b. $f(11)$ if $f(x) = \frac{1}{2}x + 5$

$$f(11) = \frac{1}{2}(11) + 5$$

$$= \frac{11}{2} + \frac{5 \cdot 2}{1 \cdot 2}$$

$$= \frac{11}{2} + \frac{10}{2} = \frac{21}{2} = 10\frac{1}{2}$$

1. Find $f(4)$ if $f(x) = x - 6$. (Example 1) **−2**

2. Choose four values for x to make a function table for $f(x) = 8 - x$.

Then state the domain and range of the function. (Example 2)

Sample answer: D: {−3, −1, 2, 4}; R: {11, 9, 6, 4}

Show your work.

x	$8 - x$	$f(x)$
−3	$8 - (-3)$	11
−1	$8 - (-1)$	9
2	$8 - 2$	6
4	$8 - 4$	4

3. A hot air balloon can hold 90,000 cubic feet of air. It is being inflated at a rate of 6,000 cubic feet per minute. The total cubic feet of air $a(t)$ is a function of the time in minutes t. (Examples 3 – 5)

a. Identify the independent and dependent variables.

The air $a(t)$ is the dependent variable and the time t is the independent variable.

b. What values of the domain and range make sense for

this situation? Explain. **The domain can be any positive number. Since the balloon only holds 90,000 cubic feet, the range values can be any rational number greater than 0 but less than 90,000.**

c. Write a function to represent the total amount of air. Then determine the total amount of air in 6 minutes.

$a(t) = 6{,}000t$; 36,000 ft^3

4. **Building on the Essential Question** How does the domain affect the range in a function?

Sample answer: Any number can be used for the domain.

So, the range depends on the domain.

Rate Yourself!

How confident are you about functions? Check the box that applies.

For help, go online to [Tutor]

Find each function value. (Example 1)

1. $f(7)$ if $f(x) = 5x$ ___35___

2. $f(9)$ if $f(x) = x + 13$ ___22___

3 $f(4)$ if $f(x) = 3x - 1$ ___11___

Show your work.

Choose four values for x to make a function table for each function. Then state the domain and range of the function. (Example 2)

4. $f(x) = 6x - 4$

Sample answer:

x	$6x - 4$	$f(x)$
-5	$6(-5) - 4$	-34
-1	$6(-1) - 4$	-10
2	$6(2) - 4$	8
7	$6(7) - 4$	38

D: $\{-5, -1, 2, 7\}$

R: $\{-34, -10, 8, 38\}$

5 $f(x) = 5 - 2x$

Sample answer:

x	$5 - 2x$	$f(x)$
-2	$5 - 2(-2)$	9
0	$5 - 2(0)$	5
3	$5 - 2(3)$	-1
5	$5 - 2(5)$	-5

D: $\{-2, 0, 3, 5\}$

R: $\{9, 5, -1, -5\}$

6. $f(x) = 7 + 3x$

Sample answer:

x	$7 + 3x$	$f(x)$
-3	$7 + 3(-3)$	-2
-2	$7 + 3(-2)$	1
1	$7 + 3(1)$	10
6	$7 + 3(6)$	25

D: $\{-3, -2, 1, 6\}$

R: $\{-2, 1, 10, 25\}$

7. In a recent 82-game season, Dwight Howard of the Orlando Magic averaged 20.7 points per game. His approximate total points scored $p(g)$ is a function of the number of games played g. (Examples 3 – 5)

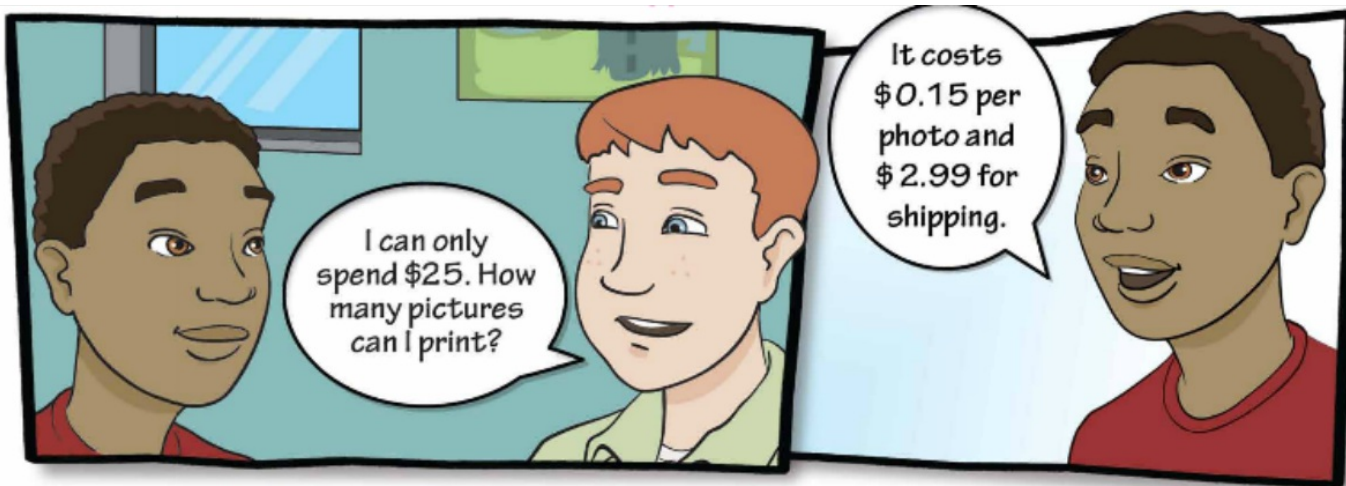**a.** Identify the independent and dependent variables.

The total points $p(g)$ is the dependent variable and the number of games g is the independent variable.

b. What values of the domain and range make sense for this situation? Explain.

Only whole numbers between and including 0 and 82 make sense for the domain because you do not want data for a partial game and there are only 82 games in a season. The range will be multiplies of 20.7.

c. Write a function to represent the total points scored. Then determine the number of points scored in 9 games.

$p(g) = 20.7g$; 186.3 points

I can only spend $25. How many pictures can I print?

It costs $0.15 per photo and $2.99 for shipping.

a. Write a function to represent the total cost c of printing and shipping any number of pictures p. $c(p) = 0.15p + 2.99$

b. Make a function table on a separate piece of paper to find the total cost of printing and shipping 25, 50, 75, and 100 pictures.

c. On a separate piece of paper, graph the ordered pairs on a coordinate plane. Can you determine how many pictures Brian can ship for $25?

Copy and Solve Find each function value. Show your work on a separate piece of paper.

9. $f\left(\frac{5}{6}\right)$ if $f(x) = 2x + \frac{1}{3}$ **2**

10. $f\left(\frac{5}{8}\right)$ if $f(x) = 4x - \frac{1}{4}$ **$2\frac{1}{4}$**

Copy and Solve Find each function value. Show your work on a separate piece of paper.

9. $f\left(\dfrac{5}{6}\right)$ if $f(x) = 2x + \dfrac{1}{3}$ **2**

10. $f\left(\dfrac{5}{8}\right)$ if $f(x) = 4x - \dfrac{1}{4}$ **$2\dfrac{1}{4}$**

H.O.T. Problems Higher Order Thinking

11. **CCSS Reason Abstractly** If $f(-3) = -8$, write a function rule and find the function values for zero, a negative, and a positive value of x.

Sample answer: $f(x) = 2x - 2$; $f(0) = -2$, $f(-4) = -10$, $f(3) = 4$

12. **CCSS Persevere with Problems** Write the function rule for each function.

a.

x	$f(x)$
−3	−30
−1	−10
2	20
6	60

$f(x) = 10x$

b.

x	$f(x)$
−5	−9
−1	−5
3	−1
7	3

$f(x) = x - 4$

c.

x	y
−2	−3
1	3
3	7
5	11

$y = 2x + 1$

d.

x	y
−2	−5
1	1
3	5
5	9

$y = 2x - 1$

13. **CCSS Persevere with Problems** If $f(x) = 4x - 3$ and $g(x) = 8x + 2$, find each function value.

a. $f[g(3)]$ __**101**__

b. $g[f(5)]$ __**138**__

c. $g\{f[g(-4)]\}$ __**−982**__