

ADDITION AND SUBTRACTION OF WHOLE NUMBERS

Addition and Subtraction of Whole Numbers

Addition

$$\begin{array}{rcccl} 5 & + & 2 & = & 7 \\ \text{Addend} & & \text{Addend} & & \text{Sum} \end{array}$$

Hundreds	Tens	Ones
1	1	
3	5	9
+ 4	7	8
8	3	7

→ **Add the Ones' Column**

$$9 + 8 = 17 \text{ (1 Ten + 7 Ones)}$$

Write the **7** in the ones' Column and carry the **1** ten to the tens' column

→ **Add the Tens' Column**

$$1 + 5 + 7 = 13 \text{ (1 hundred + 3 tens)}$$

Write the **3** in the tens' column and carry the **1** hundred to the hundred to the hundreds' column

→ **Add the Hundreds' Column**

$$1 + 3 + 4 = 8 \text{ (8 hundreds)}$$

Write the **8** in the hundreds' column

Evaluate $a + b$ when $a = 678$ and $b = 294$

→ Replace **a** with **678** and **b** with **294** **$a + b = 678 + 294$**

→ Arrange the numbers vertically

$$\begin{array}{r} 678 \\ + 294 \\ \hline 972 \end{array}$$

→ Add

- The Addition Property of Zero

$$5 + 0 = 5 \quad \text{or} \quad 0 + 5 = 5 \quad \mathbf{a + 0 = a} \quad \text{or} \quad \mathbf{0 + a = a}$$

- Commutative Property of Addition

$$5 + 7 = 7 + 5 \quad \mathbf{a + b = b + a}$$

$$12 = 12$$

- Associative Property of Addition

$$(2 + 3) + 4 = 2 + (3 + 4) \quad \mathbf{(a + b) + c = a + (b + c)}$$

$$5 + 4 = 2 + 7$$

$$9 = 9$$

Subtraction

$$\begin{array}{r} 8 \\ - 5 \\ \hline 3 \end{array}$$

Minuend - **Subtrahend** = **Difference**

	Hundreds	Tens	Ones
	3	15	9
-	12	7	8
	0	8	1

→ **Subtract the Ones' Column**

$$8 + ? = 9 \text{ (We need to add 1 to 8 to get 9)}$$

Write the **1** in the ones' Column

→ **Subtract the Tens' Column**

$7 + ? = 5$ (**5** is smaller than 7, so we will borrow 1 hundred, convert it to ten tens and add it to the 5 there to get **15**, which is now larger than 7)

Then we will add a 1 in front of the 2 (in the hundreds' column)

Like the example above

$$7 + ? = 15 \text{ (We need to add 8 to get 15)}$$

Write the **8** in the tens' column

→ **Add the Hundreds' Column**

$$3 + ? = 3 \text{ (We need to add 0 to get 3)}$$

$$(1+2=3)$$

Write the **0** in the hundreds' column

Phrases that indicate subtraction:

10 minus 3	$10 - 3$
8 less 4	$8 - 4$
2 less than 9	$9 - 2$
The difference between 6 and 1	$6 - 1$
7 decreased by 5	$7 - 5$