Name _____

Students Entering Algebra 2, Summer Packet

When you go into Algebra 2, we assume you have certain mathematical skills that were taught to you in previous years. If you do not have these skills, you will find that you will consistently get problems incorrectly next year, even though you understand the Algebra 2 concepts. It is frustrating for students when they are tripped up by the basic algebra and not the more difficult Algbera 2 skills. This summer packet is intended for you to brush up and possibly relearn these topics.

Answer all questions without a calculator!!

Spread out your work during the whole summer, since you need these skills to be relatively fresh in your mind in the fall. Also, don't fake your way through these problems; instead, visit the websites suggested below. The whole packet will take you about 10 hours to complete.

We expect you to try hard at reviewing this material, to look things up, watch video lessons, and then complete this practice.

Answers will be shared on the first and second day of school. On those days you will have a chance to ask questions, complete some of the problems, and then hand it in [you may attach extra paper to show your work].

http://www.khanacademy.com
http://www.purplemath.com/modules/index.htm
http://www.hippocampus.org/?select-textbook=19
http://tutorial.math.lamar.edu/Classes/Alg/Alg.aspx

This practice is divided into six sections:

1. Basic Operations
2. Percents
3. Evaluate, Simplify, Solve
4. Slope-Intercept
5. Inequalities
6. Basic Algebra Skills

It is crucial that you do not use a calculator for any of these questions.

Basic Operations

1. What is the value of #? $\frac{4}{6} = \frac{\#}{24}$

2. Write 4¾ as an improper fraction.

3. Write 38/7 as a mixed number.

4. Multiply: $\frac{6}{5} \times \frac{5}{9}$

5. Divide: $\frac{9}{5} \div \frac{3}{4}$

6. Simplify: $\left(\frac{2}{5} + \frac{1}{2}\right) \div \frac{1}{6}$

7. Find the greatest common factor of 4 and 26.

8. Find the least common multiple of 4 and 26.

9. Write 0.45 as a reduced fraction.

Percent

10. What is 2.5% of 54?

11. The regular price of a suit is $105. It is on sale at 28% off. What is the sale price?

12. What percent of 5 is 1?

Evaluate these expressions:

13. $30 - [6 + (4^2 \div 2)]$

14. $2x - 5y + 10x - 7y$

15. $7x^2 - 4x$ when $x = (-4)$

16. $8a^3 - 5ab + b^2$ when a = −1 and b = 3

Simplify the expression [Write your answer using only positive exponents]

17. $\dfrac{4^3 \cdot 4^5}{4^6}$

18. $\left(\dfrac{a^2}{a^{-4}}\right)^3$

19. $\dfrac{3ab^2 \cdot b^5}{a^2 b} \cdot \dfrac{b^3}{a}$

20. $x^2 \cdot \left(xy^3\right)^{-2}$

Solve the following equations:

21. $-6x - 8 = 10$

22. $5.5 + x = 7.8$

23. $17 = -5x - 6x + 14$

24. $\dfrac{k}{7} - 5 = 20$

25. $4 = -\dfrac{1}{2}(5x - 3)$

26. $\dfrac{4}{7} = \dfrac{x}{56}$

27. $\frac{2m+7}{6} = \frac{5m-2}{5}$

28. Put the following equation in slope intercept form (y = mx+b)

$8x - 4y = 20$

Identify the slope and *y*-intercept of the following lines:

29. $y = \frac{1}{2}x - 4$ m = _____, b = _____

30. $2x - 3y = 6$ m = _____, b = _____

31. Write an equation in slope-intercept form of the line that passes through (-2, 1) and has slope $m = 3$.

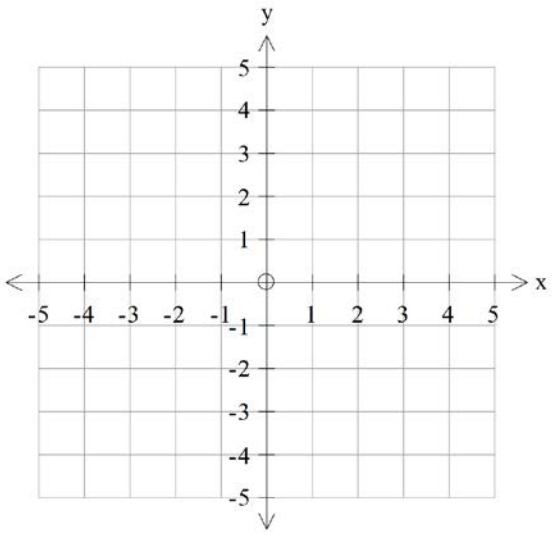
32. Write an equation in slope-intercept form of the line that passes through (-1, 2) and (4, 3).

33. Write an equation in slope-intercept form of the line that passes through (-2, 1) and (5, 1).

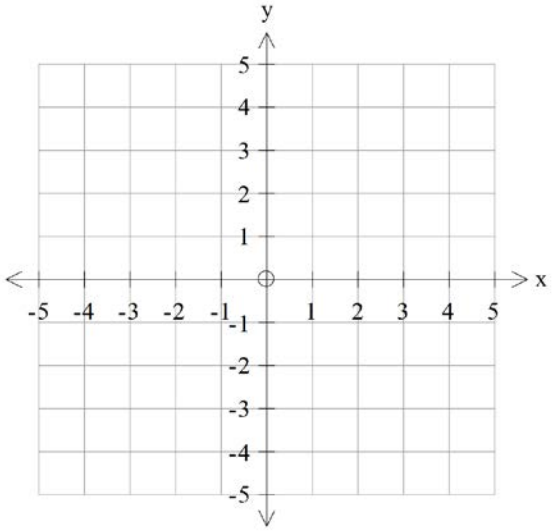
34. Write an equation in slope-intercept form of the line that passes through (-5, 9) and has an undefined slope.

35. Write an equation in slope-intercept form of the line that has an x-intercept of -4 and a y-intercept of 3.

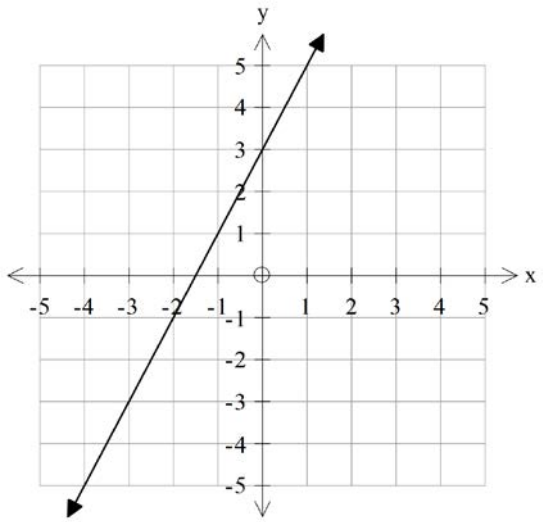
36. Graph $y = 3x - 5$



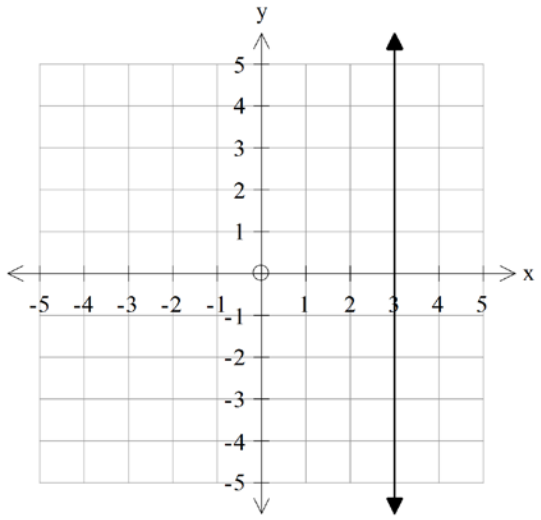
37. Graph $-2x + 3y = 6$



38. Write an equation for the following graph.



39. Write an equation for the following graph.



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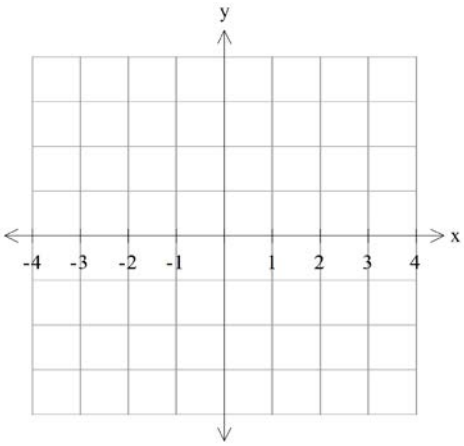
40. Solve the inequality for x: $4x + 1 \leq 7$

41. Solve the inequality for x: $2 - x > 1$

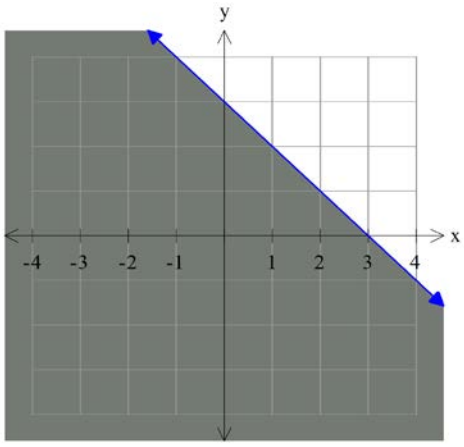
42. Solve the inequality for x: $3(x - 12) - 2 < x + 17$

43. Use the graph below to sketch the solution (shaded region) to the inequality

$y > 2x$



44. Write the inequality (use x and y) whose solution is represented below



Solve the following systems:

45. $2x + y = 1$
$3x - y = 14$

46. $6x + 3y = 6$
$8x + 5y = 12$

Multiply

47. $-2x^2 (3x - 4)$

48. $5 - 3(x - 7)$

49. $(x + 2)(x - 6)$

50. $(3x + 1)^2$

51. $(2x - 5)(2x + 5)$

Factor

52. $3x + 6$

53. $x^2 - 9x + 18$

54. $y^2 - y - 12$

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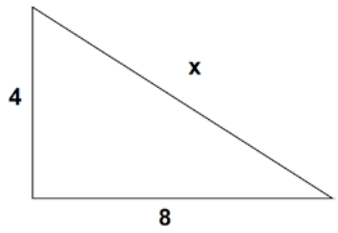
55. The hypotenuse of a right triangle is 13, and the short leg is 5. Use the Pythagorean Theorem to find the length of the other leg.

56. Find the hypotenuse of the right triangle shown below.

Use radicals to write and simplify your answer.