**7th Grade Math** **– Chapter 1 Notes**

* 1. **Order of Operations**

***Numerical expression:***a math equation with numbers and operations (+, -, x, ÷)

***Order of Operations:***the proper sequence to use to solve a math problem.

1. Parentheses (solve problems in grouping symbols)
2. Powers / exponents
3. Multiply & Divide (left to right)
4. Add and Subtract (left to right)

 This order can be remembered with a mnemonic:

**P**(lease) **E**xcuse **M**y **x** **D**ismal ÷ **A**rithmetic**+** **S**kills **–**

**Independent Practice: p.9 #8-16, 25-30**

* 1. **Properties of Numbers**

It is also helpful to know a few other properties of numbers when simplifying math expressions:

***Commutative Property:***you can add or multiply numbers in any order.

 ex: a + b = b + a 🡆 2 + 3 = 3 + 2

 ab = ba 🡆 2 x 3 = 3 x 2

***Associative Property:***when you can add or multiply numbers, you can group them in any combinations.

 ex: (a+b)+ c = a +(b+c) 🡆 (2+3)+1 = 2 + (3+1)

 (a**·**b) **·c** = a**· (**b **·c)** 🡆 (2**·**3) **·2** = 2**· (**3 **·2)**

 ***Identity Property:***The sum of zero and any number is that number. The product of one and any number is that number.

 ex: a + 0 = a 🡆 5 + 0 = 5

 a**·**1 = a 🡆 6 x 1 = 6

**Independent Practice: p.14 #19-36**

* 1. **Variables & Algebraic Expressions**

***variable:***a letter taking the place of a number 3**x** - 2

***constant:***a number in an expression, it does not change

 **3x** - **2**

***algebraic expression:***a grouping of variables, constants and operations in a number sentence.

 **3x - 2**

***evaluate:***solve an expression, usually by substituting numbers for variables.

  **ex: Evaluate 3x – 2 for x=4**

 **ex: Evaluate 2y2 – 2y for y=3**

 **ex: Evaluate 3s + r/2 for s=5, y=6**

**Independent Practice: p.20 #18-31**

* 1. **Translating Words into Math**

There are many words that describe math operations

|  |  |  |
| --- | --- | --- |
| **Operation** | **Words used** | **Ex:** |
| **Addition** | * **Add** 3 to a number
* A number **plus** 3
* **3 more than** a number
* a number is **increased by** 3
* the **sum** of a number and 3
 | **n + 3** |
| **Subtraction** | * **Subtract** 6 from a number
* A number **minus** 6
* The **difference of** a number and 6
* **6 less than** a number
* a number is **decreased by** 3
* **take away** 6 from a number
* A number **less** 6
 | **v-6** |
| **Multiplication** | * **Multiply** 2 **times** a number
* 2 **multiplied** by a number
* the **product of** 2 and a number
 | **2m** |
| **Division** | * 8 **divided into** a number
* **the quotient of** a number and 8
* a number **divided by** 8
 | **a/8****a÷8** |

 ex: the product of 20 and a number:

ex: 10 less than a number:

 ex: 2 less than a number divided by 3:

**Independent Practice: p.24 #12-21**

* 1. **Simplifying Algebraic Expressions**

***Coefficient:***a number that is multiplied by a variable

 ex: 3x, 2x2 5y, y/2 4z, 2z

 When solving equations, you need to combine “like” variables – those that are the same.

|  |  |  |
| --- | --- | --- |
| **variables** | **Like or unlike?** | **Why?** |
| **3x , 2x** |  |  |
| **5x2, 4x** |  |  |
| **w, w/7** |  |  |
| **6a, 6b** |  |  |
| **5, 2.5** |  |  |
| **1.5 , 3n** |  |  |

 ex: 7x + 2x =

 5x3 + 3y + 7x3 – 2y – 4x2 =

 2(a + 2a2) + 2b =

**Independent Practice: p.28 #7-26**