



## Mathematics 52

### Handout 2

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Course ID: (27488) and (27501)

**Note:** This handout covers important notes from the **real numbers operations and properties**.

### Important Notes 1: GENERAL

$$+ - = -$$

$$- + = -$$

$$- - = +$$

$$+ + = +$$

- Same signs are always **POSITIVE**, while different signs are always **NEGATIVE**.

### Important Notes 2: MULTIPLICATION

$$+ \text{ number1} \cdot - \text{ number2} = -( \text{number1} \cdot \text{number2} )$$

$$- \text{ number1} \cdot + \text{ number2} = -( \text{number1} \cdot \text{number2} )$$

$$+ \text{ number1} \cdot + \text{ number2} = +( \text{number1} \cdot \text{number2} )$$

$$- \text{ number1} \cdot - \text{ number2} = +( \text{number1} \cdot \text{number2} )$$

- Same signs are always **POSITIVE**, while different signs are always **NEGATIVE**.

### Important Notes 3: DIVISION

$$\frac{+ \text{ number1}}{- (\text{non} - \text{zero number2})} = - \frac{\text{number1}}{(\text{non} - \text{zero number2})}$$

$$\frac{- \text{ number1}}{+ (\text{non} - \text{zero number2})} = - \frac{\text{number1}}{(\text{non} - \text{zero number2})}$$

$$\frac{+ \text{ number1}}{+ (\text{non} - \text{zero number2})} = + \frac{\text{number1}}{(\text{non} - \text{zero number2})}$$

$$\frac{- \text{ number1}}{- (\text{non} - \text{zero number2})} = + \frac{\text{number1}}{(\text{non} - \text{zero number2})}$$

- Same signs are always **POSITIVE**, while different signs are always **NEGATIVE**.

**Important Notes 4: Order of Operation**

To simplify (evaluate) any math expression, you need to follow the following order:

**STEP 1: Evaluate anything inside brackets.**

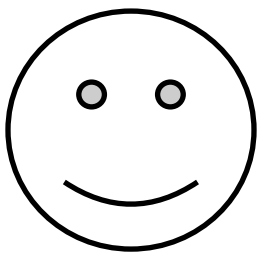
**STEP 2: Evaluate powers (exponents).**

**STEP 3: Evaluate multiplication and division from LEFT to RIGHT.**

**STEP 4: Evaluate addition and subtraction from LEFT to RIGHT.**

**Important Notes 5: General**

- **Any number to the power (exponent) zero is always 1** such as:  $2^0 = 1$  and  $e^0 = 1$ .
- Any number divided by zero is **undefined**.
- Zero divided by any **non-zero number** is **always zero**.
- Zero divided by **zero is indeterminate** (we cannot determine the answer).
- Negative of a negative number **is always positive**.



*Math is Amazing!!!  
Practice + Study = Success  
Good Luck  
Mohammed Kaabar*

