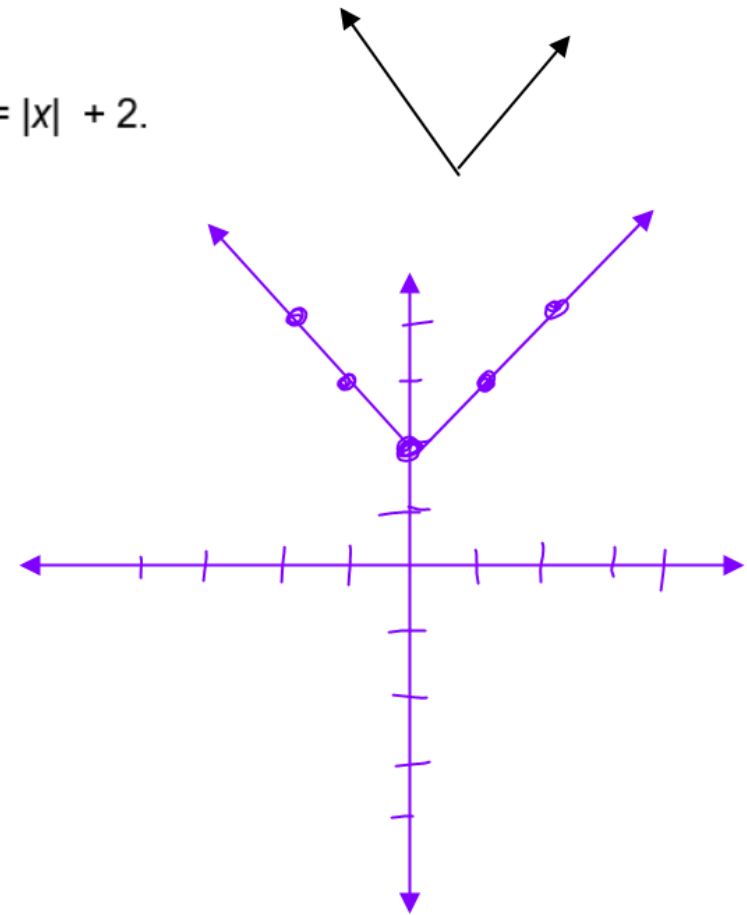
- 13.** A supermarket sells string beans for \$2 a pound. The function  $A(n) = 2n$  relates the total cost of string beans to the number of pounds  $n$  bought.

$n$	$A$
0	0
1	2
2	4
3	6



**4 EXAMPLE** a. Graph the function  $y = |x| + 2$ .

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





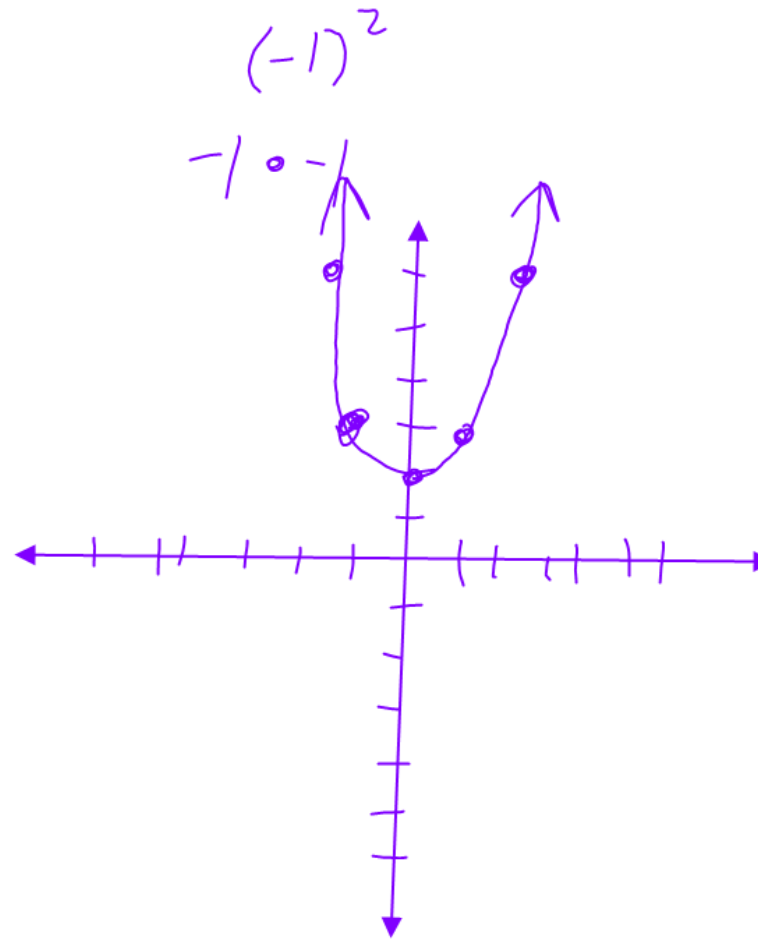
**Graph each function.**

**15.**  $y = |x|$

**4 EXAMPLE** (continued)

b. Graph the function  $f(x) = x^2 + 2$ .

$x$	$x^2 + 2$	$y$
-2	<del><math>(-2)^2</math></del> $4 + 2$	6
-1	$(-1)^2 + 2$ $1 + 2$	3
0	$0 + 2$	2
1	$(1)^2 + 2$	3
2	$(2)^2 + 2$	6



$$17. y = x^2$$

Homework: pg. 266 #4, 8, 10, 14, 16, 20, 24, 31, 36, 48, 52, 56,