

CHAPTER-5 | Prime Time

QUIZ
PART-08

1. Which number is the product of exactly three distinct prime numbers?

- A. 45
B. 60
C. 91
D. 105 (D)

Explanation: $105 = 3 \times 5 \times 7$, which has exactly three distinct prime factors.

2. Why is 45 not the product of exactly three distinct prime numbers?

- A. It has only one factor
B. It is prime
C. Its prime factors are not all distinct
D. It is even (C)

Explanation: $45 = 3 \times 3 \times 5$. It has repetition, so it does not have three distinct prime factors.

3. Which number has exactly two distinct prime factors?

- A. 60
B. 91
C. 105
D. 330 (B)

Explanation: $91 = 7 \times 13$, so it has exactly two distinct prime factors.

4. Which number has four distinct prime factors?

- A. 45
B. 60
C. 105
D. 330 (D)

Explanation: $330 = 2 \times 3 \times 5 \times 11$, so it has four distinct prime factors.

5. How many three-digit prime numbers can be formed using 2, 4, and 5 exactly once?

- A. 0
B. 1
C. 2
D. 3 (A)

Explanation: Any number formed with 2, 4, and 5 ends in 2, 4, or 5, so it is divisible by 2 or 5 and cannot be prime.

6. Why can no number made from 2, 4, and 5 be prime?

- A. The sum of digits is too small
B. The number is always odd
C. The units digit is always 2, 4, or 5
D. It has only two digits (C)

Explanation: A number ending in 2 or 4 is even, and a number ending in 5 is divisible by 5.

7. If p is prime and $2p+1$ is also prime, which of these works?

- A. 7
B. 9
C. 11
D. 15 (C)

Explanation: For $p = 11$, $2 \times 11 + 1 = 23$ is prime.

8. Which of the following is one correct example of the form $2p+1$, where both numbers are prime?

- A. $2 \times 5 + 1 = 11$
B. $2 \times 11 + 1 = 23$
C. $2 \times 9 + 1 = 19$
D. $2 \times 15 + 1 = 31$ (B)

Explanation: 11 is prime and 23 is also prime, so this is a correct example.

9. Which prime number gives 47 when doubled and 1 is added?

- A. 17
B. 19
C. 23
D. 29 (C)

Explanation: $2 \times 23 + 1 = 47$, and both 23 and 47 are prime.

10. Which statement is true?

- A. 60 has exactly three distinct prime factors
B. 91 has exactly three distinct prime factors
C. 45 has exactly four distinct prime factors
D. 105 has exactly two distinct prime factors (A)

Explanation: $60 = 2^2 \times 3 \times 5$, so its distinct prime factors are 2, 3, and 5.