

1. Perform the operations as indicated.

$$(a) \frac{3}{4} \cdot 6 - 5 \cdot \frac{5}{2} =$$

$$(b) \frac{\frac{5}{6} - \frac{5}{4}}{\frac{2}{3} \cdot \frac{5}{8}} =$$

2. Simplify each of the following.

$$(a) -2a^3 (-2a^4)^2 =$$

$$(b) 2a^3 (-2ab^2)^3 ab^2 =$$

$$(c) \frac{(-2x)^2 y^3}{2x^3 y^2} =$$

$$(d) 3(x - 2) - 2(5x - 2) =$$

$$(e) (x + 3)(5x - 3) =$$

$$(f) (5a - 1)^2 =$$

$$(g) (3x^5 + 4y)(3x^5 - 4y) =$$

$$(h) (x - y)(x^5 + x^4y + x^3y^2 + x^2y^3 + xy^4 + y^5) =$$

3. Solve each of the following equations. Make sure to check your solutions.

$$(a) \left(\frac{3}{8}\right)x + \frac{3}{2} = -\frac{3}{4}$$

$$(b) 3(2x - 3) - (5x + 4) = -14$$

$$(c) 3w - 5 = 5(w - 2)$$

$$(d) 8(x - 3) - 3(5 - 2x) = x$$

$$(e) 7(j - 5) + 8 = 2(j + 5) + 5j$$

$$(f) -3(2x - 5) - (3 - 7x) = 2(x + 1) - (x - 10)$$

$$(g) \frac{3x - 1}{4} + \frac{8 - 4x}{3} = -3 - x$$

$$(h) \frac{3x - 2}{5} + \frac{x + 4}{3} = \frac{14(x + 1)}{15}$$

4. Intercepts.

(a) Find the x -intercept of the line given by $5x - y = -10$.

(b) What is the y -intercept of the line with equation $3x + 2y = 30$?

5. Graph the lines $4x - 5y = 10$ and $y = 5 - \frac{x+1}{2}$ in the same coordinate system. Use your graph to find the coordinates of the point where the lines intersect.
6. Word Problems.
- (a) A rectangle has a width which is seven inches less than its length. The perimeter is 46 inches. Find the sides.
 - (b) A couch went on a 15% sale. The sale price is \$ 697. Find the original price.
 - (c) The difference between two numbers is 7, their sum is 37. Find these numbers.
 - (d) A certain triangle's longest side is one centimeter less than six times the shortest side. The other side is five times the shortest side. The perimeter is thirty-five centimeters. Find the length of the longest side.
 - (e) Ann and Betty are roommates. The monthly rent is \$ 950. The amount paid by Ann is \$ 310 less than twice the amount paid by Betty. How much do they each pay for rent?
 - (f) The population of a town has decreased from 90 000 to 82 800. What percent of a change does this represent?
 - (g) A bank teller has 47 more five-dollar bills than ten-dollar bills. The total value of the money is \$1000. How much of each denomination of bill does he have?
 - (h) One side of a rectangle is 4 ft shorter than three times the other side. Find the sides if the perimeter is 64 ft.
 - (i) Mary bought four less than three times the number of books that Jose did. Together they bought sixteen books. How many did Jose buy?