Here, the sum of the digits in the given number = 9 + 0 + 8 + 2 + 7 + 4 + 6 = 36 which is divisible by 3.

Thus, 90, 82,746 is divisible by 3.

Question: 3

Test the divisibility of the following numbers by 6:

Solution:

Rule: A number is divisible by 6 if it is divisible by 2 as well as 3.

(i) 7020

Here, the units digit = 0

Thus, the given number is divisible by 2.

Also, the sum of the digits = 7 + 0 + 2 + 0 = 9 which is divisible by 3. So, the given number is divisible by 3. Hence, 7,020 is divisible by 6.

(ii) 56423

Here, the units digit = 3 Thus, the given number is not divisible by 2.

Also, the sum of the digits = 5 + 6 + 4 + 2 + 3 = 20 which is not divisible by 3.

So, the given number is not divisible by 3. Since 3,56,423 is neither divisible by 2 nor by 3, it is not divisible by 6.

(iii) 732510

Here, the units digit = 0

Thus, the given number is divisible by 2.

Also, the sum of the digits = 7 + 3 + 2 + 5 + 1 + 0 = 18 which is divisible by 3. So, the given number is divisible by 3.

Hence, 7,32,510 is divisible by 6.

Question: 4

Test the divisibility of the following numbers by 4:

Solution:

Rule: A natural number is divisible by 4 if the number formed by its last two digits is divisible by 4.

(i) 786532

Here, the number formed by the last two digits is 32 which is divisible by 4. Thus, 7,86,532 is divisible by 4.

(ii) 1020531

Here, the number formed by the last two digits is 31 which is not divisible by 4. Thus, 10,20,531 is not divisible by 4.

(iii) 9801523

Here, the number formed by the last two digits is 23 which is not divisible by 4. Thus, 98,01,523 is not divisible by 4.

Question: 5

Test the divisibility of the following numbers by 8:

Solution:

Rule: A number is divisible by 8 if the number formed by its last three digits is divisible by 8.

(i) The given number = 8364

The number formed by its last three digits is 364 which is not divisible by 8. Therefore, 8,364 is not divisible by 8.

(ii) The given number = 7314

The number formed by its last three digits is 314 which is not divisible by 8. Therefore, 7,314 is not divisible by 8.

(iii) The given number = 36712

Since the number formed by its last three digit = 712 which is divisible by 8. Therefore, 36,712 is divisible by 8.

Question: 6

Test the divisibility of the following numbers by 9:

Solution:

Rule: A number is divisible by 9 if the sum of its digits is divisible by 9.

(i) The given number = 187245

The sum of the digits in the given number = 1 + 8 + 7 + 2 + 4 + 5 = 27 which is divisible by 9. Therefore, 1,87,245 is divisible by 9.

(ii) The given number = 3478

The sum of the digits in the given number = 3 + 4 + 7 + 8 = 22 which is not divisible by 9. Therefore, 3,478 is not divisible by 9.

(iii) The given number = 547218

The sum of the digits in the given number = 5 + 4 + 7 + 2 + 1 + 8 = 27 which is divisible by 9. Therefore, 5,47,218 is divisible by 9.

Question: 7

Test the divisibility of the following numbers by 11:

Solution:

(i) The given number is 5,335.

The sum of the digit at the odd places = 5 + 3 = 8

The sum of the digits at the even places = 3 + 5 = 8

Their difference = 8 – 8 = 0

Therefore, 5,335 is divisible by 11.

(ii) The given number is 7,01,69,803.

The sum of the digit at the odd places = 7 + 1 + 9 + 0 = 17

The sum of the digits at the even places = 0 + 6 + 8 + 3 = 17

Their difference = 17 – 17 = 0

Therefore, 7,01,69,803 is divisible by 11.

(iii) The given number is 1,00,00,001.

The sum of the digit at the odd places = 1 + 0 + 0 + 0 = 1

The sum of the digits at the even places = 0 + 0 + 0 + 1 = 1

Their difference = 1 – 1 = 0

Therefore, 1,00,00,001 is divisible by 11.

Question: 8

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

Solution:

We can replace the * by the smallest number to make the given numbers divisible by 3 as follows:

(i) 75*5

75*5 = 7515

As 7 + 5 + 1 + 5 = 18, it is divisible by 3.

(ii) 35*64

35*64 = 35064

As 3 + 5 +6 + 4 = 18, it is divisible by 3.

(iii) 18 * 71

18 * 71= 18171

As 1 + 8 + 1 + 7 + 1 = 18, it is divisible by 3.

Question: 9

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

Solution:

(i) 67 *19

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

The multiple of 9 which is greater than 23 is 27.

Therefore, the smallest required number = 27 – 23 = 4

(ii) 66784 *

Sum of the given digits = 6 + 6 + 7 + 8 + 4 = 31

The multiple of 9 which is greater than 31 is 36.

Therefore, the smallest required number = 36 – 31 = 5

(iii) 538 * 8

Sum of the given digits = 5 + 3 + 8 + 8 = 24

The multiple of 9 which is greater than 24 is 27.

Therefore, the smallest required number = 27 – 24 = 3

Question: 10

In each of the following numbers, replace * by the smallest number to make it divisible by 11:

Solution:

Rule: A number is divisible by 11 if the difference of the sums of the alternate digits is either 0 or a multiple of 11.

(i) 86 x 72

Sum of the digits at the odd places = 8 + missing number + 2 = missing number + 10

Sum of the digits at the even places = 6 + 7 = 13

Difference = [missing number + 10] – 13 = Missing number – 3

According to the rule, missing number – 3 = 0 [Because the missing number is a single digit]

Thus, missing number = 3

Hence, the smallest required number is 3.

(ii) 467 x 91

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

Sum of the digits at the even places = 6 + missing number + 1 = missing number + 7 Difference = 20 – [missing number + 7] = 13 – missing number

According to rule, 13 – missing number = 11 [Because the missing number is a single digit]

Thus, missing number = 2

Hence, the smallest required number is 2.

(iii) 9 x 8071

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

Sum of the digits at the even places = missing number + 0 + 1 = missing number + 1

Difference = 24 – [missing number + 1] = 23 – missing number

According to rule, 23 – missing number = 22 [Because 22 is a multiple of 11 and the missing number is a single digit]

Thus, missing number = 1

Hence, the smallest required number is 1.

Question: 11

Given an example of a number which is divisible by

Solution:

(i) A number which is divisible by 2 but not by 4 is 6.

(ii) A number which is divisible by 3 but not by 6 is 9.

(iii) A number which is divisible by 4 but not by 8 is 28.

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

Question: 12

Which of the following statement are true?

Solution:

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

False. 12 is divisible by 3 but not by 9.

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

True.

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

False. 20 is divisible by 4 but not by 8.

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

True.

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

False. 12 is divisible by both 3 and 6 but it is not divisible by 18.

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

True.

(vii) If a number exactly divides three numbers the sum of two numbers, it must exactly divide the numbers separately.

False. 10 divides the sum of 18 and 2 (i.e., 20) but 10 divides neither 18 nor 2.

(viii) If a number divides three numbers exactly, it must divide their sums exactly.

True.

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

False. 4 and 9 are co-primes and both are composite numbers.

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

True.