

MAT 119 - Pretest

Name _____

- You should be able to answer most of these questions in order to be successful in college algebra. If much of this pretest seems completely unfamiliar, you should probably reconsider taking this course.
 - An answer key starts on page 8
-

1. Simplify the algebraic expression by combining the like (or similar) terms.
$$-0.9y + 11 + 5y$$

Answer: _____

2. Evaluate the expression at $x = 0$, $y = -2$, $z = -2$ and simplify your answer.

$$\frac{-5x + 2y}{-z}$$

Answer: _____

3. Translate the phrase into an algebraic expression (not simplified). Use the variable names 'x' or 'y' to describe the unknowns.
4 divided by the sum of 5 and a number

Answer: _____

4. Solve the linear equation using equivalent equations to isolate the variable.

$$u - \frac{4}{3} = \frac{8}{3}$$

Answer: _____

5. Solve the linear equation using equivalent equations to isolate the variable.

$$-4w = \frac{8}{7}$$

Answer: _____

6. The price of a cake plus a 16% delivery charge comes to a total cost of \$22.04. What was the price of the cake?

Step 1. Describe the above situation as a linear equation using "x" or "y" as variable names to describe the unknowns.

Answer: _____

Step 2. Now solve the equation for the unknown quantity.

Answer: _____

7. Solve the linear equation and simplify your answer.

$$z - 6.2z - 2.5 = -4.5(z - 2.4)$$

Write your solution as a simplified fraction or decimal rounded to two places.

Answer: _____

8. Solve the linear equation and simplify your answer.

$$\frac{1}{5}(n + 4) = \frac{-3}{4}\left(n - \frac{2}{3}\right)$$

Write your solution as a simplified fraction or decimal rounded to two places.

Answer: _____

9. Solve the absolute value equation:

$$|9x + 7| = 8$$

Answer: _____

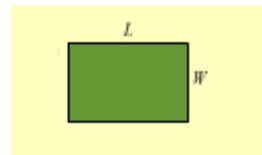
10. A student missed 2 problems on a Physics test and received a grade of 95%. If all the problems were of equal value, how many problems were on the test? Round off your answer to the nearest integer.

Answer: _____

11. The perimeter of a rectangle is 27 feet. If the length is 3 feet, find the width.

Step 1. Choose the correct formula:

- A) $C = 2 \pi r$ E) $I = Prt$
B) $C = \frac{5}{9} (F - 32)$ F) $A = bh$
C) $P = a + b + c$ G) $P = 4s$
D) $P = 2L + 2W$ H) $A = \frac{1}{2} h(b + c)$



Step 2. Without substitution, solve the formula for the unknown variable in terms of the known variables.

Answer: _____

Step 3. Finally, solve the problem for the unknown value of the variable by substituting appropriate values of the known variables in the formula. (Round your answer to 2 decimal places.)

Answer: _____

12. Solve the following proportion.

$$\frac{45}{135} = \frac{33}{x}$$

Answer: _____

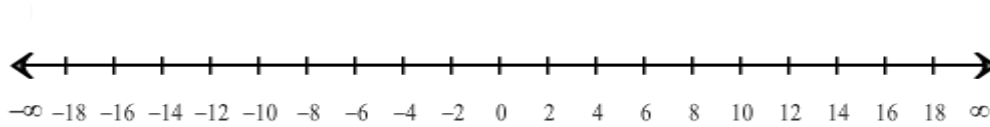
13. Consider the following inequality:

$$-2z + \frac{1}{2} \geq \frac{3}{2}$$

Step 1. Solve the linear inequality above for the given variable. Simplify your solution and use algebraic notation.

Answer: _____

Step 2. Graph the solution to the given inequality.



14. Determine the missing coordinate in the ordered pair so that it will satisfy the equation $5x + 3y = 12$.

Step 1.

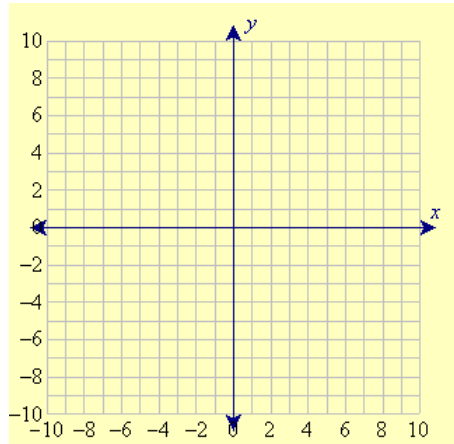
Answer: (4 ,)

Step 2.

Answer: (, 1)

15. Find the y -intercept and x -intercept for the equation above. Use your answer to then plot the graph of the equation on the axes provided.

$$2x + 3y = 6$$



y-intercept: (A) (,)

x-intercept: (B) (,)

16. Graph the linear equation:

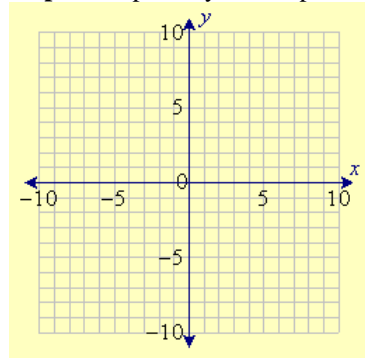
$$-3x + 4y = 20$$

Step 1. Determine the slope and y -intercept of the equation above.

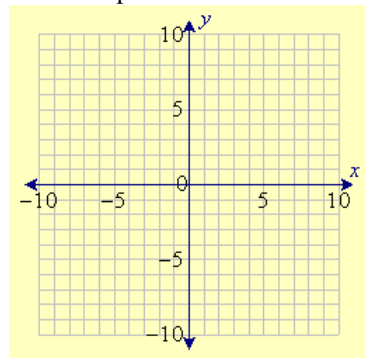
slope = _____

y -intercept = _____

Step 2. Graph the y-intercept on the axes provided.



Step 3. In step 1, you found the slope. Use the slope to find a second point on the line and then graph the line connecting these two points.



17. Simplify the expression using the properties of exponents. (Answer must be reduced to its lowest terms and all exponents must be positive. Please be sure to expand the numerical portion of the solution.)

$$x^{-5} \times x^{-1} \times x^{-4}$$

Answer: _____

18. Simplify the expression using the properties of exponents. (Answer must be reduced to its lowest terms and all exponents must be positive. Please be sure to expand the numerical portion of the solution.)

$$\left(\frac{xy^2}{4x^{-2}y^{-2}} \right)^2$$

Answer: _____

19. Determine if the expression is a polynomial.

$$6x^{-3} + 3x^3$$

A) Yes B) No

20. Determine if the expression is a polynomial.

$$4x^3 + 5 + 7x^4$$

A) Yes B) No

21. Perform the indicated operation by removing the parentheses and combining like terms.

$$(-4x^2 - 3x) - (-6x^2 + 4x)$$

Answer: _____

22. Multiply the polynomials using the distributive property and combine like terms.

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

Answer: _____

23. Multiply the binomials using the FOIL method. Combine like terms.

$$(6x^2 - 4)(x^2 + 2)$$

Answer: _____

24. Find the product of the polynomial factors using the appropriate special product (difference of two squares, square of a binomial sum, square of a binomial difference, difference of two cubes, or sum of two cubes).

$$(x - 5)(x + 5)$$

Answer: _____

25. Find the GCF (greatest common factor) of the following terms.

$$-54, 99, -63$$

Answer: _____

26. Factor the given polynomial by finding the greatest common monomial factor and rewrite the expression.

$$4x^3 + 22x^4 + 2x^3y^2$$

Answer: _____

27. If the given polynomial has a special factorization, factor the polynomial.

$$9x^4 - 16y^2$$

If the polynomial does not have a special factorization, indicate "not a special factorization".

Answer: _____

28. Completely factor the trinomial. If it cannot be factored indicate "Not Factorable".

$$3w^2 + 28w + 9$$

Answer: _____

29. Consider the following quadratic equation:

$$10x^2 + 7x - 17 = -5$$

Step 1. Using the standard form $ax^2 + bx + c = 0$ of the quadratic equation above, factor the left hand side of the equation into two linear factors.

Answer: _____

Step 2. Solve the quadratic equation above by factoring.

Answer: _____

30. Find the restricted values of x for the given rational expression.

$$\frac{1}{2x - 5}$$

If there are no restricted values of x , then indicate "no restrictions".

Answer: _____

31. Perform the indicated operation of multiplication or division on the rational expressions and simplify.

$$\frac{mn}{m^2 + 9m + 14} \div \frac{m}{4m^2 + m - 14}$$

Answer: _____

32. Perform the indicated operation of addition on the two rational expressions and reduce your answer to lowest terms.

$$\frac{x + 4}{x + 3} + \frac{x - 3}{x - 4}$$

Answer: _____

33. Evaluate the radical expression.

$$\sqrt[3]{125}$$

Write your answer as an integer, simplified fraction, or a decimal rounded to two decimal places. If the expression does not represent a real number, indicate "not a real number".

Answer: _____

34. Simplify the following expression. Assume that the variables may be positive or negative.

$$\sqrt{27x^{12}y^4}$$

Answer: _____

35. Divide and simplify the radicals by using the quotient rule for radicals.

$$\frac{\sqrt[4]{32}}{\sqrt[4]{2}}$$

Answer: _____

36. Simplify the following expression.

$$\left(\frac{49}{64}\right)^{-\frac{1}{2}}$$

Answer: _____

37. Simplify the expression by combining the radical terms using the indicated operation(s).

$$6\sqrt[3]{y} - 2\sqrt[3]{y} - 4\sqrt[3]{6}$$

Answer: _____

38. Multiply and simplify the radical expressions.

$$(\sqrt{5} + 3)(\sqrt{5} + 1)$$

Answer: _____

39. Simplify the following expression and, if applicable, rationalize the denominator. Assume that each variable is positive.

$$\sqrt{\frac{x^7}{32y^7}}$$

Answer: _____

40. Change the following expression to an equivalent expression in exponential notation, and then simplify. Assume that the variable is positive.

$$\sqrt{x^3} \times \sqrt{x^5}$$

Answer: _____

Answer Key

Test Name: Final Exam Summer 2010

1. $4.1y + 11$

2. -2

3. $\frac{4}{(5 + x)}$

4. $u = 4$

5. $\frac{-2}{7}$

6. **Step 1:** $x + \left(\frac{16}{100}\right)x = 22.04$

Step 2: $x = \$ 19.00$

7. $z = -19$

8. $n = \frac{-6}{19}$ or -0.32

9. Two Solutions, $x = \frac{1}{9}$, $x = \frac{-5}{3}$

10. 40

11. **Step 1:** $P = 2L + 2W$

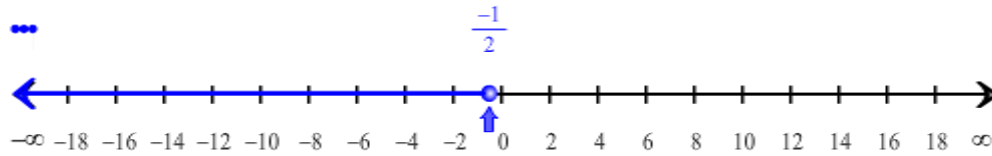
Step 2: $W = \frac{P - 2L}{2}$

Step 3: 10.5 feet

12. 99

13. Step 1: $z \leq -\frac{1}{2}$

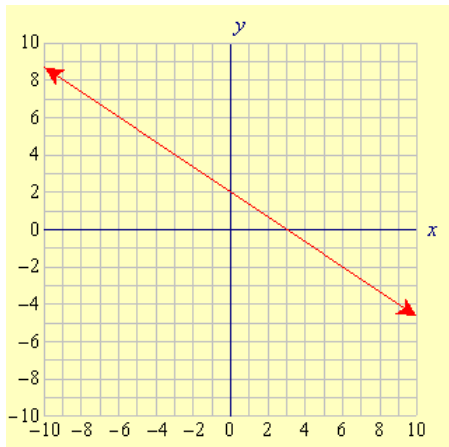
Step 2:



14. Step 1: $\frac{-8}{3}$

Step 2: $\frac{9}{5}$

15.

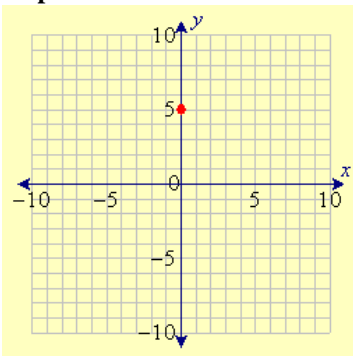


y-intercept: (A) (,)

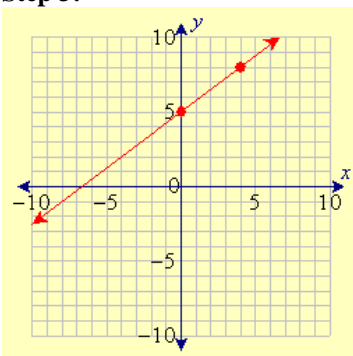
x-intercept: (B) (,)

16. **Step 1:** slope = $\frac{3}{4}$, y-intercept = (0, 5)

Step 2:



Step 3:



17. $\frac{1}{x}$

18. $\frac{6.8}{16}$

19. No

20. Yes

21. $2x^2 - 7x$

22. $x^3 + 7x^2 + 9x + 18$

23. $6x^4 + 8x^2 - 8$

24. $x^2 - 25$

25. 9

26. $2x^3(2 + 11x + y^2)$

27. $(3x^2 + 4y)(3x^2 - 4y)$

28. $(w + 9)(3w + 1)$

29. **Step 1:** $(2x + 3)(5x - 4) = 0$

Step 2: $\frac{-3}{2}, \frac{4}{5}$

30. $x \neq \frac{5}{2}$

31. $\frac{(4m - 7)n}{m + 7}$

32. $\frac{2x^2 - 25}{x^2 - x - 12}$ or $\frac{2x^2 - 25}{(x + 3)(x - 4)}$

33. 5

34. $3x^6 y^2 \sqrt{3}$

35. 2

36. $\frac{8}{7}$

37. $4\sqrt[3]{y} - 4\sqrt[3]{6}$

38. $8 + 4\sqrt{5}$

39. $\frac{x^3 \sqrt[3]{2yx}}{8y^4}$

40. x^4