How to Solve: Divisibility Rules
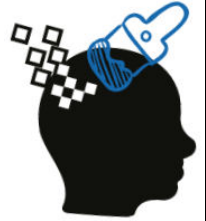### By **BrushMyQuant**

YouTube Video Link to this Post is [Here](#)

Following is Covered in the Video

Theory

> **What are Divisibility Rules and why are they useful?**
> **Divisibility Rule for divisibility by 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12**
> **Similarity in Divisibility rule for 2, 4 and 8**
> **Similarity in Divisibility rule for 3 and 9**
> **Example Problems**

What are Divisibility Rule and why are they useful?

> **Find Factors:** Divisibility Rules help us in quickly identifying if a number is a factor of another number or not.
> **Save Time:** If we use divisibility rules then we do not have to go for Long Division method to find out the factors of the number.

Divisibility Rule for divisibility by 2

There are multiple ways of checking if a number is divisible by 2 or not, 3 of them are listed below

> **Number should be even**
> **Last digit of the number should be divisible by 2**
> **Units digit should be 0,2,4,6,8**

Q1: Check if 360 is divisible by 2 or not.

Solution: There are multiple ways of checking it. 3 or them are given below:

> 360 is even so 360 divisible by 3
> Last digit of 360 which is 0 is divisible by 2, so 360 divisible by 3
> Unit digit of 360 is 0, so 360 divisible by 3

Divisibility Rule for divisibility by 3

Sum of all the digits of the number should be divisible by 3

Q2: Check if 360 is divisible by 3 or not.

Solution: Sum of all the digits of 360 = 3 + 6 + 0 = 9
We know that 9 is divisible by 3 => 360 is divisible by 3

Divisibility Rule for divisibility by 4

Number formed by last two digits should be divisible by 4

Q3: Check if 360 is divisible by 4 or not.

Solution: Number formed by last two digits of 360 is 60.
We know that 60 is divisible by 4 => 360 is divisible by 4

Divisibility Rule for divisibility by 5

Number should end with 0 or 5

Q4: Check if 360 is divisible by 5 or not.

Solution: Since 360 ends with a 0 => 360 is divisible by 5

Divisibility Rule for divisibility by 6

Number should be divisible by both 2 and 3

Q5: Check if 360 is divisible by 6 or not.

Solution: 360 is divisible by both 2 and 3 (Check above problems)
=> 360 is divisible by 6

Divisibility Rule for divisibility by 7

**Remove the last digit and double it and subtract it from the rest of the number.
If the result is divisible by 7 then number is divisible by 7, else it is not**

Q6: Check if 343 is divisible by 7 or not.

Solution: Yes 343 is divisible by 7. Check the video for detailed explanation.

Divisibility Rule for divisibility by 8

Number formed by last three digits should be divisible by 8

Q7: Check if 1360 is divisible by 8 or not.

Solution: Number formed by last three digits of 1360 is 360.
We know that 360 is divisible by 8 => 1360 is divisible by 8

Divisibility Rule for divisibility by 9

Sum of all the digits of the number should be divisible by 9

Q8: Check if 9360 is divisible by 9 or not.

Solution: Sum of all the digits of 9360 = 9 + 3 + 6 + 0 = 18
We know that 18 is divisible by 9 => 9360 is divisible by 9

Divisibility Rule for divisibility by 10

Number should end with 0

Q9: Check if 360 is divisible by 10 or not.

Solution: Since 360 ends with a 0 => 360 is divisible by 10

Divisibility Rule for divisibility by 11

If the difference of the sum of odd place digits and the sum of even place digits of the number is divisible by 11, then the number is divisible by 11, else it is not

Q10: Check if 1320 is divisible by 11 or not.

Solution: In 1320
Sum of odd places = 1 + 2 = 3
Sum of even places = 3 + 0 = 3

Sum of odd places - sum of even places = 3-3 =0
And 0 is divisible by all the numbers
=> 1320 is divisible by 11

Divisibility Rule for divisibility by 12

Number should be divisible by both 3 and 4

Q11: Check if 360 is divisible by 12 or not.

Solution: 360 is divisible by both 3 and 4 (Check above problems)
=> 360 is divisible by 12

Similarity in Divisibility rule for 2, 4 and 8

2 can be written as $2^1$121 -> Rule -> Number formed by last 1 digit(s) should be divisible by 2
4 can be written as $2^2$222 -> Rule -> Number formed by last 2 digit(s) should be divisible by 4
8 can be written as $2^3$323 -> Rule -> Number formed by last 3 digit(s) should be divisible by 8

Similarity in Divisibility rule for 3 and 9

Divisibility Rule for 3: Sum of all the digits of the number should be divisible by 3
Divisibility Rule for 9: Sum of all the digits of the number should be divisible by 9

Sample Problems

Q12: 336 is divisible by which of the following (multiple options correct)?
A. 2
B. 3
C. 6
D. 7
E. 9

Answer: A,B, C, D. [Check Video for Explanation]

Q13: 3773 is divisible by which of the following (multiple options correct)?
A. 2
B. 3
C. 7
D. 9
E. 11

Answer: C, E [Check Video for Explanation]

Hope it helps!