

ALGEBRA COMPETENCY EXAM

Part I: Free Response, No Calculators, 20 Minutes

Name (please print): _____ Date: _____
First Name Last Name

Please clearly show each step of your work in the space provided. You will be graded mainly on your methods. These question are worth 2 points each.

1) $\frac{9}{40} \div \frac{3}{5}$

1) _____

2) $8 + (2 + 4)^2 \div 4 \times 4 - 3$

2) _____

3) $(-5)^2 - (2 - 4)^2$

3) _____

4) $\sqrt{80}$

4) _____

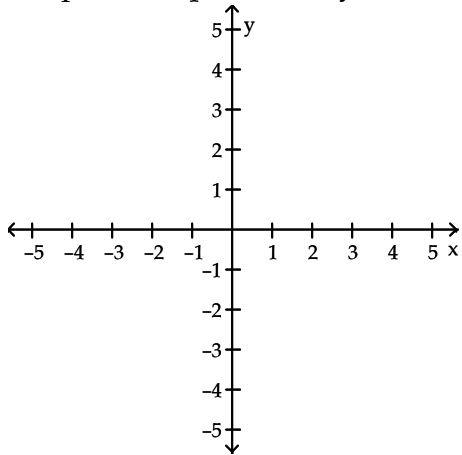
5) $\frac{2}{5} - \frac{4}{9}$

5) _____

6) Multiply: $.36 \times .52$

6) _____

7) Graph the Equation: $y = 4$



7) _____

8) What is the GCF between 48 and 72?

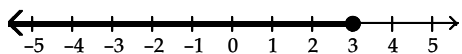
8) _____

9) Rewrite $.52$ as a simplified fraction.

9) _____

10) Write the inequality of following graph:

10) _____



ALGEBRA COMPETENCY EXAM

Part II : Free Response, No Calculators, 60 minutes

Date: _____

Name (please print): _____ School: _____
First Name Last Name

Please clearly show each step of your work in the space provided. You will be graded mainly on your methods. Each question is worth 4 points. Simplify all answers.

1) Evaluate the expression $-8x^2 - \frac{3}{x} + 2x$, when $x = \frac{3}{2}$. 1) _____

2) James shot golf rounds of 72, 67, and 74. In order to win the tournament, he has to average 70 per round. What does he need to shot in order to win? 2) _____

3) Multiply and simplify: $(7 - 2x)(3x - 5)$ 3) _____

4) Simplify: $-3(5w^3 + 2w) - 2(6w^2 - 3w) + 8w^2$ 4) _____

5) Solve for x: $4x^2 - 100 = 0$ 5) _____

6) Simplify without negative exponents: $\frac{-4x^5y^3z^{-2}}{24x^{-4}y^3z^{-6}}$

6) _____

7) Solve the proportion: $\frac{2x+4}{3} = \frac{2x+2}{12}$

7) _____

8) Solve by factoring or quadratic formula: $x^2 - 7x - 18 = 0$

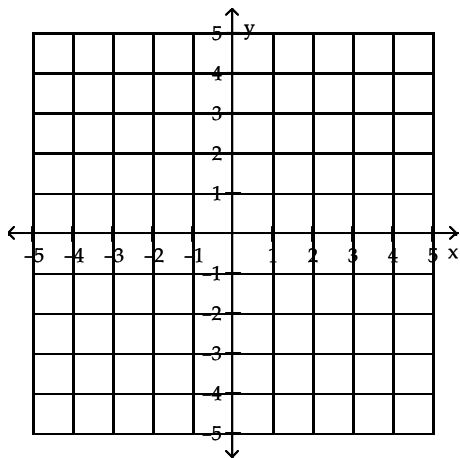
8) _____

9) Solve for x: $\frac{7x}{4} - \frac{2x}{3} = 13$

9) _____

10) Graph the inequality: $y > -\frac{2}{3}x + 3$

10) _____



11) Ryan sold 3 shirts and 4 hats. Becky sold 2 shirts and 6 hats. Ryans total was \$48 and Becky's total was \$52. How much does a shirt cost? Write the equations and solve.

11) _____

12) Write an equation in slope-intercept form, $y = mx + b$, for the line that passes through the points (3, -4) and (-2, -2).

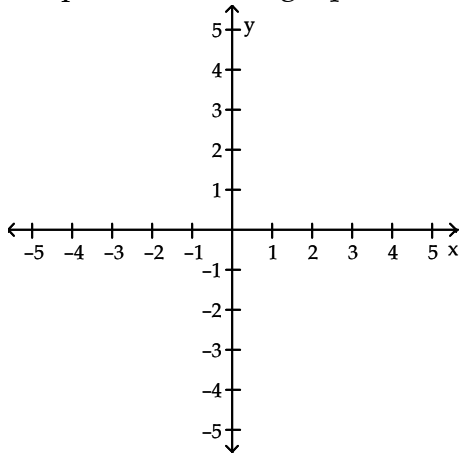
12) _____

13) Factor and simplify: $\frac{x^2 + 3x - 4}{x - 1}$

13) _____

14) Graph the following equation: $(y - 1) = -2(x - 2)$

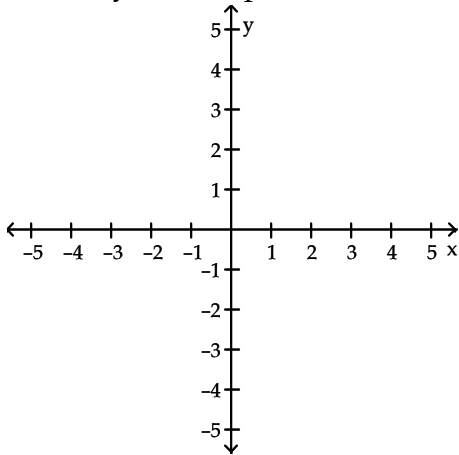
14) _____



15) Solve for x: $|2x - 4| = 8$

15) _____

- 16) Graph the following: $y = x^2 - 4x + 3$. Clearly indicate the vertex, y-intercept, and x-intercepts of the graph.



16) _____

- 17) Rewrite the following equation in terms of r.
 $p = 5(1 + r) + 2m$

17) _____

- 18) Solve for x: $3x - 2(4 - x) = 16$

18) _____

- 19) Three times the quantity of twice a number minus four is eight more than that number. Write the equation and solve.

19) _____

- 20) Solve the system of equations:

$$y = \frac{2x-25}{7}$$

$$3x + 7y = 20$$

20) _____

Name _____

1) Evaluate: $\sqrt[3]{8} = ?$

1) _____

2) There are 7 red, 8 yellow, and 5 orange dodge balls in a bag. If you grab one ball at random, what is the probability of getting either an yellow or orange?

2) _____

3) There are 8 blue, 3 red, and 5 white straws in a cup. What is the probability you reach and grab a white one for yourself, and then a blue one for your friend?
(Not replacing your blue straw between picks)

3) _____