

KEY

4-1 Graphing Relationships

Choose the graph that best represents each situation.

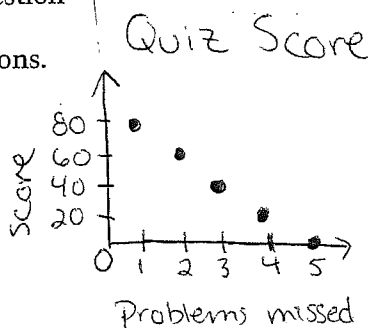
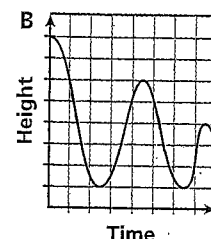
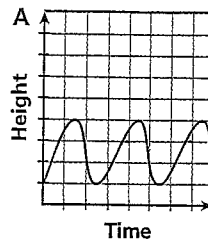
1. A person bungee jumps from a high platform.

Graph B

2. A person jumps on a trampoline in a steady motion.

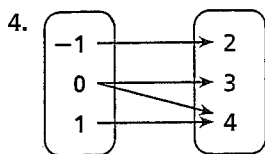
Graph A

3. Xander takes a quiz worth 100 points. Each question is worth 20 points. Sketch a graph to show his possible score if he misses 1, 2, 3, 4, or 5 questions.



4-2 Relations and Functions

Give the domain and range of each relation. Tell whether the relation is a function. Explain.



D: $\{-1, 0, 1\}$

R: $\{2, 3, 4\}$

Not a function

$x=0$ for both $y=3$ & $y=4$

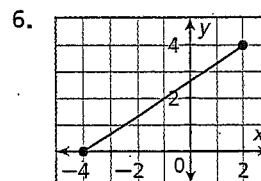
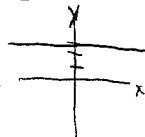
5.

x	-2	-2	0	2	2
y	3	3	3	3	3

D: $\{-2, 0, 2\}$

R: $\{3\}$

Yes a function, because it is a horizontal line



D: $\{-4 \leq x \leq 2\}$

R: $\{0 \leq y \leq 4\}$

yes a function, because it passes the vertical line test.

4-3 Writing Functions

Determine a relationship between the x- and y-values. Write an equation.

7.

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

The value of y is less than x

$$y = x - 7$$

8.

x	1	2	3	4
y	-3	-6	-9	-12

The value of y is -3 times the value of x

$$y = -3x$$

9. A printer can print 8 pages per minute. Identify the dependent and independent variables for the situation. Write a rule in function notation.

Dependent variable: pages
Independent variable: minutes

$$f(m) = 8m$$

Evaluate each function for the given input values.

10. For $f(x) = 3x - 1$, find $f(x)$ when $x = 2$.

$$\begin{aligned} f(2) &= 3(2) - 1 \\ &= 6 - 1 \\ &= 5 \end{aligned}$$

11. For $g(x) = x^2 - x$, find $g(x)$ when $x = -2$.

$$\begin{aligned} g(-2) &= (-2)^2 - (-2) \\ &= 4 + 2 \\ &= 6 \end{aligned}$$

12. A photographer charges a sitting fee of \$15 plus \$3 for each pose. Write a function to describe the situation. Find a reasonable domain and range for up to 5 poses.

$$f(x) = 15 + 3x$$

$$D: \{1, 2, 3, 4, 5\}$$

$$R: \{18, 21, 24, 27, 30\}$$

$$\begin{aligned} f(1) &= 15 + 3(1) \\ &= 18 \end{aligned}$$

$$\begin{aligned} f(2) &= 15 + 3(2) \\ &= 15 + 6 \\ &= 21 \end{aligned}$$

4-4 Graphing Functions

Graph each function for the given domain.

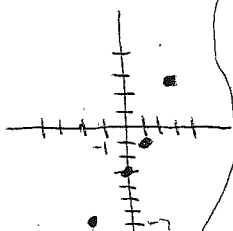
13. $2x - y = 3$; $D: \{-2, 0, 1, 3\}$

$$\begin{aligned} 2(-2) - y &= 3 & R: \{-7, -3, -1, 3\} \\ y &= -7 \end{aligned}$$

$$\begin{aligned} 2(0) - y &= 3 \\ y &= -3 \end{aligned}$$

$$\begin{aligned} 2(1) - y &= 3 \\ y &= -1 \end{aligned}$$

$$\begin{aligned} 2(3) - y &= 3 \\ y &= 3 \end{aligned}$$



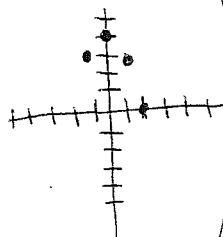
14. $y = 4 - x^2$; $D: \{-1, 0, 1, 2\}$

$$\begin{aligned} y &= 4 - (-1)^2 & R: \{3, 4, 3, 0\} \\ y &= 3 \end{aligned}$$

$$\begin{aligned} y &= 4 - (0)^2 \\ y &= 4 \end{aligned}$$

$$\begin{aligned} y &= 4 - 1^2 \\ y &= 3 \end{aligned}$$

$$\begin{aligned} y &= 4 - 2^2 \\ y &= 0 \end{aligned}$$



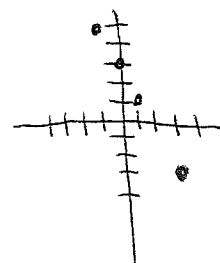
15. $y = 3 - 2x$; $D: \{-1, 0, 1, 3\}$

$$\begin{aligned} y &= 3 - 2(-1) & R: \{5, 3, 1, -3\} \\ y &= 5 \end{aligned}$$

$$\begin{aligned} y &= 3 - 2(0) \\ y &= 3 \end{aligned}$$

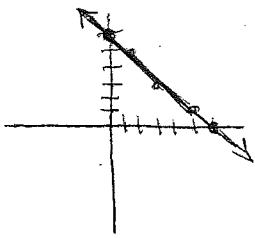
$$\begin{aligned} y &= 3 - 2(1) \\ y &= 1 \end{aligned}$$

$$\begin{aligned} y &= 3 - 2(3) \\ y &= -3 \end{aligned}$$



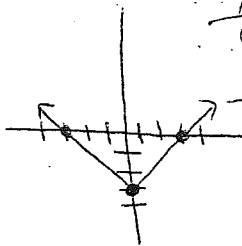
Graph each function.

16. $x + y = 6$



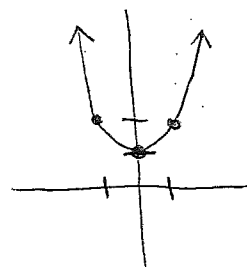
x	y
0	6
1	5
3	3
5	1
6	0

17. $y = |x| - 3$



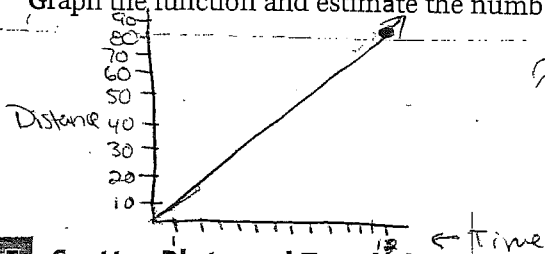
x	y
0	-3
3	0
-3	0

18. $y = x^2 + 1$



x	y
0	1
1	2
-1	2

19. The function $y = 8x$ represents how many miles y a certain storm travels in x hours. Graph the function and estimate the number of miles the storm travels in 10.5 h.



≈ 85 miles

$y = 8(10) \dots y = 8(11)$
 $y = 80 \dots y = 88$

$80 < y < 88$

4-5 Scatter Plots and Trend Lines

Choose the scatter plot that best represents the described relationship. Explain.

3. number of movie tickets sold and number of available seats

Graph A

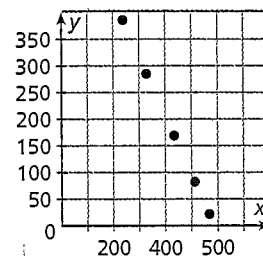
4. number of movie tickets sold and amount of concession sales

Graph B

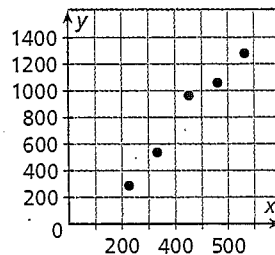
5. number of movie tickets sold and length of movie

Graph C

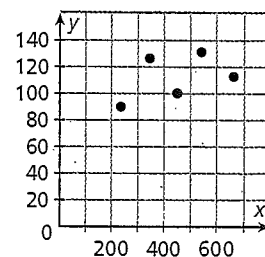
Graph A



Graph B



Graph C



6. The scatter plot shows the estimated annual sales for an electronics and appliance chain of stores for the years 2004–2009. Based on this relationship, predict the annual sales in 2012.

≈ 16 million

