

**ALGEBRA I
FINAL EXAM
For
SECONDARY SCHOOL CREDIT
2007 – 2008**

DIOCESE OF RICHMOND

School Name: _____ **Student Number:** _____

May 22, 2008

Do not write in this box, for grading purposes only.

Points: _____

Recommended for Credit:

YES

NO

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1. Simplify: $-6 - \left[\left| \frac{2+7}{-3} \right| - (2 \cdot 3 - 5) \right]^2$

3. Solve: $3(1+d) - 5 = 3d - 2$

2. Evaluate: $2b - a - (ac + b)$ if $a = -4$
 $b = 5$ and $c = 6$

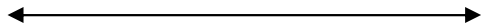
4. Solve: $-4(2 - 3x) = 7 - 2(x - 3)$

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5. Solve and graph the solution set:

$$\frac{-2}{3}x - 9 > \frac{5}{3}x - 2$$



6. The lengths of the sides of a triangle are consecutive even integers. Find the length of the longest side if it is 22 units shorter than the perimeter.

7. Solve and graph the solution set:

$$|5 - 6x| \geq 16$$



8. Fred is twice Thelma's age. In 6 years, the sum of their ages will be 30. How old are they now?

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9. The price of a new car is \$17,250. Mr. Cline made a down payment of 15% of the price of the car when he bought it and will need to borrow the rest of the money. What is the total amount he must borrow from the bank?

10. Simplify:

$$(-5x + 3x^2 - 3) + (7x^2 + x + 1)$$

11. Simplify: $\left(\frac{2a^{-2}b^0c^{-1}}{ab^{-2}}\right)^{-3}$

12. Simplify. Write the answer in scientific notation.

$$\frac{4.65 \times 10^{-1}}{5 \times 10^5}$$

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13. Simplify: $\frac{2.4y^5 + 1.2y^4 - .6y^3}{-.6y^3}$

16. Factor completely:

$$6mn - 9m - 4n + 6$$

14. Simplify: $(3x - 2)(2x + 3)$

17. Factor completely:

$$x^2 - 7x - 18$$

15. Simplify: $(7a - 5b)^2$

18. Factor completely:

$$6x^2 - 12x + 30$$

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19. Factor completely:

$$20x^2 + 80x + 35$$

20. Factor completely:

$$3x^2 + 5xy + 2y^2$$

21. Determine all values of k that make each of the following a perfect square trinomial:

A) $x^2 + kx + 16$

B) $x^2 + 20x + k$

22. Mr. Fields drove his car to Chicago at a rate of 60 miles per hour and returned home during a snow storm at a rate of 45 miles per hour. If it took him 1 hour longer to return home, how long did it take him to get to Chicago?

23. Solve: $x^3 - 9x = 0$

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24. Solve: $7x^2 + 2x - 2 = 0$

26. Simplify:

$$\frac{4a^2 - 25}{a^2 - 16} \times \frac{2a^2 + 8a}{12a + 30}$$

25. Simplify: $\frac{4x + 3}{3} - \frac{7x}{4} + \frac{x - 3}{6}$

27. Solve: $\frac{n - 2}{n} - \frac{n - 3}{n - 6} = \frac{1}{n}$

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28. Solve: $\frac{x}{3} = \frac{8}{x+2}$

31. Solve: $\sqrt{x+2} = x-4$

29. Simplify: $5\sqrt{27} + 2\sqrt{75} - \sqrt{108}$

32. A pigeon leaves its nest in New York City and flies 5 km due east. The pigeon then flies 3 km due north. How far is the pigeon from its home nest?

30. Simplify: $(2\sqrt{3x^7})(\sqrt{6x^2})(-\sqrt{4x^4})$

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33. Find the distance between the points $(-5, 4)$ and $(3, -2)$.

34. Determine the value of r so that the line through $(r, -3)$ and $(-5, r)$ has a slope equal to $\frac{3}{7}$.

35. Determine the y-intercept and the slope for the graph of :

$$-3x + 5y = -8$$

y-intercept =

slope =

36. Given the set of ordered pairs $\{(8, 1), (6, 5), (4, 8)\}$ state each of the following:

Domain:

Range:

Is the relation a function? CIRCLE ONE

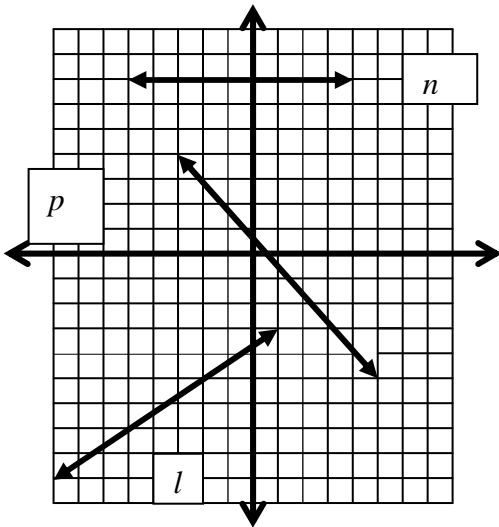
YES

NO

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37. Write the letter of the line that has the given slope:



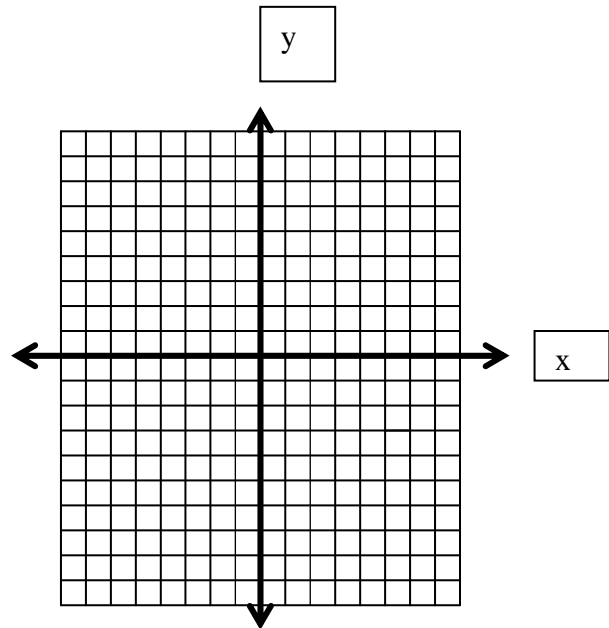
Positive slope =

Negative slope =

Zero slope =

38. Graph the following equation:

$$2x - 5y = -10$$

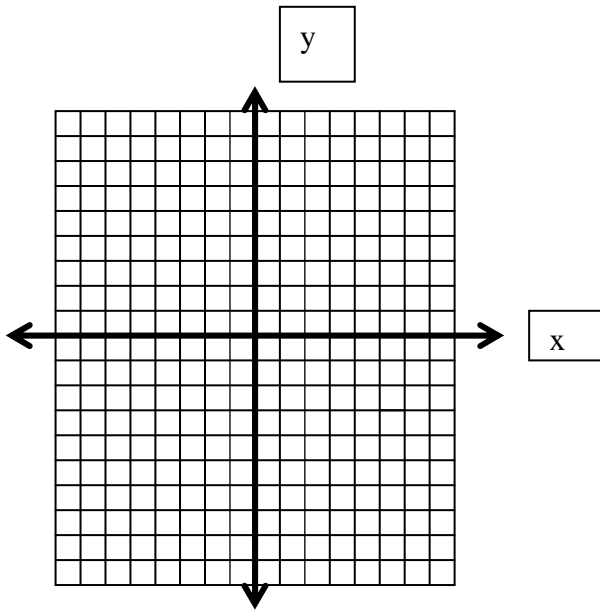


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39. Graph the following inequality:

$$4x - 3y \geq 12$$



40. Write an equation of a line that passes through the point $(6, -1)$ and is perpendicular to the graph of $3x - 2y = 6$.

41. Determine an equation of a line that passes through the points $(-3, -2)$ and $(4, 3)$.

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42. Solve the system of equations using any method except graphing.

$$\begin{cases} x - 3y = 9 \\ -4 + 2x = -y \end{cases}$$

43. Solve the system of equations using any method except graphing.

$$\begin{cases} 4y - 8x = 12 \\ y = 2x + 4 \end{cases}$$

44. Two groups of students order burritos and tacos at a local restaurant. One order of 3 burritos and 4 tacos costs \$11.33. The other order of 9 burritos and 5 tacos costs \$23.56. Jalapenos and sour cream can be ordered at no extra charge. How much is the price of each food item?

45. The length of a rectangular garden is 4 yards more than its width. The area of the garden is 60 square yards. Find the dimensions of the garden.