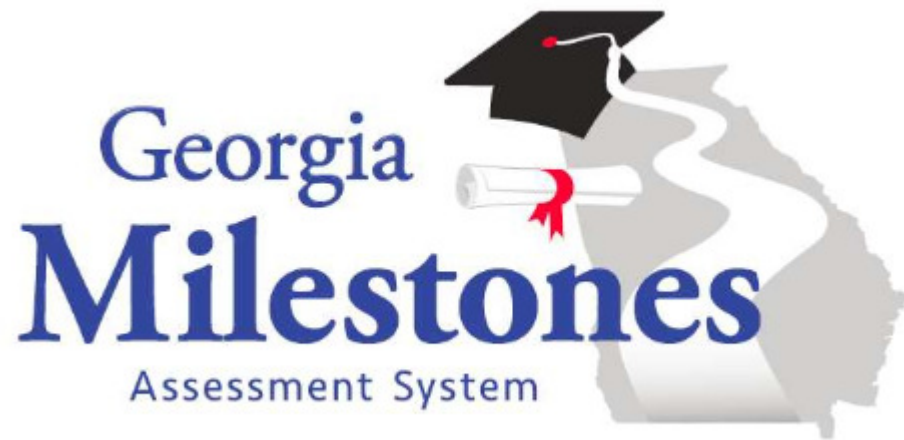


Student Name: _____



Algebra 1

EOC Test Prep

Materials



For the complete Georgia Milestones Assessment Guide for this grade level, go to the GA DOE Website at [gadoe.org](http://www.gadoe.org) and search for the **EOG Assessment Guides** – choose your grade level. **Here's the link:** <http://www.gadoe.org/Curriculum-Instruction-and-Assessment/Assessment/Pages/Georgia-Milestones-End-of-Course-Assessment-Guides.aspx>

Below are the formulas you may find useful as you work the problems. However, some of the formulas may not be used. You may refer to this page as you take the test.

Linear Formulas

Slope Formula

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Linear Equations

Slope-intercept Form: $y = mx + b$

Point-slope Form: $y - y_1 = m(x - x_1)$

Standard Form: $Ax + By = C$

Arithmetic Sequence Formulas

Recursive: $a_n = a_{n-1} + d$

Explicit: $a_n = a_1 + (n - 1)d$

Exponential Formulas

Exponential Equation

$$y = ab^x$$

Geometric Sequence Formulas

Recursive: $a_n = r(a_{n-1})$

Explicit: $a_n = a_1 \cdot r^{n-1}$

Compound Interest Formula

$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$

Quadratic Formulas

Quadratic Equations

Standard Form: $y = ax^2 + bx + c$

Vertex Form: $y = a(x - h)^2 + k$

Quadratic Formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Average Rate of Change

The change in the y-value divided by the change in the x-value for two distinct points on a graph.

Statistics Formulas

Mean

$$\bar{x} = \frac{x_1 + x_2 + x_3 + \dots + x_n}{n}$$

Interquartile Range

$$IR = Q_3 - Q_1$$

The difference between the first quartile and third quartile of a set of data.

Mean Absolute Deviation

$$\frac{\sum_{i=1}^n |x_i - \bar{x}|}{n}$$

The sum of the distances between each data value and the mean, divided by the number of data values.

Item 1

Which set of data points could be modeled by a decreasing linear function?

- A. $\{(0, 0), (1, 8), (2, 15), (3, 22), (4, 30)\}$
- B. $\{(0, 5), (1, 6), (2, 10), (3, 16), (4, 28)\}$
- C. $\{(0, 50), (1, 42), (2, 33), (3, 25), (4, 16)\}$
- D. $\{(0, 64), (1, 60), (2, 52), (3, 39), (4, 22)\}$

Item 2

Use these functions to answer this question.

$$P(x) = x^2 - x - 6$$

$$Q(x) = x - 3$$

What is $P(x) - Q(x)$?

- A. $x^2 - 3$
- B. $x^2 - 9$
- C. $x^2 - 2x - 3$
- D. $x^2 - 2x - 9$

Item 3

The total daily expenses to operate Sheila's pie bakery are the cost of salaries and ingredients. Sheila has four employees, and she pays each worker a daily rate. On average, it costs the same amount of money to make each pie. This expression shows the total daily expenses for Sheila's bakery to make x pies.

$$4(75) + \$0.50x$$

What does the term $4(75)$ represent?

- A. The amount of money Sheila must pay her employees per day.
- B. The number of pies Sheila must sell per day.
- C. The total cost of expenses per pie.
- D. The amount of money customers pay per pie.

Item 4

Which function represents the data in the table?

x	3	6	10	15
y	2.5	4	6	8.5

- A $f(x) = 2x + 1$
- B $f(x) = \frac{x}{2} - 1$
- C $f(x) = 2x - 1$
- D $f(x) = \frac{x}{2} + 1$

Item 5

What is the solution to this system of equations?

$$x - 3y = 1$$
$$x - 2y = 6$$

- A (-4, -5)
- B (-2, -1)
- C (4, 1)
- D (16, 5)

Item 6

Information about the costs of three catering companies is shown in this table.

Catering Company Costs

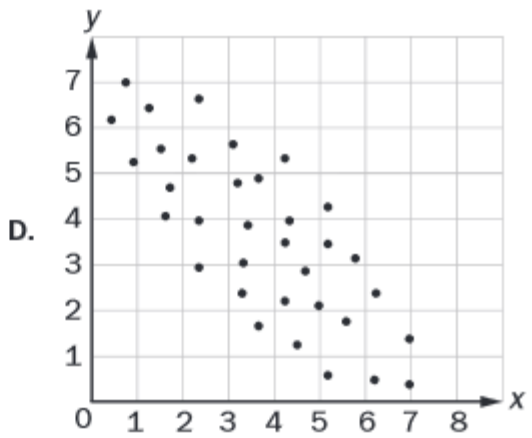
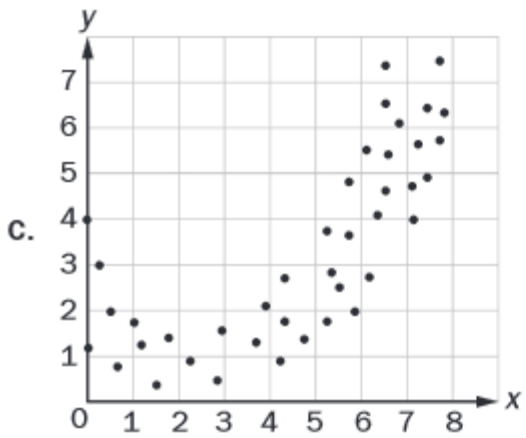
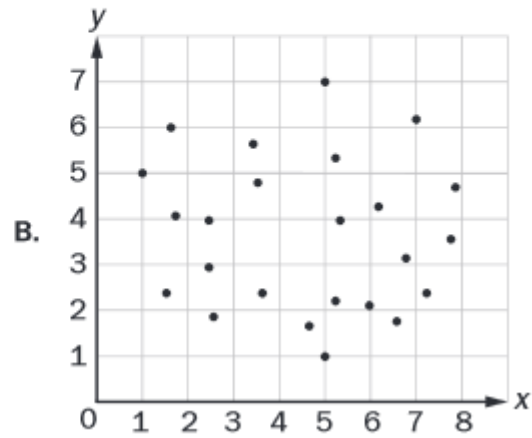
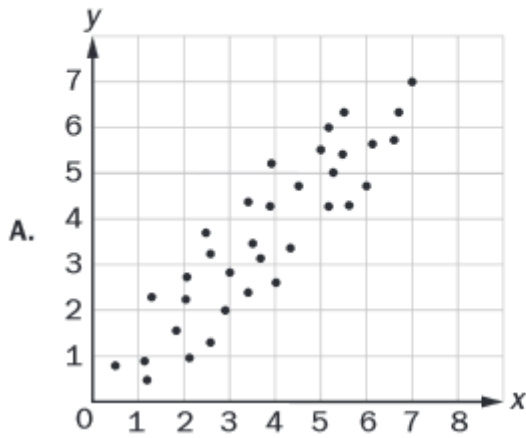
Acme Catering Company	Best Foods Company	Creative Catering Company
\$6 per person plus a flat \$100 time and equipment charge	\$8 per person plus a flat \$40 time and equipment charge	\$10 per person charge with no other fees

Gavin can spend no more than \$300 on catering. What is the greatest number of people he can invite using one of the three caterers?

- A. 30
- B. 32
- C. 33
- D. 37

Item 7

Which set of data could be BEST modeled by a quadratic function?

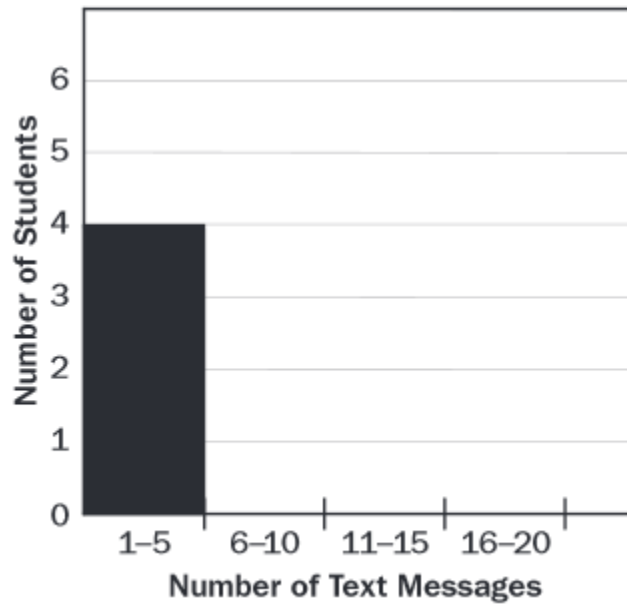


Item 8

This list shows the number of text messages each student in a group sent in one day.

16, 2, 8, 5, 3, 20,
15, 4, 9, 16, 19, 17

The students are creating this histogram to show their data.



What should be the height of the bar for 6–10 text messages?

- A. 1
- B. 2
- C. 4
- D. 5

Item 9

Jill solved the inequality $-\frac{x}{4} < \frac{x+2}{3}$ for x .

Her solution is shown.

Step 1: $-3x < 4x + 8$

Step 2: $-3x - 4x < 8$

Step 3: $-7x < 8$

Step 4: $x < -\frac{8}{7}$

Part A: Explain the mistake Jill made when solving for x .

Write your answer on your answer document.

Part B: Solve the inequality $-\frac{x}{4} < \frac{x+2}{3}$ for x . Show or explain how you found your answer. Write your answer on the lines provided.

Write your answers on the lines provided on your answer document.

Item 10

The student council makes an initial investment in a savings account that earns interest. The value of the savings account after m months is determined by the function $v(m) = 2,000(1.005)^m$. The student council also has a checking account which has a value after m months that is determined by the function $c(m) = 250 + 100m$.

Part A: What is the initial investment in the savings account?

Answer part A on your answer document.

Part B: What is the interest rate of the savings account?

Answer part B on your answer document.

When the student council has \$2,450 in its checking account, it will purchase new computers for the library.

Part C: After how many months will the student council purchase new computers for the library?

Answer part C on your answer document.

Part D: How much money will be in the student council's savings account when they purchase the new computers? Explain your reasoning. Write your answer on

Explain your reasoning on your answer document.

On the following pages are the answers for all the content questions. Note that the third column of the answer key provides a **DOK Level**. “**Depth of Knowledge**” (**DOK**) is the complexity or depth of understanding required to answer or explain an assessment item. Four distinct depths of knowledge levels have been identified in education.

Level 1 includes basic recall of facts, concepts, information or procedures.

Level 2 includes skills and concepts such as the use of information (graphs) or requires two or more steps with decision points along the way.

Level 3 includes strategic thinking that requires reasoning and is abstract and complex.

Level 4 includes extended thinking such as an investigation or application to real work.

Each EOC test will have questions ranging from DOK 1 to DOK 4 and by utilizing that diversity of questioning better assesses a student’s level of understanding of the specific content.

Item	Standard/ Element	DOK Level	Correct Answer	Explanation
1	MGSE9-12S.ID.6a	1	C	The correct answer is choice (C) $\{(0, 50), (1, 42), (2, 33), (3, 25), (4, 16)\}$. This set of data points is the only one from the list that could be modeled by a decreasing linear function, which has a negative value for a in the linear function formula: $f(x) = ax + b$. Choices (A), (B), and (D) are incorrect because the data points do not correspond to a function with a negative value for a in the linear function formula.
2	MGSE9-12A.APR.1	2	C	The correct answer is choice (C) $x^2 - 2x - 3$. This indicates a correct calculation of $P(x) - Q(x) = x^2 - x - 6 - (x - 3) = x^2 - x - 6 - x + 3 = x^2 - 2x - 3$. Choice (A) is incorrect due to a sign error on the term x . Choice (B) is incorrect due to adding $P(x)$ and $Q(x)$. Choice (D) is incorrect due to a sign error on the number 3.
3	MGSE9-12A.SSE.1a	2	A	The correct answer is choice (A) The amount of money Sheila must pay her employees per day. Choice (B) is incorrect because the number of pies Sheila must sell per day is represented by x . Choice (C) is incorrect because the total cost of expenses per pie is represented by the value of the entire expression. Choice (D) is incorrect because the amount of money customers pay per pie is not represented in the expression.
4	MGSE9-12F.BF.1	2	D	The correct answer is choice (D) $f(x) = \frac{x}{2} + 1$. When the x -values in the table are substituted for x in this function, the result is equal to the corresponding y -value. Choice (A) is incorrect because the function indicates multiplication of 2 and x instead of division of x by 2. Choice (B) is incorrect because the function indicates subtraction of 1 instead of addition of 1. Choice (C) is incorrect because the function indicates multiplication of 2 and x instead of division of x by 2 and indicates subtraction of 1 instead of addition of 1.

Item	Standard/ Element	DOK Level	Correct Answer	Explanation
5	MGSE9-12A.REI.6	2	D	The correct answer is choice (D) (16, 5). When the values of the coordinate pair are substituted into the system of equations, both sides are equal for both equations. As such, the coordinate pair represents a solution to the system of equations. Choices (B) and (C) are incorrect because the values of the coordinate pair, when substituted into the system of equations, result in an incorrect solution for the second equation. Choice (A) is incorrect because the values of the coordinate pair, when substituted into the system of equations, result in an incorrect solution for the first equation.
6	MGSE9-12A.CED.1	3	C	The correct answer is choice (C) 33. At \$6 per person, and with a \$100 flat service charge added, Acme Catering Company can provide services for 33 people at a cost of \$298. Choice (A) is incorrect because it is the number from the Creative Catering Company, but not the largest number possible. Choice (B) is incorrect because it is the number from the Best Foods Company, but not the largest number possible. Choice (D) is incorrect because the student selects the highest number without basing the response on the context provided.
7	MGSE9-12S.ID.6a	2	C	The correct answer is choice (C). The data in the graph represents a quadratic trend. The graphs in (A) and (D) represent a correlation to linear trends. The graph in (B) represents data with no clear correlation.
8	MGSE9-12S.ID.1	2	B	The correct answer is choice (B) 2. Only 2 students sent 6–10 text messages. Choices (A), (C), and (D) are incorrect because the student either made a counting mistake or looked at the numbers for 11–15 or 16–20 text messages instead of those for 6–10.
9	MGSE9-12A.REI.3	3	N/A	<i>See next page for scoring rubric and responses.</i>
10	MGSE9-12F.LE.5	3	N/A	<i>See next page for scoring rubric and responses.</i>

Below are scoring rubrics and sample exemplar responses for items 9 & 10.

Item 9

Scoring Rubric

Points	Description
2	The response achieves the following: <ul style="list-style-type: none"> • student gets Part A AND Part B correct
1	The response achieves the following: <ul style="list-style-type: none"> • student gets Part A OR Part B correct
0	The response achieves the following: <ul style="list-style-type: none"> • student gets neither Part A nor Part B correct

Exemplar Response

Points Awarded	Response
2	Part A: Jill did not invert the inequality sign in step 4 when dividing by a negative number. AND Part B: $-3x < 4x + 8$ $-7x < 8$ $x > \frac{8}{-7}$
1	Part A: Jill did not invert the inequality sign in step 4 when dividing by a negative number. OR Part B: $-3x < 4x = 8$ $-7x < 8$ $x > \frac{8}{-7}$
0	<i>Student does not produce a correct response or a correct process.</i>

Item 10

Scoring Rubric

Points	Description
4	<p>The response achieves the following: Student demonstrates a complete and thorough understanding of interpreting the parameters in a linear function in terms of a context. Award 4 points for a student response that contains all of the following elements:</p> <ul style="list-style-type: none"> • Part A: \$2,000 • Part B: 0.5% per month • Part C: 22 months • Part D: \$2,231.94. Since it will take 22 months for the student council to save enough money, the first function can be solved for $v(22)$, which equals 2,231.94.
3	<p>The response achieves the following: Student demonstrates nearly complete understanding of interpreting the parameters in a linear function in terms of a context. Award 3 points for a student response that contains any 3 of the following elements:</p> <ul style="list-style-type: none"> • Part A: \$2,000 • Part B: 0.5% per month • Part C: 22 months • Part D: \$2,231.94. Since it will take 22 months for the student council to save enough money, the first function can be solved for $v(22)$, which equals 2,231.94. <p>Scoring Note: If an error is made in one of these response elements, future response elements based on that should count as correct based upon the previous error. For example, if the student indicates 8 months as the response to Part C and computes a response to Part D that is correct for $v(8)$, then the Part D element should be scored as correct.</p>
2	<p>The response achieves the following: Student demonstrates partial understanding of interpreting the parameters in a linear function in terms of a context. Award 2 points for a student response that contains any 2 of the following elements:</p> <ul style="list-style-type: none"> • Part A: \$2,000 • Part B: 5% per month (see "Note for Educators" below) • Part B: 0.5% (with or without "rate" duration included) • Part C: 22 months • Part D: \$2,231.94 <p>Scoring Note: If an error is made in one of these response elements, future response elements based on that should count as correct based upon the previous error. For example, if the student indicates 8 months as the response to Part C and computes a response to Part D that is correct for $v(8)$, then the Part D element should be scored as correct.</p> <p>Note for Educators: Higher score levels reflect higher levels of precision and accuracy within the response. At lower score levels, incorrect responses which indicate partial understanding of the concepts under assessment may be awarded points. In this example, the two possible responses for Part B represent cases where the student is demonstrating a partial understanding of how to interpret the number 1.005 within this context, so students who commit these errors will receive partial credit in their responses at the 1- and 2-point levels.</p>

Points	Description
1	<p>The response achieves the following: Student demonstrates minimal understanding of interpreting the parameters in a linear function in terms of a context. Award 1 point for a student response that contains any 1 of the following elements:</p> <ul style="list-style-type: none"> • Part A: \$2,000 • Part B: 5% per month (See "Note for Educators" below) • Part B: 0.5% (with or without "rate" duration included) • Part B: 1.005% per month • Part C: 22 months • Part D: \$2,231.94 <p>Scoring Note: If an error is made in one of these response elements, future response elements based on that should count as correct based upon the previous error. For example, if the student indicates 8 months as the response to Part C and computes a response to Part D that is correct for $v(8)$, then the Part D element should be scored as correct.</p> <p>Note for Educators: Higher score levels reflect higher levels of precision and accuracy within the response. At lower score levels, incorrect responses which indicate partial understanding of the concepts under assessment may be awarded points. In this example, the two possible responses for Part B represent cases where the student is demonstrating a partial understanding of how to interpret the number 1.005 within this context, so students who commit these errors will receive partial credit in their responses at the 1- and 2-point levels.</p>
0	<p>The response achieves the following: The student demonstrates limited to no understanding of interpreting the parameters in a linear function in terms of a context.</p>

Exemplar Response

Points Awarded	Response
4	Part A: \$2,000 Part B: 0.5% per month Part C: 22 months Part D: \$2,231.94
3	Part A: \$2,000 Part B: 5% per month Part C: 22 months Part D: \$2,231.94
2	Part A: \$2,000 Part B: 5% per month Part C: 22 months Part D: \$2,000
1	Part A: \$2,000 Part B: 5% Part C: 20 months Part D: \$4,000
0	Part A: \$250 Part B: 1.005% Part C: 5 Part D: \$2,000

EOC Practice Test Prep Bubble Sheet Answer Key

Student Name: _____

- 1 (A) (B) (C) (D)
- 2 (A) (B) (C) (D)
- 3 (A) (B) (C) (D) 6 (A) (B) (C) (D)
- 4 (A) (B) (C) (D) 7 (A) (B) (C) (D)
- 5 (A) (B) (C) (D) 8 (A) (B) (C) (D)

9 *Place response to question 9 part A below:*

Place response to question 9 part B below:

Answer parts A, B, C, & D for item number 10 below:

Part A:

Part B:

Part C:

Part D:

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