ODM EDUCATIONAL GROUP
Changing your Tomorrow

PLAYING WITH NUMBERS

SUBJECT : MATHEMATICS
CHAPTER NUMBER: 09
CHAPTER NAME :PLAYING WITH NUMERS
SUBTOPIC : Problems based on Divisibility Rules.
PERIOD NO: 4

Website: www.odmegroup.org
Email: info@odmps.org
Toll Free: **1800 120 2316**
Sishu Vihar, Infocity Road, Patia, Bhubaneswar- 751024

Learning outcomes

- Students will be able to identify odd and even numbers.
- Students will develop application skill.
- Students will be able to solve sums applying divisibility test.

PREVIOUS KNOWLEDGE TEST

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

i) 5080 (ii) 66666 (iii) 755 (iv) 9207

2. 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) b+c (ii)b –c also completely.

Divisibility rules

A number is divisible by	if the following conditions are met
2	The last digit is even
3	The sum of its digits is divisible by 3
4	The number represented by its last two digits is divisible by 4
5	The last digit is 0 or 5
6	The number is divisible by 2 and 3
7	Remove the last digit, double it, subtract it from the leftover number. The result is divisible by 7
8	The number represented by its last three digits is divisible by 8
9	The sum of its digits is divisible by 9
10	The last digit is 0

Evaluation Question EXERCISE 9-C

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

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

Solution: (i) The given number = 9990

For 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) The given number = 0

For a number to be divisible by 10, unit's digit must be 0

Here, unit digit is 0

Therefore, 0 is divisible by 10

Evaluation Question

iii) The given number = 847

For 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) The given number = 8976

For 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

Evaluation Question

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

(i) 5918 (ii) 68,717 (iii) 3882 (iv) 10857

Solution:(i)The given number = 5918

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 then the number is divisible by 11

Sum of digits at odd places = 5 + 1 = 6

Sum of digits at even places = 9 + 8 = 17

Difference = 17 – 6 = 11

Here, the difference is 11 which is divisible by 11

Hence, the number is divisible by 11

Evaluation Question

(ii)The given number = 68717

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 then the number is divisible by 11

Sum of digits at odd places = 6 + 7 + 7 = 20

Sum of digits at even places = 8 + 1 = 9

Difference = 20 – 9 = 11

Here, difference is 11 which is divisible by 11

Hence, the number is divisible by 11

Evaluation Question

(iv) The given number = 10857

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 then the number is divisible by 11

Sum of digits at odd places = 1 + 8 + 7 = 16

Sum of digits at even places = 0 + 5 = 5

Difference = 16 – 5 = 11

Here, difference is 11which is divisible by 11

Hence, the number is divisible by 11

Evaluation Question

10. Find which of the following numbers are divisible by 15:

(i) 960 (ii) 8295 iii) 10243 (iv) 5013

Solution:

(i)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

Evaluation Question

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

For a number to be divisible by 3 sum of digits must be divisible by 3

Sum of digits = 6 + 4 + 3 = 13

The number which is divisible by 3 next to 13 is 15

Required smallest number = 15 – 13 = 2

Hence, value of M is 2

Evaluation Question

(ii) For a number to be divisible by 3 sum of digits must be divisible by 3

Sum of digits = 4 + 6 + 4 + 6 = 20

The number which is divisible by 3 next to 20 is 21

Required smallest number = 21 – 20 = 1

Hence, the value of M is 1

(iii)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 = 17

The number which is divisible by 3 next to 17 is 18

Required smallest number = 18 – 17 = 1

Hence, the value of M is 1

Evaluation Question

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 = 23

The number which is divisible by 9 next to 23 is 27

Required smallest number = 27 – 23 = 4

Hence, the value of M is 4

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)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 so 8 – M = 0

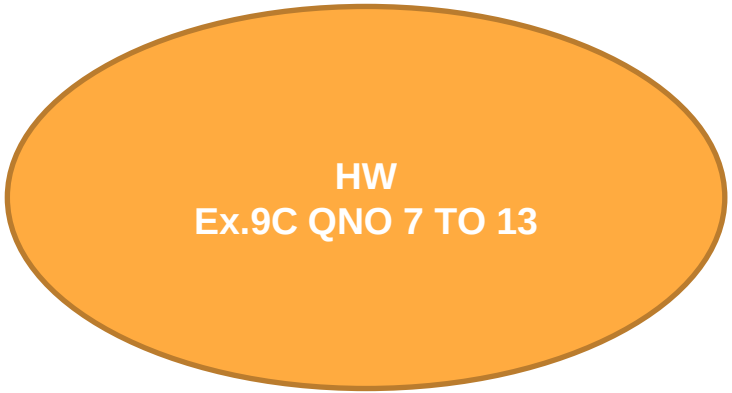
M = 8

Hence, the value of M is 8

Additional Homework

1. 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**



ODM EDUCATIONAL GROUP
Changing your Tomorrow

THANKING YOU

ODM EDUCATIONAL GROUP

ODM EDUCATIONAL GROUP
Changing your Tomorrow