MAT.0650 - Elementary Algebra
Chapter 1 (Sep, 8)

- Section 1.1

    1. Identify the properties that is illustrated by each statement.

        (a) $5 + (2 + 1) = (5 + 2) + 1$

        (b) $3(2 + 4) = 3 \cdot 2 + 3 \cdot 4$

        (c) $5 \cdot (2 \cdot 3) = (5 \cdot 2) \cdot 3$

        (d) $2 \cdot 3 = 3 \cdot 2$

    2. Use the distributive law to remove the parentheses.

        (a) $3(2 + 6)$

        (b) $-2(3 + 8)$

- Section 1.2

    1. Add.

        (a) $-3 + (-8)$

        (b) $10 + (-3)$

        (c) $-6 + 6$

        (d) $-21 + 0$

        (e) $5.2 + (-7.4)$

    2. Subtract.

        (a) $8 - 13$

        (b) $-6 - 5$

        (c) $10 - (-2)$

        (d) $-5 - (-2)$

        (e) $-8 - (-8)$

        (f) $-5 - 0$

        (g) $0 - (-2)$

        (h) $7.9 - (-5.2)$

- Section 1.3

    1. Multiply.

        (a) $(10)(-7)$

        (b) $(-2)(-8)$

        (c) $(234)(-152)(21)(0)$

        (d) $\left(\dfrac{2}{3}\right)\left(\dfrac{5}{7}\right)$

        (e) $\left(\dfrac{4}{15}\right)\left(-\dfrac{9}{6}\right)$

    2. Divide.

        (a) $\dfrac{80}{16}$

        (b) $\dfrac{-72}{8}$

        (c) $\dfrac{-63}{-7}$

        (d) $\dfrac{0}{132}$

(e) $\dfrac{1}{0}$

(f) $\dfrac{0}{0}$

3. Perform the following operations.

(a) $\dfrac{-4+2}{-8-(-6)}$

(b) $\dfrac{-5-1}{4-(-2)}$

(c) $\dfrac{25-4}{-5-(-2)}$

(d) $\dfrac{2-(-7)}{-6+4}$

- Section 1.4

  1. Writing, using symbols.

     (a) 6 more than z

     (b) 5 less than x

     (c) 5 less x

     (d) c decreases by 2

     (e) The product of b and 7

     (f) The quotient when y is divided by 2

     (g) 5 times the product of m and n

     (h) The product of a and 5 less than a

     (i) 3 more than the product of 10 and x

     (j) The quotient when a plus 2 divided by a minus 2

  2. Identify which are expression, which are not.

     (a) $3(x+5)$

     (b) $y-5=3$

- Section 1.5

  1. Evaluate each expression.

     (a) $18-3\cdot 5$

     (b) $(18-3)\cdot 5$

     (c) $5\cdot 4^2$

     (d) $(5\cdot 4)^2$

     (e) $5\cdot 3^2-4$

     (f) $5\cdot(3^2-4)$

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

     (h) $3\cdot 5-2^2$

  2. Evaluate each expression if $x=-3$, $y=6$, $z=-4$, and $w=2$

     (a) $3x+w$

     (b) $x+y-3z$

     (c) $5(x^2-w^2)$

     (d) $\dfrac{3x-y}{w-x}$

     (e) $\dfrac{x(y^2-z^2)}{(y+z)(y-z)}$

- Section 1.6

  1. List the terms of each expression.

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

     (b) $5x^2 - 7y + 3$

  2. Separate the terms into groups of like terms.

     (a) $4x$, $-3x^2$, x^3, $5x^3$, $2x^2$

     (b) $3xy$, $-2x^2$, $3x^2y$, $-xy$, x^2y, $7x^2$

  3. Combine the like terms.

     (a) $3c + 2b + 5c + 3b$

     (b) $2x + 3x^2 - 4x - 5x^2$

     (c) $3a^2 + 5a - 2a + 3 - 4a^2 + 3a - 8$

- Section 1.7

  1. Simplify

     (a) $\dfrac{10x^5}{x^2}$

     (b) $\dfrac{x^2 \cdot x^3}{x^4}$

     (c) $\dfrac{x^5 \cdot x^6 \cdot x^3}{x^2 \cdot x^4}$

     (d) $\dfrac{20m^3n^5}{-4m^4n^2}$

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

     (f) $(-3x^2y)(2x^3y^2)$

     (g) $(-4x^3y^3)(-3x^2y^2)(2xy)$

  2. Write an algebraic expression to model each application.

     (a) Alex has 20 nickels and dimes in his pocket. If x of these are dimes, how many nickels?

     (b) Brad is 10 years older than Cathy. If Cathy is x years old, how old is Brad?

     (c) A number m is 6 less than 5 times the number n. Express m in terms of n.

     (d) David has \$5 more than twice as much money as Evan has. If Evan has x dollars, how much does David have?