ASSIGNMENT 2

DYLAN ZWICK'S MATH 1010 CLASS

Section 1.4 - Algebraic Expressions

Identify the terms and coefficients of the algebraic expression:

1.4.1: $10x + 5$
$10x, 5; 10, 5$ (terms;coefficients)

1.4.4: $-16t^2 + 48$
$-16t^2, 48; -16, 48$

1.4.5: $-3y^2 + 2y - 8$

$-3y^2, 2y, -8; -3, 2, -8$

1.4.8: $25z^3 - 4.8z^2$
$25z^3, -4.8z^2; 25, -4.8$

1.4.11: $xy - 5x^2y + 2y^2$
$xy, -5x^2y, 2y^2; 1, -5, 2$

Identify the property of algebra illustrated by the statement:

1.4.15: $4 - 3x = -3x + 4$
Commutative Property of Addition

1.4.19: $(5 - 2)x = 5x - 2x$
Distributive Property

Use the indicated property to rewrite the expression:

1.4.22: Distributive Property

$6x + 6 = \quad 6(x + 1)$

Simplify the expressions by combining like terms:

1.4.25: $3x + 4x$
$7x$

1.4.29: $7x - 11x$
$-4x$

1.4.33: $3x - 2y + 5x + 20y$
$8x + 18y$

1.4.36: $9y + y^2 - 6y$
$y^2 + 3y$

1.4.39: $x^2 + 2xy - 2x^2 + xy + y$
$-x^2 + 3xy + y$

Use the Distribution Property to simplify the expressions:

1.4.41: $4(2x^2 + x - 3)$
$8x^2 + 4x - 12$

1.4.42: $8(z^3 - 4z^2 + 2)$
$8z^3 - 32z^2 + 16$

1.4.46: $-(-5t^2 + 8t - 10)$
$5t^2 - 8t + 10$

1.4.49: $3x(17 - 4x)$
$51x - 12x^2$

Simplify the expression:

1.4.53: $10(x - 3) + 2x - 5$
$12x - 35$

1.4.58: $7x - (2x + 5)$
$5x - 5$

1.4.62: $x(x^2 - 5) - 4(4 - x)$
$x^3 - x - 16$

1.4.65: $9a - [7 - 5(7a - 3)]$
$44a - 22$

1.4.69: $8x + 3x[10 - 4(3 - x)]$
$12x^2 + 2x$

1.4.72: $5[3(z + 2) - (z^2 + z - 2)]$
$-5z^2 + 10z + 40$

Evaluate the expression for the specified values of the variable(s). If not possible, state the reason:

1.4.73: $5 - 3x$

(a) $x = \frac{2}{3}, \quad 3$

(b) $x = 5, \quad -10$

1.4.75: $10 - 4x^2$

(a) $x = -1, \quad 6$

(b) $x = \frac{1}{2}, \quad 9$

1.4.79: $\frac{1}{x^2} + 3$

(a) $x = 0, \quad$ Not possible;undefined

(b) $x = 3, \quad \frac{28}{9}$

1.4.81: $3x + 2y$

(a) $x = 1, y = 5, \quad 13$

(b) $x = -6, y = -9, \quad -36$

1.4.84: $y^2 + xy - x^2$

(a) $x = 5, y = 2, \quad -11$

(b) $x = -3, y = 3, \quad -9$

1.4.85: $\dfrac{x}{y^2 - x}$

(a) $x = 4, y = 2,$ Not possible, undefined

(b) $x = 3, y = 3,$ $\dfrac{1}{2}$

1.4.88: $|x^2 - y|$

(a) $x = 0, y = -2,$ 2

(b) $x = 3, y = -15,$ 24

Evaluate the expression $0.01p + 0.05n + 0.10d + 0.25q$ to find the value of the given number of pennies p, nickels n, dimes d,and quarters q:

1.4.97: 43 pennies, 27 nickels, 17 dimes, 15 quarters
$7.23

Section 1.5 - Constructing Algebraic Expressions

Translate the verbal phrase into an algebraic expression:

1.5.1: The sum of 23 and a number n
$23 + n$

1.5.5: Six less than a number n
$n - 6$

1.5.7: Four times a number n minus 10
$4n - 10$

1.5.12: The ratio of y and 3
$\dfrac{y}{3}$

1.5.16: The number u is tripled and the product is increased by 250
$3u + 250$

1.5.19: The sum of a number and 5, divided by 10
$\dfrac{n + 5}{10}$

Write a verbal description of the algebraic expression without using the variable:

1.5.25: $t - 2$
A number decreased by 2

1.5.28: $2y + 3$
Three more than the product of a number and 2

1.5.30: $7y - 4$
Four less than seven times a number

1.5.33: $\frac{4}{5}x$

Four-fifths of a number

1.5.37: $\frac{x + 10}{3}$
The sum of a number and ten, divided by 3

Write an algebraic expression that represents the specified quantity in the verbal statement,and simplify if possible:

1.5.41: The amount of money (in dollars) represented by n quarters
$0.25n$

1.5.45: The amount of money (in cents) represented by m nickels and n dimes
$5m + 10n$

1.5.47: The distance traveled in t hours at an average speed of 55 miles per hour
$55t$

1.5.50: The average rate of speed when travelling 320 miles in t hours

$\frac{320}{t}$

1.5.51: The amount of antifreeze in a cooling system containg y gallons of coolant that is 45% antifreeze

$0.45y$

1.5.55: The sale price of a coat that has a list price of L dollars if it is a "20 % off" sale
$L - 0.20L = 0.80L$

1.5.57: The total hourly wage for an employee when the base pay is \$8.25 per hour plus 60 cents for each of q unit produced per hour
$8.25 + 0.60q$

1.5.59: The sum of a number n and five times the number
$n + 5n = 6n$

1.5.62: The sum of three consecutive even integers, the first of which is $2n$
$2n + (2n + 2) + (2n + 4) = 6n + 6$

Section 2.1 - Linear Equations

Determine whether each value of the variable is a solution of the equation:

2.1.1: $3x - 7 = 2$

(a) $x = 0$
Not a solution

(b) $x = 3$
Solution

2.1.2: $5x + 9 = 4$

(a) $x = -1$
Solution

(b) $x = 2$
Not a solution

2.1.4: $10x - 3 = 7x$

(a) $x = 0$
Not a solution

(b) $x = -1$
Not a solution

Identify the equation as a conditional equation, an identity, or an equation with no solution:

2.1.7: $6(x+3) = 6x+3$
No solution

2.1.9: $\frac{2}{3}x + 4 = \frac{1}{3}x + 12$

Conditional

Determine whether the two equations are equivalent. Explain your reasoning;

2.1.13: $3x = 10, 4x = x + 10$
Equivalent

2.1.15: $x + 5 = 12, 2x + 15 = 24$
Not equivalent

2.1.17: $3(4-2t) = 5, 12 - 6t = 5$
Equivalent

2.1.20: $6 - 5x = -4, x = -4$
Not equivalent

Solve the equation. If there is exactly one solution, check your answer. If not, describe the solution:

2.1.23: $3x - 12 = 0$
4

2.1.25: $6x + 4 = 0$
$-\frac{2}{3}$

2.1.29: $4y - 3 = 4y$
No Solution;$-3 \neq 0$

2.1.35: $3x - 1 = 2x + 14$
15

2.1.37: $8(x-8)=24$
11

2.1.45: $7(x+6)=3(2x+14)+x$
Infinitely many;both sides of the equation equal $7x+42$

2.1.47: $t-\frac{2}{5}=\frac{3}{2}$

$t=19/10$

2.1.50: $\frac{t}{6}+\frac{t}{8}=1$

$t=24/7$

2.1.53: $0.3x+1.5=8.4$
23

Solve the problems:

2.1.59: ***Number Problem*** The sum of two consecutive integer is 251. Find the integers.
Let the two integers be n and $n+1$, then $n+(n+1)=251$ we have $2n+1=251$, or $n=125$. so the integers are 125 and 126.

2.1.63: ***Work Rate*** Two people can complete a task in t hours, where t must satisfy the equation $\frac{t}{10}+\frac{t}{15}=1$.Find the required time t.
$t=6$

2.1.71: ***True or False?*** Multiplying each side of an equation by zero yields an equivalent equation. Justify your answer.
False, because this does not follow the Multiplication Property of Equality.