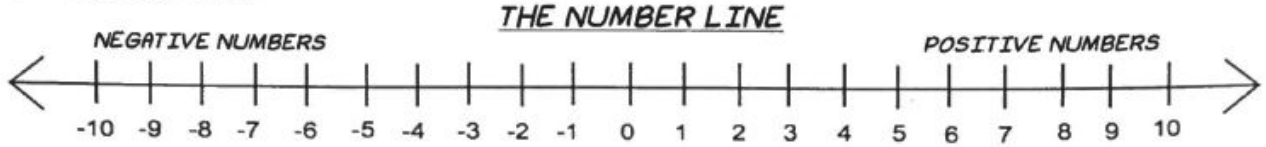
Unit 2 **Day 11: Integer Practice and Order of Operations (PEMDAS)**

Integers- A set of positive and negative whole numbers. They can be represented on a number line.

THE NUMBER LINE



Absolute Value- The distance a number is from zero on the number line. An absolute value is never negative. Examples: $|-5| = 5$ and $|5| = 5$

ADDING INTEGERS

SAME SIGN- Add and Keep the Sign!

Add the absolute value of the numbers and keep the same sign.

(positive) + (positive) = Positive

$(+4) + (+5) = +9$

(negative) + (negative) = Negative

$(-4) + (-5) = -9$

DIFFERENT SIGNS- Subtract and Keep the Sign of the Bigger Number!

Subtract the absolute value of the numbers and keep the sign of the bigger number.

$(-4) + (+5) = +1$
$(+4) + (-5) = -1$

SUBTRACTING INTEGERS

Do not subtract integers. You must change the signs:
"Add the Opposite"

KEEP- Keep the sign of the first number

CHANGE- Change the subtraction sign to addition

CHANGE- Change the sign of the second number to the opposite sign. If it is positive- change to negative. If it is negative- change to positive.

$(+4) - (-4)$

Keep change change
$(+4) + (+4)$

NOW USE THE RULES FOR ADDING:
SAME SIGN- Add absolute values and keep sign:

$(+4) + (+4) = 8$

MULTPLYING INTEGERS

SAME SIGNS- POSITIVE
Multiply the numbers. Answer will be positive.

$(-5) \times (-5) = +25$

DIFFERENT SIGNS- NEGATIVE
Multiply the numbers. Answer will be negative

$(+5) \times (-5) = -25$

DIVIDING INTEGERS

SAME SIGNS- POSITIVE
Divide the numbers. Answer will be positive.

$(-5) \div (-5) = +1$

DIFFERENT SIGNS- NEGATIVE
Divide the numbers. Answer will be negative

$(+5) \div (-5) = -1$

Order of Operations: tells us the order to evaluate an expression. We can remember the order with the acronym **PEMDAS** (Parentheses-> Exponents -> Multiplication & Division -> Addition & Subtraction)

1. **Evaluate each of the following expressions:**
   a. $3 - 4 + 5 - 6$

   b. $3(-4 + 5) - 6$

   c. $3 - 4(5 - 6)$

   d. $-5 + (-5) + (-5)(-5)$

2. **Add parentheses to make the expressions equal different numbers:**
   a. $12 \div 4 - 1 + 2$

   b. $12 \div 4 - 1 + 2$

   c. $12 \div 4 - 1 + 2$

   d. $12 \div 4 - 1 + 2$

3. **Solve each equation below:**
   a. $5(x + 1) = 25$

   b. $5x + 1 = 26$

   c. $-5(x + 1) = 25$

   d. $-5x + 1 = 26$

   e. $\frac{x}{5} + 1 = 7$

   f. $\frac{x+1}{5} = 7$

   g. $\frac{x}{-5} + 1 = 7$

   h. $\frac{x+1}{-5} = 7$