Operations on Whole Numbers

Exercise 4.1

Question: 1

Fill in the blanks to make each of the following a true statement:

Solution:

(i) 359 + 476 = 476 + 359 (Commutativity)

(ii) 2008 + 1952 = 1952 + 2008 (Commutativity)

(iii) 90758 + 0 = 90758 (Additive identity)

(iv) 54321 + (489 + 699) = 489 + (54321 + 699) (Associativity)

Question: 2

Add each of the following and check by reversing the order of addends:

Solution:

(i) 5628 + 39784 = 45412

And,

39784 + 5628 = 45412

(ii) 923584 + 178 = 923762

And,

178 + 923584 = 923762

(iii) 15409 + 112 = 15521

And,

112 + 15409 = 15521

(iv) 2359 + 641 = 3000

And,

641 + 2359 = 3000

Question: 3

Determine the sum by suitable rearrangements:

Solution:

(i) 953 + 407 + 647

Therefore, 53 + 47 = 100

Therefore, (953 + 647) + 407 = 1600 + 407 = 2007

(ii) 15409 + 178 + 591 + 322

409 + 91 = 500

And,

78 + 22 = 100

Therefore, (15409 + 591) + (178 + 322) = (16000) + (500)

= 16500

(iii) 2359 + 10001 + 2641 + 9999

Therefore, 59 + 41 = 100

And, 99 + 01 = 100

Therefore, (2359 + 2641) + (10001 + 9999)

= (5000) + (20000)

= 25000

(iv) 1 + 2 + 3 + 4 + 1996 + 1997 + 1998 + 1999

Therefore, 99 + 1 = 100

98 + 2 = 100

97 + 3 = 100

And

96 + 4 = 100

Therefore, (1 + 1999) + (2 + 1998) + (3 + 1997) + (4 + 1996)

= 2000 + 2000 + 2000 + 2000

= 8000

(v) 10 + 11 + 12 + 13 + 14 + 15 + 16 + 17 + 18 + 19 + 20

10 + 20 = 30

1 + 9 = 10

2 + 8 = 10

3 + 7 = 10

And,

4 + 6 = 10

Therefore, (10 + 20) + (11 + 19) + (12 + 18) + (13 + 17) + (14 + 16)

= 30 + 30 + 30 + 30 + 30 + 15

= 150 + 15

= 165

Question: 4

Which of the following statements are true and which are false?

(i) The sum of two odd numbers is an odd number.

(ii) The sum of two odd numbers is an even number.

(iii) The sum of two even numbers is an even number.

(iv)The sum of two even numbers is an odd number.

(v) The sum of an even number and an odd number is an odd number.

(vi)The sum of an odd number and an even number is an even number.

(vii) Every whole number is a natural number.

(viii) Every natural number is a whole number.

(ix) There is a whole number which when added to a whole number, gives that number

(x) There is a natural number which when added to a natural number, gives that number.

(xi) Commmutativity and associativity are properties of whole numbers.

(xii) Commmutativity and associativity are properties of addition of whole number.

Solution:

(i) FALSE (3 + 5 = 8; 8 is an even number)

(ii) TRUE (3 + 5 = 8; 8 is an even number)

(iii) TRUE (2 + 4 = 6; 6 is an even number)

(iv) FALSE (2 + 4 = 6; 6 is an even number)

(v) TRUE (2 + 3 = 5; 5 is an odd number)

(vi) FALSE (3 + 2 = 5; 5 is not an even number)

(vii) FALSE [The whole number set is {0, 1, 2, 3, 4 …), whereas the natural number set is {1, 2, 3, 4 …)]

(viii) TRUE [The whole number set is {0, 1, 2, 3, 4 …), whereas the natural number set is {1, 2, 3, 4 …)]

(ix) TRUE [That number is zero.]

(x) FALSE

(xi) FALSE

(xii) TRUE