3.1A Algebraic Expressions – Combining Like Terms

algebraic expression – an expression (no equal sign) that may contain numbers, operations (+, -, x, ÷) and symbols

terms – parts of an expression separated by addition

i.e. $3x^2 + 2x - 5$ (K C C; ① ② ③)

like terms – terms that have the same variables raised to the same exponent

constant – a terms with only a number, all constants are *like terms*

Identify the terms and the like terms.

Ex: $9x - 2 + 7 - x$ (K C C K C C; ① ② ③ ④)

terms: $9x, -2, 7, -x$

like terms: $9x$ & $-x$

-2 & 7

Ex: $z^2 + z - 3z^2 + z - 5z^2$ (K C C K C C; ① ② ③ ④ ⑤)

terms: $z^2, z, -3z^2, z, -5z^2$

like terms: z^2 & $-3z^2$ & $-5z^2$

z & z & z

simplest form – an expression that has no like terms and no parentheses because it has been simplified

- take away coefficient of 1: $1x \rightarrow x$
- clean up double signs: + - = -
- alphabetical order
- in order from highest exponent to lowest

coefficient – the number in front of a variable

Ex: $5x \rightarrow 5$

Ex: $y \rightarrow 1$

Ex: $-y \rightarrow -1$

Simplify.

Ex: $3x + 5y - 2x - 1y$ (K C C; K C C)

simplify! ① $1x + 4y$

$x + 4y$

Ex: $7 + 4p - 5 + 1p + 2q$ (K C C)

$5p + 2q + 2$

* must be in this order! *

KCC

Ex: $\frac{3}{4}y + 12 + \frac{-1 \cdot 2}{2 \cdot 2}y + 6$

KCC

$\frac{3}{4}y + 12 + \left(-\frac{2}{4}y\right) + (-6)$

$\frac{1}{4}y + 6$

KCC

Ex: $\frac{1 \cdot 2}{1 \cdot 2}y + 10 + \frac{-3}{2}y$

$\frac{2}{2}y + 10 + \left(-\frac{3}{2}y\right)$

$-\frac{1}{2}y + 10$

KCC KCC KCC

Ex: $2r^2 + -9 + 7r + -1r^2$

simplify! $1r^2 + 7r + (-9)$

$r^2 + 7r - 9$

Ex: $2.2x - 4.6y$

already simplified

Ex:

Each person in a group buys a ticket, medium drink, and a large popcorn. Write an expression in simplest form that represents the amount of money the group spends at the movies. Interpret the expression.

Let x = # of people

total cost $= 7.50x + 2.75x + 4x$

$= 14.25x$

Total cost per person is $14.25.

Ex: How much would 4 people attending the movies spend altogether?

$14.25(4)$

$57

Try These:

Simplify.

(1) $14 - 3z + 8 + z$ $-2z + 22$

(2) $2.5x + 4.3x - 5$ $6.8x - 5$

(3) $\frac{3}{8}b - \frac{3}{4}b$ $-\frac{3}{8}b$

(4) $2.4m - 4.5n$

already simplified