



SCHOOL ACADEMIC RESOURCE

Academic Year & Term	2026-27 TERM 1
Class	VIII
Subject	MATHEMATICS
Topic/Chapter	MIDTERM WORKSHEET
Section [KG/Middle/Secondary etc..]	MIDDLE
Date of Issue	SEPTEMBER 2026

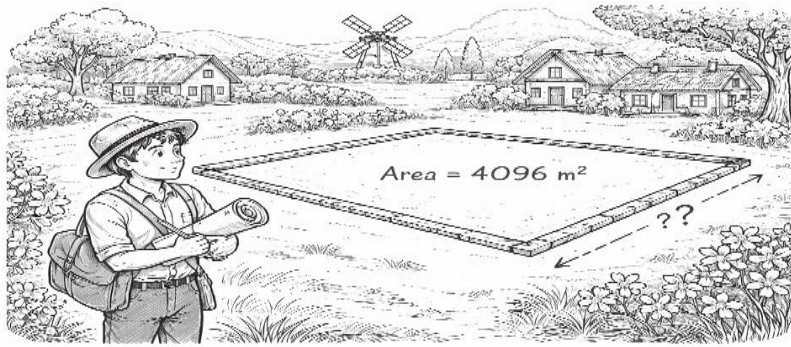
CH-1 A SQUARE AND A CUBE

I. ANSWER THE FOLLOWING:

- 1) Without adding, find the sum of $1 + 3 + 5 + 7 + 9 + 11 + 13 + 15$
- 2) How many numbers lie between squares of the following numbers?
a) 12 and 13 b) 25 and 26 c) 9 and 10
- 3) Find the smallest square number which is divisible by each of the numbers 6, 9 and 15.
- 4) Given $36^2 = 1296$, what is the value of 37^2 ?
- 5) Find the square root of each of the following numbers by Prime Factorization method.
a) 256 b) 2304 c) 3844 d) 900
- 6) For each of the following numbers, find the smallest whole number by which it should be multiplied so as to get a perfect square number. Also find the square root of the square number so obtained.
a) 392 b) 980 c) 242
- 7) Find the length of the side of a square whose area is 4096 m^2 .
- 8) Find the cube root of each of the following numbers by prime factorization method.
a) 1728 b) 8000 c) 39304
- 9) Find the smallest number by which each of the following numbers must be multiplied to obtain a perfect cube.
a) 864 b) 1125 c) 256

II. CASE STUDY :

- 1) In a peaceful village, a young architect is designing a perfect square garden for a community celebration on the 5th day of spring. The total area of the garden must be exactly 4096 m^2 so that it can fit all five planned sections equally. To build the fence around the garden, the architect needs to know the length of one side of the square.



- a) Write the prime factors of the area of the garden.
- b) Find the length of the side of the garden .
- c) What mathematical operation will you use to find the side length from the area?

2) Smart watches are a big innovation in the wearable industry following too many functions. The most common now a days is to count the number of steps. This has a big impact on health. Gunjan noticed the number of steps she walked on her smart watch in the evening and found it to be 7744.



Based on above information, answer the following questions:

- (i) Is the given number a perfect cube?
- (ii) If the given number is not a perfect cube, then what is smallest number to be multiplied to make it a perfect cube?
- iii) What is the cube root of the resulting number?

CH- 2 POWER PLAY

I. ANSWER THE FOLLOWING:

1. Write numerical value of each of the following.
 - a) $(-3)^2 \times (-5)^3$
 - b) $2^3 \times 10^4$
 - c) $4^4 \times 7$
2. Simplify and write in exponential form.
 - a) $(-3)^4 \times \left(\frac{5}{3}\right)^4$
 - b) $10^4 \div 5^4$
 - c) $(9^2)^3 \div 9^{-4}$
 - d) $[(2^2)^3 \times 3^6] \times 5^6$

3. Express each of the following as a product of powers of their prime factors in exponential form: (a) 729 (b) 3125 (c) 1000
4. Write exponential form for $9 \times 9 \times 9 \times 9$ taking base as 3.
5. Express the following numbers in standard form
 - a) 7,234, 00,000
 - b) 318.65123
 - c) 3908.78
6. Write the given number as the product of two or more powers in three different ways.
 - a) 81^3
 - b) 64^4
 - c) 32^5
7. Identify the greater number in each of the following:
 - a) 5^3 or 3^4
 - b) 7^3 or 5^5
 - c) 2^{10} or 10^2
8. **Assertion (A):** Folding a sheet of paper doubles its thickness each time.
Reason (R): Doubling every fold is an example of multiplicative (exponential) growth.
 - a) Both A and R are true and R is the correct explanation of A.
 - b) Both A and R are true but R is not the correct explanation of A.
 - c) A is true but R is false.
 - d) A is false but R is true.

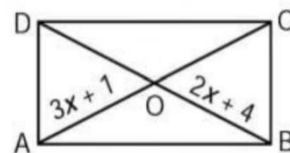
II. CASE STUDY:

1. The distance between Sun and Earth is 149600000000 m and the distance between Earth and Moon is 384000000m. During solar eclipse moon comes in between Earth and Sun.
 - a) Express the distance between sun and earth in standard form.
 - b) Express the distance between earth and moon in standard form.
 - c) During solar eclipse, what is the distance between Moon and Sun?
2. In a magical pond, the number of lotuses doubles every day. After 30 days, the pond is completely covered with lotuses.
 - a) On which day was the pond half full?
 - b) Write the number of lotuses (in exponential form) when the pond was — (i) fully covered (ii) half covered.

CH- 4 QUADRILATERALS

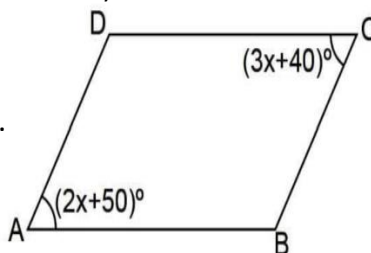
I. ANSWER THE FOLLOWING:

1. In the below figure, ABCD is a rectangle. Its diagonals meet at O.
Find x, if $OA = 3x + 1$ and $OB = 2x + 4$.

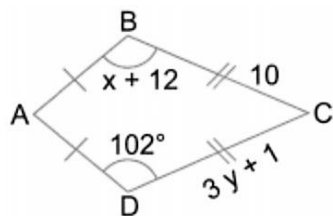


2. ABCD is a parallelogram where $m\angle A = (2x + 50)^\circ$ and $m\angle C = (3x + 40)^\circ$.

- (i) Find the value of x.
- (ii) Find the measure of each angle.



3. In a kite ABCD, find the values of x and y



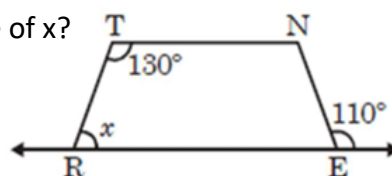
4. Construct a kite whose diagonals are of lengths 5 cm and 10 cm.

5. Find all the sides and the angles of the quadrilateral obtained by joining two equilateral triangles with sides 6 cm.

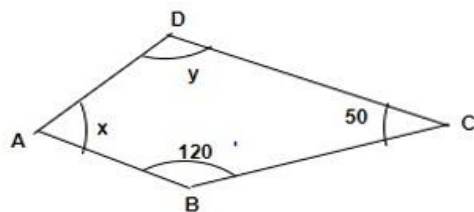
6. Using the diagonal properties, construct a parallelogram whose diagonals are of lengths 8 cm and 6 cm, and intersect at an angle of 125° .

7. Construct a square with a diagonal of length 9 cm.

8. RENT is a trapezium in which $TN \parallel RE$. What is the value of x ?



9. If ABCD is a kite, then find x and y .



10. Construct a parallelogram with $AB = 4$ cm, $AD = 5$ cm, and $\angle A = 30^\circ$.

11. **Assertion (A):** Diagonals of a rectangle are equal.

Reason (R): Opposite sides of a rectangle are parallel.

12. **Assertion (A):** Diagonals of a rhombus bisect each other at right angles.

Reason (R): All sides of a rhombus are equal.

II. CASE STUDY:

1. A renowned flooring company is developing designer tiles shaped as special quadrilaterals. One new tile design has four equal-length sides, and when measured, its diagonals intersect at right angles but differ in length. The company's production engineer must classify this shape correctly for consistency in manufacturing and cataloging.

By using the above, give the answers of the following questions:

- What is the name of this quadrilateral?
- Mention any two properties of this shape.
- Name another quadrilateral with perpendicular diagonals and unequal side lengths.



CH 5 – NUMBER PLAY

I. CHOOSE THE CORRECT ANSWER:

- The expression always gives an even number is
(a) $3g + 5h$ (b) $2a + 2b$ (c) $x^2 + 1$ (d) $5k - 2$
- The sum of two even numbers that are not multiples of 4 is always a
(a) odd number (b) multiple of 4 (c) not a multiple of 4 (d) multiple of 8

II. SOLVE THE FOLLOWING:

- Using divisibility tests, determine which of the following are divisible by 4 and divisible by 8:
a) 572 b) 5500 c) 14560 d) 1215 e) 21084
- Using divisibility tests, determine which of the following are divisible by 9:
a. 234 b. 729 c. 6318 d. 9,999 e. 100000
- Check whether the following numbers are divisible by 11
a. 847 b. 10000001 c. 12375 d. 7138956 e. 5445
- Fill in the missing digit so that the number formed is divisible by 11.
a. 92__389 b. 8__94984
- Write the smallest possible digit and the greatest possible digit in each blank so that the number formed is divisible by 3.
a. __6724 b. 4765__2

III. CASE STUDY

1. Divisibility by 5

At a math exhibition, students created a “Divisibility by 5” booth. Riya explained that any number ending in 0 or 5 is divisible by 5. She demonstrated this rule using several examples.

- Check whether 735, 420, and 1285 are divisible by 5.
- Explain why this rule works.
- Write two more numbers divisible by 5.
- What is the remainder when 1287 is divided by 5?



2. Organizing the Sports Day Parade

A games teacher wants to arrange the middle school students into marching rows for the annual sports day parade. She discovers that she can perfectly arrange the students into rows of 6 or rows of 9 without anyone being left out. Some student assistants immediately claim that the total number of students must therefore be a multiple of 54. The teacher steps in to explain that while 54 works, it isn't the smallest configuration possible due to shared factors between 6 and 9.



- Compute the true Least Common Multiple (LCM) of 6 and 9 to find the minimum row-capacity target.
- If there are exactly 36 students in the grade, show whether they can safely form uniform rows of 6 and rows of 9.
- Explain mathematically why a group of 18 students satisfies the teacher's arrangement rule but is not divisible by 54.

CH- 6 WE DISTRIBUTE, YET THINGS MULTIPLY

I. ANSWER THE FOLLOWING:

- Write the following in expanded form.

(a) $\frac{5}{8}(32y + 32)$

(b) $(8x + 3)(2x - 3)$

(c) $(9x - 7)(5x + 4)$

- Simplify $(x + 7)(x + 9) - (x + 4)(x + 5)$

- Find the increase in area when the side of a square changes from s to $(s + 4)$.

- Simplify $(x + 2)(x + 5) - (x + 3)(x + 4)$.

- Solve using algebraic identity

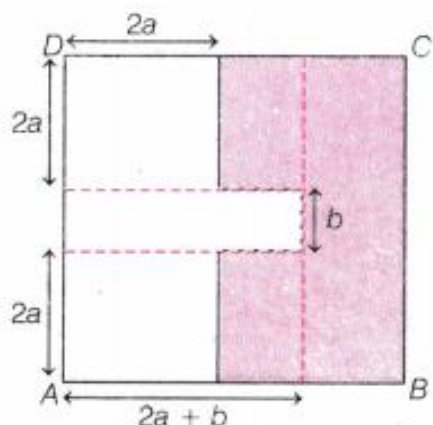
(i) 92×108

(ii) 86×74

(iii) 93×107

(iv) 89×111

- Find the area of the shaded region in the given figure, if ABCD is a square.



7. **Assertion (A)** :The increase in product of 42 and 68 when 42 is increased by 1, is 68×43 .

Reason (R): The increase in product of two numbers a and b when a is increased by 1, is b.

- (a) Both A and Reason are true and Reason is the correct explanation of Assertion
- (b) Both A and R are true but Reason is not the correct explanation of Assertion
- (c) A is true but R is false
- (d) A is false but R is true

II. CASE STUDY

1. Smart City Open Square Design

As part of a smart city initiative, planners design a square open plaza for cultural events and public gatherings. Initially, each side of the plaza measures 58 m. To accommodate larger crowds and facilities, planners decide to increase each side by 7 m. A group of students suggests using algebraic identities instead of lengthy multiplication to calculate the new area and additional space created. This real-life application helps planners make quick and accurate estimates during planning discussions and demonstrates the usefulness of algebra in urban development.



- (i) Write the identity used .
- (ii) Find original area.
- (iii) Find the increase in area.

CH-7 PROPORTIONAL REASONING - 1

I. CHOOSE THE CORRECT ANSWER:

- 1) Which of the following is a true proportion?
A. $4 : 7 :: 12 : 21$ B. $8 : 3 :: 24 : 6$ C. $7 : 12 :: 12 : 7$ D. $12 : 18 :: 28 : 12$
- 2) Which ratio is proportional to $4 : 9$?
A. $8 : 18$ B. $12 : 27$ C. $16 : 36$ D. All of the above
- 3) Blue and yellow paints are mixed in the ratio $3 : 5$. How much blue paint is needed to make 40 ml of green paint?
A. 10 mL B. 15 mL C. 20 mL D. 25 mL
- 4) Assertion (A): The ratios $5:20$ and $150:200$ are in proportion.
Reason (R): If two ratios in their simplest form are same, then the ratios are said to be proportion.

- a). Both A and R are true, and R is the correct explanation of A.
- b). Both A and R are true, but R is not the correct explanation of A.
- c). A is true, but R is false.
- d). A is false, but R is true.

II. SOLVE THE FOLLOWING :

- 1) The Moon takes about 27.3 days to complete one orbit around Earth. Approximately how many days would it take to complete 5 orbits?
- 2) Divide 36000 rupees into two parts in the ratio 2:7.
- 3) Prem and Sachin started a supermarket. Prem invested ₹ 60000 and Sachin invested ₹ 40000. They gained a profit of ₹ 5000. They decided that they would share the profit in the same ratio as their investment. What is each person's share of the profit?

III. CASE STUDY

- 1) Puneeth is having a rectangular land of Length 3600 ft, width 120 ft.



- a. What is the total Area of his land in square feet?
- b. What is the total Area of his land in Acres?
- c. Find the ratio of Area to length.

NOTE: REFER TO TEXTBOOK AND ALL NOTES & WORKSHEETS OF TERM 1 DISCUSSED AND UPLOADED IN GOOGLE CLASSROOM.