

INTEGER OPERATIONS

Things to keep in mind:

- A number without a sign in front of it is a positive number: $7 = +7$
- Absolute value is never negative: $|9| = 9$; $|-9| = 9$
- The opposite of a number is the same distance from 0 on the number line, but on the opposite side of it.

Addition

Do the numbers have the SAME SIGN?	
YES – Same Signs: Add and keep the sign	NO – Different Signs: Subtract the absolute values and keep the sign of the number with the larger absolute value
$-4 + (-5) = -9$	$4 + (-7) = -3$
$2 + 6 = 8$	$-3 + 9 = 6$

Subtraction

Subtract means: ADD THE OPPOSITE.

- First, **ADD THE OPPOSITE** of the second number to the first number.
- Then, solve the **ADDITION** problem using the rules above.

Example: $-8 - (-2) = -8 + (+2) = -6$

1. The first number stays the same. -8
2. Change the operation to addition. $-8 +$
3. Switch the sign of the second number. $-8 + (+2)$
4. Follow the rules for addition $-8 + (+2) = -6$

Multiplication or Division

Use 2 steps:

1. Determine the sign.
2. Do the multiplication or division without any signs.

Do the numbers have the SAME SIGN?	
YES – Same Signs: The answer is always positive.	NO – Different Signs: The answer is always negative.
$-4 \times (-5) = 20$	$3 \times (-7) = -21$
$-8 \div (-2) = 4$	$-9 \div 3 = -3$

Integer Operations

Integers are the counting numbers and their opposites and zero.

Example: 1, 2, 3, 4, -1, -2, -3, -4, -5, 0, 5, ... and so on.

Adding Integers:

1. $++ = +$ (Example: $3 + 4 = 7$)

Positive + Positive = Positive

2. $-- = -$ (Example: $-3 + -4 = -7$)

Negative + Negative = Negative

3. $-+ =$ *OR* $+- =$

When adding two different signs, subtract the 2 numbers and carry the sign of the greater number.

(Example: $-3+4 = 1$ OR $3+-4 = -1$)

Subtracting Integers:

To subtract 2 integers, change the sign of the second number to its opposite sign, and then follow the Adding Integer rules.

Example: $3 - 4 = 3 + -4 = -1$

$-3 - 4 = -3 + -4 = -7$

$3 - -4 = 3 + 4 = 7$

Multiplication and Division of Integers :

$+\cdot + = +$

$-\cdot - = +$

$-\cdot + = -$

$+\cdot - = -$

Same For Division:

$+\div + = +$

$-\div - = +$

$-\div + = -$

$+\div - = -$