

**Algebra 1 Quick Quiz**

September 23, 2024

Name.....Period.....

- 1. Nancy has just been hired for her first job. Her company gives her four choices for how she can collect her annual salary over the first eight years of employment.

Each function below represents the four choices she has for her annual salary in thousands of dollars, where  $t$  represents the number of years after she is hired.

$$a(t) = 2^t + 25$$

$$b(t) = 10t + 75$$

$$c(t) = \sqrt{400t} + 80$$

$$d(t) = 2(t + 1)^2 - 10t + 50$$

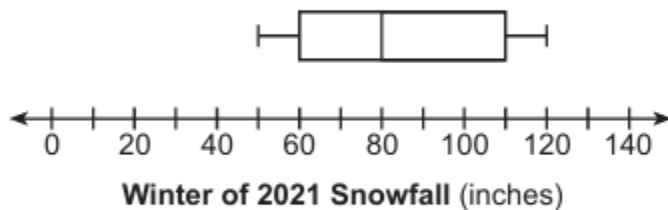
Which pay plan should Nancy choose in order to have the highest salary in her eighth year?

- (1)  $a(t)$
- (2)  $b(t)$
- (3)  $c(t)$
- (4)  $d(t)$

- 2. The third term in a sequence is 25 and the fifth term is 625. Which number could be the common ratio of the sequence?

- (1)  $\frac{1}{5}$
- (2) 5
- (3)  $\frac{1}{25}$
- (4) 25

- 3. The box plot below summarizes the data for the amount of snowfall, in inches, during the winter of 2021 for 12 locations in western New York.



- What is the interquartile range?
- (1) 30
  - (2) 50
  - (3) 80
  - (4) 110

4.

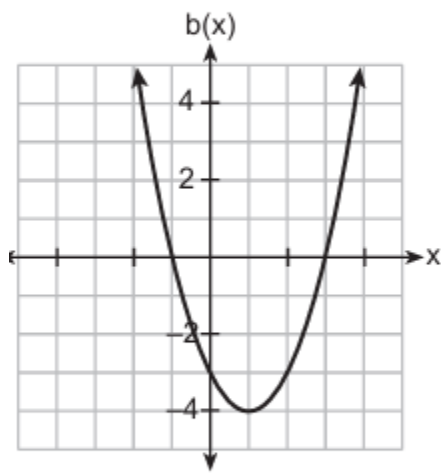
Four quadratic functions are represented below.

$$a(x) = (x - 3)^2 - 7$$

I

$$c(x) = x^2 + 6x + 3$$

III



II

x	d(x)
-4	-1
-3	-4
-2	-5
-1	-4
0	-1

IV

Which function has the *smallest* minimum value?

(1) I

(3) III

(2) II

(4) IV

5.

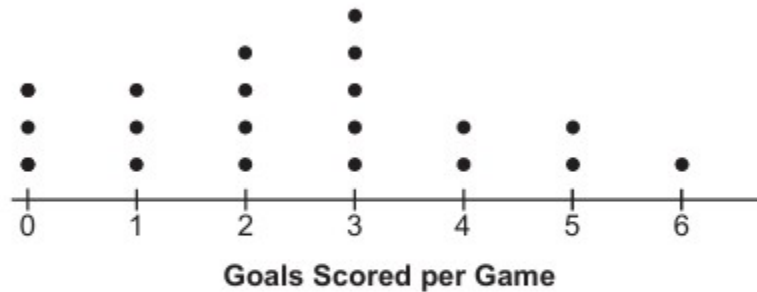
The equation that represents the sequence  $-2, -5, -8, -11, -14, \dots$  is

(1)  $a_n = -3 + (-2)(n - 1)$       (3)  $a_n = 3 + (-2)(n - 1)$

(2)  $a_n = -2 + (-3)(n - 1)$       (4)  $a_n = -2 + (3)(n - 1)$

6.

The dot plot below shows the number of goals Jessica scored in each lacrosse game last season.



Which statement about the dot plot is correct?

- (1) mean  $>$  mode
- (2) mean = median
- (3) mode = median
- (4) median  $>$  mean

7.

The students in Mrs. Smith's algebra class were asked to describe the graph of  $g(x) = 2(x - 3)^2$  compared to the graph of  $f(x) = x^2$ .

Which student response is correct?

- (1) Ashley said that the graph of  $g(x)$  is wider and shifted left 3 units.
- (2) Beth said that the graph of  $g(x)$  is narrower and shifted left 3 units.
- (3) Carl said that the graph of  $g(x)$  is wider and shifted right 3 units.
- (4) Don said that the graph of  $g(x)$  is narrower and shifted right 3 units.

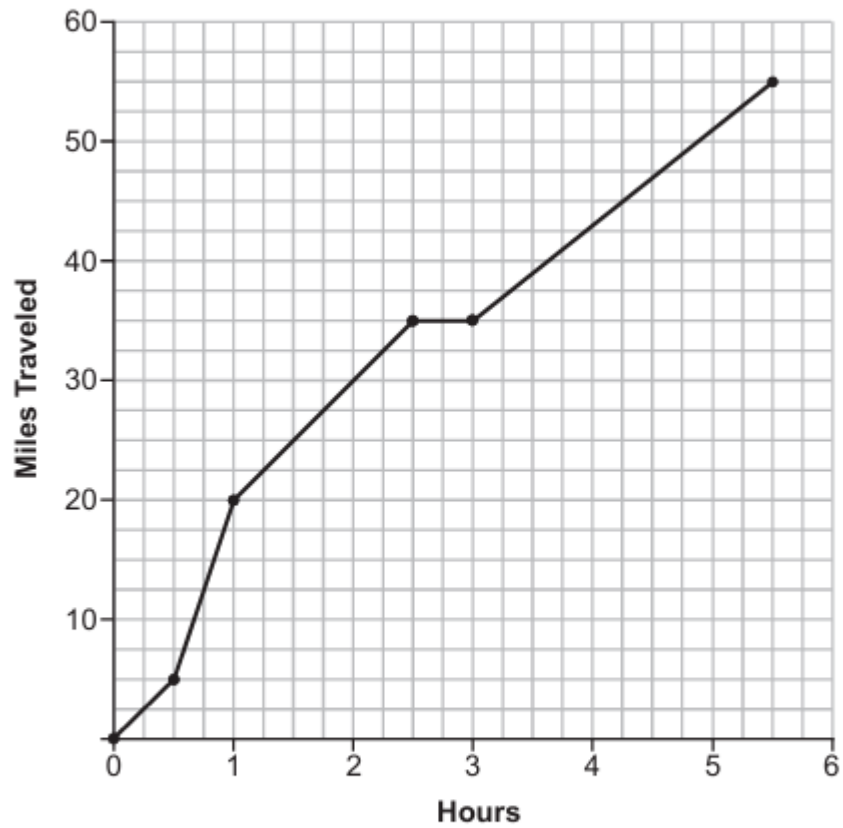
8.

Which expression is equivalent to  $(x - 5)(2x + 7) - (x + 5)$ ?

- (1)  $2x^2 - 2x - 30$
- (2)  $2x^2 - 2x - 40$
- (3)  $2x^2 - 4x - 30$
- (4)  $2x^2 - 4x - 40$

9.

One Saturday, Dave took a long bike ride. The graph below models his trip.

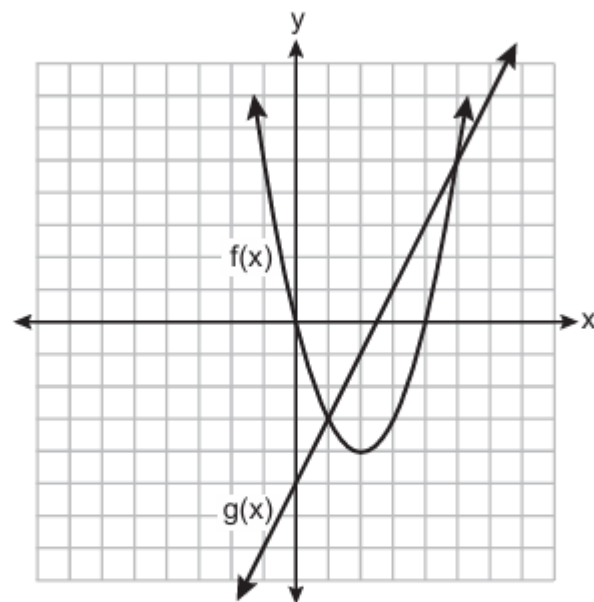


What was Dave's average rate of change, in miles per hour, on this trip?

- (1) 10
- (2) 11
- (3) 11.6
- (4) 14.5

10.

The functions  $f(x)$  and  $g(x)$  are graphed on the set of axes below.



What is the solution to the equation  $f(x) = g(x)$ ?

(1) 1 and 5

(3) -3 and 5

(2) -5 and 0

(4) 0 and 4

Bonus

11.

Jamie has a plan to save money for a trip. Today, she puts 5 pennies in a jar. Tomorrow, she will put the initial amount in plus another 5 pennies. Each day she will put 5 pennies more than she put into the jar the day before, as shown in the table.

Day	0	1	2	3
Deposit (pennies)	5	10	15	20

**Part A**

Let  $f(d)$  represent the amount of pennies she puts into the jar on day  $d$ . What does  $f(10) = 55$  mean?

- A. Jamie will put 10 pennies in the jar on day 55.
- B. Jamie will put 55 pennies in the jar on day 10.
- C. Jamie will have 10 pennies in the jar on day 55.
- D. Jamie will have 55 pennies in the jar on day 10.

**Part B**

Let  $f(d)$  represent the amount of pennies that Jamie puts into the jar on day  $d$ . Today is day 0.

Select the statement that is true.

- A.  $f(d + 1) = f(d)$
- B.  $f(d + 1) = 5(f(d))$
- C.  $f(d + 1) = f(d) + 1$
- D.  $f(d + 1) = f(d) + 5$