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. $\frac{4^3 \cdot 4^5}{4^6}$

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

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

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. $\frac{k}{7} - 5 = 20$

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

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

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 $m = 3$.

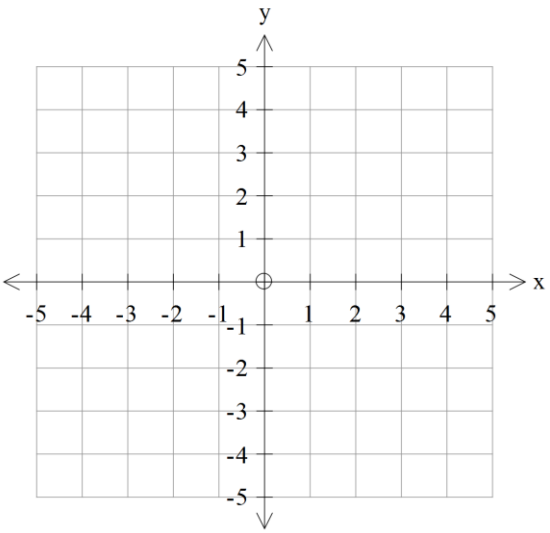
32. Write an equation in slope-intercept form of the line that passes through (-1, 2) and (4, 3).

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

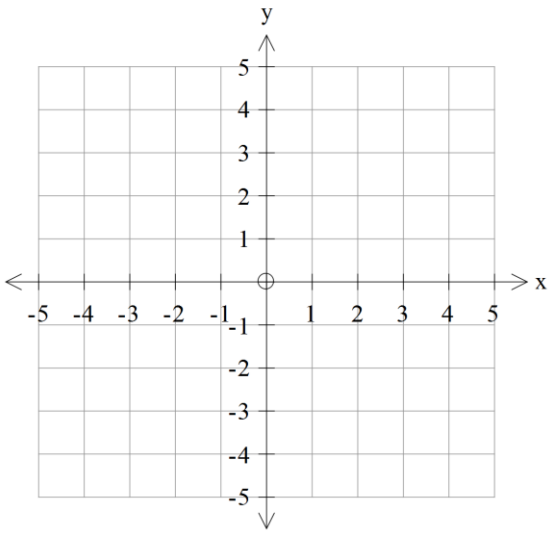
34. Write an equation in slope-intercept form of the line that passes through (-5, 9) and has an undefined slope.

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

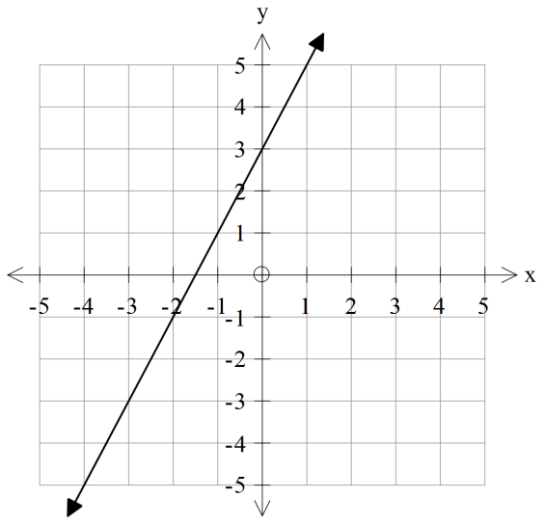
36. Graph $y = 3x - 5$



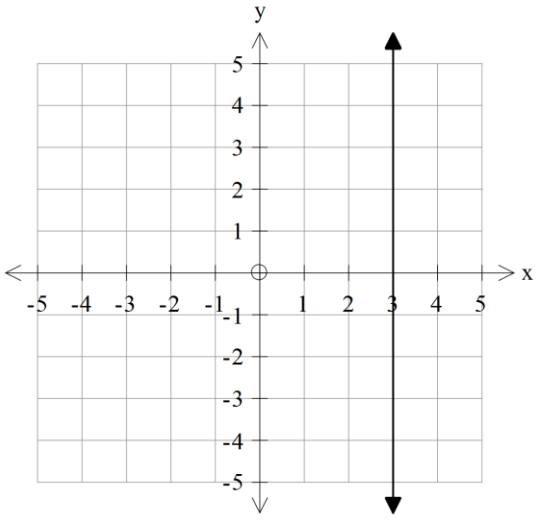
37. Graph $-2x + 3y = 6$



38. Write an equation for the following graph.



39. Write an equation for the following graph.



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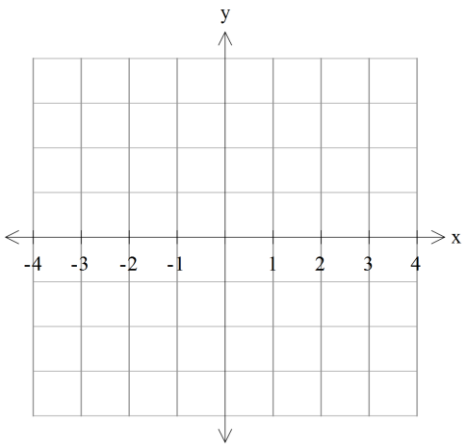
40. Solve the inequality for x: $4x + 1 \leq 7$

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

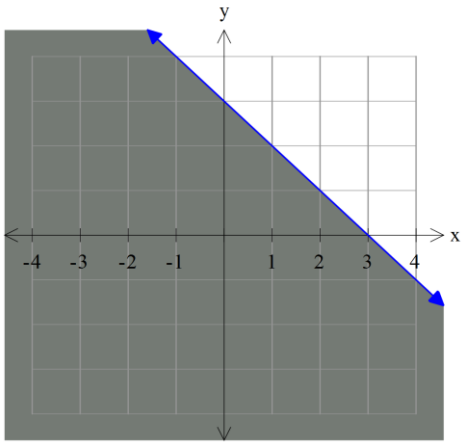
42. Solve the inequality for x: $3(x - 12) - 2 < x + 17$

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. $x^2 - 9x + 18$

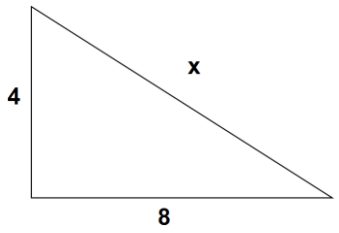
54. $y^2 - y - 12$

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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.



Please solve for the indicated variable.

57. $ax+b=c \quad for \quad x$

58. $-b-kx=-3b \quad for \quad x$

59. $a(x+b)=c \quad for \quad x$

60. $A=\frac{1}{2}h(b_1+b_2) \quad for \quad b_2$

61. $A=\pi r^2 \quad for \quad r$

62. $\frac{ax+2}{b}=\frac{c}{d} \quad for \quad x$

Please simplify the following with exact values.

63. $5\sqrt{16}$

64. $\sqrt{48}$

65. $-3\sqrt{75}$

66. $\sqrt{240}$

67. $3+2\sqrt{8}$

68. $\sqrt{15}\cdot\sqrt{3}$

Please simplify the following.

69. $|-4|-|12|$

70. $-|-9+8|$

71. $-2|-5|-|-16|$

72. $8-|-17|$

73. $|-4+3-12|$

74. $-|-7|+|-4(-2)|$