

Algebra I
Notes 3.1 Adding Integers

Objectives:

- Know the opposite or additive inverse of a number.
- Use the absolute value operation.
- Add two or more integers.

Two numbers are **opposites** or **additive inverses** if their sum is zero.

The **opposites** or **additive inverses** of these numbers are:

2 _____ -2 _____ 4 _____ -4 _____ -100 _____ 0 _____

The **absolute value** of a number (symbol: $| |$) is always **positive** (or zero).

If a number is **positive**, its absolute value is _____.

If a number is **negative**, its absolute value is _____.

The **absolute value** of these numbers are:

$|-12| =$ _____ $|-2| =$ _____ $|4| =$ _____ $|-4| =$ _____
 $|-100| =$ _____ $|0| =$ _____ $|102| =$ _____ $|-102| =$ _____

Rules for Adding Integers:

A. **Like Signs** (both positive or both negative):

1. Add the absolute values of both integers.
2. Use the sign common to both integers.

The sum of a positive and a positive is a _____.

The sum of a negative and a negative is a _____.

B. **Different Signs** (one positive and one negative):

1. Subtract the absolute values of both integers.
2. Use the sign of the integer with the greater absolute value.

Find each sum (the signs are the same):

$$2 + 4 = \quad -2 + -4 = \quad -10 + -2 = \quad -12 + -3 = \quad 14 + 5 =$$

Find each sum (the signs are different):

1. $|-24| =$ $|4| =$ The number with the greater absolute value is ____.
The sign of the sum will be ____.

$$-24 + 4 =$$

2. $|-20| =$ $|40| =$ The number with the greater absolute value is ____.
The sign of the sum will be ____.

$$-20 + 40 =$$

3. $|-5| =$ $|3| =$ The number with the greater absolute value is ____.
The sign of the sum will be ____.

$$-5 + 3 =$$

4. $|8| =$ $|-14| =$ The number with the greater absolute value is ____.
The sign of the sum will be ____.

$$8 + (-14) =$$

5. $|34| =$ $|-24| =$ The number with the greater absolute value is ____.
The sign of the sum will be ____.

$$34 + (-24) =$$

6. $|-8| =$ $|11| =$ The number with the greater absolute value is ____.
The sign of the sum will be ____.

$$-8 + 11 =$$

Addition has the property of being **associative**. Whenever you add integers, the order of addition or grouping of integers does not matter. $(1 + 2) + 3 = 6$ $1 + (2 + 3) = 6$ $(2 + 3) + 1 = 6$