Exercise 2B

(iv) 467*91

Sum of the digits at odd places 1 + * + 6 = 7 + *

Sum of the digits at even places 9 + 7 + 4 = 20

Difference = sum of odd terms – sum of even terms

= (7 + *) – 20

= * – 13

Now, (* –13) will be divisible by 11 if * = 2.

i.e., 2– 13 = –11

–11 is divisible by 11.

∴ * = 2

Hence, the number is 467<u>2</u>91.

(v) 1723*4

Sum of the digits at odd places 4+ 3+ 7= 14

Sum of the digits at even places *+2+1 = 3 + *

Difference = sum of odd terms – sum of even terms

= 14 – (3 + *)

= 11 – *

Now, (11 – *) will be divisible by 11 if * = 0.

i.e., 11 – 0 = 11

11 is divisible by 11.

∴ * = 0

Hence, the number is 1723<u>0</u>4.

(vi) 9*8071

Sum of the digits at odd places 1+0+* = 1 + *

Sum of the digits at even places 7 + 8 + 9 = 24

Difference = sum of odd terms – sum of even terms

=1 + * – 24

= * – 23

Now, (* – 23) will be divisible by 11 if * = 1.

i.e., 1 – 23 = –22

–22 is divisible by 11.

∴ * = 1

Hence, the number is 9<u>1</u>8071.

Q14

Answer :

(i) 10000001 by 11

10000001 is divisible by 11.

Sum of digits at odd places = (1 + 0 + 0 + 0) = 1

Sum of digits at even places = (0 + 0 + 0 + 1) = 1

Difference of the two sums = (1 − 1) = 0, which is divisible by 11.

(ii) 19083625 by 11

19083625 is divisible by 11.

Sum of digits at odd places = (5 + 6 + 8 + 9) = 28

Sum of digits at even places = (2 + 3 + 0 + 1) = 6

Difference of the two sums = (28 − 6) = 22, which is divisible by 11.

(iii) 2134563 by 9

2134563 is not divisible by 9.

It is because the sum of its digits, 2 + 1 + 3 + 4 + 5 + 6 + 3, is 24, which is not divisible by 9.

(iv) 10001001 by 3

10001001 is divisible by 3.

It is because the sum of its digits, 1 + 0 + 0 + 0 + 1 + 0 + 0 + 1, is 3, which is divisible by 3.

(v) 10203574 by 4

10203574 is not divisible by 4.

It is because the number formed by its tens and the ones digits is 74, which is not divisible by 4.

(vi) 12030624 by 8

12030624 is divisible by 8.

It is because the number formed by its hundreds, tens and ones digits is 624, which is divisible by 8.

Q15

Answer :

A number between 100 and 200 is a prime number if it is not divisible by any prime number less than 15.

Similarly, a number between 200 and 300 is a prime number if it is not divisible by any prime number less than 20.

(i) 103 is a prime number, because it is not divisible by 2, 3, 5, 7, 11 and 13.

(ii) 137 is a prime number, because it is not divisible by 2, 3, 5, 7 and 11.

(iii) 161 is a not prime number, because it is divisible by 7.

(iv) 179 is a prime number, because it is not divisible by 2, 3, 5, 7, 11 and 13.

(v) 217 is a not prime number, because it is divisible by 7.

(vi) 277 is a prime number, because it is not divisible by 2, 3, 5, 7, 11, 13, 17 and 19.

(vii) 331 is a prime number, because it is not divisible by 2, 3, 5, 7, 11, 13, 17 and 19.

(viii) 397 is a prime number, because it is not divisible by 2, 3, 5, 7, 11, 13, 17 and 19.

Q16

Answer :

(i) 14 is divisible by 2, but not by 4.

(ii) 12 is divisible by 4, but not by 8.

(iii) 24 is divisible by both 2 and 8, but not by 16.

(iv) 30 is divisible by both 3 and 6, but not by 18.

Q17

Answer :

(i) If a number is divisible by 4, it must be divisible by 8. False
Example: 28 is divisible by 4 but not divisible by 8.

(ii) If a number is divisible by 8, it must be divisible by 4. True
Example: 32 is divisible by both 8 and 4.

(iii) If a number divides the sum of two numbers exactly, it must exactly divide the numbers separately. False
Example: 91 (51 + 40) is exactly divisible by 13. However, 13 does not exactly divide 51 and 40.

(iv) If a number is divisible by both 9 and 10, it must be divisible by 90. True
Example: 900 is both divisible by 9 and 10. It is also divisible by 90.

********** END **********