Exercise 2.5

Q.1 Test the divisibility of the following numbers by 2.

(i) 6520 (ii) 984325 (iii) 367314

Sol: (i) 6520

In 6520, unit digit is 0, it is divisible by 2.

(ii) In 984325, unit digit is not even, so it is not divisible by 2.

(iii) In 367314, unit digit is 4 (even), it is divisible by 2.

Q.2 Test the divisibility of the following numbers by 3.

(i) 70335 (ii) 607439 (iii) 9082746

Sol: (i) 70335

here, sum of digits = 7+0+3+3+5 = 18

$\because$ 18 is divisible by 3,

$\therefore$ 70335 is also divisible by 3.

(ii) 607439 : Sum of digits = 6+0+7+4+3+9 = 29

$\because$ 29 is not divisible by 3

$\therefore$ 607439 is also not divisible by 3.

(iii) 9082746

Sum of digits = 9+0+8+2+7+4+6

= 36, divisible by 3.

∴ 9082746 is divisible by 3.

Q.3 Test the divisibility of the following numbers by 6.

(i) 7020 (ii) 56423 (iii) 732510

Solution: As a number is divisible by 6 if it is divisible by 2 and 3.

(i) 7020, unit digit is zero, divisible by 2

also 7+0+2+0 = 9, div. by 3.

∴ 7020 is divisible by 6.

(ii) 56423, here unit digit is 3, so 56423 is not divisible by 2

also 5+6+4+2+3 = 20, not divisible by 3.

∴ 56423 is not divisible by 6.

(iii) 732510: here unit digit is zero

so, it is divisible by 2.

also 7+3+2+5+1+0 = 18, divisible by 3.

∴ 732510 divisible by 6.

Q.4 Test the divisibility of the following numbers by 4.

(i) 786532 (ii) 1020531 (iii) 9801523

Sol: A number is divisible by 4 if last two digits are divisible by 4.

(i) In 786532, 32 is divisible by 4.

∴ 786532 is divisible by 4.

(ii) In 1020531, 31 is not divisible by 4.

∴ 1020531 is not divisible by 4.

(iii) In 9801523, 23 is not divisible by 4

∴ 9801523 is not divisible by 4.

Q.5 Test the divisibility of the following numbers by 8.

(i) 8364 (ii) 7314 (iii) 36712

Sol: We know that a number is divisible by 8 if the number formed by last three digits is divisible by 8.

(i) In 8364,

Since 364 is not divisible by 8.

∴ 8364 also not divisible by 8.

(ii) 7314 The last three digits 314, not divisible by 8.

∴ 7314 is also not divisible by 8.

(iii) 36712 : The last three digits 712, divisible by 8

∴ 36712 is also divisible by 8.

Q.6 Test the divisibility of following numbers by 9.

(i) 187245 (ii) 3478 (iii) 547218

Sol: We know that a number is divisible by 9 if sum of digits is divisible by 9.

(i) Given number = 187245

Sum of digits = 1+8+7+2+4+5 = 27, which is divisible by 9

∴ 187245 also divisible by 9.

(ii) Given number = 3478

Sum of digits = 3+4+7+8 = 22, not divisible by 9

∴ 3478 not divisible by 9.

(iii) Given number = 547218

Sum of digits = 5+4+7+2+18

= 27, divisible by 9.

∴ 547218 divisible by 9.

Q.7 Test the divisibility of following numbers by 11.

(i) 5335 (ii) 70169803 (iii) 10000001

Solution: A number is divisible by 11, if the difference of the sum of digits in odd places and sum of digits in even places is either 0 or multiple of 11.

(i) 5335 Sum of digits in odd Places = 5+3 = 8

Sum of digits in even places = 3+5 = 8

Difference = 8-8 = 0

∴ Number is divisible by 11.

(ii) 70169803.

Sum of digits in odd Places = 3+8+6+0 = 17

Sum of digits in even Places = 0+9+1+7 = 17

Difference = 17-17 = 0

∴ Number is divisible by 11

(iii) 10000001

Sum of digits in odd places = 1+0+0+0 = 1

Sum of digits in even places = 0+0+0+1 = 1

Difference = 1-1 = 0

∴ Number is divisible by 11.

Q8 In each of the following numbers, replace * by the smallest number to make it divisible by 3.

Ans (i) 75*5 (ii) 35*64 (iii) 18*71

Sol: (i) In 75*5

Sum of digits = 7+5+5 = 17

∴ Smallest number that should be added to 17 to get multiple of 3 is 1.

∴ * Replaced by 1.

(ii) 35*64 : Sum of digits = 3+5+6+4 = 18

∵ It is already divisible by 3.

∴ * should by replaced by 0.

(iii) 18*71 Sum of digits = 1+8+7+1

= 17

Next Multiple of 3 = 18

∴ required number = 18-17

= 1

Q9 In each of the following numbers replace * by the smallest number to make it divisible by 9.

(i) 67*19 (ii) 66784* (iii) 538*8

Solution (i) 67*19

Sum of digits = 6+7+1+9 = 23

next Multiple of 9 is 27

∴ * should be replaced by 27−23 = 4

(ii) 66784* : Sum of digits = 6+6+7+8+4
= 31

next Multiple of 9 is 36

∴ * should be replaced by 36−31 = 5

(iii) 538*8 : Sum of digits = 5+3+8+8
= 24

next Multiple of 9 is 27

∴ * should be replaced by 27−24 = 3

Q.10 In each of the following numbers replace * by the smallest number to make it divisible by 11.

(i) 86*72 (ii) 467*91 (iii) 9*8071

Sol: (i) 86*72

Sum of digits in odd places
= 8 + Missing number + 2
= 10 + Missing number

Sum at even places = 6+7 = 13

Difference. If we replace Missing number by 3, then difference becomes zero.

here required digit is 0.

(ii) 467 * 91

Sum of digits at odd places

= 1 + Missing no. + 6 = 7 + Missing number

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

Difference = 20 − (7 + Missing number)

= 13 − Missing number.

If Missing number is replaced by 2, then it becomes multiple of 11

∴ required number is 2.

(iii) 9 * 8071

Sum of digits at odd places = 1 + 0 + Missing number.

= 1 + Missing number.

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

Difference = 24 − (1 + Missing number)

= 23 − Missing number.

If Missing no. is replaced by 1 i.e

23 − 1 = 22 is divisible by 11.

∴ required number is 1

Q.11 Give an example of a number which is divisible by

(i) 2 but not by 4 (ii) 3 but not by 6.

(iii) 4 but not by 8 (iv) both 4 and 8 but not by 32

Sol (i) 6 is divisible by 2 but not by 4.

(ii) 9 is divisible by 3 but not by 6

(iii) 12 is divisible by 4 but not by 8.

(iv) 48 is divisible by 4 and 8 but not by 32.

Q.12 Which of the following statements are true.

(i) If a number is divisible by 3, it must be divisible by 9.

(ii) If a number is divisible by 9, it must be divisible by 3.

(iii) If a number is divisible by 4, it must be divisible by 8.

(iv) If a number is divisible by 8, it must be divisible by 4.

(v) A number is divisible by 18, if it is divisible by 3 and 6.

(vi) If a number is divisible by 9 and 10, it must be divisible by 90.

(vii) If a number is exactly divides the sum of two numbers, it must exactly divide the numbers separate

(viii) If a number divides three numbers exactly, it must Devide their sum exactly.

(ix) If two numbers are Coprime, at least one of them must be a prime number.

(x) The sum of two consecutive odd numbers is always divisible by 4.

Answers (i) False (ii) True (iii) False

(iv) True (v) False (vi) True (vii) False

(viii) True (ix) False (x) True

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