ADDITION AND SUBTRACTION OF WHOLE NUMBERS

Addition and Subtraction of Whole Numbers

Addition

\[
\begin{array}{c}
5 \\
+ 2 \\
\hline
7
\end{array}
\]

Addend  Addend  Sum

\[
\begin{array}{ccc}
\text{Hundreds} & \text{Tens} & \text{Ones} \\
1 & 1 & \\
3 & 5 & 9 \\
+ 4 & 7 & 8 \\
8 & 3 & 7
\end{array}
\]

→ 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 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 \( b = 294 \)

\[
\rightarrow \text{Replace } a \text{ with } 678 \text{ and } b \text{ with } 294 \quad a + b = 678 + 294
\]

\[
\rightarrow \text{Arrange the numbers vertically}
\]

\[
\begin{array}{c}
678 \\
+ 294 \\
\hline
972
\end{array}
\]

- **The Addition Property of Zero**
  \[ 5 + 0 = 5 \quad \text{or} \quad 0 + 5 = 5 \quad a + 0 = a \quad \text{or} \quad 0 + a = a \]

- **Commutative Property of Addition**
  \[ 5 + 7 = 7 + 5 \quad a + b = b + a \]
  \[ 12 = 12 \]

- **Associative Property of Addition**
  \[ (2 + 3) + 4 = 2 + (3 + 4) \quad (a + b) + c = a + (b + c) \]
  \[ 5 + 4 = 2 + 7 \]
  \[ 9 = 9 \]

**Subtraction**

\[
\begin{array}{c}
8 \\
- 5 \\
\hline
3
\end{array}
\]

Minuend - Subtrahend = Difference

Hundreds Tens Ones

\[
\begin{array}{c}
3 \\
5 \\
9 \\
- 2 \\
7 \\
8 \\
0 \\
8 \\
1
\end{array}
\]
→ Subtract the Ones’ Column
8 + ? = 9 (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 (We need to add 8 to get 15)
Write the 8 in the tens’ column

→ Add the Hundreds’ Column
3 + ? = 3 (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