CHAPTER 2 ADDITION

Specific outcomes

- Add whole numbers using expanded notation and vertical addition.
- Add whole numbers using the number line.
- Apply addition using the number line to solve problems in real life situation.
- Solve word problems involving addition.

CONCISE INFORMATION

A. DEFINITION

Addition means putting things together. The answer that we get after adding numbers is called **sum.**

B. ADDITION USING EXPANDED NOTATION

Example 1

Find the sum of the following using expanded notation.

234 + 133

Solution

Proceed as follows:

$$\begin{aligned} 234 &= 200 + 30 + 4 \\ 133 &= +\underline{100 + 30 + 3} \\ &\quad\ \underline{300 + 60 + 7} \\ &= \mathbf{367} \end{aligned}$$

Example 2

Find the sum of the following using expanded notation.

51 364 + 32 583

Solution

Proceed as follows:

$$\begin{aligned} 51\,364 &= 50\,000 + 1\,000 + 300 + 60 + 4 \\ 32\,583 &= +\underline{30\,000 + 2\,000 + 500 + 80 + 3} \\ &\quad\ \underline{80\,000 + 3\,000 + 800 + 140 + 7} \\ &= 80\,000 + 3\,000 + 900 + 40 + 7 \\ &= \mathbf{83\,947} \end{aligned}$$

Note: The 100 from 140 is taken to the hundreds increasing 800 to 900 remaining with 40 from 140

C. VERTICAL ADDITION

We can use vertical addition to add easily complicated numbers. Always remember to carry the units to the tens, the tens to the hundreds, the hundreds to the thousands and so on. Also take note of what you carry by indicating it below the answer.

Example 3

Find the sum of the following: 716 375 + 175 467 + 378 735

Solution

Proceed as follows: Start adding the numbers from the units on the right going to the left.

$$\begin{array}{r} 716\ 375 \\ 175\ 467 \\ +\ 378\ 735 \\ \hline \mathbf{1\ 270\ 577} \\ \textit{1 2 1 1 1} \end{array}$$

Example 4

Add 102 053 351 + 23 709 126

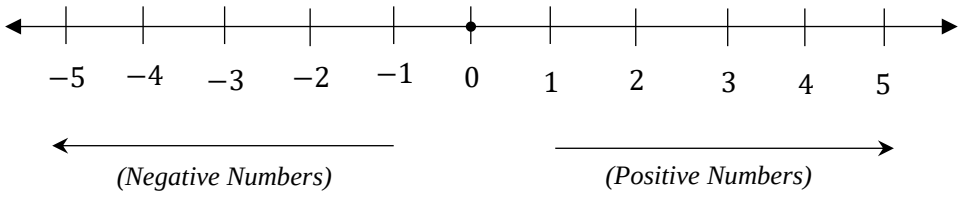
Solution

Proceed as follows: Start adding the numbers from the units on the right going to the left.

$$\begin{array}{r} 102\ 053\ 351 \\ +\ 23\ 709\ 126 \\ \hline \mathbf{125\ 762\ 477} \\ \mathbf{1} \end{array}$$

D. ADDITION ON THE NUMBER LINE

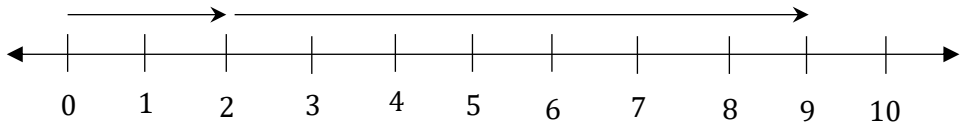
A number line consists of both positive and negative numbers including zero (0), which is the mid-point. All numbers go up to infinite (i.e they are endless). Positive numbers are all numbers to the ***right*** of zero. Negative numbers are all numbers to the ***left*** of zero.



- The number increases in magnitude as you move further to the right.
  E.g $-1 > -2$, $0 > -1$, $1 > 0$, $2 > 1$, $3 > 2$, $4 > 3$ etc
- The number decreases in magnitude as you move further to the left.
  E.g $-1 < 0$, $-2 < -1$, $-3 < -2$, $-4 < -3$, $-5 < -4$ etc

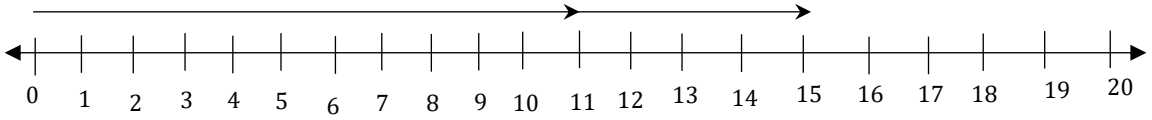
Example 5
Add $2 + 7$ on the number line.

Solution
Proceed as follows:
Step 1: Start from zero and move two (2) steps to the right.
Step 2: Move a further seven (7) steps from two to the right.
The digit on which the second arrow reaches is the answer. i.e **9**



Example 6
Add $11 + 4$ on the number line.

Solution
Proceed as follows:
Step 1: start from zero and move eleven (11) steps to the right.
Step 2: move a further four (4) steps from eleven to the right.
The digit on which the second arrow reaches is the answer. i.e **15**



$11 + 4 = \mathbf{15}$

E. WORD PROBLEMS INVOLVING ADDITION

Example
Mr Phiri, Mr Choma and Mr Katongo wanted to become members of parliament. In an election, they got 23 109 votes, 5 275 votes and 11 871 votes respectively. What was the total number of votes casted?

Solution

Proceed as follows:

2 3 1 0 9

1 1 8 7 1

\+ 5 2 7 3

4 0 2 5 3