

Divisibility Rules!

A number is divisible by 2 if it is an even number.
A number is divisible by 3 if the sum of its digits is divisible by 3.
A number is divisible by 4 if its last two digits are divisible by 4.
A number is divisible by 5 if its last digit (ones place) is a 0 or 5.
A number is divisible by 6 if it is divisible by both 2 and 3.
A number is divisible by 8 if its last three digits are divisible by 8.
A number is divisible by 9 if the sum of its digits is divisible by 9.
A number is divisible by 10 if its last digit (ones place) is a 0.

Solve each riddle for all natural numbers that fit the clues, unless otherwise indicated. [Adapted from a Texas Instruments resource, 1998]

1. I am a 3-digit number less than 150 that is divisible by 8. Who am I?

Solution(s): _____

Pattern: Is the pattern arithmetic or geometric? _____

What number is the common difference or ratio? _____

Explain the reason for the pattern.

8 divides evenly into the smallest number. Show that this is true.

$8 \mid 8n$ where n is any integer. True or False.

Will $8 \mid (\text{the smallest number} + 8n)$ where n is any whole number? _____ Yes/No

2. I am an even 2-digit number that is divisible by 3 and 5. Who am I?

Solution(s): _____

Pick one of your solutions, and use the rules to show that it is divisible by 2, 3 and 5.

3. I am an odd 2-digit number that is divisible by 3 and 5. Who am I?

Solution(s): _____

Pattern: _____

4. I am a 2-digit number that ends in a 4 but is not divisible by 4. Who am I?

Solution(s): _____

Pattern: _____

5. I am a 2-digit number that is divisible by 3, 6, and 9. Who am I?

Solution(s): _____

Pattern: Add _____ each time.

6. I am a number that is divisible by 2, 3, 4, and 5 and is less than 300. Who am I?

Solution(s): _____

7. I am an even number between 100 and 200 that is divisible by 9. Who am I?

Solution(s): _____

Pattern: _____

8. I am a 3-digit number that has 2 in the hundreds place and is divisible by 2, 3, 4, and 5. Who am I?

Solution(s): _____

9. I am a multiple of 2, 3, 4, and 5, and I am less than 100. Who am I?

Solution(s): _____

10. I am a factor (or divisor) of 48, 60, and 80. Who am I?

Solution(s): _____

Do your best! Rise to the challenge! Live and learn!