Playing with Numbers Class 8 Extra Questions

Very Short Answer Type

Question 1.Write the following numbers in generalised form.

(a) ab (b) 85 (c) 132 (d) 1000

Solution:

(a) ab = 10 × a + 1 × b = 10a + b

(b) 85 = 10 × 8 + 1 × 5 = 10 × 8 + 5

(c) 132 = 100 × 1 + 10 × 3 + 1 × 2 = 100 × 1 + 10 × 3 + 2

(d) 1000 = 1000 × 1

Question 2.Write the following in usual form.

(a) 3 × 100 + 0 × 10 + 6

(b) 5 × 1000 + 3 × 100 + 2 × 10 + 1

Solution:

(a) 3 × 100 + 0 × 10 + 6 = 300 + 0 + 6 = 306

(b) 5 × 1000 + 3 × 100 + 2 × 10 + 1 = 5000 + 300 + 20 + 1 = 5321

Questions 3.Which of the following numbers are divisible by 3?

(i) 106 (ii) 726 (iii) 915 (iv) 1008

Solution:

(i) Sum of the digits of 106 = 1 + 0 + 6 = 7 which is not divisible by 3.

Hence 106 is not divisible by 3.

(ii) Sum of the digits of 726 = 7 + 2 + 6 = 15 which is divisible by 3.

Hence 726 is divisible by 3.

(iii) Sum of the digits of 915 = 9 + 1 + 5 = 15 which is divisible by 3.

Hence 915 is divisible by 3.

(iv) Sum of the digits of 1008 = 1 + 0 + 0 + 8 = 9 which is divisible by 3.

Hence 1008 is divisible by 3.

Question 4.Prove that the sum of the given numbers and the numbers obtained by reversing their digits is divisible by 11.

(a) 89 (b) ab (c) 69 (d) 54

Solution:(a) Given number = 89

Number obtained by reversing the order of digits = 98

Sum = 89 + 98 = 187 ÷ 11 = 17

Hence, the required number is 11.

(b) Given number = ab = 10a + b

Number obtained by reversing the digits = 10b + a

Sum = (10a + b) + (10b + a)

= 10a + b + 10b + a

= 11a + 11b

= 11(a + b) ÷ 11

= a + b

(c) Given number = 69
Number obtained by reversing the digits = 96
Sum = 69 + 96 = 165 ÷ 11 = 15
Hence, the required number is 11.
(d) Given number = 54
Number obtained by reversing the digits = 45
Sum = 54 + 45 = 99 ÷ 11 = 9
Hence, the required number is 11.
Question 5.Prove that the difference of the given numbers and the numbers obtained by reversing their digits is divisible by 9.
(i) 59 (ii) xy (iii) xyz (iv) 203
Solution:
(i) Given number = 59
Number obtained by reversing the digits = 95
Difference = 95 – 59 = 36 ÷ 9 = 4
Hence, the required number is 9.
(ii) Given number = xy = 10x + y
Number obtained by reversing the digits = 10y + x
Difference = (10x + y) – (10y + x)
= 10x + y – 10y – x
= 9x – 9y
= 9(x – y) ÷ 9
= x – y
Hence, the required number is 9.
(iii) Given number = xyz = 100x + 10y + z
Number obtained by reversing the digits = 100z + 10y + x
Difference = (100x + 10y + z) – (100z + 10y + x)
= 100x + 10y + z – 100z – 10y – x
= 99x – 99z
= 99(x – z)
= 99(x – 2) ÷ 9
= 11 (x – z)
Hence, the required number is 9.
(iv) Given number = 203
Number obtained by reversing the digits = 302
Difference = 302 – 203 = 99 ÷ 9 = 11
Hence, the required number is 9.
Question 6.If a, b, c are three digits of a three-digit number, prove that abc + cab + bca is a multiple of 37.
Solution:
We have abc + cab + bca
abc = 100a + 10b + c
cab = 100c + 10a + b
bca = 100b + 10c + a

Adding abc + cab + bca = 111a +111b + 111c
= 111 (a + b+ c)
= 37 × 3 (a + b + c) which is a multiple of 37.
Hence proved.

Question 7.Complete the magic square given below so that the sum of the numbers in each row or in each column or along each diagonal is 15.

8	1	A
B	5	C
D	E	F

Solution:
(i) A = 15 – (8 + 1) = 15 – 9 = 6
(ii) F = 15 – (8 + 5) = 15 – 13 = 2
(iii) C = 15 – (A + F) = 15 – (6 + 2) = 15 – 8 = 7
(iv) E = 15 – (1 + 5) = 15 – 6 = 9
(v) D = 15 – (E + F) = 15 – (9 + 2) = 15 – 11 = 4
(vi) B = 15 – (8 + 4) = 15 – 12 = 3
Hence the required square is

8	1	**6**
3	5	**7**
4	**9**	**2**