Day 04 PowerPoint

1.1 Variables and 1.2 Expressions

Assignments: HW04

1.1 Variables

SWBAT explain what a variable is.

Assignments:

HW04

- Describe the objects that I have given to you.
- What kinds of things could we measure about these objects?
  - Things we can measure are called **quantities**
- Are there quantities we can't measure now, but could if we had the right tools?
- Could any of those measurements change over time?
- Describe the elephant.

Some Vocabulary…

- Quantities whose values do not change are **constant**
- Quantities whose values *do* change are **varying quantities.**
- Think about this classroom during the day.
  - Name 3 constant quantities.
  - Name 3 varying quantities.
- Constant quantities are usually just described using numbers and units. But varying quantities are represented by *variables*
- Therefore: a **Variable** is a letter representing a quantity that can change
  - We can use pretty much any letter from any alphabet we want – the Latin and Greek alphabets are really popular. However, we *cannot* use e or i as variables, because they have specific meanings in math – just like π.
  - The most common letters that are used as variables are **x**, **y**, **z**, **r**, and $\boldsymbol{\theta}$

A real-life example…

Sonic menu – a small selection

- SuperSONIC Double Cheeseburger - $4.99
- Classic Chicken Sandwich - $4.49
- Small Mozzarella Sticks - $2.49
- Medium Tots or Fries - $1.99
- Vanilla Cone - $1.00
- Breakfast Burrito - $2.59
- Medium Soft Drink - $1.69
- Small Sonic Blast - $3.39
- Real Ice Cream Sundae - $1.99

- What would be cost (before tax) of a Classic Chicken Sandwich and two orders of mozzarella sticks?
- What would be the cost (before tax) of 2 Double Cheeseburgers, 2 fries, and a Sonic Blast?
- What would be the cost (before tax) of chicken sandwiches, mozzarella sticks, and ice cream sundaes?
- (Hint: We have to use variables!)

Sonic Menu Items and Prices from https://www.fastfoodmenuprices.com/sonic-prices/

1.2 Expressions

SWBAT evaluate expressions

Vocabulary

- Variable
  - A letter that represents a quantity that might change
- Coefficient
  - A number multiplied to a variable
- Term
  - A number, a variable, or variables and numbers multiplied together
- Expression
  - A set of terms (usually) connected by addition

- Identify variables, coefficients, and terms in the following expressions.

1. $4.99c + 2.49m + 1.99s$
2. $3x^2 + 2y - 2x^2$
3. $n + 5n$
4. $1.2b - 6y - 2y^3$
5. $3x - 2$
6. $7\sqrt{x} + \sqrt{x}$

Order of Operations

- **P** Parentheses
- **E** Exponents
- **M** Multiplication
- **D** Division
- **A** Addition
- **S** Subtraction

- *Parentheses* means simplifying *inside*. Numerators and denominators are in invisible parentheses.
- *Exponents* includes radicals, so that would be when you simplify square roots
- *Multiplication* and *Division* are done at the same time (going from left to right)
- So do *Addition* and *Subtraction*

Personally, I turn all division into multiplication and all subtraction into addition, so I think of the order of operations more like “PEMA”

Evaluating Expressions

- **Evaluate**: find the value of an expression when given specific values for variables
- Remember that variables can be anything! Including π and radicals.
- Ex. $y + x(y - 15)$; use $x = -5$ and $y = 10$

- Evaluate the expressions using the values given.

1. $j + k^2$; use $j = 1$ and $k = 4$
2. $5 - (z - y)$; use $y = 1$ and $z = 3$
3. $\frac{(xy)}{2r}$; use $x = \sqrt{8}$; $y = \sqrt{6}$, and $r = \sqrt{5}$
4. $x + 4z$; use $x = 1$ and $z = 4$
5. $4p - m$; use $m = 1$ and $p = 5$
6. $y - y + x$; use $x = 5$ and $y = 6$