Student Name ______________________________

Form REL

Georgia End-Of-Course Tests

Coordinate Algebra Released Items

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Coordinate Algebra Formula Sheet

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.

Area

Rectangle and Parallelogram $A = bh$

Triangle $A = \frac{1}{2}bh$

Circle $A = \pi r^2$

Trapezoid $A = \frac{1}{2}(h)(b_1 + b_2)$

Circumference

$C = \pi d \quad \pi \approx 3.14$

Volume

Rectangular Prism/Cylinder $V = Bh$

Pyramid/Cone $V = \frac{1}{3}Bh$

Sphere $V = \frac{4}{3}\pi r^3$

Surface Area

Rectangular Prism $SA = 2lw + 2wh + 2lh$

Cylinder $SA = 2\pi r^2 + 2\pi rh$

Pythagorean Theorem

$a^2 + b^2 = c^2$

Mean Absolute Deviation

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

the average of the absolute deviations from the mean for a set of data

Distance Formula

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Slope Formula

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

Midpoint Formula

$$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$$

Interquartile Range

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

1 **The value, V, of an automobile n years after purchase can be modeled with this formula.**

$$V = I(1 - d)^n$$

In the formula, I is the purchase price, in dollars, of the automobile and the expression $(1 - d)^n$ is known as the *decay factor*.

A car purchased for $21,000 has a decay factor of 0.7. What is the present value of the car?

A $6,300
B $14,700
C $30,000
D $35,700

2 **This expression is a product.**

$$4(2a + 3b)(5x + y)$$

As written, how many factors make up this product?

A 2
B 3
C 4
D 5

3 **An artist paints designs on T-shirts. It takes 15 minutes to set up the equipment and 40 minutes to clean the equipment and put it away. Once everything is set up, it takes the artist about 12 minutes to paint a design on each T-shirt.**

Which equation BEST models the number of shirts, s, the artist can make in 127 minutes?

A $12s - 55 = 127$
B $55 - 12s = 127$
C $12s + 25 = 127$
D $12s + 55 = 127$

4 **Andrew invested $1000 in his savings account. The interest rate, r, is compounded annually. Which equation shows the amount, A, in his account after x years?**

A $A = 1000(1 - r)^x$
B $A = 1000(1 + r)^x$
C $A = 1000(r - 1)^x$
D $A = 1000r^x$

5 **If the value of z decreases by 2, how does the value of the expression $y(16 + z)$ change?**

A decreases by $2y$
B decreases by $32y$
C increases by $14y$
D increases by $18y$

6 **Look at the system of equations.**

$$ax + by = c$$
$$dx + ey = f$$

The system has a unique solution, $(x,\ y)$. Which system of equations has the same solution?

A $ax + by = c$
$dx - ey = f$

B $ax + by = c$
$(a + e)x + (b + d)y = c + f$

C $ax + by = c$
$(a + d)x + (b - e)y = c + f$

D $ax + by = c$
$(a + 2d)x + (b + 2e)y = c + 2f$

7 **What is the x-value of the solution to this system of equations?**

$$3x + 2y = 6$$
$$2x + y = 2$$

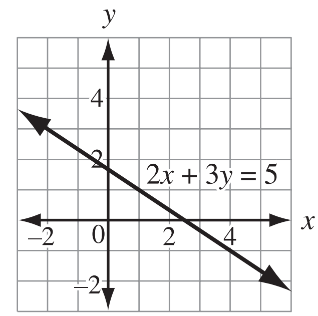
A $x = -2$

B $x = \frac{10}{7}$

C $x = 2$

D $x = 4$

8 **This coordinate plane shows the graph of an equation.**



Which statement about the solutions of the equation MUST be true?

A If the x-value of a solution is positive, then the corresponding y-value is negative.

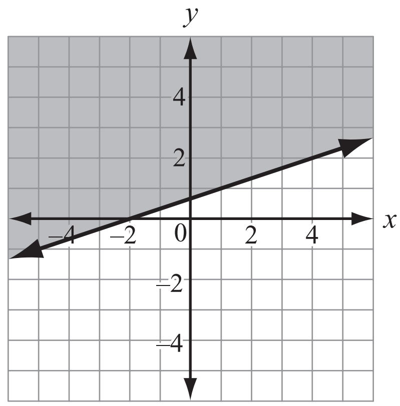
B If the x-value of a solution is negative, then the corresponding y-value is positive.

C There is no solution for which both the x-value and the y-value are integers.

D There is only one solution for which both the x-value and the y-value are integers.

9 **Which graph shows the solution set for the inequality $x > 3y - 2$?**

A



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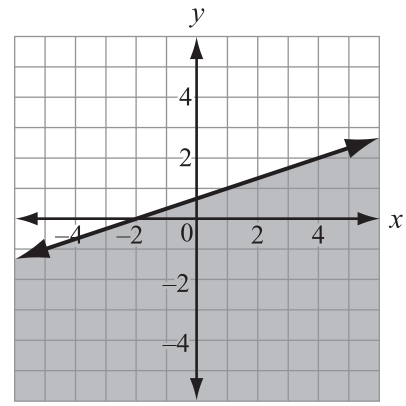

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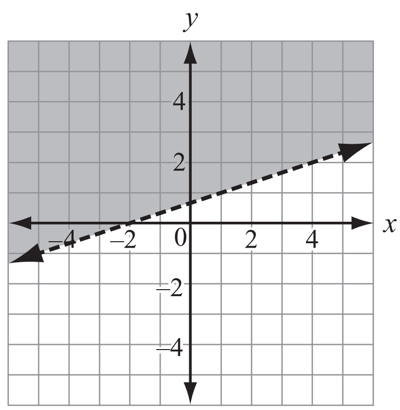

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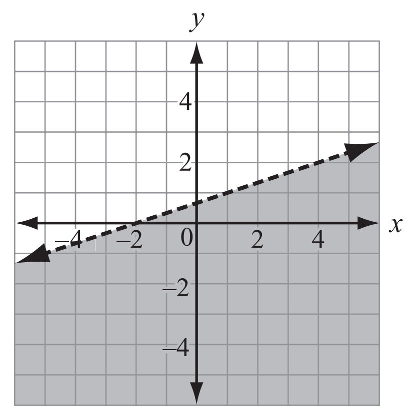
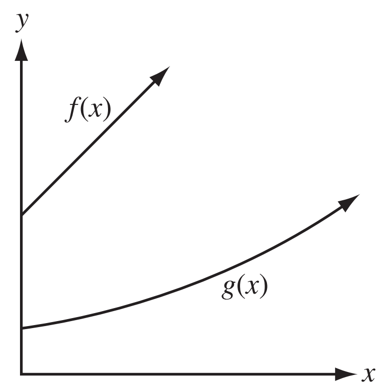


10 **This coordinate plane shows two functions of x.**

- **$f(x)$ is an increasing linear function.**
- **$g(x)$ is an increasing exponential function.**



Based on the information, which statement is true for all real values of the domain $x \geq 0$?

A $f(x) = g(x)$ for only one value in the domain
B $f(x) = g(x)$ for many values in the domain
C $f(x) > g(x)$ for all values in the domain
D $f(x) < g(x)$ for all values in the domain

11 **These tables show points from two linear functions.**

Function 1

x	$f(x)$
1	5
2	7
3	9
4	11

Function 2

x	$f(x)$
1	–1
2	2
3	5
4	8

Which of these linear functions has a slope GREATER than the slope for Function 1 and LESS than the slope for Function 2?

A $f(x) = 1.5x + 1$
B $f(x) = 2x + 2.5$
C $f(x) = 2.5x - 6$
D $f(x) = 3x + 2$

12 **Which table BEST describes a function with exponential decay?**

A

x	$f(x)$
1	81
2	27
3	9
4	3

B

x	$f(x)$
1	80
2	70
3	50
4	20

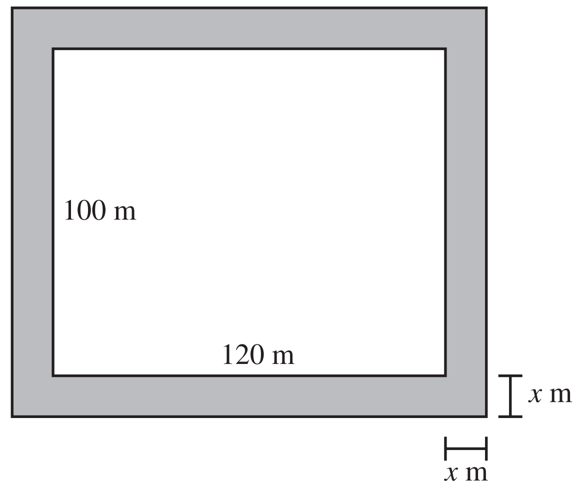
C

x	$f(x)$
1	80
2	76
3	67
4	51

D

x	$f(x)$
1	2
2	4
3	8
4	16

13 **A rectangular field is 100 meters in width and 120 meters in length. The dimensions of the field will be expanded by x meters in each direction, as shown in the diagram.**



Which function describes the perimeter of the new field in terms of x?

A $f(x) = 220 + 4x$
B $f(x) = 220 + 8x$
C $f(x) = 440 + 4x$
D $f(x) = 440 + 8x$

14 **Which function shares at least one point with the function represented by the equation $y = 2^x$?**

A $y = x$

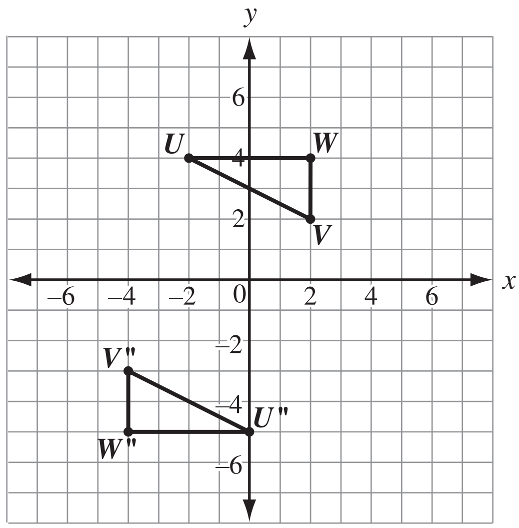
B $y = -x$

C $y = -2^x$

D $y + 2 = x$

Go On

15 **On this coordinate plane, $\triangle UVW$ has been transformed to form its image, $\triangle U''V''W''$.**



Which statement describes the sequence of transformations?

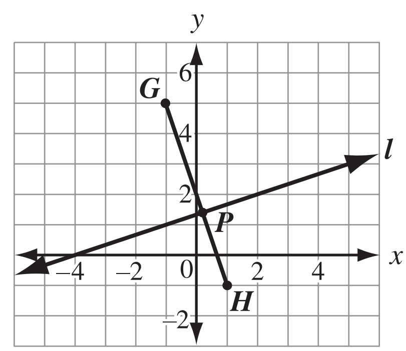
A reflection across the *y*-axis, followed by a translation of 2 units to the left and 9 units down

B reflection across the *x*-axis, followed by a reflection across the *y*-axis

C rotation of 180° about the origin, followed by a translation of 2 units to the right and 1 unit down

D translation of 2 units to the right and 1 unit up, followed by a rotation of 180° about the origin

16 **On the coordinate plane, line *l* intersects segment $\overline{GH}$ at point *P* so that $\frac{GP}{PH} = \frac{3}{2}$.**



What are the coordinates of point *P*?

A (0.1, 1.2)

B (0.1, 1.4)

C (0.2, 1.2)

D (0.2, 1.4)

17 **On a coordinate plane, *WXYZ* is a square. Segment $\overline{WZ}$ is one side of the square and has endpoints $W(-8, -5)$ and $Z(-4, -2)$. What is the perimeter, in units, of *WXYZ*?**

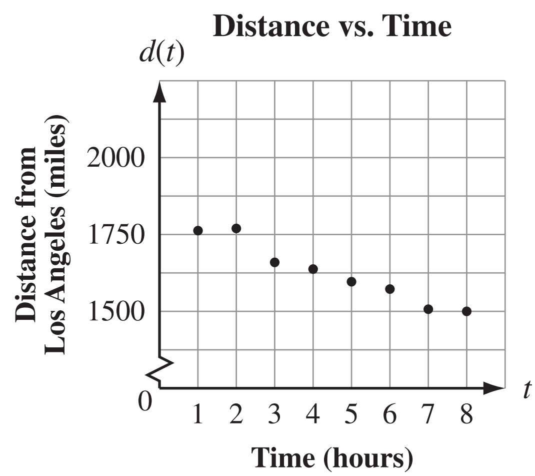
A 5
B 15
C 20
D 25

18 **Point *N* $(2, 9)$ is on $\overline{RS}$. A translation moves point *N* to its image, $N'(6, 3)$.**

What is the distance, in units, between any point on $\overline{RS}$ and its image?

A $\sqrt{10}$
B $\sqrt{40}$
C $\sqrt{52}$
D $\sqrt{130}$

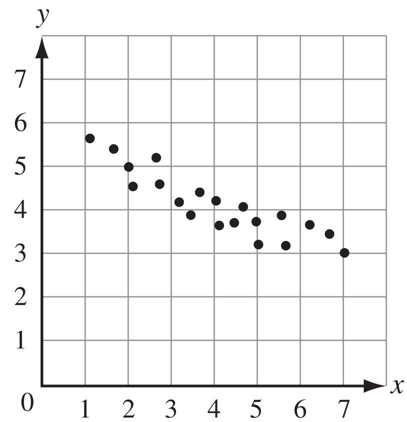
19 **A train traveled from Chicago to Los Angeles. The points graphed on this coordinate grid show the distance the train was from Los Angeles after each of the first eight hours of the trip.**



The linear regression model for the data is $d(t) = -58t + 1888$. Based on the regression function, which is the best estimate for the total time it took the train to travel the entire distance?

A 10 hours
B 33 hours
C 53 hours
D 63 hours

20 **Look at the scatter plot.**



What is the MOST likely correlation coefficient, *r*, between the variables represented in this scatter plot?

A –0.9
B –0.5
C 0.5
D 0.9

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