**Basic Operations**

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

**2.** Write 4¾ as an improper fraction.

**3.** Write 38/7 as a mixed number.

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

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

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

**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.

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**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?

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**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 $b = 3$

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

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**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.**   $\dfrac{2m+7}{6} = \dfrac{5m-2}{5}$

**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.**  $y = \dfrac{1}{2}x - 4$          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).
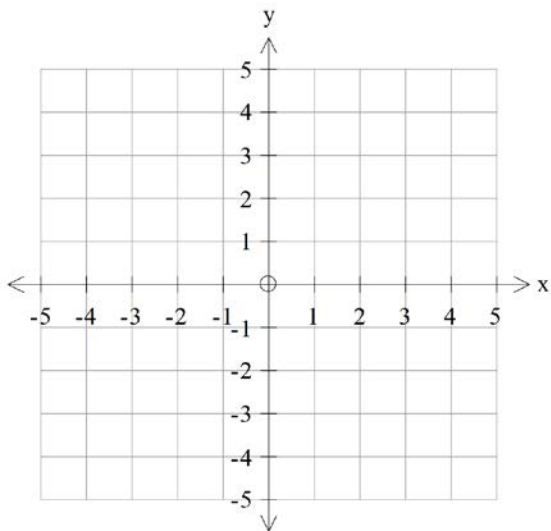
**34.**  Write an equation in slope-intercept form of the line that passes through (-5, 9) and has an undefined slope.

**35.** Write an equation in slope-intercept form of the line that has an x-intercept of -4 and a y-intercept of 3.
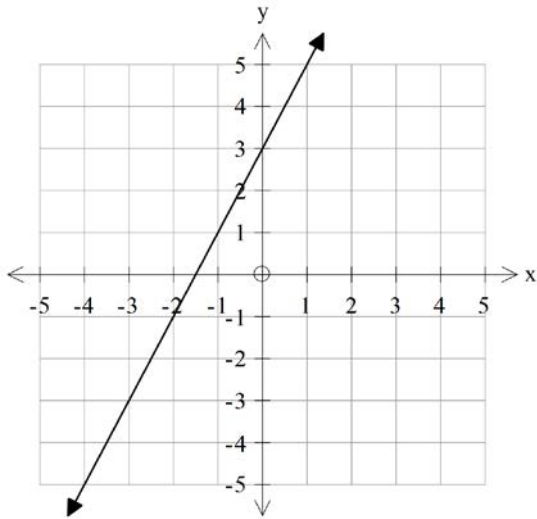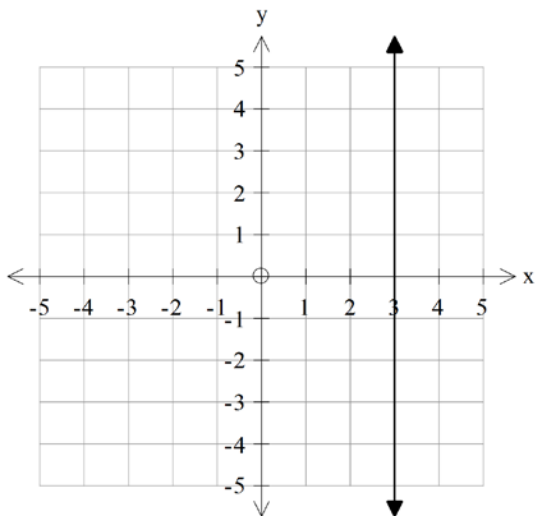
**36.** Graph y = 3x – 5
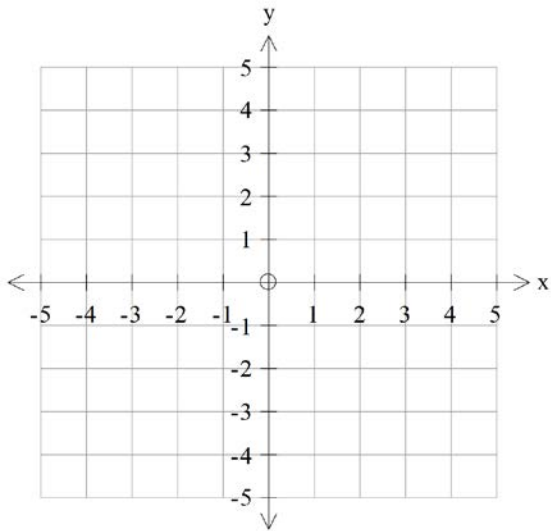


**37.** Graph  –2x + 3y = 6

**38.** Write an equation for the following graph.



**39.** Write an equation for the following graph.



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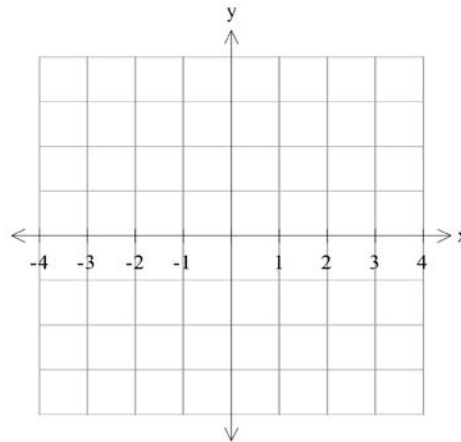
**40.** Solve the inequality for $x$:  $4x + 1 \leq 7$

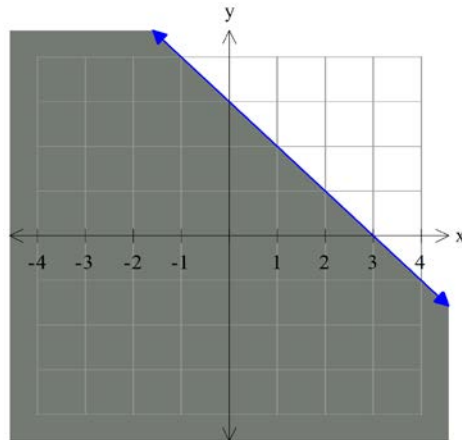**41.** Solve the inequality for $x$:  $2 - x > 1$

**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



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**Solve the following systems:**

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

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

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**Multiply**

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

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

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

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

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

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**Factor**

    **52.** $3x + 6$

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

    **54.** $y^2 - y - 12$

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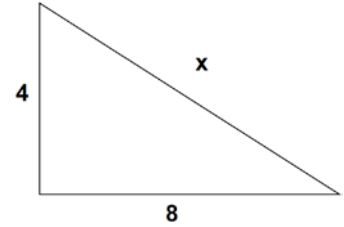
**55.** The hypotenuse of a right triangle is 13, and the short leg is 5. Use the Pythagorean Theorem to find the length of the other leg.

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

Use radicals to write and simplify your answer.



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