Unit 6: Applications of Linear Functions Practice Test

Name: Key Date: _____

1. The cost, in dollars, of printing n digital photos is $1.50 + 0.20n$. Which statement is correct?

   A. For each additional photo printed, the cost increases by $0.20.

   B. For each additional photo printed, the cost increases by $1.30.

   C. For each additional photo printed, the cost increases by $1.50.

   D. For each additional photo printed, the cost increases by $1.70.

2. For a few months, Dexter recorded the amounts, in fluid ounces, of laundry detergent remaining, y, after he and his family washed x loads of laundry. The equation of the line of best fit for his data is shown below.

   $$y = -1.6x + 50$$

   -1.6 per load

   Which statement correctly describes the slope of Dexter's equation of the line of best fit in the context of the situation?

   A. The bottle Dexter's family buys holds about 50 fluid ounces of detergent.

   B. For each load of laundry, Dexter's family uses about 1.6 fluid ounces of detergent.

   C. With 50 fluid ounces of detergent, Dexter's family can wash about 1.6 loads of laundry.

   D. With 1.6 bottles of laundry detergent, Dexter's family can wash about 50 loads of laundry.

3. The number of people (n) who will attend a dance depends on the admission price (p), in dollars. This relationship is represented by the equation shown below.

   $n = 800 - 50p$ -50 per person

   Which of these is a correct interpretation of the slope of this equation?

   A. 50 people will attend if the admission price is free

   B. 50 fewer people will attend for every dollar the admission price increases

   C. 800 people will attend if the admission price is free

   D. 800 fewer people will attend for every dollar the admission price increases

4. The table below shows the cost of renting a canoe at Parker Lakes for different numbers of hours.

   Canoe Rental Cost

Number of Hours	Cost
1	$7
2	$9
3	$11
4	$13

   Based on the data in the table, which statement correctly represents the cost of renting a canoe?

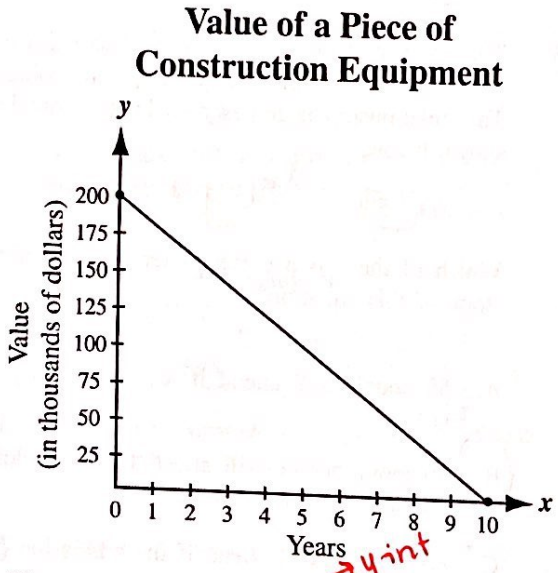
   A. The cost is $3.25 per hour.

   B. The cost is $3.50 per hour.

   C. The cost is a one-time fee of $2 plus $5 per hour.

   D. The cost is a one-time fee of $5 plus $2 per hour.

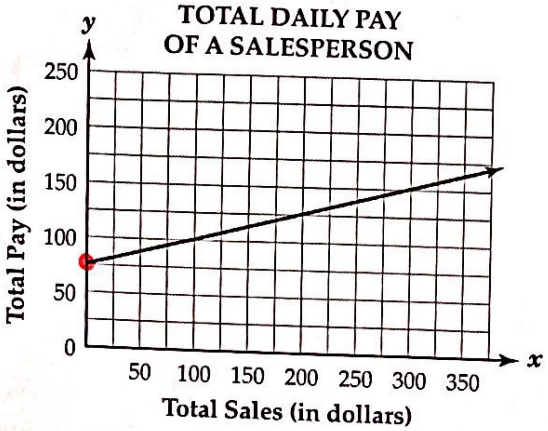
5. The graph below models the value of a piece of construction equipment as it depreciates over 10 years.



What was the original value of the piece of construction equipment?

A. $10,000
B. $20,000
C. $100,000
D. $200,000

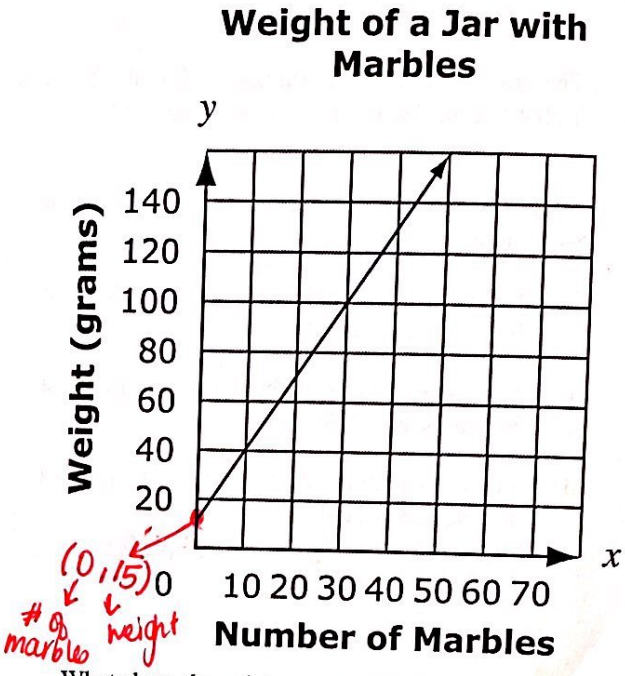
6. A salesperson earns 25% of her total sales in addition to a base pay. The graph below represents her total pay for a given day.



How much does she earn if she does not make any sales on a given day?

A. $0
B. $25
C. $75
D. $175

7. Jayda makes a graph to show the weight of a jar when it contains different numbers of marbles.



What does the y-intercept represent?

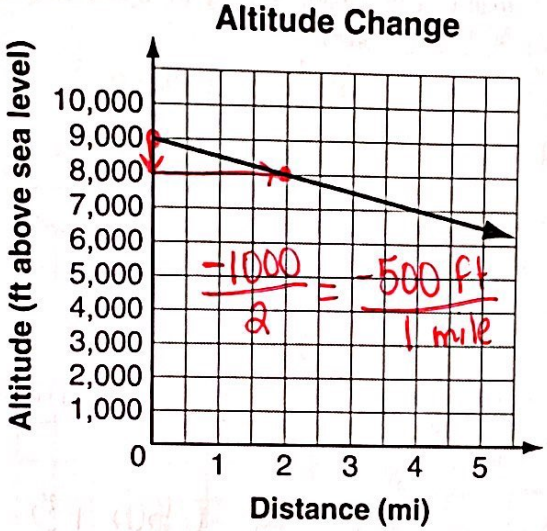
A. The weight of each marble
B. The weight of the jar by itself
C. The number of marbles when the weight is 0 grams
D. The number of marbles when the weight is 10 grams

8. Nancy earns $200 per week plus 15% commission on the value of her sales. In the linear function representing Nancy's weekly earnings, x represents the value of her sales, and y represents her total earnings for the week. What does the y-intercept of the function represent?

$y = .15x + 200$

A. the amount of commission earned for one week
B. the rate of commission on the value of her sales
C. the total earnings for one week when she makes $0 in sales
D. the value of her sales for one week when she makes $0 in total earnings

9. This graph shows the relationship between the altitude of an airplane and the distance it travels while it is descending.



Which statement describes the slope of this line?

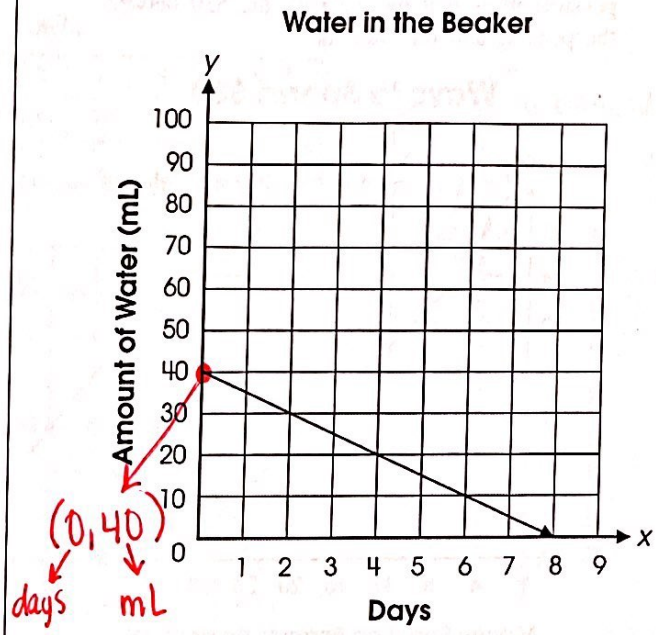
A. The altitude decreases by 500 feet every mile.

B. The altitude decreases by 1000 feet every mile.

C. The altitude decreases by 1 foot every 500 miles.

D. The altitude decreases by 1 foot every 1000 miles.

10. The graph shows the change in the amount of water in an uncovered beaker over several days.



What information does the *y*-intercept provide?

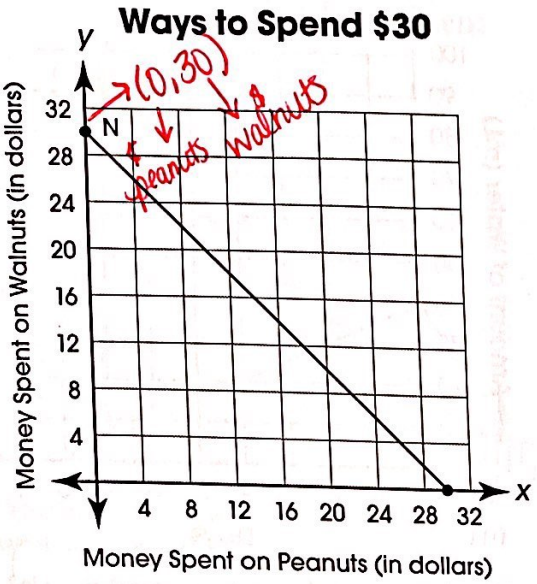
A. The amount of water in the beaker decreased by 40 mL.

B. The water was gone by the eighth day.

C. The change in the amount of water over time has a negative slope.

D. The water level started at 40 mL.

11. Jamie is buying peanuts and walnuts. He wants to spend exactly \$30. The graph below shows all possible ways that he can split the \$30 between the peanuts and the walnuts.



What does the point N on the graph represent?

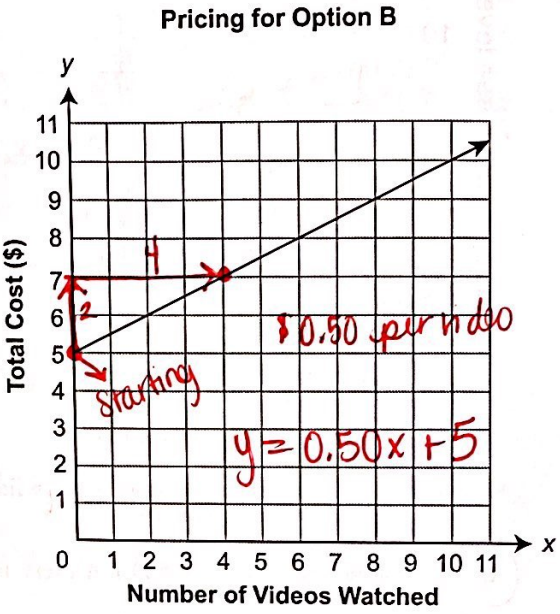
A. spending all \$30 on walnuts

B. spending all \$30 on peanuts

C. spending \$20 on peanuts and \$10 on walnuts

D. spending half of the \$30 on peanuts and half of the \$30 on walnuts

12. An online video service offers two price options. Pricing for option A is given by $y = 2x + 10$, where x is the number of videos watched and y is the total cost in dollars. Pricing for option B is shown in the graph below.



Both options include an initial charge and a charge per video watched. Which statement correctly compares the two price options?

A. Option A has a higher initial charge and a higher charge per video watched.

B. Option B has a higher initial charge and a higher charge per video watched.

C. Option A has a higher initial charge, and option B has a higher charge per video watched.

D. Option B has a higher initial charge, and option A has a higher charge per video watched.

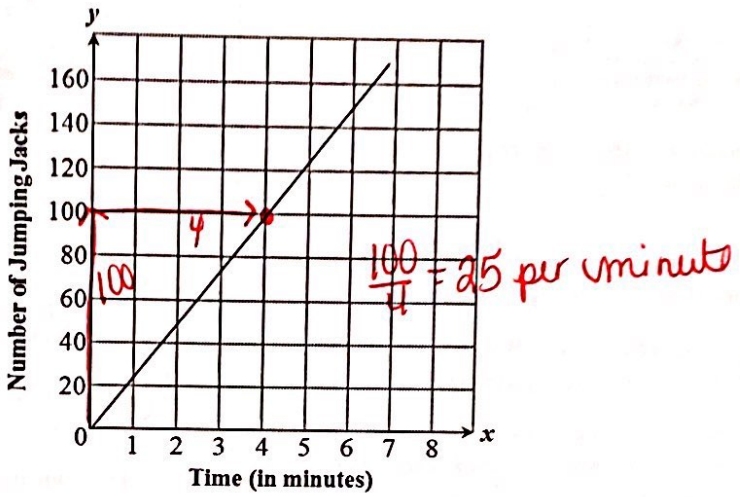
13. Alicia and Melissa did jumping jacks. The table below shows the number of jumping jacks that Alicia had done in different amounts of time.

Alicia

Time (minutes)	1	2	3	4	5	6	7	8
Jumping Jacks	30	60	90	120	150	180	210	240

30 per minute

The graph below shows the number of jumping jacks Melissa had done in different amounts of time.



Which choice best describes the difference between the rates at which the girls did jumping jacks?

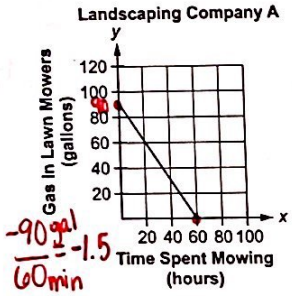
A. Melissa did 6 more jumping jacks per minute than Alicia.

B. Alicia did 6 more jumping jacks per minute than Melissa.

C. Melissa did 5 more jumping jacks per minute than Alicia.

D. Alicia did 5 more jumping jacks per minute than Melissa.

14. The graph and table below show information about two landscaping companies.



$\frac{-90 \text{ gal}}{60 \text{ min}} = -1.5$

Landscaping Company B

Time Spent Mowing (hours)	Gas In Lawn Mowers (gallons)
0	110
24	80
48	50
72	20
88	0

$\frac{-110 \text{ gal}}{88 \text{ min}} = -1.25$

Which statement about the two landscaping companies is true?

A. Landscaping company A mows for 20 more hours than landscaping company B.

B. Landscaping company B mows for 20 more hours than landscaping company A.

C. Landscaping company A uses 0.25 of a gallon more gasoline per hour than landscaping company B.

D. Landscaping company B uses 0.25 of a gallon more gasoline per hour than landscaping company A.

Time vs Gallons Used

15. **Use the two functions below to answer the question.**

Function *A*

x	y
−2	6
0	9
2	12
4	15

$y = 1.5x + 9$

$+2$ $+3$

$\frac{\Delta y}{\Delta x} = \frac{3}{2} = 1.5$

Function *B*

$y = 3x + 9$

Which comparison of function *A* and function *B* is correct?

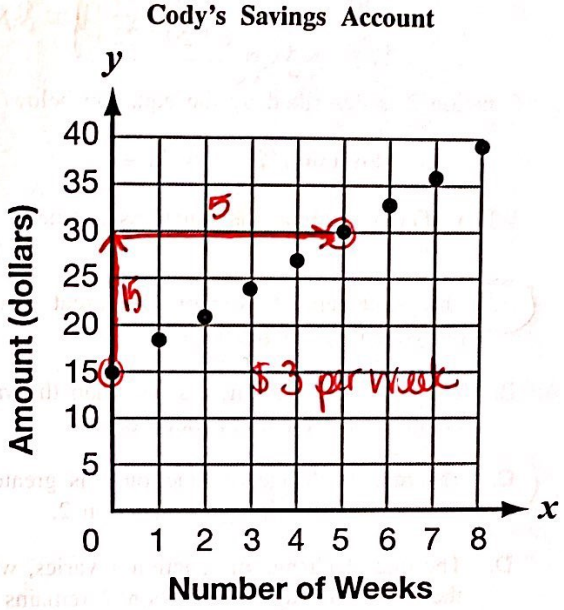
A. Function *A* and function *B* have the same *y*-intercept and the same slope.

B. Function *A* and function *B* have different slopes and different *y*-intercepts.

C. Function *A* and function *B* have the same *y*-intercept, but have different slopes.

D. Function *A* and function *B* have the same slope, but have different *y*-intercepts.

16. Cody and Oren are each saving money to buy a new video game. The amount of money Cody has saved at the end of each week is shown in the graph below.



The amount of money, y, Oren has saved at the end of each week, x, can be determined by the equation below.

$y = 3.50x + 15$

Which description correctly compares the amount of money Cody has been saving to the amount of money Oren has been saving?

A. Cody started saving with more money than Oren, but Oren has been saving more money each week.

B. Cody started saving with more money than Oren, and he has been saving more money than Oren each week.

C. Both Cody and Oren had the same amount of money saved when they started, but Oren has been saving more money each week than Cody.

D. Both Cody and Oren started saving with the same amount of money, but Cody has been saving more money each week than Oren.

17. The total cost in dollars, y, of a membership at each of four health clubs is represented below in terms of x, the number of months of the membership.

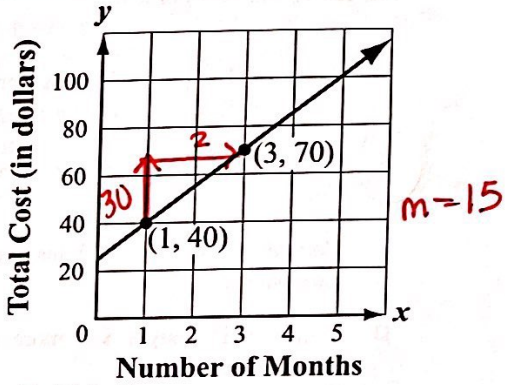
- Health Club A:

  $y = 12x + 60$

- Health Club B:

x	y
0	\$ 0
1	\$21
2	\$42
3	\$63
4	\$84

- Health Club C:



- Health Club D:

  A customer pays a one-time fee of \$20 plus \$20 each month for x months.

Which representation has the greatest rate of change?

A. Health Club A B. Health Club B

C. Health Club C D. Health Club D

18. Limousine Company P and Company R both charge a rental fee plus an additional charge per hour.

- The equation $y = 50 + 30x$ models the total cost (in dollars), y, of renting a limousine from Company P for x hours.
- The table below shows the cost to rent a limousine from Company R for different lengths of time.

Company R

Time (hours)	1	2	3	4	5
Total Cost	$100	$125	$150	$175	$200

Which statement accurately compares the per hour charges of the two companies?

A. Company P charges $5 less per hour than Company R.

B. Company P charges $5 more per hour than Company R.

C. Company P charges $25 less per hour than Company R.

D. Company P charges $25 more per hour than Company R.

19. Larry creates Function 1 is two linear functions of x. Function 1 is represented by the table below.

Function 1

x	1	4	7	9	10
y	4	10	16	20	22

Function 2 is described by the equation below.

Function 2: $y = 3x - 1$

Which statement about the functions is true?

A. The y-intercept of function 1 is greater than the y-intercept of function 2.

B. The value of function 1 is less than the value of function 2 for every value of x.

C. The rate of change of function 1 is greater than the rate of change of function 2.

D. The rate of change of function 1 varies, while the rate of change of function 2 remains constant.