

Secondary I Notes

2.1: Modeling with Expressions

I. Vocabulary

A. Expression = A mathematical phrase that contains operations, numbers, and/or variables.

B. Terms = The parts of an expression that are being added.

C. Coefficients = The numerical factor of a variable term.

D. Numerical Expression = Contains only numbers.

E. Algebraic Expression = Contains at least one variable.

II. Interpreting Parts of an Expression

A. Example 1

$$8p + 2q + 7r$$

1) Terms = $8p, 2q, 7r$

2) Coefficients = $8, 2, 7$

B. Example 2

$$18 - 2x - 4y$$

1) Rewrite expression to be the sum of terms since subtraction is involved.

$$18 + (-2x) + (-4y)$$

2) Terms = $18, -2x, -4y$

3) Coefficients = $-2, -4$

C. Example 3 (Student Example)

$$2x + 3y - 4z + 10$$

1) Rewrite Expression as a sum of terms.

$$2x + 3y + (-4z) + 10$$

2) Terms = $2x, 3y, -4z, 10$

3) Coefficients = $2, 3, -4$

D. Story Problem Example 1

Tickets to an amusement park are \$60 for adults and \$30 for children. If a is the number of adults and c is the number of children, then the cost for a adults and c children is $60a + 30c$.

1) Terms = $60a, 30c$

2) Factors of $60a = 60, a$

3) Factors of $30c = 30, c$

4) Coefficients = $60, 30$

5) Meaning of terms =

$60a$ is the cost for a adults.

$30c$ is the cost for c children.

E. Story Problem Example 2

The price of a case of juice is \$15.00. Fred has a coupon for 20 cents off each

bottle in the case. The expression to find the final cost of the case of juice is $15 - 0.2b$, wherein b is the number of bottles.

1) Terms = $15, -0.2b$

2) Factors of Terms =

15 first term

-0.2 and b second term

3) Coefficients = None for first term

-0.2 for second term.

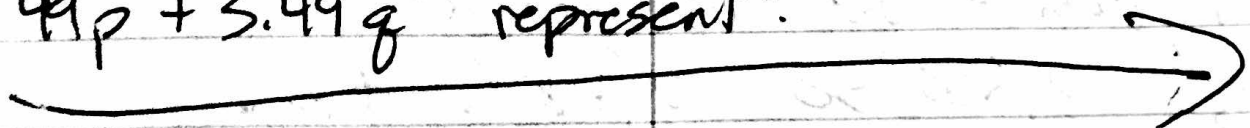
4) What does the expression mean?

If Fred has a coupon, 20 cents is subtracted from the price of every bottle in the case. If Fred does not have a coupon, then the case costs \$15.

III. Interpreting Algebraic Expression in Context

A) Story Example I

Curtis is buying supplies for his school. He buys p packages of crayons at \$1.49 per package and q packages of markers at \$3.49 per package. What does the expression $1.49p + 3.49q$ represent?



1) What does 1.49 represent in the term? $1.49p$
- The cost of ~~the~~ ^{one} package of Crayons.

2) What does 3.49 represent in the term $3.49g$?
- The cost of one package of markers.

3) What does $1.49p + 3.49g$ mean?
- The total cost of all packages of Crayons p and all packages of markers, g .

IV. Comparing Algebraic Expressions

A. More Vocabulary

1) Equivalent Expressions = Expressions that are the same or equal.

B. ~~XX~~ We can denote inequalities between expressions with ($<$) ^{less} ~~greater~~ than, and ^{greater} ~~less~~ than ($>$) symbols.

C. Examples

~~1) Suppose~~ Suppose x and y give the population of two different cities where $x > y$. Compare the expressions and tell which of the given pair is greater.

1) $x + y$ and $2x$,

Answer = $2x$ is greater

Why? $y < x$ so $y + x < x + x$.

2) $\frac{x}{y}$ and $\frac{y}{x}$

Answer = Since $x > y$, $\frac{x}{y}$ will be greater than 1 and $\frac{y}{x}$ will be less than 1.

So $\frac{x}{y} > \frac{y}{x}$.

3) Student Example

Suppose x and y give the populations of two different cities where $x > y$ and $y > 0$. Compare the expressions and tell which of the given pair is greater.

$\frac{x}{x+y}$ and $\frac{x+y}{x}$

Answer = Since $x < x+y$, the first ratio must be less than 1. Since $x < x+y$, the second ratio must be greater than 1.

So $\frac{x+y}{x} > \frac{x}{x+y}$

See Table in your book for words that ~~Homework~~ are associated with operations.

Homework 5

Section 1.3 Pg. # 2-5, 7, 8, 9-12, 13-17

Section 2.1 Pg. # 1-10, 15-19