

Mystery Number challenges(5-minute starter)

The skills involved are varied so learners practise divisibility, factors, squares, cubes, primes, integers, exponents and basic algebraic reasoning.

Goal

Identify a specific number using a set of clues.

Instructions to learners

Read each clue carefully.

Use every clue to narrow down the possibilities until you identify the mystery number.

Write down the mystery number and be prepared to explain how each clue helped you reach the answer.

(Learners may apply the rules in any order to shorten the process)

Challenge 1

My number is a whole number from 20 to 50. (The number is 42)

Clues	Detailed solution	Intuitive method
It is even	20, 22, 24, . . . 50	36, <u>42</u>, 48 36 is the smallest even multiple of 2 that is bigger than 30 - only 42 has a digit sum of 6
It is a multiple of 3	24, 30, 36, 42, 48	
The sum of its digits is 6	24, 42	
It is greater than 30	42	

Challenge 2

My number is a whole number from 50 to 100. (The number is 85)

Clues	Detailed solution	Intuitive method
It is a multiple of 5	50, 55, 60, . . . 100	55, 65, 75, <u>85</u>, 95 - the number ends on 5 8 is 3 more than 5
It is not a multiple of 10	55, 65, 75, 85, 95	
The tens digit is 3 more than the units digit	85	

Challenge 3

My number is a two-digit number. (The number is 63)

Clues	Detailed solution	Intuitive method
The number is odd	10, 11, 12, . . . 99	63 7 is prime $7 \times 9 = 63$ (LCM)
It is a multiple of 9	18, 27, 36, 45, 54, 63, 72, 81, 90, 99	
It is divisible by 7	14, 21, 28, 35, 42, 49, 56, 63, 70, 77, 84, 91, 98	
Answer	63	

Challenge 4

My number is a whole number from 40 to 70. (The number is 56)

Clues	Solution
It is a multiple of 7.	42, 49, 56, 63, 70
The digits add up to 11	56