Linear function (table)

1

1

x	−1	0	1	2	3
y	1	2	3	4	5

The table above shows some values of x and their corresponding values of y. Which of the following equations shows a possible relationship between x and y?

A) $y = x + 2$

B) $y = x - 2$

C) $y = 2x + 3$

D) $y = 3x - 2$

2

2

x	y
1	5
2	7
3	9
4	11

The table above shows some pairs of x values and y values. Which of the following equations could represent the relationship between x and y?

A) $y = 2x + 3$

B) $y = 3x - 2$

C) $y = 4x - 1$

D) $y = 5x$

3

2

x	$f(x)$
1	5
3	13
5	21

Some values of the linear function f are shown in the table above. Which of the following defines f?

A) $f(x) = 2x + 3$

B) $f(x) = 3x + 2$

C) $f(x) = 4x + 1$

D) $f(x) = 5x$

4

3

Shipping Charges

Merchandise weight (pounds)	Shipping charge
5	$16.94
10	$21.89
20	$31.79
40	$51.59

The table above shows shipping charges for an online retailer that sells sporting goods. There is a linear relationship between the shipping charge and the weight of the merchandise. Which function can be used to determine the total shipping charge $f(x)$, in dollars, for an order with a merchandise weight of x pounds?

A) $f(x) = 0.99x$

B) $f(x) = 0.99x + 11.99$

C) $f(x) = 3.39x$

D) $f(x) = 3.39x + 16.94$

5

4

n	1	2	3	4
$f(n)$	−2	1	4	7

The table above shows some values of the linear function f. Which of the following defines f?

A) $f(n) = n - 3$

B) $f(n) = 2n - 4$

C) $f(n) = 3n - 5$

D) $f(n) = 4n - 6$

6

23

x	a	$3a$	$5a$
y	0	$-a$	$-2a$

Some values of x and their corresponding values of y are shown in the table above, where a is a constant. If there is a linear relationship between x and y, which of the following equations represents the relationship?

A) $x + 2y = a$

B) $x + 2y = 5a$

C) $2x - y = -5a$

D) $2x - y = 7a$

7

19

x	$f(x)$
8	12
12	17

The table above shows two pairs of values for the linear function f. The function can be written in the form $f(x) = ax + b$, where a and b are constants. What is the value of $a + b$?

8

16

Length (miles)	Cost (millions of dollars)
5	405
10	810
15	1,215

The table gives some values of possible lengths x, in miles, of a monorail system, and their corresponding costs to build $f(x)$, in millions of dollars. Which of the following equations models this relationship?

A) $f(x) = 81x$

B) $f(x) = 405x$

C) $f(x) = 5x + 405$

D) $f(x) = 405x + 5$

9

9

Some values of x and the corresponding values of $f(x)$ are given in the table shown.

x	f(x)
2	1
5	1.5
8	2
11	2.5

If there is a linear relationship between x and $f(x)$, which of the following equations gives this relationship?

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

B) $f(x)=\frac{1}{2}x-\frac{1}{2}$

C) $f(x)=\frac{1}{6}x+\frac{5}{6}$

D) $f(x)=\frac{1}{6}x+\frac{2}{3}$

10

15

Age	Average amount of money
25	$42
28	$36
33	$26
35	$22
42	$8

The table shows the results of a survey on the average amount of money d, in dollars, consumers would be willing to spend on a product and their corresponding age a, in years. Which equation could represent this linear relationship?

A) $d = -2a + 92$

B) $d = -\frac{1}{2}a + 92$

C) $d = 2a - 8$

D) $d = 2a - 40$

11

5

Bill is planning to drive 1,000 miles to visit his family. If he plans to drive 250 miles per day, which of the following represents the remaining distance d, in miles, that Bill will have to drive to reach his family after driving for n days?

A) $d = 1{,}000 + 250n$

B) $d = 1{,}000n - 250$

C) $d = 250n - 1{,}000$

D) $d = 1{,}000 - 250n$

12

1

A helicopter, initially hovering 40 feet above the ground, begins to gain altitude at a rate of 21 feet per second. Which of the following functions represents the helicopter's altitude above the ground y, in feet, t seconds after the helicopter begins to gain altitude?

A) $y = 40 + 21$

B) $y = 40 + 21t$

C) $y = 40 - 21t$

D) $y = 40t + 21$

13

2

A television with a price of $300 is to be purchased with an initial payment of $60 and weekly payments of $30. Which of the following equations can be used to find the number of weekly payments, w, required to complete the purchase, assuming there are no taxes or fees?

A) $300 = 30w - 60$

B) $300 = 30w$

C) $300 = 30w + 60$

D) $300 = 60w - 30$

14

7

A pool initially contains 1,385 cubic feet of water. A pump begins emptying the water at a constant rate of 20 cubic feet per minute. Which of the following functions best approximates the volume $v(t)$, in cubic feet, of water in the pool t minutes after pumping begins, for $0 \leq t \leq 69$?

A) $v(t) = 1{,}385 - 20t$

B) $v(t) = 1{,}385 - 69t$

C) $v(t) = 1{,}385 + 20t$

D) $v(t) = 1{,}385 + 69t$

15

9

A truck enters a stretch of road that drops 4 meters in elevation for every 100 meters along the length of the road. The road is at 1,300 meters elevation where the truck entered, and the truck is traveling at 16 meters per second along the road. What is the elevation of the road, in meters, at the point where the truck passes t seconds after entering the road?

A) $1{,}300 - 0.04t$

B) $1{,}300 - 0.64t$

C) $1{,}300 - 4t$

D) $1{,}300 - 16t$

1 A
2 A
3 C
4 B
5 C
6 A
7 13/4 or 3.25
8 A
9 D
10 A
11 D
12 B
13 C
14 A
15 B