Algebra Skills Assessment for incoming MLWGS students interested in Algebra II Plus

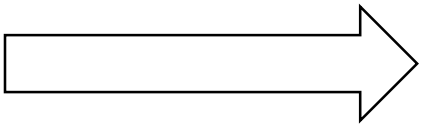
Complete by March 26th

NO CALCULATOR PERMITTED

Take no more than 75 minutes

Submit answers to https://www.quia.com/quiz/4179124.html

Feel free to print this test and use scratch paper, but **DO NOT USE A CALCULATOR or any other resources**. You should not look over this assessment in order to review prior to taking it. You should complete this test in a single session of no more than 75 minutes. The score on this test will help you to schedule for the most appropriate Algebra II course.

Start your timer and begin 

Algebra Skills Assessment

1. Which of the following is true given $x < -1$?
   a) The additive inverse of x is less than x
   b) The multiplicative inverse of x is less than x.
   c) The multiplicative inverse of x is greater than the additive inverse of x.
   d) The multiplicative inverse of x is greater than x.
   e) None of these relationships can be determined with the given information.

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2. Which of the following is/are true given the line $y = -3x - 2$?
   a) The y-intercept is negative.
   b) The x-intercept is negative.
   c) The y coordinate of the y-intercept is less than the x coordinate of the x-intercept.
   d) *a)* and *b)* are true, but *c)* is false
   e) *a)*, *b)*, and *c)* are true.

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3. Which of the following is/are true given $y > 1$?

a) $(y^3)^{100} = y^3 y^{100}$
b) $(y^3)^{100} > y^3 y^{100}$
c) $(y^3)^{100} < y^3 y^{100}$
d) The relationship cannot be determined without more information.

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4. $\sqrt{5^2 + 4^2} =$

a) 20 *b*) 9 *c*) 81
d) $\sqrt{41}$ *e*) undefined

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5. Expand $(3x - 1)^2(x + 2)$.
   a) $9x^3 + 18x^2 + x + 2$ *b*) $9x^3 + 18x^2 - x - 2$ *c*) $9x^3 + 2$
   d) $9x^3 + 12x^2 - 11x + 2$ *e)* $9x^4 + 25x^2 + 4$

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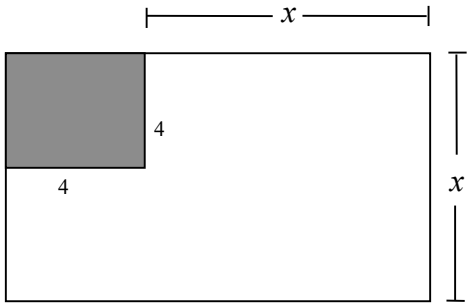
6. A rectangle has a length of $(x - 3)$ and a width of $(3x^2 + 4x)$. What is its perimeter?

   a) $3x^3 - 5x^2 - 12x$ *b)* $3x^3 + 4x^2 - 3$ *c)* $3x^2 + 5x - 3$
   d) $3x^3 - 12x$ *e)* $6x^2 + 10x - 6$

7. For what value of x will the area of the white region be equal to 29 square inches?



Factor Completely. If not factorable, write prime.

8. $2a^2b^2 + 8a^3b^3$

9. $p^2 - 14p + 49$

10. $25x^2 + 16$

11. $6x^2 - 35x - 6$

12. $7x^2 - 10x + 3$

13. $a^2 - 49b^2$

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14. Which of the following is equivalent to $\left(a + \frac{b}{2}\right)^2$?

a. $a^2 + \frac{b^2}{2}$ b. $a^2 + \frac{b^2}{4}$ c. $a^2 + \frac{ab}{2} + \frac{b^2}{2}$ d. $a^2 + ab + \frac{b^2}{4}$

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15. In the year 2000, Ellie's Bakery sold 65,500 donuts and in the year 2010 they sold 66,000 donuts. Assuming the amount of donuts sold each year increases at a constant rate, how many more donuts did they sell each year?

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16. If $\frac{2a}{b} = 4$, then $\frac{b}{a} = ?$

17. The graphs of the equations $\begin{cases} x+3y=2 \\ 3x+9y=12 \end{cases}$ consist of:

a) two lines intersecting where x=1

b) two lines intersecting where $x=\frac{2}{3}$

c) two distinct parallel lines

d) only one line

e) two lines intersecting where y=1

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18. What is the slope of the line perpendicular to the line $3x - 5y + 8 = 0$?

a) $\frac{3}{5}$ b) $\frac{5}{3}$ c) $-\frac{3}{5}$ d) $-\frac{5}{3}$ e) 3

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19. If $R=\frac{ST}{S-T}$, then S =

a) $\frac{RT}{T-R}$ b) $\frac{RT}{R-T}$ c) $\frac{RT}{T+R}$ d) $\frac{R+T}{RT}$ e) $\frac{R-T}{RT}$

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20. If $x = 100$, find the value of $\sqrt{\frac{x}{16}-\frac{x}{25}}$.

a) 15 b) 5 c) $\frac{5}{2}$ d) $\frac{3}{2}$ e) $\frac{1}{2}$

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21. What is the slope of the line given by the equation $5x + 3y = 2$?

a) $-\frac{5}{3}$ b) $-\frac{3}{5}$ c) –5 d) $\frac{5}{3}$ e) 5

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22. What is an equation of the line passing through (3, 0) and (7, 5)?

a) $y = \frac{4}{5}x + 3$ b) $y = \frac{4}{5}x + \frac{12}{5}$ c) $y = \frac{2}{3}x$

d) $y = \frac{5}{4}x - 3$ e) $y = \frac{5}{4}x - \frac{15}{4}$

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23. What is the equation of the horizontal line that goes through (6, 4)?

a) $x = 4$ b) $x = 6$ c) $y = 4$ d) $y = 6$ e) $y = \frac{3}{2}x$

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24. Given $f(x) = \sqrt{x-2} + \frac{3}{x}$, what is $f(6)$?

a) 2.5 b) 3.5 c) 5.5 d) 6.5 e) 17.5

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25. What is the equation of a line passing through (3, 2) that has undefined slope?

a) $x = 2$ b) $x = 3$ c) $y = 2$ d) $y = 3$ e) No line exists

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26. What is the equation of a line passing though (3, 2) that has a slope equal to 0?

a) $x = 2$ b) $x = 3$ c) $y = 2$ d) $y = 3$ e) No line exists

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For problems 27 – 34, solve for *x*. If more than one solution exists, separate your answers with commas. For example if *x* = 2 or 3, enter 2,3 as your answer.

27. $x^2 + 2x = 15$

$x =$ _____

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28. $3(x - 2)^2 = 12$

$x =$ _____

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29. $\dfrac{5}{2x+3} = \dfrac{3}{x}$

$x =$ _____

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30. $\dfrac{3}{5}x - \dfrac{1}{4}x = 7$

$x =$ _____

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31. $5[3 - (x - 2)] = x$

$x =$ _____

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32. $(x - 3)(2x) = 0$

$x =$ _____

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33. $2x^2 + 4x = 0$

$x =$ _____

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34. $\dfrac{1}{3}(5x + 9) = -2$

$x =$ _____

True or False. Write the letter **T** if the statement is true for all values of x. Write the letter **F** if the statement is only true for some values of x or not true for any x.

35. $(x)\left(\frac{1}{x}\right)=1$, *where* $x \neq 0$.

36. $x+-x=1$

37. $x>|x|$

38. $-4(3-x)=4x-12$

39. $\frac{x}{1+\frac{1}{3}}=\frac{4}{3}x$

40. $|x|=|-x|$

41. $-x<0$

Solve the system, enter your solution in problems 42 & 43:

$$\begin{cases} 4x-3y=5 \\ 3x+2y=8 \end{cases}$$

42. $x=$ _____

43. $y=$ _____

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44. If $x = 3$, find the value of $\left(\sqrt{\frac{x^2}{16}}\right)\left(\sqrt{\frac{4x^2}{25}}\right)$

a) $\frac{3}{10}$ b) $\frac{9}{10}$ c) $\frac{27}{100}$ d) $\frac{39}{20}$ e) $\frac{9}{5}$

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45. $\sqrt{125}+\sqrt{27}-\sqrt{12}$ is equal to

a) $5\sqrt{5}+\sqrt{3}$ b) $5\sqrt{5}+\sqrt{15}$ c) $5\sqrt{5}-\sqrt{3}$

d) $8\sqrt{8}-2\sqrt{3}$ e) $6\sqrt{5}$

46. If the point $\left(-3, \frac{1}{2}\right)$ lies on the graph of the equation $2x + ky = -11$, find the value of k.

a) $-\frac{5}{2}$ b) -34 c) $-\frac{17}{2}$ d) -10 e) -5

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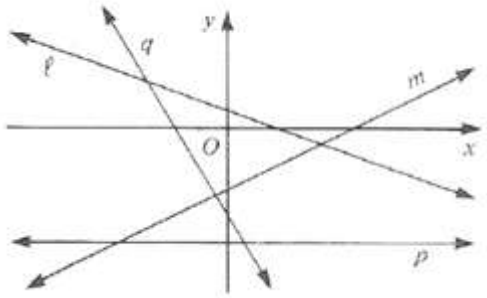
47. Arrange the lines l, m, p, and q in order of increasing slope.



a) *qlpm* b) *lqpm* c) *qlmp*

d) *plmq* e) *pmlq*

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48. Find 3 consecutive integers whose sum is 480. (enter the numbers separated by commas)

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49. Solve for x: $y = mx + b$

a) $x = \frac{y - b}{m}$

b) $x = \frac{b + y}{m}$

c) $x = \frac{y}{m} + b$

d) $x = \frac{y}{m} - b$

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50. Write an equation that describes the pattern shown below

x	2	3	4	5	6
y	1	-1	-3	-5	-7

a) $y = 2x$ b) $y = 0.5x$ c) $y = -0.5x + 2$

d) $y = -2x + 5$ 3) $y = -2x + 1$

END OF ASSESSMENT