



Algebra 1

Sample Test Materials

Answer Key

The B.E.S.T. Algebra 1 Sample Test Materials Answer Key provides the correct response(s) for each item on the sample test. The sample items and answers are not intended to demonstrate the length of the actual test, nor should student responses be used as an indicator of student performance on the actual test.

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B.E.S.T. Mathematics Sample Items Answer Key

1. A band sells x premium tickets and y regular tickets for a concert.

- A premium ticket costs \$20.
- A regular ticket costs \$5 less than a premium ticket.
- The band raises \$2145 from selling tickets.

Select coefficients to complete the equation representing the relationship between x and y . For each box, fill in the bubble before the number that is correct.

<table border="1"><tr><td><input type="radio"/> A</td><td>5</td></tr><tr><td><input type="radio"/> B</td><td>15</td></tr><tr><td><input checked="" type="radio"/> C</td><td>20</td></tr><tr><td><input type="radio"/> D</td><td>25</td></tr></table>	<input type="radio"/> A	5	<input type="radio"/> B	15	<input checked="" type="radio"/> C	20	<input type="radio"/> D	25	$x +$	<table border="1"><tr><td><input type="radio"/> A</td><td>5</td></tr><tr><td><input checked="" type="radio"/> B</td><td>15</td></tr><tr><td><input type="radio"/> C</td><td>20</td></tr><tr><td><input type="radio"/> D</td><td>25</td></tr></table>	<input type="radio"/> A	5	<input checked="" type="radio"/> B	15	<input type="radio"/> C	20	<input type="radio"/> D	25	$y = 2145$
<input type="radio"/> A	5																		
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<input type="radio"/> D	25																		

B.E.S.T. Mathematics Sample Items Answer Key

2. A function is shown.

$$f(x) = 2x + 1$$

Select all the effects on the graph of the function when $f(x)$ is multiplied by 3.

- | | | |
|--|---|---|
| <input type="radio"/> Ⓐ The x-intercept increases. | <input checked="" type="radio"/> Ⓒ The y-intercept increases. | <input checked="" type="radio"/> Ⓓ The slope increases. |
| <input type="radio"/> Ⓑ The x-intercept decreases. | <input type="radio"/> Ⓔ The y-intercept decreases. | <input type="radio"/> Ⓕ The slope decreases. |

Option C: **This answer is correct.** The student correctly indicated an effect on the graph with the specified value of k .

Option E: **This answer is correct.** The student correctly indicated an effect on the graph with the specified value of k .

B.E.S.T. Mathematics Sample Items Answer Key

3. The expression $15,000(1 + 0.02)^m$ can be used to model the sales, in dollars, of a company after m months.

The value 12 was substituted for m to create the expression $15,000(1 + 0.02)^{12}$.

Write your response in the shaded box below and fill in the bubble before the correct unit to complete the sentence.

The expression $(1 + 0.02)^{12}$ represents the growth factor of the company's sales for a period of time

lasting

1

<input type="radio"/> (A) day(s)
<input type="radio"/> (B) month(s)
<input checked="" type="radio"/> (C) year(s)

Other correct responses:

The expression $(1 + 0.02)^{12}$ represents the growth factor of the company's sales for a period of time

lasting

12

<input type="radio"/> (A) day(s)
<input checked="" type="radio"/> (B) month(s)
<input type="radio"/> (C) year(s)

B.E.S.T. Mathematics Sample Items Answer Key

The expression $(1 + 0.02)^{12}$ represents the growth factor of the company's sales for a period of time

lasting

365

- ☒ day(s)
- ☐ month(s)
- ☐ year(s)

The expression $(1 + 0.02)^{12}$ represents the growth factor of the company's sales for a period of time

lasting

366

- ☒ day(s)
- ☐ month(s)
- ☐ year(s)

B.E.S.T. Mathematics Sample Items Answer Key

4. A table of values for a linear function is shown.

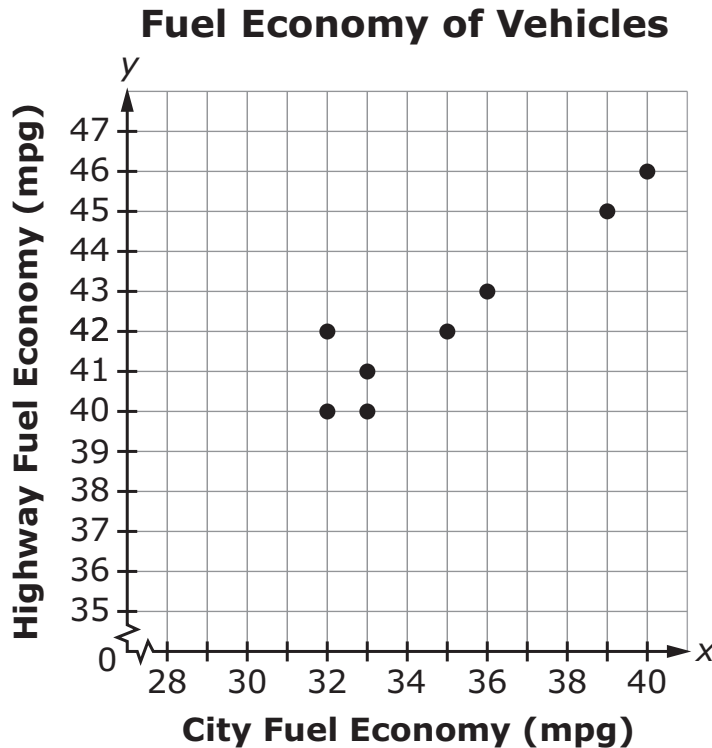
x	$f(x)$
-1	-8
3	0
6	6

Fill in bubbles to match each key feature of the graph to its value.

	-6	$\frac{1}{2}$	2	3	6
x-intercept	<input type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input checked="" type="radio"/> D	<input type="radio"/> E
y-intercept	<input checked="" type="radio"/> F	<input type="radio"/> G	<input type="radio"/> H	<input type="radio"/> I	<input type="radio"/> J
rate of change	<input type="radio"/> K	<input type="radio"/> L	<input checked="" type="radio"/> M	<input type="radio"/> N	<input type="radio"/> O

GO ON
TO THE
NEXT PAGE.

5. The fuel economy of a car is its average distance traveled per amount of fuel consumed. Cars have different fuel economies when they are driven in the city and on the highway. A linear model of the relationship between the city and highway fuel economies of eight cars, in miles per gallon (mpg), is shown.



This question has **two** parts.

Part A

Which linear equation best models the scatter plot?

- $y = \frac{2}{3}x + 19$
- Ⓐ $y = \frac{6}{8}x + 25$
- Ⓑ $y = \frac{3}{2}x + 19$
- Ⓓ $y = \frac{8}{6}x + 25$

B.E.S.T. Mathematics Sample Items Answer Key

Part B

Based on the model in Part A, what could be the highway fuel economy, in mpg, of a car that has a city fuel economy of 43 mpg? Round your answer to the nearest hundredth.

Write your response in the shaded box below.

47.66

*Option A: **This answer is correct.** The student determined the equation of the linear model.*

Other correct responses: for Part B, any value between 47.66 and 47.67, inclusive

B.E.S.T. Mathematics Sample Items Answer Key

6. The table shown represents two functions, Function A and Function B.

x	Function A	Function B
0	700	600
1	750	624
10	1200	888*
20	1700	1315*

*rounded value

Complete the sentences to compare the two functions. For each blank, fill in the bubble **before** the word or phrase that is correct.

Function A appears to grow _____ [☒ linearly ☐ exponentially].

Function B appears to grow _____ [☐ linearly ☒ exponentially].

As x increases, the quantities for _____ [☐ Function A ☒ Function B]

will eventually exceed the quantities for _____ [☒ Function A

☐ Function B].

B.E.S.T. Mathematics Sample Items Answer Key

7. In a survey of 3,260 people, 57% of people said they spend more than 2 hours a day on their smartphones. The margin of error is $\pm 2.2\%$. The survey is used to estimate the number of people in a town of 17,247 who spend more than 2 hours a day on their smartphones.

Based on the survey, what are the estimated minimum and maximum numbers of people in the town who spend more than 2 hours a day on their smartphones? Round your answers to the nearest whole numbers.

Write your responses in the shaded boxes below.

Minimum:

9451

Maximum:

10210

Other correct responses: for the minimum, any value between 9451 and 9452, inclusive; for the maximum, any value between 10210 and 10211, inclusive



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