

Prime Time

Class VI Mathematics – Worksheets

SUMMARY OF CONCEPTS & DEFINITIONS

1. FACTORS & MULTIPLES

Factors



- If a number is divisible by another, the second number is called a **factor** of the first.

Example: 4 is a factor of 12 because $12 \div 4 = 3$.

- A number 1 and the number itself are factors of every number.

Example: Factors of 12 are 1, 2, 3, 4, 6, 12

Multiples

(2, 4, 6, ...)

- The products we get when a number is multiplied by 1, 2, 3, ... are the multiples of that number.
- Every number is a multiple of itself.

Example: Multiples of 5 are 5, 10, 15, 20, 25, ...

Perfect Number



- A number for which the sum of all its factors is equal to twice the number is called a **perfect number**.

Example: 28 is a perfect number.

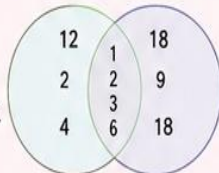
Factors: 1, 2, 4, 7, 14, 28

Sum = $56 = 2 \times 28$

Common Factors:

Factors that two or more numbers have in common.

Example: Common factors of 12 and 18 are 1, 2, 3, 6.

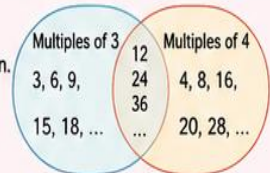


Common Multiples:

Multiples that two or more numbers have in common.

Example: Common multiples of 3 and 4 are

12, 24, 36, ...



2. PRIME NUMBERS & CO-PRIME NUMBERS

Prime Numbers



- Prime numbers are numbers that have exactly two factors: 1 and themselves.
- Examples:** 2, 3, 5, 7, 11, ...
- 2 is the only even prime number.
- A prime number is a building block of all numbers.

Composite Numbers



- Composite numbers are numbers that have more than two factors, i.e., at least one factor other than 1 and themselves.
- Examples:** 4, 6, 8, 9, 10, ...
- 1 is neither prime nor composite.

Co-prime Numbers



- Two numbers that do not have any common factor other than 1 are called **co-prime**.
- Example:** 8 and 15 are co-prime.
Factors of 8: 1, 2, 4, 8
Factors of 15: 1, 3, 5, 15
Common factor: only 1



How to Check Co-prime?

Find the prime factorisation of both numbers.

- If there is no common prime factor → They are co-prime.
- If there is a common prime factor → They are not co-prime.

Example:

$12 = 2 \times 2 \times 3$
 $25 = 5 \times 5$ } No common prime factor
⇒ 12 and 25 are co-prime.

3. DIVISIBILITY RULES (QUICK TESTS)

Divisible by 2

If the last digit is 0, 2, 4, 6 or 8.

Example: 374
(last digit 4)

⇒ Divisible by 2

Divisible by 5

If the last digit is 0 or 5.

Example: 325
(last digit 5)

⇒ Divisible by 5

Divisible by 10

If the last digit is 0.

Example: 780
(last digit 0)

⇒ Divisible by 10

Divisible by 4

If the last two digits form a number divisible by 4.

Example: 364 (last two digits 64)

⇒ Divisible by 4

Divisible by 8

If the last three digits form a number divisible by 8.

Example: 5728 (last three digits 728)

⇒ Divisible by 8

Divisible by 3

If the sum of the digits is divisible by 3.

Example: 123
($1+2+3 = 6$)

⇒ Divisible by 3

Divisible by 9

If the sum of the digits is divisible by 9.

Example: 126
($1+2+6 = 9$)

⇒ Divisible by 9



Remember: Prime factorisation helps in checking factors, divisibility and co-primality easily. It shows the unique way a number can be written as a product of prime numbers.



PRIME TIME

WORKSHEET-1

MCQs (PART-1) ($10 \times 1 = 10$ marks)

1. What is the smallest prime number?

- a) 1 b) 2 c) 0 d) 3

2. What is a number called that has only two factors (1 and itself)?

- a) Composite b) Even c) Odd d) Prime

3. Which of these is a 'perfect number' between 1 and 10?

- a) 4 b) 6 c) 8 d) 9

4. What is the units digit of any number divisible by 5?

- a) Only 0 b) Only 5 c) 0 or 5 d) Any even number

5. Which of the following is a composite number?

- a) 7 b) 13 c) 9 d) 11

6. Which of these pairs are 'twin primes'?

- a) 2 and 3 b) 3 and 5 c) 5 and 10 d) 7 and 9

7. A number is divisible by both 5 and 3. Which of the following statements is always true?

- A) The number is divisible by 8
B) The number is divisible by 15
C) The number is divisible by 9
D) The number is divisible by 25

8. Prime factorisation of 16 is?

- a) 8×2 b) $4 \times 2 \times 2$ c) $2 \times 2 \times 2 \times 2$ d) 16×1

9. which of the following pairs of numbers are co-prime?

- a) 2,3 b) 5,7 c) 9,8 d) all of the above

10. which of the following is not the factor of 36 :

- a) 12 b)18 c) 15 d)9

MCQs (PART-2) ($10 \times 1 = 10$ marks)

11. How many prime numbers are there between 1 and 20?

- a) 6 b) 7 c) 8 d) 9

12. The number 91 is:

- a) Prime b) Composite c) Even d) None

13. The prime factors of 30 are:

- a) 5,6 b) 2,3,5 c) 10,3 d) 2,15

14. Which of the following numbers is divisible by 9?

- (a) 1532 (b) 2187 (c) 3457 d) none of these

15. Which of the following statements is true about co-prime numbers?

- (a) They must both be prime numbers.
(b) They have no common factors other than 1.
(c) Their HCF is their product.
(d) They must both be odd numbers.

16. Which pair of numbers has the smallest common multiple equal to their product?

- a. 8 and 12 b. 9 and 10 c. 15 and 25 d. 14 and 21

17. Which of the following numbers has exactly three prime factors (counting repeated factors)?

- a. 18 b. 20 c. 30 d. 45

18. Without performing long division, which number is divisible by both 4 and 8?

- a. 7232 b. 7216 c. 7236 d. 7224

19. Which of the following statements is always true?

- a. Every odd number is prime.
b. Every prime number is odd.
c. Every composite number has more than two factors.
d. Every even number is composite.

20. Which of the following numbers is NOT co-prime with 35?

- a. 18 b. 24 c. 27 d. 49

WORKSHEET-2

Section B: Short Answer ($10 \times 2 = 20$ marks)

1. Find the prime factorization of 172.

2. Find the LCM of 12 and 18.

3. Write three multiples of 13 than 60.

4. Write the first five multiples of 5.

5. Find all the factors of 26.

6. Who am I? I am a number less than 40. One of my factors is 7. The sum of my digits is 8

7. State the divisibility rule for 9 and check if the number 45729 is divisible by 9.

8. Find all the prime numbers between 51 and 91

9. From the year 2024 till 2099, how many leap years are there?

10. What is the smallest digit that must be placed in the blank space of 37_7 to make it divisible by 3?

Section C: Short Answer ($6 \times 3 = 18$ marks)

11 find prime factorisation of 1024.

12. Show that 28 is a perfect number by listing its factors and finding their sum

13. Is the number 9135 divisible by 5 and 7? Explain your answer.

14. Find the largest and smallest 3-digit numbers that are divisible by 4 and are also palindromes

15. Write the first six multiples of 5 and the first six multiples of 8. From these lists, find the Least Common Multiple (LCM) of 5 and 8.

16. Two bells ring every 6 minutes and 8 minutes. After how many minutes will they ring together again?

Section D: Long Answer ($4 \times 5 = 20$ marks)

17. Find the smallest number that is a multiple of all the numbers from 1 to 10, except for 7.

18. A company produced **7,425 water bottles** and wants to pack them equally into cartons of **15 bottles each**. Using the appropriate divisibility test, check whether this arrangement is possible and justify your answer.

19. Using the divisibility test for 11, check if the numbers 121 and 1331 are divisible by 11. Explain your reasoning

20. Find the smallest number that is a multiple of all the numbers from 1 to 10

Case Study Based Questions ($2 \times 4 = 8$ marks)

21. A group of children plays the 'Idli-Vada' game up to the number 90. In this game, they say 'idli' for multiples of 5, 'vada' for multiples of 7, and 'idli-vada' for common multiples.

1. How many times will the children say '**idli**' (including the times they say 'idli-vada')?
2. How many times will they say '**vada**'?
3. How many times will they say '**idli-vada**'?
4. At what number will they say 'idli-vada' for the **2nd time**

22. or a school festival, lights blink at different intervals.

- Red lights blink every **15 seconds**.
- Yellow lights blink every **20 seconds**.
- Blue lights blink every **30 seconds**.

At 6:00 p.m., all lights blink together.

Questions

1. Find the prime factorisation of 15, 20, and 30.
2. Find the LCM of 15, 20, and 30 using prime factorisation.
3. After how many seconds will all the lights blink together again?

Self Assessment:

I understood all the concepts ☐ Yes ☐ No

I need more practice ☐ Yes ☐ No

Name of Concepts having doubts/Not Cleared: _____

Parent's Assessment:

My ward understood all the concepts ☐ Yes ☐ No

He/She need more practice ☐ Yes ☐ No

Name of Concepts having doubts/Not Cleared: _____

Signature of Parent:

Teacher's Assessment

Answers of Worksheet -1:

Q.No.	1	2	3	4	5	6	7	8	9	10
ANS	b	d	b	c	c	b	B	c	d	c
Q.No.	11	12	13	14	15	16	17	18	19	20
ANS	c	b	b	b	b	b	a	b	c	d

Answers of Worksheet -2:

Q.No.	1	2	3	4	5	6	7	8
ANS	$2 \times 2 \times 43$	36	65,78,91	5,10, 15,20,25	1,2,13,26	35	yes	53,59, 61,63, 67,71,73, 79,83,89
Q.No.	9	10	11	12	13	14	15	16
ANS	19	1	2^{10}		yes	888,212	40	24
Q.No.	17	18	19	20	21	22		
	360	yes	yes	2520	18 12 2 70	3×5 $, 2 \times 2 \times 5, 2 \times 3 \times 5$ 60 60sec		