

EXERCISE 9(C)

1. Find which of the following numbers are divisible by 2: (i) 352 (ii) 523 (iii) **496** (iv) 649 **Solution:** (i) 352 The given number = 352Digit at unit's place = 2Hence, the number is divisible by 2 (ii) 523 The given number = 523Digit at unit's place = 3Hence, the number is not divisible by 2 (iii) 496 The given number = 496Digit at unit's place = 6Hence, the number is divisible by 2 (iv) 649 The given number = 649Digit at unit's place = 9Hence, the number is not divisible by 2 2. Find which of the following number are divisible by 4: (i) 222 (ii) 532 (iii) **678** (iv) 9232 Solution: (i) 222 The given number = 222The number formed by ten's and unit digit is 22, which is not divisible by 4. Hence, the number is not divisible by 4 (ii) 532 The given number = 532The number formed by ten's and unit digit is 32, which is divisible by 4. Hence, the number is divisible by 4 (iii) 678



The given number = 678 The number formed by ten's and unit digit is 78, which is not divisible by 4 Hence, the number is not divisible by 4 (iv) 9232 The given number = 9232 The number formed by ten's and unit digit is 32, which is divisible by 4 Hence, the number is divisible by 4

3. Find which of the following numbers are divisible by 8:

(i) 324 (ii) 2536 (iii) **92760** (iv) 444320 Solution: (i) 324 The given number = 324The number formed by hundred's, ten's and unit digit is 324, which is not divisible by 8 Hence, 324 is not divisible by 8 (ii) 2536 The given number = 2536The number formed by hundred's, ten's and unit digit is 536, which is divisible by 8 Hence, 2536 is divisible by 8 (iii) 92760 The given number = 92760The number formed by hundred's, ten's and unit digit is 760, which is divisible by 8 Hence, 92760 is divisible by 8 (iv) 444320 The given number = 444320The number formed by hundred's, ten's and unit digit is 320, which is divisible by 8 Hence, 444320 is divisible by 8

4. Find which of the following numbers are divisible by 3:

(i) 221
(ii) 543
(iii) 28492
(iv) 92349
Solution:
(i) 221
The given number = 221



For a number to be divisible by 3, sum of digits must be divisible by 3 Sum of digits = 2 + 2 + 1 = 5Since 5 is not divisible by 3 Hence, 221 is not divisible by 3 (ii) 543 The given number = 543For a number to be divisible by 3, sum of digits must be divisible by 3 Sum of digits = 5 + 4 + 3 = 12Since 12 is divisible by 3 Hence, 543 is divisible by 3 28492 (iii) The given number = 28492For a number to be divisible by 3, sum of digits must be divisible by 3 Sum of digits = 2 + 8 + 4 + 9 + 2 = 25Since 25 is not divisible by 3 Hence, 28492 is not divisible by 3 (iv)92349 The given number = 92349For a number to be divisible by 3, sum of digits must be divisible by 3 Sum of digits = 9 + 2 + 3 + 4 + 9 = 27Since 27 is divisible by 3 Hence, 92349 is divisible by 3

5. Find which of the following numbers are divisible by 9:

(i) 1332 (ii) 53247 (iii) 4968 (iv) 200314 Solution: (i) 1332 The given number = 1332 For a number to be divisible by 9, sum of digits must be divisible by 9 Sum of digits = 1 + 3 + 3 + 2 = 9Since 9 is divisible by 9 Hence, 1332 is divisible by 9 (ii) 53247 The given number = 53247 For a number to be divisible by 9, sum of digits must be divisible by 9 Sum of digits = 5 + 3 + 2 + 4 + 7 = 21



Since 21 is not divisible by 9 Hence, 53247 is not divisible by 9 (iii) 4968 The given number = 4968 For a number to be divisible by 9, sum of digits must be divisible by 9 Sum of digits = 4 + 9 + 6 + 8 = 27Since 27 is divisible by 9 Hence, 4968 is divisible by 9 (iv) 200314 The given number = 200314 For a number to be divisible by 9, sum of digits must be divisible by 9 Sum of digits = 2 + 0 + 0 + 3 + 1 + 4 = 10Since 10 is not divisible by 9 Hence, 200314 is not divisible by 9

6. Find which of the following number are divisible by 6:

- (i) 324
- (ii) **2010**
- (iii) **33278**
- (iv) 15505

Solution:

A number which is divisible by either 2 and 3 or both then the given number is divisible by 6

(i) 324 The given number = 324Sum of digits = 3 + 2 + 4 = 9which is divisible by 3 Therefore, 324 is divisible by 6 (ii) 2010 The given number = 2010Sum of digits = 2 + 0 + 1 + 0 = 3which is divisible by 3 Therefore, 2010 is divisible by 6 (iii) 33278 The given number = 33278Sum of digits = 3 + 3 + 2 + 7 + 8 = 23Unit digit is 3, which is odd Therefore, 33278 is not divisible by 6 (iv) 15505



The given number = 15505Sum of digits = 1 + 5 + 5 + 0 + 5 = 16which is divisible by 2 Therefore, 15505 is divisible by 6

7. Find which of the following numbers are divisible by 5: (i) **5080** (ii) 66666 (iii) 755 (iv) 9207 Solution: (i) 5080 The given number = 5080For a number to be divisible by 5, unit's digit must be 0 or 5 Here, unit digit is 0 Therefore, 5080 is divisible by 5 (ii) 66666 The given number = 66666For a number to be divisible by 5, unit's digit must be 0 or 5 Here, unit digit is 6 Therefore, 66666 is not divisible by 5 (iii)755 The given number = 755For a number to be divisible by 5, unit's digit must be 0 or 5 Here, unit digit is 5 Therefore, 755 is divisible by 5 (iv) 9207 The given number = 9207For a number to be divisible by 5, unit's digit must be 0 or 5 Here, unit digit is 7 Therefore, 9207 is not divisible by 5

8. Find which of the following numbers are divisible by 10:

(i) 9990
(ii) 0
(iii) 847
(iv) 8976
Solution:
(i) 9990

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The given number = 9990For a number to be divisible by 10, unit's digit must be 0 Here, unit digit is 0 Therefore, 9990 is divisible by 10 (ii) 0 The given number = 0For a number to be divisible by 10, unit's digit must be 0 Here, unit digit is 0 Therefore, 0 is divisible by 10 (iii) 847 The given number = 847For a number to be divisible by 10, unit's digit must be 0 Here, unit digit is 7 Therefore, 847 is not divisible by 10 (iv) 8976 The given number = 8976For a number to be divisible by 10, unit's digit must be 0 Here, unit digit is 6 Therefore, 8976 is not divisible by 10

9. Find which of the following numbers are divisible by 11:

(i) **5918** (ii) **68,717** (iii) **3882** (iv) 10857 Solution: (i) 5918 The given number = 5918If the difference of sum of its digit in odd places from left side and sum of digits in even places from left side is divisible by 11 then the number is divisible by 11 Sum of digits at odd places = 5 + 1 = 6Sum of digits at even places = 9 + 8 = 17Difference = 17 - 6 = 11Here, the difference is 11 which is divisible by 11 Hence, the number is divisible by 11 (ii) 68717 The given number = 68717If the difference of sum of its digit in odd places from left side and sum of digits in even places from left side is divisible by 11 then the number is divisible by 11



Sum of digits at odd places = 6 + 7 + 7 = 20Sum of digits at even places = 8 + 1 = 9Difference = 20 - 9 = 11Here, difference is 11 which is divisible by 11 Hence, the number is divisible by 11 (iii) 3882 The given number = 3882If the difference of sum of its digit in odd places from left side and sum of digits in even places from left side is divisible by 11 then the number is divisible by 11 Sum of digits at odd places = 3 + 8 = 11Sum of digits at even places = 8 + 2 = 10Difference = 11 - 10 = 1Here, difference is 1 which is not divisible by 11 Hence, the number is not divisible by 11 (iv) 10857 The given number = 10857If the difference of sum of its digit in odd places from left side and sum of digits in even places from left side is divisible by 11 then the number is divisible by 11 Sum of digits at odd places = 1 + 8 + 7 = 16Sum of digits at even places = 0 + 5 = 5Difference = 16 - 5 = 11Here, difference is 11 which is divisible by 11 Hence, the number is divisible by 11 10. Find which of the following numbers are divisible by 15: (i) **960** (ii) 8295

(iii) 10243

(iv) 5013

Solution:

(i) 960

The given number = 960

For a number to be divisible by 15, it should be divisible by both 3 and 5

Sum of digits = 9 + 6 + 0 = 15

Since 15 is divisible by 3

So, the number is divisible by 3

Here, unit digit is 0, so it is divisible by 5

Hence, the number is divisible by 15

(ii) 8295



The given number = 8295For a number to be divisible by 15 it should be divisible by both 3 and 5 Sum of digits = 8 + 2 + 9 + 5 = 24Since 24 is divisible by 3 So, the number is divisible by 3 Here, unit digit is 5, so it is divisible by 5 Hence, the number is divisible by 15 (iii) 10243 The given number = 10243For a number to be divisible by 15 it should be divisible by both 3 and 5 Sum of digits = 1 + 0 + 2 + 4 + 3 = 10Since 10 is not divisible by 3 So, the number is not divisible by 3 Here, unit digit is 3, so it is not divisible by 5 Hence, the number is not divisible by 15 (iv) 5013 The given number = 5013For a number to be divisible by 15 it should be divisible by both 3 and 5 Sum of digits = 5 + 0 + 1 + 3 = 9Since 9 is divisible by 3 So, the number is divisible by 3 Here, unit digit is 3, so it is not divisible by 5 Hence, the number is not divisible by 15

11. In each of the following numbers, replace M by the smallest number to make resulting number divisible by 3:

(i) 64 M 3 (ii) 46 M 46 (iii) 27 M 53 Solution: (i) 64 M 3 The given number = 64 M 3 For a number to be divisible by 3 sum of digits must be divisible by 3 Sum of digits = 6 + 4 + 3 = 13The number which is divisible by 3 next to 13 is 15 Required smallest number = 15 - 13 = 2Hence, value of M is 2 (ii) 46 M 46 The given number = 46 M 46



For a number to be divisible by 3 sum of digits must be divisible by 3 Sum of digits = 4 + 6 + 4 + 6 = 20The number which is divisible by 3 next to 20 is 21 Required smallest number = 21 - 20 = 1Hence, the value of M is 1 (iii) 27 M 53 The given number = 27 M 53 For a number to be divisible by 3 sum of digits must be divisible by 3 Sum of digits = 2 + 7 + 5 + 3 = 17The number which is divisible by 3 next to 17 is 18 Required smallest number = 18 - 17 = 1Hence, the value of M is 1

12. In each of the following numbers replace M by the smallest number to make resulting number divisible by 9

(i) 76 M 91 (ii) 77548 M (iii) 627 M 9 Solution: (i) 76 M 91 The given number is 76 M 91 For a number to be divisible by 9 sum of digits must be divisible by 9 Sum of digits = 7 + 6 + 9 + 1 = 23The number which is divisible by 9 next to 23 is 27 Required smallest number = 27 - 23 = 4Hence, the value of M is 4 (ii) 77548 M The given number = 77548 M For a number to be divisible by 9 sum of digits must be divisible by 9 Sum of digits = 7 + 7 + 5 + 4 + 8 = 31The number which is divisible by 9 next to 31 is 36 Required smallest number = 36 - 31 = 5Hence, the value of M is 5 (iii) 627 M 9 The given number = 627 M 9For a number to be divisible by 9 sum of digits must be divisible by 9 Sum of digits = 6 + 2 + 7 + 9 = 24The number which is divisible by 9 next to 24 is 27 Required smallest number = 27 - 24 = 3



Hence, the value of M is 3

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13. In each of the following numbers, replace M by the smallest number to make
resulting number divisible by 11
(i) 39 M 2
(ii) 3 M 422
(iii) 70975 M
(iv) 14 M 75
Solution:
(i) 39 M 2
The given number = 39 \text{ M} 2
A number is divisible by 11, if the difference of sum of its digit in odd places from left
side and sum of digits in even places from left side is divisible by 11
Sum of its digits in odd places = 3 + M
Sum of its digits in even places = 9 + 2 = 11
Difference:
11 - (3 + M) = 0
11 - 3 - M = 0
8 - M = 0
M = 8
Hence, the value of M is 8
(ii) 3 M 422
The given number = 3 \text{ M} 422
A number is divisible by 11, if the difference of sum of its digit in odd places from left
side and sum of digits in even places from left side is divisible by 11
Sum of its digits in odd places = 3 + 4 + 2 = 9
Sum of its digits in even places = M + 2 = 11
Difference:
9 - (M + 2) = 0
9 - M - 2 = 0
9 - 2 = M
M = 7
Hence, the value of M is 7
(iii) 70975 M
The given number is 70975 M
A number is divisible by 11, if the difference of sum of its digit in odd places from left
side and sum of digits in even places from left side is divisible by 11
Sum of its digits in odd places = 7 + 9 + 5 = 21
Sum of its digits in even places = 0 + 7 + M = 7 + M
Difference:
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21 - (7 + M) = 021 = 7 + MM = 14Hence, the value of M is 14 (iv) 14 M 75 The given number is 14 M 75 A number is divisible by 11, if the difference of sum of its digit in odd places from left side and sum of digits in even places from left side is divisible by 11 Sum of its digits in odd places = 1 + M + 5= 6 + MSum of its digits in even places = 4 + 7= 11Difference: 11 - (6 + M) = 011 = 6 + MM = 11 - 6M = 5

Hence, the value of M is 5

14. State, true or false:

(i) If a number is divisible by 4. It is divisible by 8

(ii) If a number is a factor 16 and 24, it is a factor of 48

(iii) If a number is divisible by 18, it is divisible by 3 and 6

(iv) If a divide b and c completely, then a divides (i) a + b (ii) a - b also completely. Solution:

(i) False

The number is divisible by 4, if tens and unit digit is divisible by 4

The number is divisible by 8, if hundreds, tens and unit digit is divisible by 8

(ii) True

As 16 and 24 are factors of 48

(iii) True

The product of 3 and 6 is 18, so if a number is divisible by 18, it is divisible by 3 and 6 (iv) True

If a divides b and c completely, then a divides a + b and a - b completely

Hence, if a number is a factor of each of the two numbers, then it is a factor of their sum also