

Class 6 Maths**Prime Time – Prime Numbers, Co-primes & Prime Factorisation -
NCERT Solutions**

1. We see that 2 is a prime and also an even number. Is there any other even prime?
2. Look at the list of primes till 100. What is the smallest difference between two successive primes? What is the largest difference?
3. Which of the following numbers are prime? 23, 51, 37, 26.
4. Write three pairs of prime numbers less than 20 whose sum is a multiple of 5.
5. The numbers 13 and 31 are prime numbers. Both these numbers have same digits 1 and 3. Find such pairs of prime numbers up to 100.
6. Find seven consecutive composite numbers between 1 and 100.
7. Twin primes are pairs of primes having a difference of 2. For example, 3 and 5 are twin primes. So are 17 and 19. Find the other twin primes between 1 and 100.
8. Identify whether each statement is true or false. Explain.
 - a. There is no prime number whose units digit is 4.
 - b. A product of primes can also be prime.
 - c. Prime numbers do not have any factors.
 - d. All even numbers are composite numbers.
 - e. 2 is a prime and so is the next number, 3. For every other prime, the next number is composite.
9. Which of the following numbers is the product of exactly three distinct prime numbers: 45, 60, 91, 105, 330?

10. How many three-digit prime numbers can you make using each of 2, 4 and 5 once?
11. Observe that 3 is a prime number, and $2 \times 3 + 1 = 7$ is also a prime. Are there other primes for which doubling and adding 1 gives another prime? Find at least five such examples.

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Answers**Q: Is there any even prime other than 2?****Answer: No**

Explanation: Every even number (except 2) is divisible by 2, so it has more than 2 factors → not prime.

2. Difference between successive primes (till 100)

List a few primes: 2, 3, 5, 7, 11, 13...

Differences:

$$3 - 2 = 1$$

$$5 - 3 = 2$$

$$7 - 5 = 2$$

$$11 - 7 = 4$$

...

- **Smallest difference: 1** (between 2 and 3)
 - **Largest difference: 8** (between 89 and 97)
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3. Which are prime?

23 ✓ Prime

51 ✗ (3×17)

37 ✓ Prime

26 ✗ (2×13)**4. Prime pairs (<20) whose sum is multiple of 5**

Examples:

$(2, 3) \rightarrow 5 \checkmark$

$(3, 7) \rightarrow 10 \checkmark$

$(11, 19) \rightarrow 30 \checkmark$

5. Prime pairs with same digits (like 13 & 31)

$(13, 31)$

$(17, 71)$

$(37, 73)$

$(79, 97)$

6. Seven consecutive composite numbers

Example:

24, 25, 26, 27, 28, 29, 30 ✗ (29 is prime)

Correct set:

90, 91, 92, 93, 94, 95, 96 ✓ (all composite)

7. Twin primes (difference = 2)

(3,5), (5,7), (11,13), (17,19), (29,31), (41,43), (59,61), (71,73)

9. True or False

a) No prime ends in 4 → **True**

b) Product of primes can be prime → **False**

(Example: $2 \times 3 = 6$)

c) Prime numbers have no factors → **False**

(They have 1 and itself)

d) All even numbers are composite → **False**

(2 is prime)

e) After 2 and 3, next number after a prime is composite → **True**

(Example: 5 → 6, 7 → 8)

10. Product of exactly 3 distinct primes

Check:

$$45 = 3 \times 3 \times 5 \quad \times \text{ (not distinct)}$$

$$60 = 2^2 \times 3 \times 5 \quad \times$$

$$91 = 7 \times 13 \quad \times$$

$$105 = 3 \times 5 \times 7 \quad \checkmark$$

$$330 = 2 \times 3 \times 5 \times 11 \quad \times$$

Answer: 105

11. Three-digit prime numbers using 2, 4, 5

Possible numbers:

245, 254, 425, 452, 524, 542

All are even or divisible by 5 → **not prime**

Answer: 0

12. Check $(2 \times \text{prime} + 1)$

Try primes:

$$2 \rightarrow 2 \times 2 + 1 = 5 \checkmark$$

$$3 \rightarrow 7 \checkmark$$

$$5 \rightarrow 11 \checkmark$$

$$11 \rightarrow 23 \checkmark$$

$$17 \rightarrow 35 \times$$

Examples:

(2,5), (3,7), (5,11), (11,23), (29,59)

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