

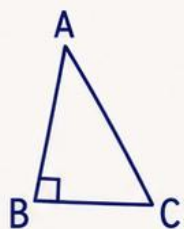


तत त्वं पूसन अपावृणु
केन्द्रीय विद्यालय संगठन

$$4 \times 3 = 12$$



$$\frac{3}{5}$$



KENDRIYA VIDYALAYA SANGATHAN

—• ZIET CHANDIGARH •—

WORKBOOK

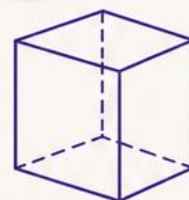
$$\frac{2}{3} + \frac{1}{6} = \frac{5}{6}$$

MATHEMATICS

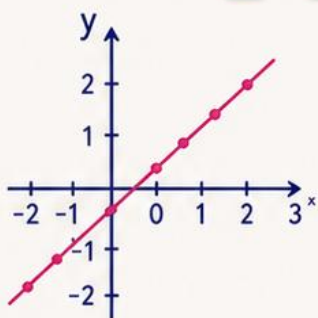
FOR

CLASS VII

(PART II)



$$-5 + 13 = 8$$



CONCEPTUAL
UNDERSTANDING



PRACTICE
REGULARLY



THINK
LOGICALLY



SUCCEED
CONFIDENTLY

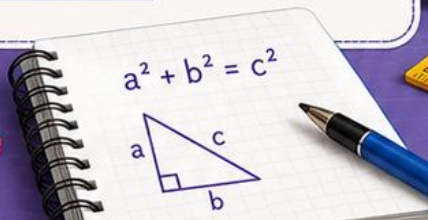
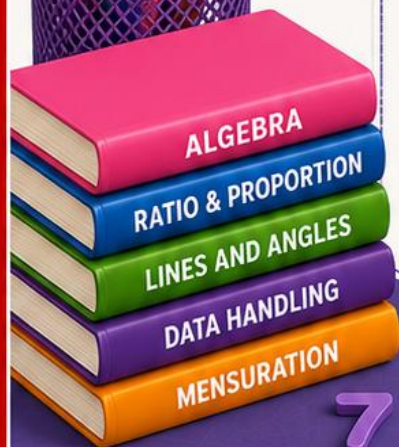
π

Name of Vidyalaya : _____

Name : _____

Class : _____ Section : _____

Roll No. : _____



संरक्षक

श्री विकास गुप्ता, भा. प्र. से.
आयुक्त
केन्द्रीय विद्यालय संगठन, नई दिल्ली

सुश्री चंदना मंडल
अपर आयुक्त (शैक्षिक)

सुश्री पी. बी. एस. उषा
संयुक्त आयुक्त (प्रशिक्षण)

श्रीमती श्रुति भार्गव
उपायुक्त एवं निदेशक
आंचलिक शिक्षा एवं प्रशिक्षण संस्थान, चंडीगढ़

श्री अजीत कुमार यादव
सह-कोर्स निदेशक
(प्राचार्य पीएम् श्री केंद्रीय विद्यालय -1 अम्बाला कैंट)

श्री असन कुमार
संसाधक
प्रशिक्षित स्नातक शिक्षक (गणित)
पीएम् श्री केंद्रीय विद्यालय -1 अमृतसर कैंट

श्रीमती हर्ष बाला
संसाधक
प्रशिक्षित स्नातक शिक्षक (गणित)
केंद्रीय विद्यालय खानपुर

FOREWORD

Education today aims to develop confident, creative, and competent learners who can apply their knowledge to solve real-life problems. In this context, the implementation of the National Education Policy (NEP) 2020 and the National Curriculum Framework (NCF) 2023 has brought a significant transformation in the teaching and learning of Mathematics. The new NCERT Class VI Mathematics textbook, *Ganita Prakash*, promotes conceptual understanding, logical reasoning, problem-solving, and joyful learning through meaningful experiences.

I am pleased to present the **"Workbook for Students of Class VII Mathematics (Part II) based on the New NCERT Textbook."** This workbook has been thoughtfully designed to supplement classroom learning and provide students with ample opportunities to practice, explore, and strengthen mathematical concepts.

The workbook contains a variety of competency-based exercises, application-oriented questions, Challenging questions, self-assessment tasks, and real-life situations. These carefully designed learning experiences encourage students to think critically, reason logically, and develop confidence in applying mathematics in everyday life. The exercises also support continuous practice and formative assessment, enabling teachers to monitor students' progress effectively.

I sincerely appreciate the dedicated efforts of the Associate Course Director, Resource Persons and Mathematics faculty who have worked tirelessly to develop this learner-friendly resource. Their commitment towards academic excellence and quality education is truly commendable.

I am confident that this workbook will become a valuable companion for students in their mathematical journey and an effective classroom resource for teachers. I extend my best wishes to all students and teachers for a joyful, engaging, and successful learning experience.

(Deputy Commissioner)

Kendriya Vidyalaya Sangathan
Zonal Institute of Education & Training, Chandigarh

CONTENT PREPARED BY:

TOPIC	NAME OF TEACHER (TGT Maths)	NAME OF KV	REGION
GEOMETRIC TWINS	DEEPAK AGARWAL	AFS NO. 1 SIRSA	GURUGRAM
OPERATIONS WITH INTEGERS			
FINDING COMMON GROUND	SUNIL GULERIA	YOL CANTT.	GURUGRAM
ANOTHER PEEK BEYOND THE POINT			
CONNECTING THE DOTS...			
CONSTRUCTIONS AND TILINGS			
FINDING THE UNKNOWN	KALPNA GUPTA	SUBATHU	GURUGRAM

MODERATED BY:

TOPIC	NAME OF TEACHER (TGT Maths)	NAME OF KV	REGION
GEOMETRIC TWINS	PRACHI MATHUR	NO.2 SRINAGAR	JAMMU
OPERATIONS WITH INTEGERS	VANDANA KUMARI	SUNJUWAN	JAMMU
FINDING COMMON GROUND	RAJVIR SINGH	PRAGATI VIHAR	DELHI
ANOTHER PEEK BEYOND THE POINT	SANJU BALA	NO.2 DELHI CANTT	DELHI
CONNECTING THE DOTS...	VANDANA GAUTAM	SPG DWARKA	DELHI
CONSTRUCTIONS AND TILINGS	VIVEK KUMAR TYAGI	SECTOR-8 RK PURAM	DELHI
FINDING THE UNKNOWN			



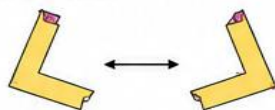
CHAPTER 1 : GEOMETRIC TWINS



SUMMARY OF CONCEPTS

1. CONGRUENCE – BASICS

- Figures that have the same shape and size are called **congruent**.
- Congruent figures can be superimposed exactly one over the other.



These figures are congruent.

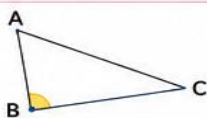
Note: A figure can be rotated or flipped before superimposing.

2. MEASUREMENTS TO RECREATE A FIGURE

- To recreate a figure exactly, we need sufficient measurements.

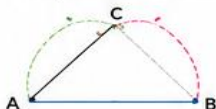
For this open figure:

- Two arm lengths (AB, BC) are not enough.
- Arm lengths AB, BC and the included angle $\angle ABC$ are enough.

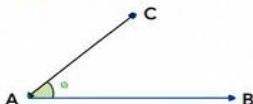


6. CONSTRUCTION OF TRIANGLES

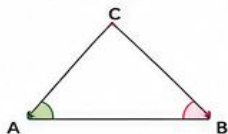
- Three sides given (SSS):** Draw base, then intersecting arcs from its endpoints with other two lengths.



- Two sides & included angle (SAS):** Draw base, construct angle, mark other side on the arm.

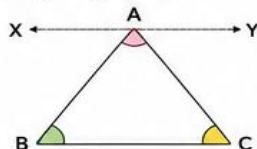


- Two angles & included side (ASA):** Draw base, construct angles at ends, intersection is third vertex.



7. ANGLE SUM PROPERTY

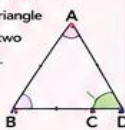
The sum of the interior angles of any triangle is 180° .



- Draw a line XY through A parallel to BC.
- By alternate angles:
 $\angle XAB = \angle B$ and $\angle YAC = \angle C$
- $\angle XAB + \angle BAC + \angle YAC = 180^\circ$
- Hence, $\angle A + \angle B + \angle C = 180^\circ$.

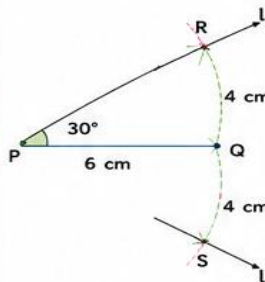
Exterior Angle Property

An exterior angle of a triangle equals the sum of the two opposite interior angles.



8. SPECIAL CASE – SSA

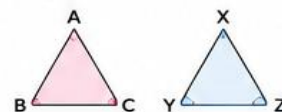
- Two sides and a non-included angle (SSA) do not always guarantee congruence.
- Two different triangles can be formed.
- Only in special cases (e.g., right triangle – RHS) congruence holds.



4. CONVENTIONS TO EXPRESS CONGRUENCE

- Write triangles in the same order of corresponding vertices.

Example:



$\triangle ABC \cong \triangle XYZ$ means

$A \leftrightarrow X, B \leftrightarrow Y, C \leftrightarrow Z$

$AB \leftrightarrow XY, BC \leftrightarrow YZ,$

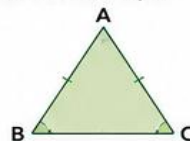
$AC \leftrightarrow XZ$

$\angle A \leftrightarrow \angle X, \angle B \leftrightarrow \angle Y,$

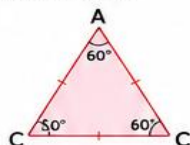
$\angle C \leftrightarrow \angle Z$

5. IN ISOSCELES & EQUILATERAL TRIANGLES

- In an **isosceles triangle**, angles opposite to equal sides are equal.



- In an **equilateral triangle**, all angles are 60° .



9. USES OF CONGRUENCE

Helps us prove that:

- equal parts are truly equal
- shapes and sizes are identical
- properties of one figure apply to its congruent counterpart

Used in real life:

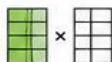
- Architecture (bridges, domes, pyramids)
- Art and designs
- Everyday patterns and structures

10. QUICK REFERENCE – FORMULAS & FACTS

Multiplication of Fractions

$$\frac{a}{b} \times \frac{c}{d} = \frac{a \times c}{b \times d}$$

- Cancel common factors before multiplying.
- When one number is between 0 and 1 $\rightarrow$ product is less than the other number.
- When one number is greater than 1 $\rightarrow$ product is greater than the other number.



Division of Fractions

$$\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \times \frac{d}{c} = \frac{a \times d}{b \times c}$$

- Find reciprocal of divisor ($\frac{d}{c}$).
- Multiply by the dividend.
- When divisor $< 1 \rightarrow$ quotient is greater than dividend.
- When divisor $> 1 \rightarrow$ quotient is less than dividend.

Reciprocal of a Fraction

The reciprocal of $\frac{a}{b}$ is $\frac{b}{a}$.

$$\left(\frac{a}{b}\right) \times \left(\frac{b}{a}\right) = 1$$

Angle Sum Property

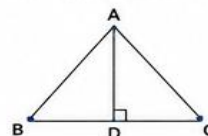
$$\angle A + \angle B + \angle C = 180^\circ$$

Equilateral Triangle

All sides equal $\rightarrow$ each angle $= 60^\circ$.

Altitude

A perpendicular from a vertex to the opposite side.



Observe carefully

Measure smartly

Compare

Match Corresponding Parts

Conclude Congruence

GEOMETRIC TWINS

WORKSHEET-1

Section A: MCQs(Part-1) (10 × 1 = 10 marks)

- Two figures are said to be congruent if they have:
 - the same shape only
 - the same size only
 - the same shape and the same size
 - the same colour and shape
- Which of the following pairs of figures are always congruent?
 - Any two squares
 - Any two circles
 - Two circles with equal radii
 - Any two rectangles with the same perimeter
- Congruence of plane figures can be verified by:
 - Superposition
 - Measuring angles only
 - Measuring sides only
 - Comparing colours
- In Congruency Symbol $\cong$, the symbol $\sim$ indicates
 - same shape
 - same size
 - same shape and same size
 - none of these
- If $\triangle ABC \cong \triangle QPR$, then which of the following is correct?
 - $AB = QR$
 - $BC = PQ$
 - $AC = PR$
 - $AB = PQ$ and $BC \neq QR$
- Which of the following real-life pairs BEST represents congruent figures?
 - A photo and its enlarged copy
 - Two identical postage stamps
 - A wall and its shadow
 - A coin and a button of the same colour
- Which rule is not use as the criterion for congruency of two triangles?
 - ASA
 - RHS
 - SSS
 - AAA
- In $\triangle DEF$ and $\triangle LMN$, $\angle D = \angle L$, $\angle E = \angle M$, and $DE = LM$. The congruence rule applicable is:
 - SSS
 - SAS
 - ASA
 - RHS
- If $\triangle ZXY \cong \triangle BAC$, then the corresponding angle of $\angle Y$ is:
 - $\angle A$
 - $\angle B$
 - $\angle C$
 - None of these
- In everyday life, congruent figures are found in:
 - Tiles on a floor
 - A growing tree
 - Shadows of objects
 - Rainbows

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

11. Two triangles have sides measuring **8 cm, 10 cm, and 12 cm** respectively. Which congruence criterion proves that they are congruent?

- (a) SAS (b) ASA (c) SSS (d) RHS

12. Which of the following pairs of figures can be congruent?

- (a) Two rectangles of dimensions $5\text{ cm} \times 8\text{ cm}$ and $8\text{ cm} \times 5\text{ cm}$
(b) Two circles of radii 4 cm and 5 cm
(c) Two squares of sides 5 cm and 7 cm
(d) Two triangles with equal perimeters only

13. If $\triangle PQR \cong \triangle XYZ$, then the side corresponding to QR is:

- (a) XY (b) YZ (c) XZ (d) PX

14. Which of the following transformations does not change the congruence of a figure?

- (a) Stretching (b) Reflection in a mirror
(c) Enlarging the figure (d) Reducing the figure

15. Two right triangles have equal hypotenuse and one corresponding leg equal. They are congruent by:

- (a) SAS (b) SSS (c) RHS (d) ASA

16. If $\triangle ABC \cong \triangle DEF$, then which statement is correct?

- (a) $\angle A = \angle E$ (b) $BC = EF$ (c) $AC = DE$ (d) $AB = EF$

17. A carpenter makes two wooden triangular frames using side lengths 6 cm, 8 cm, and 10 cm. What can be concluded about the frames?

- (a) They have equal area only. (b) They are similar but not congruent.
(c) They are congruent. (d) Nothing can be concluded.

18. Which of the following information is not sufficient to prove two triangles congruent?

- (a) Three corresponding sides are equal.
(b) Two sides and the included angle are equal.
(c) Two corresponding angles and one corresponding side are equal.
(d) Three corresponding angles are equal.

19. A square-shaped floor tile is rotated by 90° . Which statement is true?

- (a) It is no longer congruent to the original tile. (b) Only its area remains the same.
(c) It remains congruent to the original tile. (d) Its perimeter changes.

20. In two congruent triangles, one angle measures 75° . The corresponding angle in the other triangle measures:

- (a) 105° (b) 75° (c) 90° (d) Cannot be determined

WORKSHEET-2

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

1. What do you mean by congruent figures? Give two real-life examples of congruent objects found in your classroom.

2. Name the congruence criterion used in each case and justify briefly:

(a) Two triangles have sides 5 cm, 7 cm, 9 cm each.

(b) Two triangles have two equal sides and the angle between them equal.

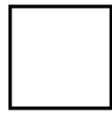
3. What measurements would you take to create a figure congruent to a given:

(a) Circle

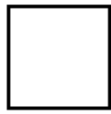
(b) Rectangle

4. Suppose Δ HOT is congruent to Δ SUN. List all the other correct ways of expressing this congruence using symbol.

5. Look at the four shapes below: Number given below figure represent length by breadth of figure.



[A] 3×3



[B] 3×3



[C] 3×4



[D] 4×4

Identify which shapes are congruent.

- (a) Which shapes are congruent to each other? Write the letters.
(b) Explain why shapes C and D are NOT congruent.

6. In $\triangle MON$ and $\triangle TUE$: $MO = UT = 6$ cm, $ON = TE = 8$ cm, $\angle O = \angle T = 90^\circ$. Name the congruence rule and write the congruence statement.

7. If $\triangle PQR \cong \triangle YZX$, $PQ = 5.4$ cm, $QR = 6.8$ cm, $PR = 7.2$ cm. Find XY , YZ , and XZ without measuring.

8. In the figure below, $\triangle ABC \cong \triangle PQR$. Write all the corresponding sides and angles.

9. During the lesson on Geometric Twins, a discussion raised among the students of class VII.

Neha says, "All squares are congruent."

Ravi says, "Only squares with the same side are congruent."

Now Teacher asked the remaining students that Who is correct and why?. Many view-points were shared and listened, but finally Nishant arrived at the correct answer. Therefore the answer to it is

10. If $\triangle DEF = \triangle PQR$, write the part(s) of $\triangle PQR$ that correspond to

(a) $\angle Q$

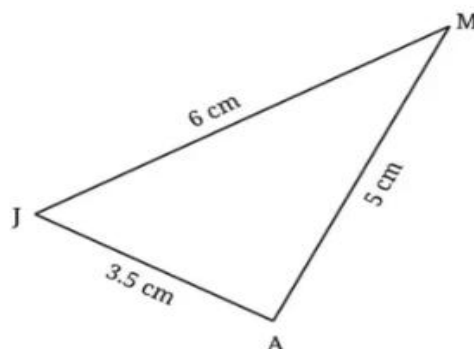
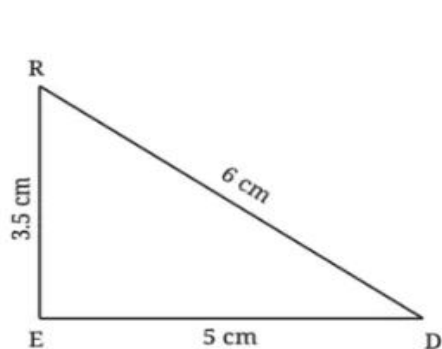
(b) $\angle F$

(c) EF

(d) DF

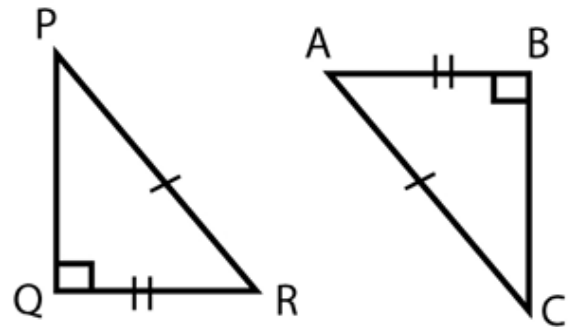
Section C: Short Answer ($6 \times 3 = 18$ marks)

11. Determine whether the triangles are congruent. If yes, express the congruence.

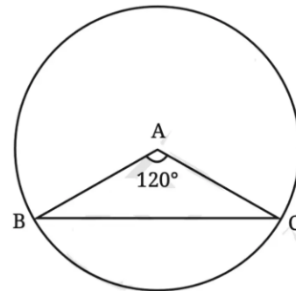


12. Determine whether the triangles are congruent.

If yes, express the congruence.



13. Find $\angle B$ and $\angle C$, if A is the Centre of the circle.



14. Each of the following cases contains certain measurements taken from two triangles. Identify the pairs in which the triangles are congruent to each other, with reason. Express the congruence whenever they are congruent.

(a) $AB = DF$, $\angle B = \angle D = 90^\circ$, $AC = FE$

(d) $\angle A = \angle D$, $\angle B = \angle E$, $AC = DF$

15. State whether the following statements are True or False.

(a) Congruent figures always have the same shape and size.

(b) Two figures with equal area are always congruent.

(c) Rotating a figure changes its congruence.

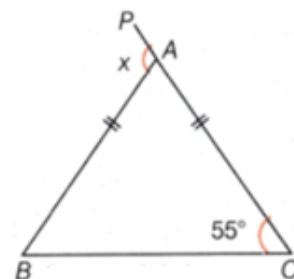
16. O is the midpoint of both diagonals AC and BD of quadrilateral ABCD.

Draw the figure and Show that $\triangle AOB \cong \triangle COD$.

Section D : Long Answer Questions (4 x 5 = 20 marks)

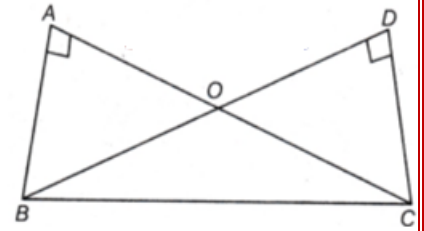
17. In the given figure, if $AB = AC$, $\angle ACB = 55^\circ$.

Find $\angle ABC$, $\angle BAC$ and if $\angle PAB = x$, then find the value of x .

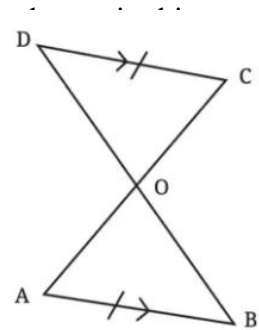


18. In the following figure, $\triangle ABC$ and $\triangle DCB$ are right angled at A and D, respectively and $AC = DB$.

- Write the pair of corresponding equal parts in $\triangle ABC$ and $\triangle DCB$ with suitable reasons.
- Write the Congruence criterion.
- Write the order for congruence of triangles.



19. Given that CD and AB are parallel, and $AB = CD$, what are the other equal parts in the figure? Are the two resulting triangles congruent? If so, express the congruence.)



20. In $\triangle ABC$, $AB = AC$ and D is the midpoint of BC. Draw the figure and then Prove that $\triangle ABD \cong \triangle ACD$ by writing corresponding equal parts.

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

21. Design a Kite

Arjun is designing a kite. The kite has two pairs of congruent triangles. The kite ABCD has a vertical axis AC and a horizontal axis BD such that O is their intersection point, $AO = 30$ cm, $OC = 20$ cm, $BO = OD = 15$ cm.

- (a) Draw the figure for the abovesaid kite.
- (b) Name the two pairs of congruent triangles in the kite.
- (c) State the congruence criterion for each pair and prove one pair congruent.

22. Railway Bridge



Rohan is an aspiring architect. He is observing a railway bridge made of steel beams. He notices that the structure is composed of several triangular sections. He focuses on one particular section, where two triangles, $\triangle ABC$ and $\triangle PQR$ are used to support a heavy load.

His supervisor informs him that these two triangles are exactly the same in shape and size, meaning that $\triangle ABC = \triangle PQR$ under the correspondence $A \leftrightarrow P$, $B \leftrightarrow Q$ and $C \leftrightarrow R$.

- (i) If the length of side $AB = 5$ cm and $BC = 7$ cm, what must be the length of side PQ ?
- (ii) Rohan measures $\angle ABC$ to be 60° and $\angle BAC$ to be 80° . What is the measure of $\angle PRQ$?
- (iii) Which congruence criterion would Rohan use if he only knew that $AB = PQ$, $AC = PR$ and $\angle BAC = \angle QPR$?

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	1	2	3	4	5	6	7	8	9	10
Ans	c	c	a	a	d	b	d	c	c	a
Q	11	12	13	14	15	16	17	18	19	20
Ans	c	a	b	b	c	b	c	d	c	b

Answers of Worksheet-2:

Q	1	2	3	4	5
Ans		(a) SSS (b) SAS.	Radius length and breadth	1. $\triangle HOT \cong \triangle SUN$ 2. $\triangle OTH \cong \triangle UNS$ 3. $\triangle TOH \cong \triangle NUS$ 4. $\triangle HTO \cong \triangle SNU$ 5. $\triangle OHT \cong \triangle USN$ 6. $\triangle THO \cong \triangle NSU$	A and B are congruent
	6	7	8	9	10
	Rule: SAS Statement: $\triangle MON \cong \triangle UTE$	$YZ = PQ = 5.4 \text{ cm}$ $XZ = QR = 6.8 \text{ cm}$ $XY = PR = 7.2 \text{ cm}$	$AB = PQ$ $BC = QR$ $AC = PR$ $\angle A = \angle P,$ $\angle B = \angle Q$ $\angle C = \angle R.$	figures to be congruent their dimensions	(a) $\angle Q = \angle E$ (b) $\angle F = \angle R$ (c) $EF = QR$ (d) $DF = PR$
	11	12	13	14	15
	$\triangle RED \cong \triangle JAM$	$\triangle PQR \cong \triangle CBA$	$\angle C = \angle B = 30^\circ$	Yes	(a) True (b) False (c) False
	16	17	18		
	proof	$x = 110^\circ$	i) $\angle A = \angle D$ (Each 90°) $AC = BD$ (Given) $BC = BC$ (common) ii) By RHS Congruence rule iii) any of 6 possible ways like $\triangle ABC \cong \triangle DCB$)		
	19	20	21		22
	Yes	proof	ii)($\triangle AOB$ & $\triangle AOD$) and ($\triangle BOC$ & $\triangle COD$) iii) $\triangle AOB \cong \triangle AOD$		(i) 5 cm (ii) 40° (iii) SAS



CHAPTER 2 : OPERATIONS WITH INTEGERS

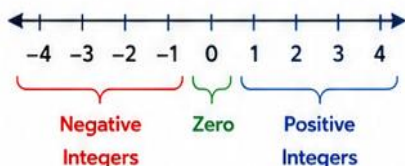


SUMMARY OF CONCEPTS

1. INTEGERS

Integers are the set of positive numbers, negative numbers and zero.

$$\mathbb{Z} = \{ \dots, -3, -2, -1, 0, 1, 2, 3, \dots \}$$



Key Idea

Integers can be represented on a number line.

2. ADDITION & SUBTRACTION OF INTEGERS

- Addition of integers follows the same rules as in Grade 6.
- Subtraction of integer a by integer b is the same as $a + (-b)$.

Using Token Model

Green token (+1) Red token (-1)

$$+1 + (-1) = 0$$

Use zero pairs (+1 and -1) to add or remove tokens as needed.

3. MULTIPLICATION OF INTEGERS

Multiplied Numbers	Rule
$(+) \times (+) = +$	Same signs $\rightarrow$ Positive
$(-) \times (-) = +$	Same signs $\rightarrow$ Positive
$(+) \times (-) = -$	Different signs $\rightarrow$ Negative
$(-) \times (+) = -$	Different signs $\rightarrow$ Negative

Properties

- Commutative Property : $a \times b = b \times a$
- Associative Property : $a \times (b \times c) = (a \times b) \times c$
- Distributive Property : $a \times (b + c) = (a \times b) + (a \times c)$

4. DIVISION OF INTEGERS

Dividend $\div$ Divisor	Rule
$(+) \div (+) = +$	Same signs $\rightarrow$ Positive
$(-) \div (-) = +$	Same signs $\rightarrow$ Positive
$(+) \div (-) = -$	Different signs $\rightarrow$ Negative
$(-) \div (+) = -$	Different signs $\rightarrow$ Negative

Key Rules

- Division by zero is not defined.
- $a \div b = a \times \left(\frac{1}{b}\right)$, where $b \neq 0$

5. TOKEN MODEL FOR MULTIPLICATION

$$(+) \times (+) = +$$

Add positive tokens repeatedly.
 $(3 \times 2 = 6)$



$$(+) \times (-) = -$$

Add negative tokens repeatedly.
 $(3 \times (-2) = -6)$



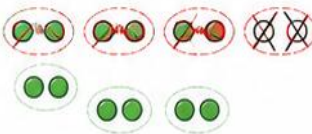
$$(-) \times (+) = -$$

Add negative tokens repeatedly.
 $((-3) \times 2 = -6)$



$$(-) \times (-) = +$$

Remove negative tokens (using zero pairs). $((-3) \times (-2) = 6)$



Zero pairs: $\bullet +1$ and $\bullet -1$ together make 0 (cancel each other).

6. SPECIAL CASES

Multiplication:

$$\begin{aligned} a \times 1 &= a \\ a \times (-1) &= -a \\ (-1) \times (-1) &= 1 \\ a \times 0 &= 0 \end{aligned}$$

Division:

$$\begin{aligned} a \div 1 &= a \\ a \div (-1) &= -a \\ 0 \div a &= 0 \quad (a \neq 0) \end{aligned}$$

Remember

- Keep track of the sign.
- Magnitude is the same as for positive numbers.

7. EXPRESSIONS WITH INTEGERS

- Follow BODMAS rule.
- Multiplication and division are done from left to right.
- Use brackets to show the order clearly.



Example:

$$(-2) \times (3 + (-5)) = (-2) \times (-2) = 4$$

8. APPLICATIONS IN REAL LIFE

Temperature



If temperature drops 5°C per hour from 8°C , after 4 hours:
 $8 + (4 \times (-5)) = -12^\circ\text{C}$

Profit and Loss



Profit = positive
Loss = negative
Total = Profit + Loss

Elevator Movement



Up = positive
Down = negative
Final position =
Start + (Speed $\times$ Time)

9. IMPORTANT TAKEAWAYS

- Integers include positive numbers, negative numbers and zero.
- Addition and subtraction follow the rules using zero pairs.
- Signs in multiplication and division follow fixed rules.
- Multiplication is commutative, associative and distributive.
- Division by zero is not defined.
- Integers are used in many real-life situations like temperature, money, elevators, games and more.

QUICK REFERENCE



MULTIPLICATION RULE

$$\begin{aligned} (+) \times (+) &= + \\ (-) \times (-) &= + \\ (+) \times (-) &= - \\ (-) \times (+) &= - \end{aligned}$$

DIVISION RULE

$$\begin{aligned} (+) \div (+) &= + \\ (-) \div (-) &= + \\ (+) \div (-) &= - \\ (-) \div (+) &= - \end{aligned}$$

DISTRIBUTIVE LAW

$$\begin{aligned} a \times (b + c) \\ &= a \times b + a \times c \end{aligned}$$

ASSOCIATIVE LAW

$$\begin{aligned} a \times (b \times c) \\ &= (a \times b) \times c \end{aligned}$$

COMMUTATIVE LAW

$$a \times b = b \times a$$

ZERO PAIR

$$\begin{aligned} +1 \text{ and } -1 \\ \text{make } 0. \\ \bullet + \bullet \end{aligned}$$



Key to Success: Understand $\rightarrow$ Practice $\rightarrow$ Observe Patterns $\rightarrow$ Apply in Real Life



OPERATION WITH INTEGERS

WORKSHEET-1

Section A: MCQs(Part-1) ($10 \times 1 = 10$ marks)

- Which of the following is the greatest integer?
(a) -2 (b) -7 (c) 0 (d) -1
- On a number line, the integer -4 is located:
(a) 4 units to the right of 0 (b) 4 units to the left of 0 (c) between 0 and 4 (d) at 4
- A coin starts at -3 on a number line. Its first movement is $+11$ units. If the final position of the coin is $+5$ then the second movement is _____.
(a) -19 (b) $+3$ (c) $+19$ (d) None of these.
- How many pairs of opposite integers are there between -4 and 5 ?
(a) 4 (b) 5 (c) 3 (d) None of these
- The temperature at 5 PM was 5°C . If the drop in temperature takes place by 2°C every hour. At What time the temperature is dropped by 16°C ?
(a) 12 PM (b) 1 AM (c) 11 AM (d) 1 PM
- The weather report suggested that your city's temperature increased from -10°C to 20°C . What is the rise in temperature?
(a) 20°C (b) -20°C (c) -30°C (d) 30°C
- The sum of two integers is zero only when:
(a) Both are positive (b) Both are negative
(c) Two integers with same magnitude and opposite sign (d) Both are non - zero
- How many integers are their between -2 and 6 .
(a) 7 (b) 8 (c) 9 (d) 10
- Which rule is used in $(-5)(18 + (-6)) = (-5 \times 18) + (-5 \times -6)$?
(a) Commutative property (b) Associative property
(c) Distributive property (d) Identity property
- Which of the following gives a positive value.
(a) $4 \times (-3)$ (b) $(-6) \times 3$ (c) $(-5) \times 0$ (d) $(-9) \times (-10)$

WORKSHEET-2

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

1. State True or False.

(a) When a fixed positive integer is multiplied by consecutive negative integers, the product increases by a constant amount.

(b) If a negative integer is subtracted from a positive integer, then we move to the right side on the number line.

2. Find $(+7) - (+18)$ using token model.

3. If $47 - 56 + 14 - 8 + 2 - 8 + 5 = -4$, then find the value of $\frac{47 - 56 + 14 - 8 + 2 - 8 + 5}{-47 + 56 - 14 + 8 - 2 + 8 - 5}$ without calculating the full expression.

4. Find the values of the expression: $(-5) \times (18 + (-3))$.

5. Write a positive and a negative integer whose Sum is - 5 and difference is 7.

6. An exam has +4 marks for each correct answer and -2 mark for each wrong answer. If Riya answered 25 questions correctly and 15 wrongly then find her total marks.

7. Mt. Everest, the highest peak in Asia, is 29,028 feet above sea level. The Dead Sea is 1,312 feet below sea level. What is the level difference between these two places?

8. Andrew has deposited ₹ 5500 and has withdrawn ₹ 4800 two times consecutively. Find the amount in his account.

9. Find the sum of all integers from - 149 to 150 without performing any actual calculations.

10. Represent the following integers on a number line: -5 , -2 , 0 , 3 .

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

11. The temperature recorded in a city on Monday is 50°C . If the temperature increases by 10°C on Tuesday and falls by 11°C on Wednesday. Find the temperature recorded on Wednesday. Did the temperature on Wednesday fall/ rise from Monday and by how much. Show your answer.

12. If a submarine is at -240 m and every hour it rises by 40 m, then what will be its new position after 4 hour. If it doesn't reach the sea level, then how much more time it required to reach the sea level.

13. Arrange the following integers in ascending order: $-12, 7, -3, 0, -8, 5$. Find the sum of all these integers

14. Evaluate: $(9) \times (-77) + (-9) \times 23$.

15. Fill in the blanks using the rule of signs:

(a) $(-) \times (-) \times (+) \times (-) = \underline{\hspace{2cm}}$

(b) $(-48) \div (\underline{\hspace{2cm}}) = 8$

(c) $\underline{\hspace{2cm}} \times (-7) = 63$

16. A class of 30 students participated in a quiz. For every correct answer $+3$ marks are awarded and for every wrong answer -1 mark is given. Rahul got 15 correct and 5 wrong answers. Priya got 12 correct and 8 wrong answers. Who scored more and by how many marks?

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

17. Arrange the expressions given below in increasing order.

(a) $(-348) + (-1064)$

(b) $348 - (-1064)$

(c) $348 \times (-1064)$

(d) $(-348) - (-1064)$

(e) $(-348) \times (-1064)$

(f) 348×964

18. On Monday, the temperature in Shimla was -3°C . Each day for the next 5 days, the temperature dropped by 2°C . What was the temperature on Saturday? Also represent the daily temperatures on a number line.

19. A shopkeeper earns a profit of ₹5 by selling one pen and incurs a loss of ₹2 per eraser. In a particular month, he incurs a total loss of ₹10. If he sold 20 pens, how many erasers did he sell?

20. In a test, $(+4)$ marks are given for every correct answer and (-2) marks are given for every incorrect answer.

(a) Anita answered all the questions in the test. She scored 40 marks even though 15 of her answers were correct. How many of her answers were incorrect? How many questions are in the test?

(b) Anil scored (-10) marks even though he had 5 correct answers. How many of his answers were incorrect? Did he leave any questions unanswered?

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

21. A Shopkeeper

A shopkeeper records his daily profit/loss (in ₹) for 6 days of a week:

Monday: +₹350, Tuesday: -₹120, Wednesday: +₹280, Thursday: -₹95, Friday: +₹430,
Saturday: -₹175

- (a) Find the total profit or loss for the week.
- (b) Find the average daily profit/loss.
- (c) On which days did he face losses? What is the total loss?

22. Mountain Expedition

A team of mountaineers is climbing Mount Everest. The base camp is at 5,364 m above sea level. Camp I is 660 m above base camp. Camp II is 500 m above Camp I. The Dead Zone starts 1,000 m above Camp II. However, after a snowstorm, the team had to descend 820 m from Camp II to set up a rescue camp.

- (i) Taking base camp as 0, represent the positions of Camp I and Camp II as integers.
- (ii) How far is the Dead Zone from the base camp (in integer terms)?
- (iii) Write and evaluate the integer expression for the rescue camp's position relative to base camp.
- (iv) The team climbs back from the rescue camp to reach the peak, which is 3,682 m above Camp II. Write the total journey from base camp to peak as an integer sum.

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:

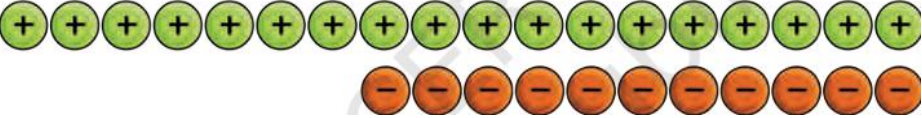
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Answers of Worksheet-1:

Q	1	2	3	4	5	6	7	8	9	10
ANS	d	b	d	c	b	d	c	a	c	d
Q	11	12	13	14	15	16	17	18	19	20
ANS	a	b	b	a	c	a	b	c	b	a

Answers of Worksheet-2:

Q	1	3	4	5	6
ANS	(a) False (b) True	-1	-75	1 and - 6	70
Q	7	8	9	10	11
ANS	30340 feet	- ₹ 4100	0	Representation on number line	49°C 1°C
Q	12	13	14	15	16
ANS	2 hr	-12, -8, -3, 0, 5, 7 -11	-900	(a) - (b) - 6 (c) -9	40 28 12
Q	17	18	19	20	
ANS	(e), (a), (b), (c), (f), (d)	-13°C	55	(a) Number of incorrect answers=10 Total questions in the test = 25 questions. (b) incorrect answers =15 He did not leave any question unanswered.	
Q	21	22			
ANS	+ ₹660, + ₹110 Total loss = - ₹ 390	+ 660 m, + 1160 m + 2160 340 m = 4502 m			

Q No	Answers
12	We have 7 positives and we need 11 more. So we need to put in 11 zero pairs  We can now remove 18 positives.  So, $7 - 18 = -11$.



CHAPTER 3 : FINDING COMMON GROUND



SUMMARY OF CONCEPTS

1. HIGHEST COMMON FACTOR (HCF / GCD)

- The HCF (or GCD) of two or more numbers is the greatest of their common factors.

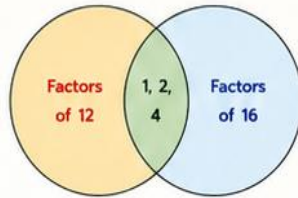
Example: HCF of 12 and 16

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

Factors of 16 : 1, 2, 4, 8, 16

Common factors: 1, 2, 4

HCF = 4



Finding HCF using Prime Factorisation

Steps:

- Find prime factorisation of the numbers.
- Take the common prime factors.
- Take the smallest power of each common prime.

Example:

$$12 = 2^2 \times 3 \quad 16 = 2^4$$

Common prime: 2

Smallest power: 2^2

$$\text{HCF} = 2^2 = 4$$

2. LOWEST COMMON MULTIPLE (LCM)

- The LCM of two or more numbers is the least (smallest) of their common multiples.

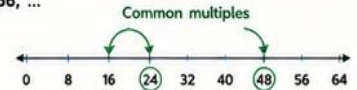
Example: LCM of 6 and 8

Multiples of 6 : 6, 12, 18, 24, 30, 36, 42, 48, ...

Multiples of 8 : 8, 16, 24, 32, 40, 48, 56, ...

Common multiples: 24, 48, 72, ...

LCM = 24



Finding LCM using Prime Factorisation

Steps:

- Find prime factorisation of the numbers.
- Take all prime factors (common and non-common).
- Take the greatest power of each prime.

Example:

$$6 = 2 \times 3 \quad 8 = 2^3$$

All primes: 2, 3

Greatest powers: $2^3, 3^1$

$$\text{LCM} = 2^3 \times 3 = 24$$

3. RELATION BETWEEN HCF AND LCM

For any two positive integers a and b:

$$\text{HCF}(a, b) \times \text{LCM}(a, b) = a \times b$$

Example: For 12 and 18

HCF = 6, LCM = 36

$$6 \times 36 = 216 = 12 \times 18 \quad \checkmark$$

4. QUICK PROCEDURE (COMMON DIVISION METHOD)

Divide both numbers by common factors successively.

To find HCF → Multiply the common factors only.

To find LCM → Multiply the common factors and the last remaining numbers.

Example: 84 and 180

$$\begin{array}{r|rr} 2 & 84 & 180 \\ 2 & 42 & 90 \\ 3 & 21 & 45 \\ & 7 & 15 \end{array} \quad \begin{array}{l} \text{HCF} = 2 \times 2 \times 3 \\ = 12 \end{array}$$

$$\text{LCM} = 2 \times 2 \times 3 \times 7 \times 15 = 1260$$

5. SPECIAL CASES & PATTERNS

- If one number is a factor (or multiple) of the other, HCF is the smaller number.
- Consecutive numbers → HCF = 1
- Co-prime numbers → HCF = 1
- If both numbers are doubled, HCF also doubles.
- LCM of co-prime numbers = product of the numbers.
- In general:
 - Multiples of a number share that number as a common factor.
 - Common multiples are multiples of the LCM.

6. MULTIPLICATION OF INTEGERS

Signs of Numbers	Product	Rule	Properties
$+$ $\times$ $+$	$+$	Same signs → Positive	Commutative : $a \times b = b \times a$
$-$ $\times$ $-$	$+$	Same signs → Positive	Associative : $a \times (b \times c) = (a \times b) \times c$
$+$ $\times$ $-$	$-$	Different signs → Negative	Distributive : $a \times (b + c) = a \times b + a \times c$
$-$ $\times$ $+$	$-$	Different signs → Negative	Identity : $a \times 1 = a, a \times (-1) = -a$
			Zero : $a \times 0 = 0$

7. DIVISION OF INTEGERS

Signs of Numbers	Quotient	Rule	Key Points
$+$ $\div$ $+$	$+$	Same signs → Positive	Division by zero is not defined.
$-$ $\div$ $-$	$+$	Same signs → Positive	$a \div b = a \times \left(\frac{1}{b}\right), b \neq 0$
$+$ $\div$ $-$	$-$	Different signs → Negative	$a \div 1 = a, a \div (-1) = -a$
$-$ $\div$ $+$	$-$	Different signs → Negative	$0 \div a = 0 \quad (a \neq 0)$

8. REAL-LIFE APPLICATIONS

Tiling / Packing



Largest square tile or pack size = HCF
(e.g. room 12 ft $\times$ 16 ft → HCF = 4 ft tiles)

Packing / Grouping



Equal weight bags with least number = HCF
(e.g. 84 kg & 108 kg → HCF = 12 kg)

Meeting / Events



Events repeat together after = LCM
(e.g. every 7 & 10 days → LCM = 70 days)

Games / Patterns



Common step/jump size or pattern repeat = LCM
(e.g. Jump Jackpot game)

9. QUICK REFERENCE

Prime Factorisation Steps

- Divide the number by the smallest prime factor.
- Divide the quotient again by a prime factor.
- Continue till the quotient is 1.
- Multiply all the prime factors.

To Find HCF & LCM (Using Prime Factors)

- HCF → Multiply common primes with their smallest powers.
- LCM → Multiply all primes with their greatest powers.



Use HCF for largest size or least number of groups.



Use LCM for repeating events or common cycles.



Follow sign rules in multiplication and division.



HCF $\times$ LCM = Product of the numbers.



Prime factorisation is the key to quick and easy solutions!

FINDING THE COMMON GROUND

WORKSHEET-1

Section A: MCQs (Part-1) ($10 \times 1 = 10$ marks)

1. The common factors of 12 and 16 are:

- a) 1, 2, 4 b) 2, 4, 8 c) 1, 3, 4 d) 1, 2, 8

2. A prime number has exactly:

- a) 1 factor b) 2 factors c) 3 factors d) 4 factors

3. Prime factorisation of 105 is:

- a) $3 \times 5 \times 7$ b) 5×21 c) 15×7 d) 35×3

4. Which of the following is NOT a factor of 225?

- a) 15 b) 45 c) 75 d) 100

5. The HCF of 45 and 75 is:

- a) 5 b) 10 c) 15 d) 25

6. Co-prime numbers have HCF:

- a) 0 b) 1 c) 2 d) Same as smaller number

7. The Lowest Common Multiple means:

- a) Greatest factor b) Smallest common multiple
c) Largest multiple d) Prime multiple

8. The LCM of 6 and 8 is:

- a) 12 b) 24 c) 48 d) 72

9. The shortest toran length possible for strips of 6 cm and 8 cm is:

- a) 12 cm b) 18 cm c) 24 cm d) 48 cm

10. If one number is a multiple of another, then the LCM is:

- a) Smaller number b) Product c) Larger number d) 1

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

11. The HCF of 24 and 36 is:

- a) 6 b) 12 c) 18 d) 24

12. The LCM of 8 and 12 is:

- a) 12 b) 24 c) 36 d) 48

13. If HCF of two numbers is 5 and their product is 500, then their LCM is:

- a) 50 b) 100 c) 25 d) 20

14. Which of the following numbers is a factor of both 45 and 60?

- a) 5 b) 9 c) 12 d) 15

15. If two numbers are co-prime, their HCF is:

- a) 0 b) 1 c) 2 d) Their LCM

16. Three bells ring at intervals of 9 minutes, 12 minutes, and 15 minutes. If they ring together at 8:00 a.m., after how many minutes will they ring together again?

- (a) 90 minutes (b) 180 minutes (c) 60 minutes (d) 45 minutes

17. Which of the following pairs of numbers is co-prime?

- (a) 18 and 24 (b) 21 and 28 (c) 25 and 36 (d) 27 and 45

18. A teacher has 42 red pens and 56 blue pens. She wants to make identical gift packs using all the pens without any left over. What is the greatest number of gift packs she can make?

- (a) 7 (b) 14 (c) 21 (d) 28

19. Which of the following numbers has the prime factorisation $2^3 \times 3^2 \times 5$?

- (a) 240 (b) 300 (c) 360 (d) 420

20. The HCF of two numbers is 8, and one of the numbers is 40. Which of the following cannot be the other number?

- (a) 24 (b) 56 (c) 72 (d) 30

WORKSHEET-2

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

1. Find the HCF of 112 and 84 using prime factorisation.

2. How many 4 ft by 4 ft square tiles will Sameeksha need to cover her 12 ft by 16 ft room's floor?

3. Two treasures are buried at numbers 12 and 28 on a number line. Jumpy wants to jump starting at 0 with the longest possible jump length to land exactly on both treasures. What is the longest jump size?

4. If one number is a factor of the other, what will the HCF of the two numbers be?

5. Find the LCM of 15,20 by prime factorisation.

6. Write the prime factorisation of 300.

7. What will be the HCF of two consecutive numbers ?

8. The factors of 84 are: 1, 2, 3, 4, 6, 7, 12, 14, 21, 28, 42, 84. The factors of 108 are:

1, 2, 3, 4, 6, 9, 12, 18, 27, 36, 54, 108. What is the HCF?

9. Check whether 2×7 is a factor of 210 ?

10. Using prime factorisation, find the HCF of $3 \times 3 \times 5 \times 7 \times 7$ and $12 \times 7 \times 11$.

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

11. If the product of two numbers is 950, their HCF is 5. Find The LCM of these two numbers .

12. Verify: $\text{HCF}(30, 72) \times \text{LCM}(30, 72) = 30 \times 72$

13. Find the prime factorisation of 1200

14. . Find the HCF of 300 and 150 using the division method.

15. Find the LCM of 24,30 and 36.

16. Meena has 24 toffees and 36 chocolates. She wants to pack them into small bags so that each bag has the same number of toffees and the same number of chocolates, with nothing left over

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

17. A shopkeeper has two ropes, one 48 m long and the other 60 m long. He wants to cut both ropes into pieces of equal length with no rope wasted. What is the longest possible length of each piece?

18. Bus A leaves a bus stand every 18 minutes and Bus B leaves every 24 minutes. Both buses left the stand together at 6:00 a.m. At what time will they next leave together?

19. Two numbers have an HCF of 12 and an LCM of 360. One of the numbers is 72. Find the other number. Also verify your answer by checking that the product of the two numbers equals the product of their HCF and LCM.

20. Lekhana bought 84 kg and 108 kg of rice from two farms. She wants to pack it in bags of equal weight using as few bags as possible. What should the bag weight be? How many bags of each type will she need? Show full working.

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

21. The craft competition

Priya's school is holding a craft fair. She has three rolls of ribbon — one red roll of **72 cm**, one blue roll of **90 cm**, and one yellow roll of **120 cm**. She wants to cut all the ribbons into pieces of equal length so that no ribbon is wasted, and each piece is as long as possible.



A) What is the greatest length of each piece of ribbon that Priya can cut? Show your working using prime factorisation.

B) How many pieces will she get from each ribbon — the red, the blue, and the yellow — if she cuts them at the length found in part (A)?

C) If Priya instead wants pieces of exactly 6 cm each, will there be any ribbon wasted? Justify your answer and state how many total pieces she will get from all three rolls together.

22. Rohan is preparing goody bags for his birthday party. He has 48 chocolates, 60 lollipops, and 36 toffees. He wants to divide them equally into as many bags as possible, with each bag having the same number of each type of sweet and nothing left over.



A) Find the maximum number of goody bags Rohan can make. What is the HCF of 48, 60, and 36?

B) How many chocolates, lollipops, and toffees will go into each bag?

C) Rohan's mother adds 24 more chocolates to the collection. Does the maximum number of bags change now? Find the new HCF of all the chocolates (72), lollipops (60), and toffees (36) and explain.

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.	A	B	A	D	C	B	B	B	C	C
Q.No.	11	12	13	14	15	16	17	18	19	20
Ans.	B	B	B	A	B	b	c	b	c	d

Answers of Worksheet-2

Q.No.	1	2	3	4	5	6
	28	12 tiles	4	Smaller number	60	$2^2 \times 3 \times 5^2$
	7	8	9	10	11	12
Ans.	1	12	Yes	7	190	Verified ($2160=2160$)
	13	14	15	16	17	18
	$2^4 \times 3 \times 5^2$	150	360	12 bags	12 m	72 min (7:12 a.m.)
	19	20				
	60	12 kg; 7 & 9bags	(A)6 cm (B)12,15,20 (C)47pieces	(A)12 bags (B)4,5,3 (C)HCF=12		



CHAPTER 4 : ANOTHER PEEK BEYOND THE POINT



SUMMARY OF CONCEPTS

1. DECIMALS – A QUICK RECAP

Decimals are an extension of our place value system to represent decimal fractions like $\frac{1}{10}$, $\frac{1}{100}$, $\frac{1}{1000}$, ...

Example: 27.53

Tens	Ones	Tenths	Hundredths
2	7	.	5 3

27.53 = 2 Tens + 7 Ones + 5 Tenths + 3 Hundredths

Fractions with denominators 10, 100, 1000, ... can be written as decimals.

Examples:

$$\frac{254}{1000} = 0.254 \quad \frac{847}{10000} = 0.0847 \quad \frac{173}{100} = 1.73$$

2. MULTIPLICATION OF DECIMALS

- Multiply the numbers as whole numbers.
- In the product, place the decimal point so that the number of digits after decimal = sum of digits after decimal in multiplier and multiplicand.

Example:

$$\begin{array}{r} 5.8 \times 1.24 \\ \times 1.24 \\ \hline 232 \\ 580 \\ 696 \\ \hline 7192 \end{array}$$

1 digit after decimal 2 digits after decimal

Product as whole numbers

Total decimal digits = 3

Product Comparison

- Both > 1 → Product $>$ both numbers
- Both between 0 and 1 → Product $<$ both numbers
- One > 1 and other between 0 and 1 → Product is between the two numbers

3. DIVISION BY 10, 100, 1000, ...

Move the decimal point to the LEFT by as many places as there are zeroes in the divisor.

Number	÷ 10	÷ 100	÷ 1000
18.7	1.87	0.187	0.0187
21.1	2.11	0.211	0.0211
2.146	0.2146	0.02146	0.002146
0.306	0.0306	0.00306	0.000306

4. DIVISION USING PLACE VALUE (LONG DIVISION)

- Same method as for whole numbers.
- After Ones, regroup to Tenths, Hundredths, Thousandths, ...
- Place the decimal point in the quotient when we start dividing the Tenths.

Example: $1325 \div 4 = 331.25$

$$\begin{array}{r} 4 \overline{) 1325} \quad 1325 \div 4 = 331.25 \\ \underline{-12} \\ 12 \\ \underline{-12} \\ 5 \\ \underline{-4} \\ 10 \\ \underline{-8} \\ 20 \\ \underline{-20} \\ 0 \end{array}$$

→ Hundreds
→ Tens
→ Ones
→ Tenths
→ Hundredths

5. DIVISION WITH DECIMAL DIVISOR

- Make the divisor a whole number by multiplying both dividend and divisor by 10, 100, 1000, ...
- Then divide using place value method.

Example: $4.68 \div 0.13$

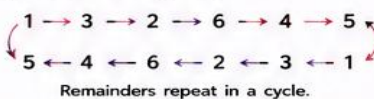
$$\begin{aligned} &= \frac{4.68}{0.13} = \frac{4.68 \times 100}{0.13 \times 100} = \frac{468}{13} \\ &= 36 \text{ (remainder 0)} = 36 \end{aligned}$$

6. RECURRING (NEVER ENDING) DECIMALS

- Some divisions do not end. The remainders repeat in a cycle.

Example: $\frac{10}{3} = 3.33333 \dots$

$\frac{1}{7} = 0.142857142857 \dots$
(block 142857 repeats)

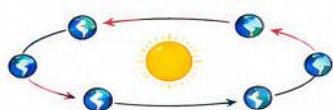


7. LEAP YEAR & GREGORIAN CALENDAR

The Earth takes 365.2422 days to go around the Sun.

We consider 365 days in a calendar year.

Extra each year = 0.2422 days.



Rules for Leap Year (Gregorian Calendar)

A year is a leap year if:

- It is divisible by 400 → Leap year (366 days)
- OR divisible by 4 but NOT by 100 → Leap year
- Otherwise → Common year (365 days)



Why these rules?

- Add 1 day every 4 years.
- Don't add in every 100th year.
- Again add in every 400th year.
- This keeps our calendar in sync with the Earth's revolution.

8. IMPORTANT PATTERNS & PROPERTIES

HCF (Highest Common Factor)

- Highest among common factors.
- Using prime factors → take the MINIMUM power of each prime.
- If one number is a factor (or multiple) of the other → HCF is the smaller number.

LCM (Lowest Common Multiple)

- Lowest among common multiples.
- Using prime factors → take the MAXIMUM power of each prime.
- If one number is a multiple of the other → LCM is the larger number.

Relationship between HCF and LCM (for two numbers a and b)

$$\text{HCF}(a, b) \times \text{LCM}(a, b) = a \times b$$

Example: For 12 and 18

$$\begin{aligned} 12 &= 2^2 \times 3 & 18 &= 2 \times 3^2 \\ \text{HCF} &= 2 \times 3 = 6 & \text{LCM} &= 2^2 \times 3^2 = 36 \\ 6 \times 36 &= 216 & &= 12 \times 18 \quad \checkmark \end{aligned}$$

If both numbers are multiplied by the same number k:

HCF → multiplied by k
LCM → multiplied by k

9. QUICK REFERENCE – FORMULAS

Decimal multiplication:

Multiply as whole numbers. Decimal places in product = sum of decimal places in the numbers.

Division by 10, 100, 1000, ...:

Move decimal point LEFT by number of zeroes.

Division by a decimal divisor:

Make divisor whole by multiplying both numbers by the same power of 10.

Fraction to decimal:

Make denominator 10, 100, 1000, ... and convert.

Fraction division:

$$\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \times \frac{d}{c}$$

Recurring decimal detection:

Look for repeating remainders.



10. UNIT CONVERSIONS (QUICK GUIDE)

- 1 m = 100 cm = 1000 mm
- 1 kg = 1000 g = 1000 mg
- 1 l = 1000 ml
- 1 km = 1000 m



11. REAL-LIFE APPLICATIONS

Shopping & Money



Cost, profit, total amount

Travel



Distance, speed, fuel usage

Sharing & Packing



Equal sharing, packing items

Measurements



Length, weight, capacity

Calendars



Leap years & time

12. KEY TAKEAWAYS

- Decimals extend our place value system.
- Understand place value → do the operations with ease.
- Rules for decimals are natural extensions of whole number rules.
- Practice, observe patterns, and check your answers!



REMEMBER!

Understand



Practice



Observe patterns



Apply in real life

Excel in Maths!



ANOTHER PEEK BEYOND THE POINT

WORKSHEET-1

Section A: MCQs(Part-1) ($10 \times 1 = 10$ marks)

1. What does the decimal 27.53 represent in terms of place value?
A) 2 tens, 7 units, 5 tenths, 3 hundredths B) 2 hundreds, 7 tens, 5 units, 3 tenths
C) 2 units, 7 tenths, 5 hundredths, 3 thousandths D) 2 tens, 7 hundredths, 5 units, 3 tenths
2. What does the decimal 27.53 represent in terms of place value?
A) 2 tens, 7 units, 5 tenths, 3 hundredths B) 2 hundreds, 7 tens, 5 units, 3 tenths
C) 2 units, 7 tenths, 5 hundredths, 3 thousandths D) 2 tens, 7 hundredths, 5 units, 3 tenths
3. Which of the following equals 0.254?
A) $254/100$ B) $254/10$ C) $254/1000$ D) $254/10000$
4. To divide 123 by 10, how many places do you move the decimal point?
A) 2 places right B) 1 place right C) 1 place left D) 2 places left
5. To divide 123 by 10, how many places do you move the decimal point?
A) 2 places right B) 1 place right C) 1 place left D) 2 places left
6. What is 9.5×5 ?
A) 45.5 B) 47.5 C) 47 D) 45
7. How many decimal digits will the product 9.5×5 have?
A) 0 B) 1 C) 2 D) 3
8. If $596 \times 248 = 147808$, then $5.96 \times 24.8 = ?$
A) 14780.8 B) 1478.08 C) 147.808 D) 14.7808
9. To divide a decimal by 1000, the decimal point moves:
A) 3 places right B) 3 places left C) 1 place left D) 1 place right
10. To divide a decimal by 1000, the decimal point moves:
A) 3 places right B) 3 places left C) 1 place left D) 1 place right

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

11. Riddhi is rewriting a number because the decimal point blurred out. She knows the digit 4 is in the hundredths place. Which of the following could be her number?
A) 432.1 B) 32.41 C) 2.143 D) 0.413
12. A map uses a scale where 1 cm represents 10 km. If the distance between two towns on the map is measured as 3.5 cm, what is the actual distance?
A) 0.35 km B) 35 km C) 350 km D) 3.5 km
13. John multiplied 0.3×0.4 on his homework and wrote the answer as 1.2. Why is John incorrect?
A) He should have added the numbers instead of multiplying.
B) The product must have two digits after the decimal point (0.12).
C) The product must have no decimal point at all (12).
D) He multiplied the whole numbers incorrectly.
14. A piece of ribbon is 0.8 meters long. If it is cut exactly into 4 equal smaller strips, what is the length of each strip?
A) 0.2 cm B) 2.0 meters C) 0.02 meters D) 0.2 meters
15. Four students ran a 100-meter dash. Their recorded times in seconds are listed below:
• Amit: 14.35 s, Bhavna: 14.05 s, Chirag: 14.30 s, Divya: 14.50 s
Who won the race?
A) Amit B) Bhavna C) Chirag D) Divya
16. A bottle contains 2.75 L of juice. If 0.85 L is poured out, how much juice remains in the bottle?
(A) 1.80 L (B) 1.90 L (C) 2.60 L (D) 1.70 L
17. Which of the following decimals is equal to $\frac{405}{1000}$?
(A) 4.05 (B) 0.405 (C) 40.5 (D) 0.0405
18. A runner completes 12 laps, each of length 0.75 km. What total distance does the runner cover?
(A) 8 km (B) 9 km (C) 9.5 km (D) 10 km
19. Which of the following numbers is the smallest?
(A) 3.507 (B) 3.570 (C) 3.57 (D) 3.705
20. A shopkeeper divides 18.9 kg of rice equally into 9 bags. How much rice is packed in each bag?
(A) 2.01 kg (B) 2.1 kg (C) 21 kg (D) 1.9 kg

WORKSHEET-2

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

1. Convert 50 g, 25 g, and 250 g each to kilograms as decimals.

2. Given $756 / 36 = 21$, find $75.6 / 3.6$.

3. Fill the boxes $\square \times \square = 3.6$

4. Write 5500 m in km as a decimal.

5. Give the first five digits of the decimal expansion of $1 / 7$

6. Find the product of 5.8×1.24 using the standard rule.

7. A 4 m wooden block is cut into 5 equal pieces. Length of each piece?

8. Write $527/10000$ as sum of fractions and also as decimal.

9. Find 14.24×6.46 .

10. Find the value of $6.24/0.35$.

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

11. If 33 meters of ribbon is shared equally among 5 people how much ribbon does each person receive ?

12. Find the following product a) 82×6 tenths b) 19×5 hundredths

13. Convert 0.079 m in cm and mm.

14. Represent 3.7 on the number line.

15. A regular polygon has 12 sides with perimeter 208.8 cm. Find each side's length.

16. A school tailor uses 1.85 meters of cloth to stitch one student's uniform. How many meters of cloth will he require to stitch uniforms for a class of 25 students?

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

17. Shyamala buys 3 kg bananas at Rs. 30/kg and counts 35 bananas. She sells each at Rs. 4.5. How much profit does she make?

18. An airplane covers a distance of 2408.5 km in 3.5 hours. Assuming it flies at a constant speed, how much distance does it travel in just 1 hour?

19. Preeti ran 3.25km on Monday, km on Tuesday, and a certain distance on Wednesday. If her total running distance for the three days was 10.1 km, how far did she run on Wednesday?

20. Arshad visits a stationery shop. One pen costs Rs. 9.5, one notebook costs Rs. 23.6, and one eraser costs Rs. 2.75. He buys 5 pens, 3 notebooks, and 4 erasers. Find the total money he has to pay to the shopkeeper.

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

21. The Leap Year Problem

In Geography class teacher presented the fact that The Earth takes 365.2422 days per revolution around the Sun. Calendar designers use leap years to synchronise the calendar. After knowing this fact Manu and Panu have these questions in their minds help them to solve.

- (a) How many extra days accumulate after 4 calendar years without any leap year?
- (b) How many calendar days are in 100 years with a leap year every 4th year?
- (c) Why is the year 2100 not a leap year?

22. The Bookshelf

A teacher places textbooks (2.5 cm thick each) on a shelf 160 cm long. The teacher wants to place 80 textbooks.

- (a) How many books can actually fit on the shelf?
- (b) How much space would 80 books require?
- (c) How many extra shelves of the same length are needed to place all 80 books?

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.	A	A	C	C	C	B	B	C	B	B
Q.No.	11	12	13	14	15	16	17	18	19	20
Ans.	B	B	B	D	B	B	B	A	B	

Answers of Worksheet-2

Q.No.	1	2	3	4	5
Ans.	0.05 kg, 0.025 kg, 0.25 kg	21	0.36	5.5 km	0.14285
Q.No.	6	7	8	9	10
Ans.	7.192	0.8 m	0.0527	91.9904	17.83
Q.No.	11	12	13	14	15
Ans.	6.6 m	(a)49.2 (b)0.95	7.9 cm, 79 mm	3.7 on number line	17.4 cm
Q.No.	16	17	18	19	20
Ans.	46.25 m	₹67.50 profit	688.14 km	6.85 km	₹129.50
Q.No.	21	22			
Ans.	(a)0.9688 days (b)36525 days (c)Divisible by 400	(a)64 books (b)200 cm (c)1 extra shelf			

5

CONNECTING THE DOTS...

Statistics helps us understand data and make sensible conclusions.

In this chapter

- Statistical questions & statements
- Representative values (Mean)
- Data collection & organisation
- Bar graphs
- Line graphs
- Interpreting graphs & data



Discuss, think, and share your ideas using data around you!



Scan to Learn More!

1. STATISTICAL QUESTIONS & STATEMENTS

A **statistical statement** is a claim or summary about some phenomenon, expressed in terms of numbers, proportions, probabilities or predictions.

A **statistical question** is a question that can be answered by collecting and analysing data.

Examples of Statistical Statements

- Jemimah's batting has been very consistent over the past year.
- I take about 15 minutes to cycle from school to home.
- The population of their village has reduced by about 100 in the last decade.
- Since I started to eat fruits & vegetables more frequently, I can run 2 km more each day.
- David spends about 7 hours daily in the school.



Examples of Statistical Questions

- How tall are Grade 7 students in our school?
- Typically, are onions costlier in Yahapur or Wahapur?
- How old are the dogs that live on this street?
- What fraction of students in your class like walking up a hill?
- What was the rainfall pattern in Barmer last year?



2. REPRESENTATIVE VALUES – THE MEAN (AVERAGE)

To compare a group of numbers, we can use one number that represents the group. The most commonly used representative value is the **AVERAGE** or **ARITHMETIC MEAN (A.M.)**.

Formula

$$\text{Mean} = \frac{\text{Sum of all the values in the data}}{\text{Number of values in the data}}$$

It balances out high and low values and shows the typical or fair-share value.

Example:

Runs scored in a cricket series

Player	M1	M2	M3	M4	M5	Total	Matches	Mean (Avg. runs)
Shubman	23	07	10	52	18	110	5	$110 \div 5 = 21$
Yashasvi	26	53	02	–	15	96	4	$96 \div 4 = 24$

Conclusion: Yashasvi performed better in this series (average runs $24 > 21$).

Average as Fair-Share

Shreyas' friends collected: 3, 8, 10, 5, 4 (Total = 30) → Mean = $30 \div 5 = 6$
 Parag's friends collected: 5, 7, 9, 3, 6, 10 (Total = 40) → Mean = $40 \div 6 \approx 6.67$
 On average, each of Parag's friends collected more guavas.



3. COLLECTING & ORGANISING DATA

Ways to Collect Data

- Surveys, interviews
- Observation
- Questionnaires
- Experiments
- Records

Types of Data

1. **Qualitative (Categorical):**
Based on qualities or categories.
Example: Favourite fruit (mango, banana, apple)
2. **Quantitative (Numerical):**
Based on numbers.
Example: Height, marks, number of books

Organising Data

- **Tally Marks:** |||| = 5 (helps in counting)
- **Frequency Table:** Shows how many times each value occurs.

Example: Favourite Colour of Students

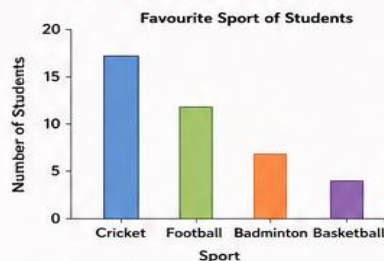
Colour	Tally Marks	Frequency
Blue		8
Green		7
Red		4
Yellow		2
Total		21

Always write labels, titles, units and source of data.

4. BAR GRAPHS

- Used to compare quantities using rectangular bars.
- Bars can be vertical or horizontal.
- Bars are of equal width and have gaps between them.

Example: Favourite Sport



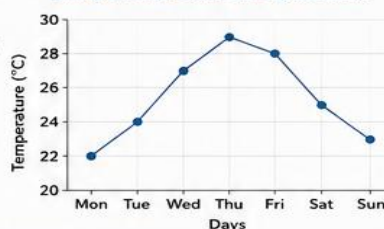
How to Read?

- More height → more quantity.
- Read the scale before comparing.

5. LINE GRAPHS

- Used to show how a quantity changes over time.
- Points are plotted and joined by straight lines.
- Useful for showing trends.

Example: Temperature of a City in a Week



How to Read?

- Each point shows value at a time.
- Upward line → increase.
- Downward line → decrease.
- Flat line → no change.

6. INTERPRETING GRAPHS & DATA

Steps to Interpret

- ✓ 1. Read the title of the graph.
- ✓ 2. Check the labels and units.
- ✓ 3. Understand the scale.
- ✓ 4. Compare values carefully.
- ✓ 5. Draw conclusions or predictions.

Example 1: Bar Graph

From the Favourite Sport graph:

- Most students like Cricket.
- Least students like Basketball.
- Football is more popular than Badminton.

Example 2: Line Graph

From the Temperature graph:

- Temperature increases till Thursday.
- Highest on Thursday (29°C).
- Then it decreases till Sunday.

Real-Life Use

- Weather forecasting
- Sports performance
- Population & census
- Business & sales trends
- Health & fitness tracking

KEY DEFINITIONS

- **Statistical Statement:** A claim or summary about data.
- **Statistical Question:** A question that can be answered using data.
- **Mean (Average):** Sum of all values ÷ Number of values.
- **Qualitative Data:** Based on qualities or categories.
- **Quantitative Data:** Based on numerical values.

IMPORTANT FORMULAS

- **Mean (Average):**
$$\text{Mean} = \frac{\text{Sum of all values in data}}{\text{Number of values in data}}$$
- **Total (Sum):** Add all the values.
- **Frequency:** Number of times a value occurs.
- **Range:** Highest value – Lowest value.

KEY TAKEAWAYS

- ✓ Statistics helps us make sense of data.
- ✓ Average (Mean) gives a fair picture.
- ✓ Organise data using tables for clarity.
- ✓ Bar graphs compare quantities.
- ✓ Line graphs show changes over time.
- ✓ Always read graphs carefully before drawing conclusions.

THINK & DISCUSS

- Find data around you (e.g., heights, marks, time taken).
- Organise it in a table.
- Find the mean.
- Draw bar or line graph.
- What patterns do you observe?

CONNECTING THE DOTS...

WORKSHEET-1

Section A: MCQs(Part-1) ($10 \times 1 = 10$ marks)

1. The formula for Arithmetic Mean is:
(A) $\text{Sum} \div \text{Largest value}$ (B) $\text{Sum of all values} \div \text{Number of values}$
(C) $\text{Largest value} \div \text{Smallest value}$ (D) $\text{Middle value} \times 2$
2. The arithmetic mean of 3, 8, 10, 5, 4 is:
(A) 5 (B) 6 (C) 7 (D) 8
3. In ancient Indian mathematics, the term used for arithmetic mean meaning 'equal' is:
(A) samavay (B) samamiti (C) samanvay (D) samatva
4. The median of 118, 165, 170, 173, 175 is:
(A) 165 (B) 168 (C) 170 (D) 173
5. An outlier is a value that:
(A) Is the largest in the data (B) Significantly deviates from the rest of the values
(C) Equals the mean (D) Is repeated most often
6. In Poovizhi's family heights (170, 173, 165, 118, 175), the outlier is:
(A) 170 (B) 175 (C) 173 (D) 118
7. Mean and Median are called measures of:
(A) Central tendency (B) Dispersion (C) Variation (D) Probability
8. In a Grade 5 class, boys' average height is 142.94 cm and girls' is 146.9 cm. This means:
(A) Every girl is taller than every boy
(B) Girls are taller than boys on average in this class
(C) Boys will never be taller
(D) The data is incorrect
9. If 40 is an outlier (high end), removing it will:
(A) Increase the mean (B) Decrease the mean
(C) Not affect the mean (D) Increase the median significantly
10. What does a dot plot help us observe?
(A) Only the mean (B) Variability and patterns in data
(C) Only outliers (D) Only the maximum value

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

11. Which of the following is a statistical question?

- (a) What is your roll number? (b) Who is the class monitor?
(c) How many hours do Grade VII students study daily? (d) What is the date today?

12. The median of the data 3, 5, 7, 8, 10, 12, 15 is:

- (a) 7 (b) 8 (c) 10 (d) 12

13. Which measure of central tendency is least affected by outliers?

- (a) Mean (b) Total (c) Median (d) Range

14. In a dot plot, repeated values are shown by:

- (a) Different colours (b) Dots stacked above the same value
(c) Bars (d) Lines

15. The average of 18, 22, 20, 25 and 15 is:

- (a) 18 (b) 19 (c) 20 (d) 21

16. The daily number of books borrowed from a library is 12, 15, 10, 18 and 20. What is the arithmetic mean?

- (a) 14 (b) 15 (c) 16 (d) 17

17. The data set is: 9, 14, 16, 18, 20, 25. What is the median?

- (a) 16 (b) 17 (c) 18 (d) 19

18. Which measure of central tendency is most suitable when a data set contains an unusually high or low value?

- (a) Mean (b) Median (c) Total (d) Range

19. The scores of six students are 45, 48, 52, 52, 55, 58. What is the range of the scores?

- (a) 10 (b) 12 (c) 13 (d) 15

20. Which of the following data sets contains an outlier?

- (a) 15, 16, 17, 18, 19 (b) 25, 26, 27, 28, 70
(c) 31, 32, 33, 34, 35 (d) 8, 9, 10, 11, 12

WORKSHEET-2

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

1. Shreyas bounced a ball: 6, 2, 9, 5, 4, 6, 3, 5 times in 8 attempts. Calculate the average number of bounces.

2. The monthly price of onions in Yahapur (₹): 25, 24, 26, 28, 30, 35, 39, 43, 49, 56, 59, 44. Find the mean .

3. A newspaper has 16, 18, 20, 22, 26, 16, 10 pages from Monday to Sunday. Find the median. Which value is the outlier?

4. . Player C scored 8, 11, Did Not Play, 13 in four games. Should you divide by 3 or 4 to find mean? Justify and calculate.

5. If the mean of 6 observations is 4, find their sum ?

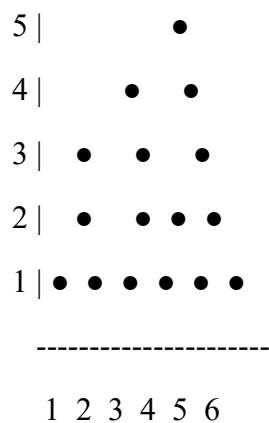
6. Do you read newspapers? Have you noticed how many pages a newspaper has on different days of the week-is it the same or different? The list below shows the number of pages for a particular newspaper from Monday to Sunday: 15, 17, 20, 23, 26, 14, 10. Draw the dot plot.

7. The heights (in cm) of five plants are 35, 42, 38, 40 and 37. Find the range of the heights.

8. Study the following **dot plot** and answer the questions.

Number of Hours Students Studied in a Week

Frequency



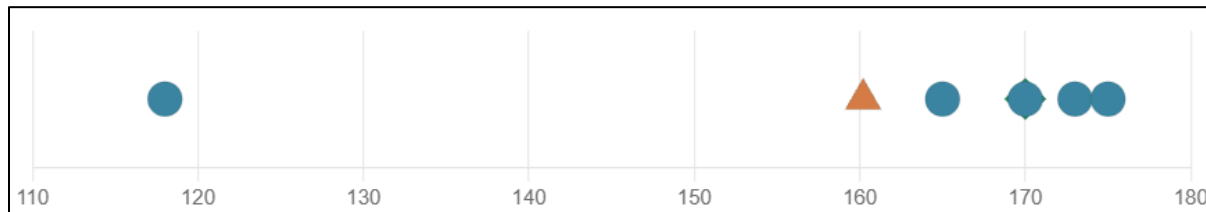
- How many students studied for **1 hour**?
- How many students studied for **2 hours**?

9. The weights (in kg) of seven bags are 8, 10, 9, 12, 11, 7 and 13. Find the median weight.

10. The number of visitors to a museum on five days was 120, 145, 130, 150 and 135. Find the range of the number of visitors.

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

11.

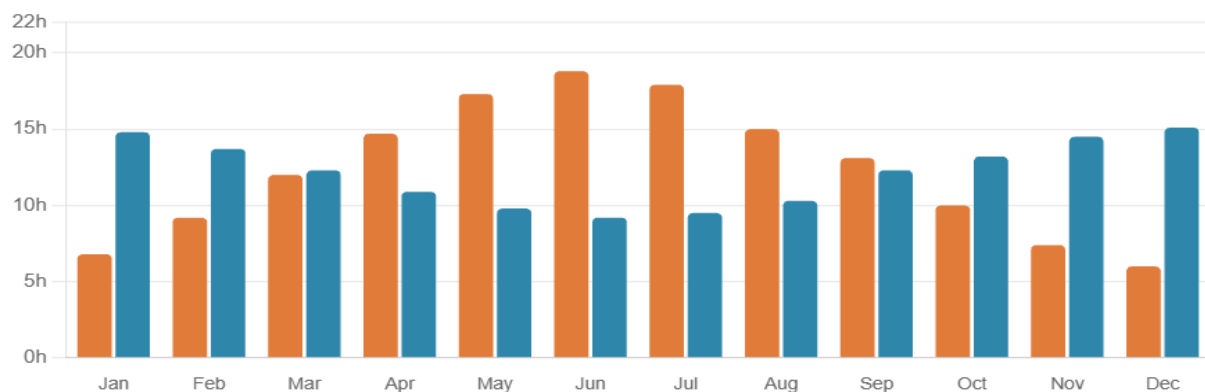


The dot plot above shows heights of Poovizhi's family members.

(a) How many family members are there? List their heights from the dot plot.

(b) The mean (160.2 cm) is marked. Is the mean higher or lower than most of the data points?

12.



Study the clustered bar graph of average daily daylight hours and answer:

- (a) What scale is used on the vertical axis? What is the maximum value shown?
- (b) In which month does City 1 have maximum daylight? In which month does City 2 have maximum daylight?

13. The daily water usage from a tap (in litres) over 9 days: 5.6, 8, 3.09, 12.9, 6.5, 12.1, 11.3, 20.5, 7.4.

- (a) Find the mean and median daily usage.
- (b) Can the mean or median lie between 25 and 30 litres? Justify using the meaning of mean and median.

14. The marks obtained by two groups in a GK quiz (out of 100):

Group 1: 85, 76, 90, 85, 39, 48, 56, 95, 81, 75

Group 2: 68, 59, 73, 86, 47, 79, 90, 93, 86

(a) Find the mean and median for each group.

(b) Which group has a potential outlier? Identify it.



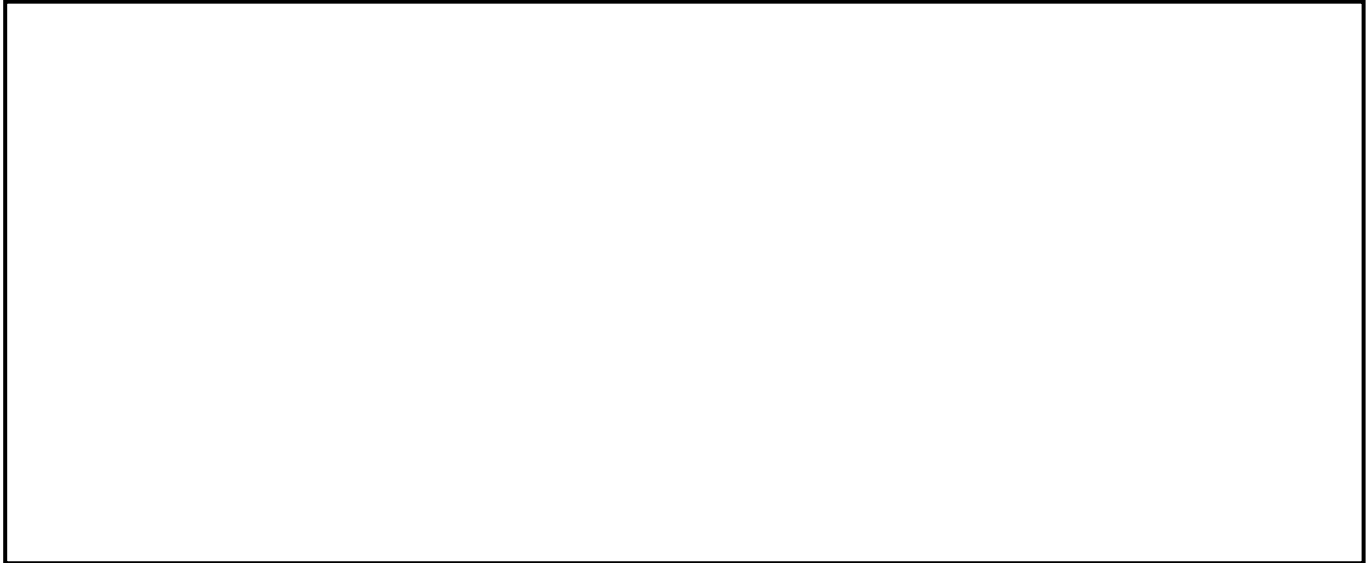
15. The table below shows the average life expectancy (in years) in five different countries during a specific decade. Represent this data with the help of a bar graph.

Country	Average Life Expectancy (in years)
Country A	72
Country B	68
Country C	55
Country D	78
Country E	62



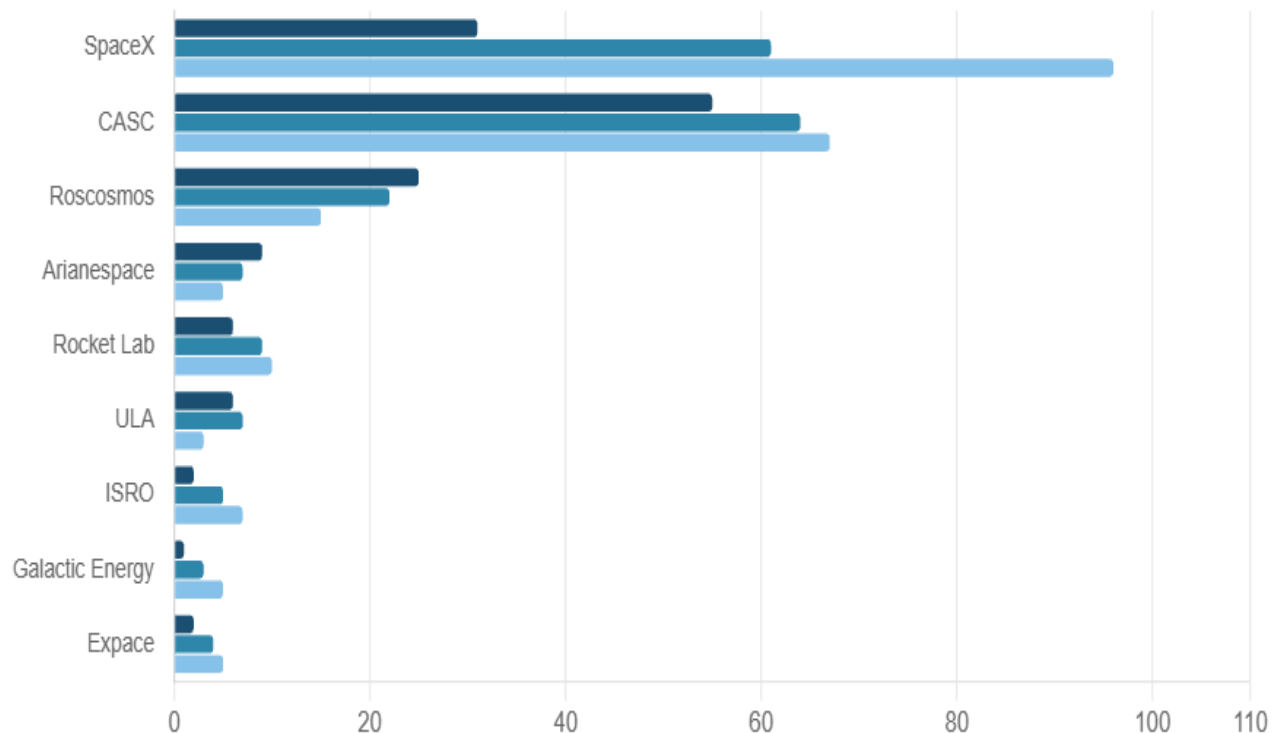
16. Do you read newspapers? Have you noticed how many pages a newspaper has on different days of the week-is it the same or different?

The list below shows the number of pages for a particular newspaper from Monday to Sunday: 15, 17, 20, 23, 26, 14, 10. Draw the dot plot. Mark the mean and median on the dot plot.



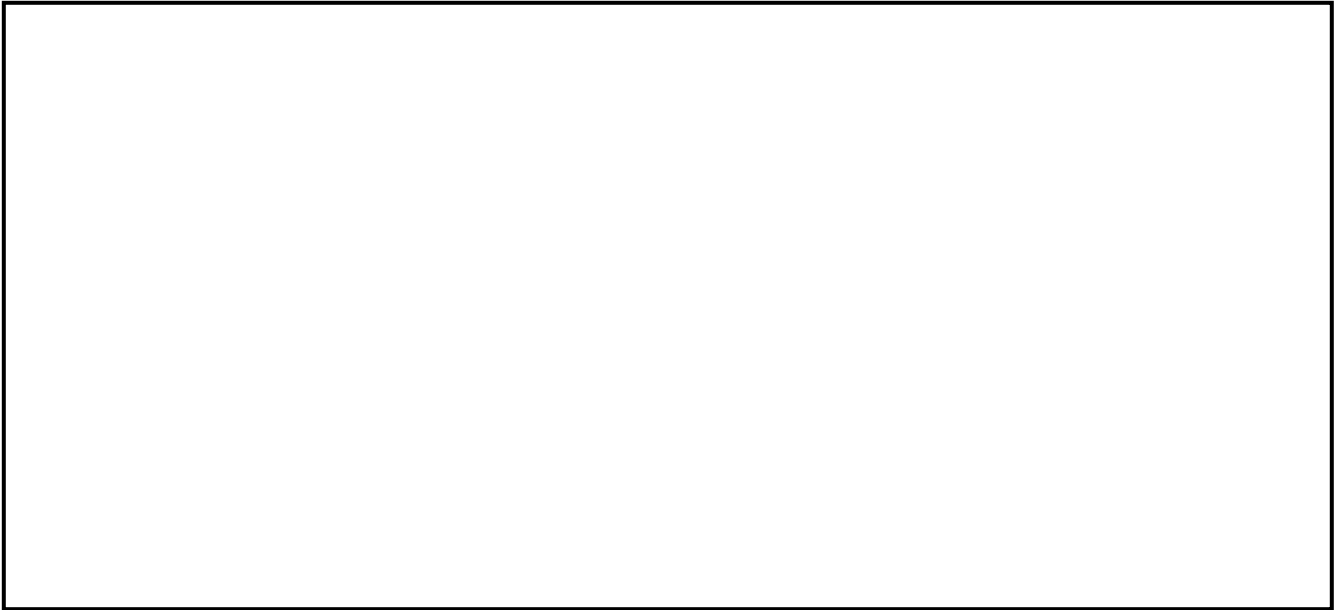
Section D: Long Answer ($4 \times 5 = 20$ marks)

17.

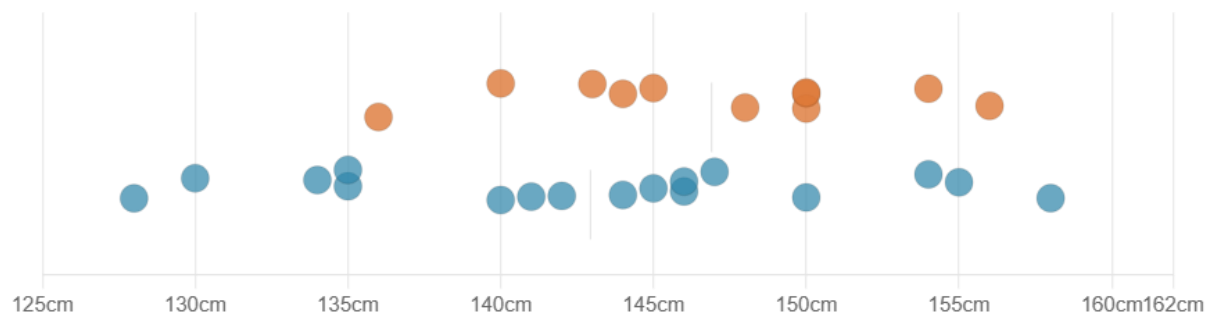


Study the rocket launch bar graph and answer:

- (a) Which organisation launched the most rockets in 2023? Approximately how many?
- (b) Which organisation's launches decreased every year from 2021 to 2023?
- (c) SpaceX approximately doubled its launches from 2021 to 2022. Estimate both values from the graph and verify.



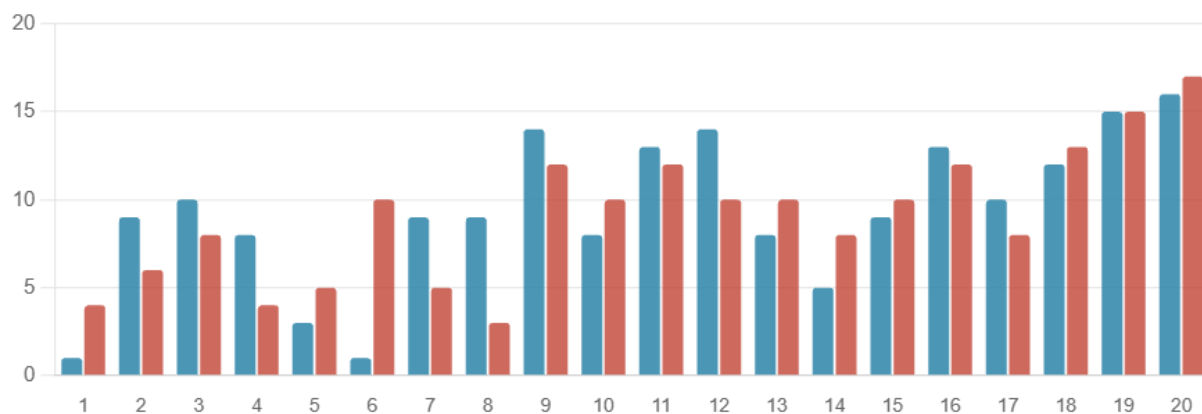
18.



The dot plot shows heights of boys and girls in a Grade 5 class.

- (a) What is the range of heights for boys? What is the range for girls?
- (b) Which group has a higher mean? Which group is taller on average?
- (c) How many students are taller than the whole class mean of 144.4 cm? (Count from boys: 147, 154, 155, 158, 146, 145, 150 and girls: 150, 154, 148, 156, 150, 150)

19.



Study the cricket worm chart above carefully:

- (a) What scale is used on the vertical axis (runs per over)?
- (b) Approximately how many runs did the Blue team score in overs 10–15? Add them up from the graph.
- (c) In which over did the Red team score the least runs? How many runs did they score?

- (b) The sports teacher wants two equal groups – one with heights below a certain value and one above. What value would you recommend?

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

21. A cricket coach needs to pick one of three batters for the final match. Their scores over the past 5 matches are:

Ravi: 45, 0, 80, 10, 65

Meera: 30, 35, 28, 40, 32

Arjun: 60, 0, 0, 90, 50

The coach says: 'I need a consistent performer who can score at least 30 runs reliably.'



(i) Calculate the mean score for Meera .

(ii) Calculate the median score for Ravi .

(iv) Based on the coach's requirement of 'consistency' and 'scoring at least 30 reliably', which player would you recommend? Justify using both mean and median.

22. EV Adoption in India

The following data shows the number of electric vehicles registered (in thousands) in 4 states over 3 years:

	2022	2023	2024
Gujarat:	69	89	78
Delhi:	62	74	81
Andhra Pradesh:	15	28	55
West Bengal:	8	30	40

A news headline reads: 'EV registrations in all states increased every year from 2022 to 2024.'



- (i) Find the mean registrations for Gujarat over the 3 years.
- (ii) Which state showed the greatest percentage increase from 2022 to 2024?
- (iii) What is the median number of registrations across all four states in 2024?

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:

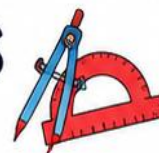
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Answers of Worksheet-1

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

Answers of Worksheet-2

Q.No.	1	2	3	4	5
Ans.	5	₹38.17	18,10	10.67	24
Q.No.	6	7	8	9	10
Ans.	Dot Plot	7 cm	6,4	10 kg	30
Q.No.	11	12	13	14	15
Ans.	5 members; Mean lower	Graph	9.71,8	G1:73,78.5; G2:75.67,79; 39	Bar Graph
Q.No.	16	17	18	19	20
Ans.	Mean 17.86, Median 17	Graph	13 cm,8 cm; Girls;14	Graph	115,115
Q.No.	21	22			
Ans.	33, 45, Meera	78.67, West Bengal, 59.5			



SUMMARY OF CONCEPTS

1. STATISTICAL QUESTIONS & STATEMENTS

- A statistical statement is a claim/summary about some phenomenon, expressed in numbers (values, proportions, probabilities, or predictions).
- A statistical question is a question whose answer can be found by collecting data.

Examples

Statistical Statements

- Jemimah's batting has been consistent.
- I take about 15 minutes to cycle home.
- The population of their village has reduced by about 100 in a decade.
- I eat fruits & vegetables more frequently, so I can run 2 km more each day.
- David spends about 7 hours daily in school.

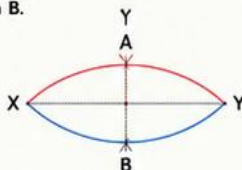
Statistical Questions

- How tall are Grade 7 students in our school?
- Are onions costlier in Yahapur or Wahapur?
- What fraction of students like walking up a hill?
- What was the rainfall pattern in Barmer last year?

2. GEOMETRIC CONSTRUCTIONS

(A) Eyes Construction (Grade 6 Recall)

- Draw a line XY (supporting line).
- From X and Y, draw arcs (same radius) above and below XY.
- Points of intersection of arcs give centres A (above) and B (below).
- Draw upper arc from A and lower arc from B.



(B) Perpendicular Bisector

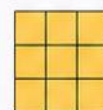
- Set of all points equidistant from X and Y lies on the perpendicular bisector of XY.
- Steps to construct:
 - From X and Y, draw arcs above XY.
 - From X and Y, draw arcs below XY (with same radius).
 - Join the two intersection points (A and B). AB is the perpendicular bisector of XY.

3. TILINGS

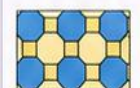
- A tiling (or tessellation) is a pattern that covers a plane completely without any gaps or overlaps.
- Regular tilings use one kind of regular polygon.
- Semi-regular (Archimedean) tilings use two or more kinds of regular polygons.

Examples

Regular Tilings

Equilateral Triangles
(3.6.3.6)Squares
(4.4.4.4)Regular Hexagons
(6.6.6)

Semi-regular Tilings



(4.8.4.8)



(3.6.3.6)



(3.4.6.4)

(a.b.c.d) shows polygons around a vertex.

4. MULTIPLICATION OF DECIMALS

- Multiply as whole numbers.
- In the product, place the decimal point so that the number of decimal places = sum of decimal places in multiplier and multiplicand.

Example:

$$2.35 \times 4.6$$

2.35 → 2 decimal places

× 4.6 → 1 decimal place

$$\begin{array}{r} 235 \\ \times 46 \\ \hline 1410 \\ 940 \\ \hline 10810 \end{array}$$

2 + 1 = 3
decimal places

10.810 → 10.81

Product Comparison

- Both > 1 → Product > both
- Both between 0 and 1 → Product < both
- One > 1 and other between 0 and 1 → Product is between the two

5. DIVISION BY 10, 100, 1000, ...

- Move the decimal point to the LEFT as many places as there are zeroes in the divisor.

÷ 10	÷ 100	÷ 1000
18.7	1.87	0.187
21.1	0.211	0.0211
2.146	0.02146	0.002146
0.306	0.0306	0.000306

6. DIVISION USING PLACE VALUE (LONG DIVISION)

- Same method as for whole numbers.
- After Ones, regroup to Tenths, Hundredths, Thousandths, ...
- Place the decimal point in the quotient when we start dividing the Tenths.
- Continue till remainder is 0 or desired accuracy.

$$\begin{array}{r} 1325 \div 4 = 331.25 \\ \underline{4 } 1325 \\ 12 \\ \underline{12} \\ 05 \\ \underline{04} \\ 10 \\ \underline{10} \\ 20 \\ \underline{20} \\ 0 \end{array}$$

→ Hundreds
→ Tens
→ Ones
→ Tenths
→ Hundredths

7. DIVISION WITH DECIMAL DIVISOR

- Make divisor a whole number by multiplying dividend and divisor by the same power of 10.
- Then divide using long division.

Example: $4.68 \div 0.13$

$$= 4.68 \div 0.13 \times \frac{100}{100} = \frac{468}{13}$$

$$\begin{array}{r} 13 \overline{) 468} \\ \underline{-39} \\ 78 \\ \underline{-78} \\ 0 \end{array}$$

Rule

Multiply both dividend and divisor by the same power of 10 so that the divisor becomes a whole number.

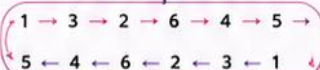
8. RECURRING (NEVER ENDING) DECIMALS

- Some divisions never end.
- The remainders repeat in a cycle.
- The decimal digits also repeat in the same cycle.

$$10 \div 3 = 3.3333 \dots \text{ (3 repeats)}$$

$$1 \div 7 = 0.142857142857 \dots$$

(block 142857 repeats)



9. LEAP YEAR (GREGORIAN CALENDAR)

- Earth takes 365.2422 days to go around the Sun.
- To keep the calendar in sync, we add extra days.

Year is:	Type of Year	Days
Divisible by 400	Leap year	366
Divisible by 100 but not by 400	Common year	365
Divisible by 4 but not by 100	Leap year	366
Otherwise	Common year	365

✓ This keeps our calendar in close sync with Earth's revolution.



10. KEY TAKEAWAYS

- ✓ Decimals extend our place value system.
- ✓ Multiplication & division of decimals follow simple rules based on place value.
- ✓ Division by 10, 100, 1000, ... → move decimal left.
- ✓ Long division works for decimals with regrouping.
- ✓ Some decimal divisions never end (recurring).
- ✓ Geometric constructions create accurate figures using compass & ruler.
- ✓ Tilings cover a plane without gaps or overlaps.
- ✓ Statistics helps us make sense of data around us.



REMEMBER!

Understand the idea



Practice regularly



Observe patterns



Apply in real life



Excel in Maths!



CONSTRUCTION AND TILLING

WORKSHEET-1

Section A: MCQs(Part-1) (10 × 1 = 10 marks)

1. What is a perpendicular bisector?

- A) A line parallel to a segment B) A line that bisects a segment and is perpendicular to it
C) A line joining two midpoints D) Any line through the midpoint

2. If $AX = AY = BX = BY$, then the line AB is:

- A) Parallel to XY B) Perpendicular bisector of XY
C) Angle bisector of $\angle XAY$ D) Median of triangle XAB

3. To construct a perpendicular bisector, arcs from X and Y are drawn with:

- A) Different radii always B) Radius less than $XY/2$
C) The same fixed radius D) Radius equal to XY

4. In the 'Eyes' construction, for symmetry which condition must hold?

- A) $AX = BY$ only B) $AX = AY = BX = BY$ C) $AX = BX$ only D) $AX > BX$

5. A division of any geometrical object into two equal parts is called:

- A) Trisection B) Rotation C) Bisection D) Translation

6. Any point equidistant from endpoints X and Y of a segment lies on:

- A) The segment XY B) A line parallel to XY
C) The perpendicular bisector of XY D) The angle bisector

7. To construct 90° at O, which step is essential?

- A) Find midpoint of OX first
B) Mark X and Y equidistant from O then construct perpendicular bisector of XY
C) Draw two parallel lines through O
D) Bisect a 60° angle

8. In the Śulba-Sūtras, what replaced the compass?

- A) Set square B) Protractor C) Rope D) Marked ruler

9. A 45° angle can be constructed by:

- A) Trisecting a 90° angle B) Bisecting a 60° angle
C) Bisecting a 90° angle D) Copying a 30° angle

10. In angle bisection, $\triangle OBC \cong \triangle OAC$ is shown by:

- A) ASA B) AAS C) SAS D) SSS

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

11. The line that bisects a given line segment and is perpendicular to it is called:

- (A) Angle bisector (B) Perpendicular bisector (C) Parallel line (D) Transversal

12. In the figure below, XY is a line segment and A, B are points such that $AX = AY = BX = BY$. Which of the following is correct?

A

X -----O----- Y

B

- (A) AB is parallel to XY (B) AB is the perpendicular bisector of XY
(C) O is any point on XY (D) AB bisects only the angle at O

13. A 60° angle can be constructed using a ruler and compass by:

- (A) Bisecting a 30° angle (B) Constructing an equilateral triangle
(C) Drawing a perpendicular bisector (D) Copying a 90° angle

14. Which of the following regular polygons CANNOT tile the plane by itself?

- (A) Equilateral Triangle (B) Square (C) Regular Hexagon (D) Regular Pentagon

15. A 5×7 grid cannot be tiled with 2×1 tiles because:

- (A) The tiles are too large
(B) The grid has an odd number of unit squares (35), not divisible by 2
(C) The rows are not equal to the columns
(D) Only square tiles can be used

16. A student constructs a line segment $PQ = 8$ cm and draws its perpendicular bisector.

Which statement is always true?

- (A) Every point on the bisector is 8 cm from P.
(B) Every point on the bisector is equidistant from P and Q.
(C) The bisector is parallel to PQ.
(D) The bisector divides PQ into three equal parts.

17. Which of the following angles can be constructed by first constructing a **60° angle** and then bisecting it?

- (A) 45° (B) 30° (C) 75° (D) 120°

18. A floor is to be covered completely using **only one type of regular polygon** without leaving any gaps or overlaps. Which polygon can be used?

- (A) Regular Pentagon (B) Regular Heptagon (C) Regular Hexagon (D) Regular Nonagon

19. A regular octagon has been constructed using a ruler and compass. What is the measure of each **central angle** of the octagon?

- (A) 30° (B) 45° (C) 60° (D) 90°

20. A **10×8** rectangular grid is completely covered using **2×2 square tiles** without cutting any tile. What is the minimum number of tiles required?

- (A) 10 (B) 16 (C) 20 (D) 40

WORKSHEET-2

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

1. Explain how to construct a 90° angle at any point O on a line using only ruler and compass

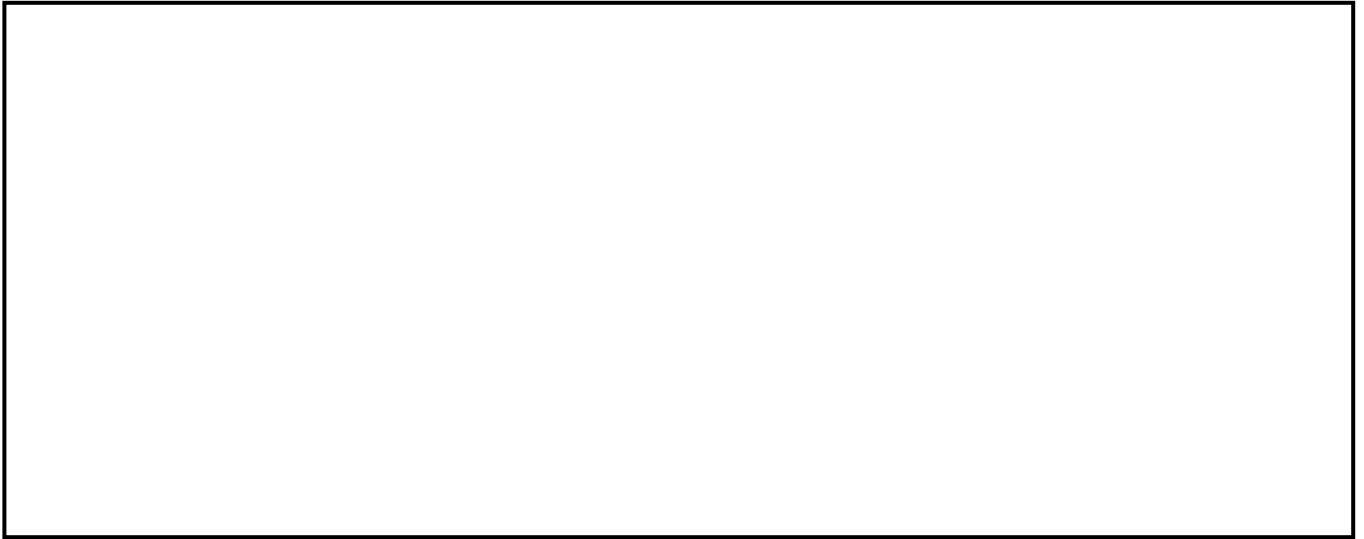
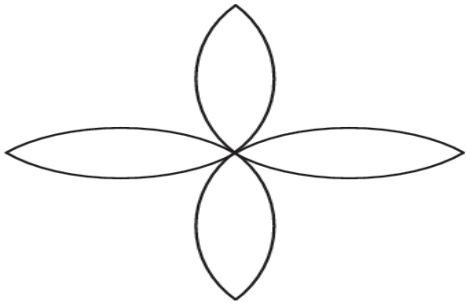
2. State the congruence condition used to prove AB is the perpendicular bisector of XY.

3. State the two steps to construct a 60° angle.

4. How many equilateral triangles form a regular hexagon? What is each interior angle?

5. Construct a 30° angle from a 60° angle. Write the steps in brief.

6. Recreate this design using only a ruler and compass —

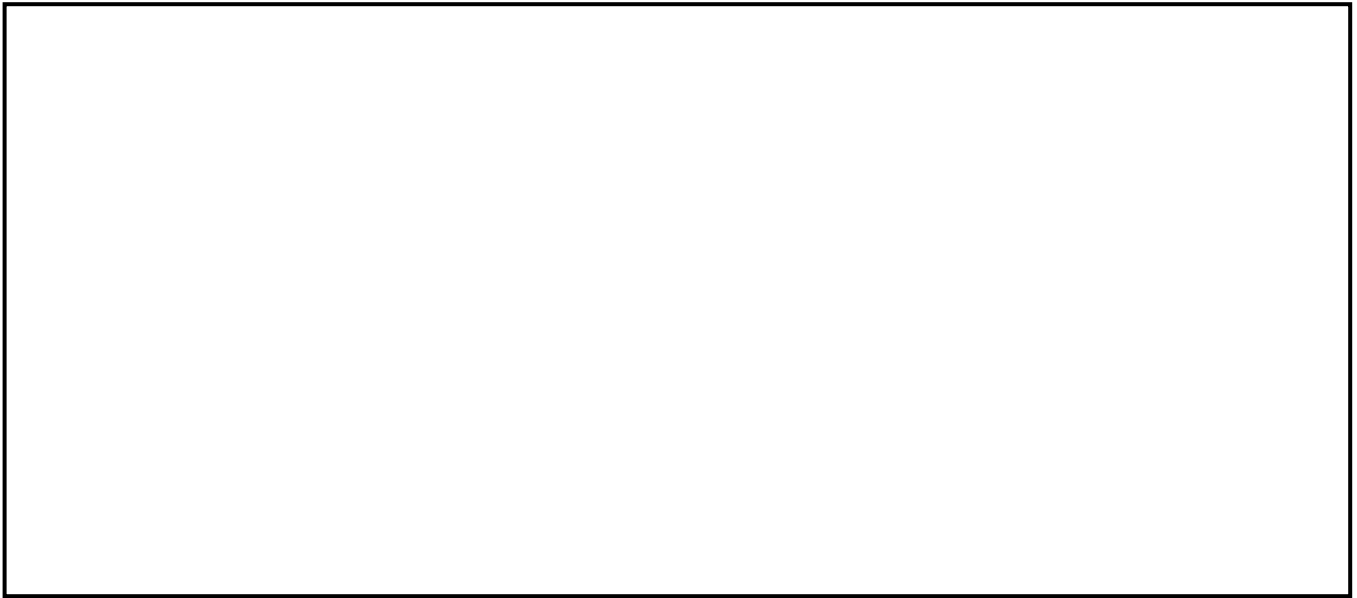


7. Draw a perpendicular bisector of line 5 cm.

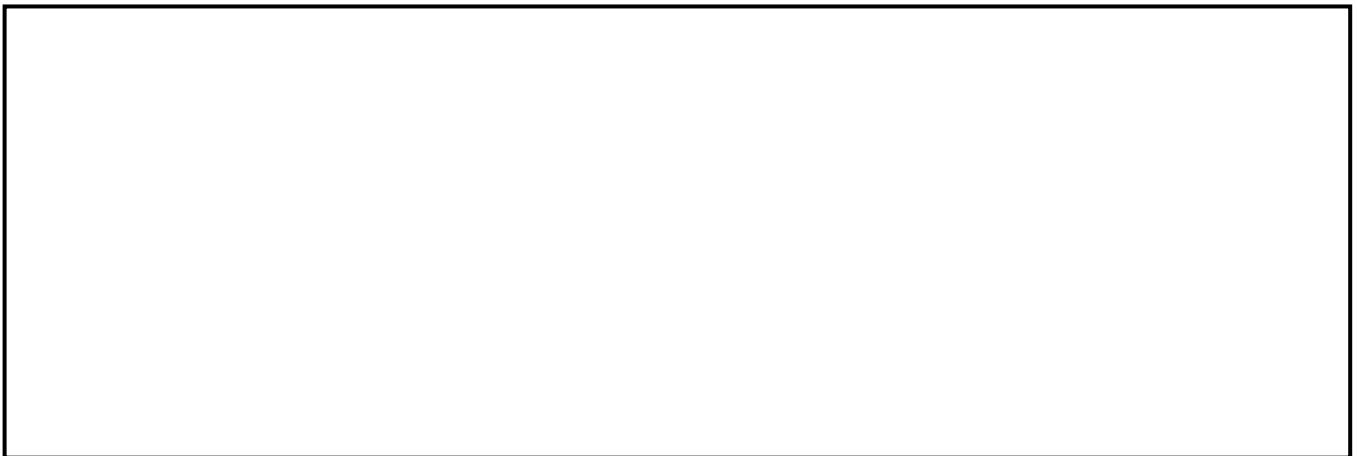


Section C: Short Answer ($6 \times 3 = 18$ marks)

11. Draw an angle. Create a copy of this angle using only a ruler and compass.



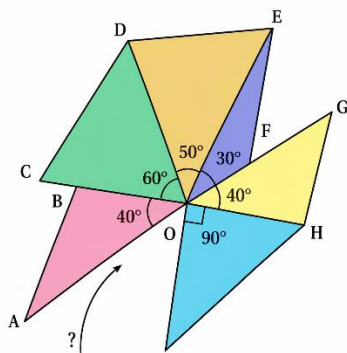
12. Draw two parallel lines using compass and ruler only.



13. Construct an angle of 75° using compass and ruler.

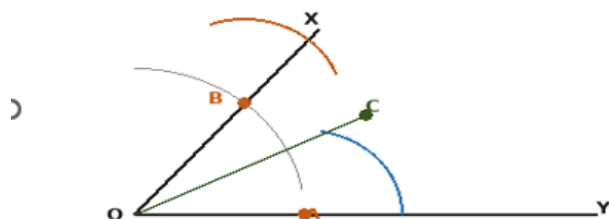


14. Consider this figure. Will the 50° angle fit into the gap? What is the gap angle $\angle AOI$?



15. How many equilateral triangles form a regular hexagon? What is each interior angle?

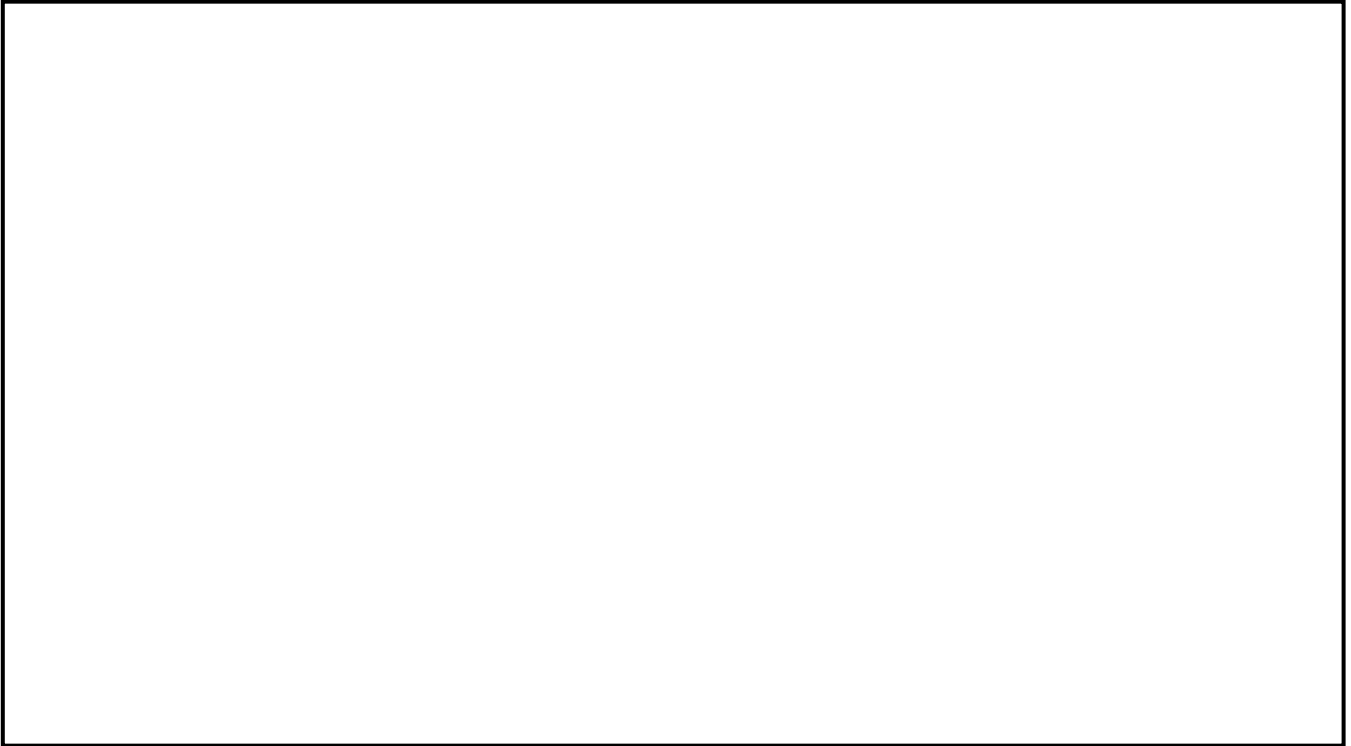
16. In the figure, $\angle XOY$ is drawn with $OA = OB$. Equal arcs from A and B meet at C, and ray OC is drawn. What does OC do to $\angle XOY$?



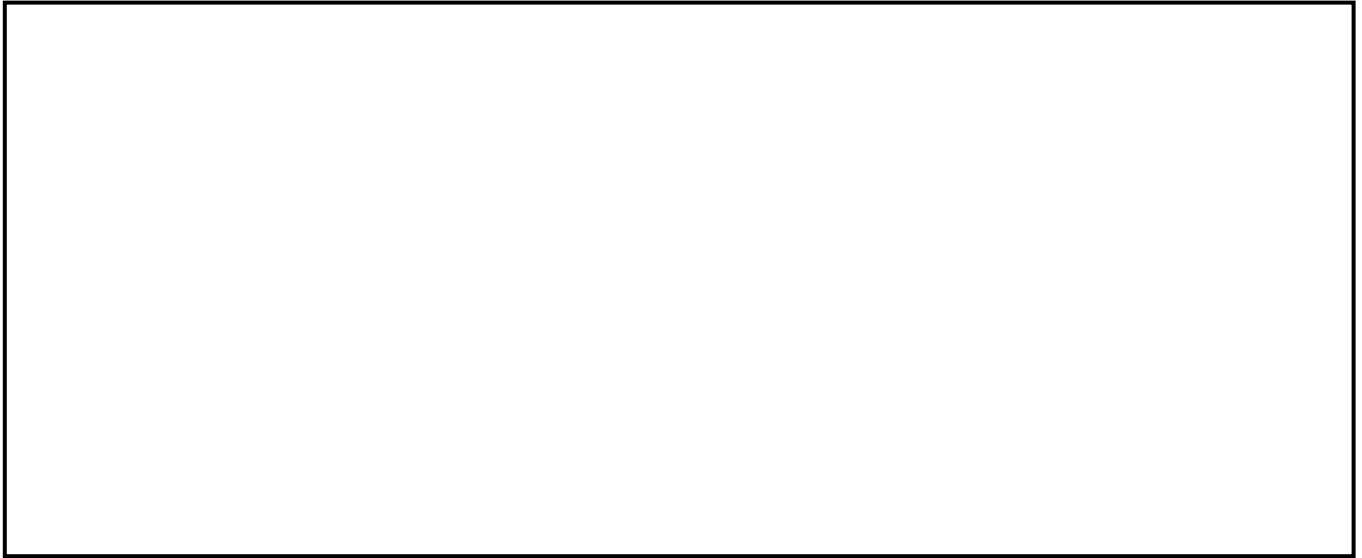
17. Draw a regular pentagon of side 4cm. Write steps of construction also.



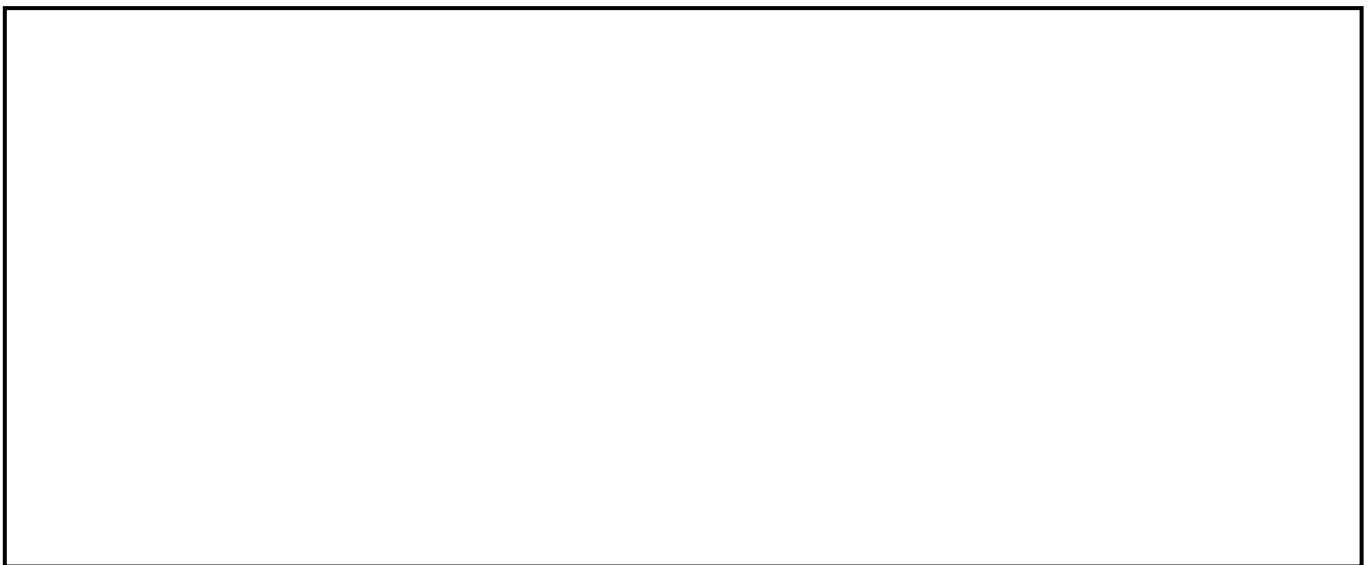
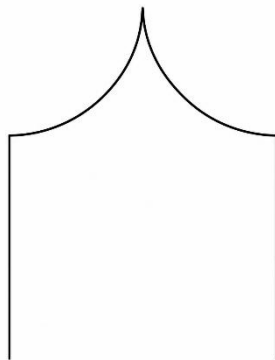
18. Draw a regular Hexagon of side 5 cm. Write steps of construction also.



19. Draw an 6×6 grid be tiled using 2×1 tiles?

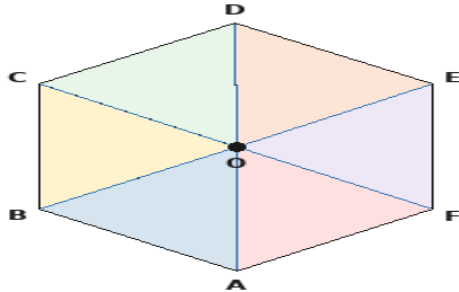


20. construct the given diagram:



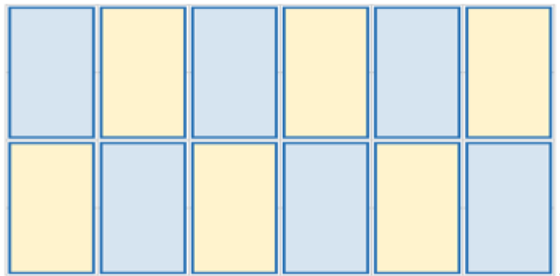
21. Kabir studies a beehive cross-section. The cells are hexagonal and fit together without gaps — a perfect tiling. His math teacher says this relates to regular hexagons. Kabir tries to construct a regular hexagon of side 4 cm using ruler and compass. His teacher hints: construct a 60° angle and think about equilateral triangles.

Fig: Regular Hexagon = 6 Equilateral Triangles



- What is the measure of angle $\angle AOF$.
- What is the measure of $\angle DEF$.
- What is the sum of all angles of this regular hexagon. Show your calculations.

22. The school wants to tile an $6\text{ m} \times 4\text{ m}$ courtyard with $2\text{ m} \times 1\text{ m}$ tiles placed horizontally or vertically. Student Arjun suggested to tile the courtyard with $2\text{ m} \times 1\text{ m}$ tiles. Student Priya wonders if the courtyard can still be tiled with 1×1 unit tile.



- How many tiles be needed if we use Arjuna method ?
- How many tiles needed by Priya method?
- If we use 3×1 unit tiles how many tiles will be needed and show it diagramitically.

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	1	2	3	4	5	6	7	8	9	10
Ans	B	B	C	B	C	C	B	C	C	D
Q	11	12	13	14	15	16	17	18	19	20
Ans	B	B	B	D	B	B	B	C	B	C

Answers of Worksheet-1

Q	4	15	21	22
Ans	120°.	Each interior angle = 120°. Sum of all interior angles = $6 \times 120^\circ = 720^\circ$.	$\angle AOF = 60^\circ$. $\angle DEF = 120^\circ$ Sum=720°	12 tiles 24 tiles 8 tiles



SUMMARY OF CONCEPTS

1. EQUATIONS – AN INTRODUCTION

- An equation is a statement of equality between two algebraic expressions.
- It has two sides:

Left Hand Side (LHS) = Right Hand Side (RHS)

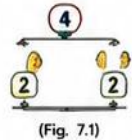
- Solving an equation means finding the value(s) of the unknown (letter-number) that make LHS = RHS true.

Examples of Equations

$$3x + 4 = 7 \quad 20 = y - 3 \quad \frac{a}{3} = 50 \quad 2x + 4 = 5x - 14$$

2. UNKNOWN WEIGHTS (BALANCED SCALE)

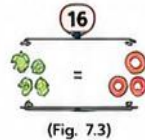
- The scale shows equal weights on both plates.
- Removing or adding equal weights on both plates keeps it balanced.



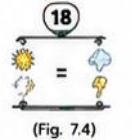
(Fig. 7.1)



(Fig. 7.2)



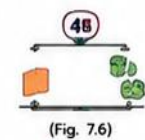
(Fig. 7.3)



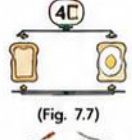
(Fig. 7.4)



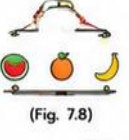
(Fig. 7.5)



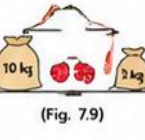
(Fig. 7.6)



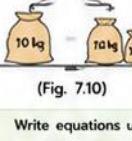
(Fig. 7.7)



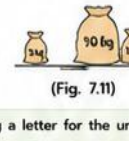
(Fig. 7.8)



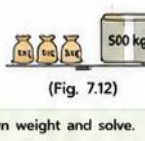
(Fig. 7.9)



(Fig. 7.10)



(Fig. 7.11)



(Fig. 7.12)

Write equations using a letter for the unknown weight and solve.
Hint: Remove the same weight from both sides to isolate the unknown.

4. REPRESENTATIVE VALUE – AVERAGE (MEAN)

- A single number that represents a collection of data is called a representative value.
- The most common representative value is the Average (Arithmetic Mean).

Formula

$$\text{Mean} = \frac{\text{Sum of all the values}}{\text{Number of values}}$$

Example (Runs scored in a series)

Player	M1	M2	M3	M4	M5	Total	Matches	Mean
Shubman	23	7	10	52	18	110	5	21
Yashasvi	26	53	2	-	15	96	4	24

Yashasvi's average (24) is higher than Shubman's (21).

Average as Fair-Share

When a total is shared equally among n people,
each share = Total $\div$ n (this is the mean).

7. SOLVING EQUATIONS – BASIC STEPS

- Simplify both sides of the equation.
- Use properties of equality to isolate the unknown.
- Perform operations step by step on both sides.
- Check the solution by substituting it in the equation.



9. KEY DEFINITIONS

- Equation:** An equality of two expressions.
- Solution:** Value(s) that make LHS = RHS true.
- Variable:** A letter used to denote an unknown.
- Mean (Average):** Sum of values $\div$ Number of values.
- Perpendicular Bisector:** A line that divides a segment into two equal parts at right angles.

10. TOOLS FOR CONSTRUCTIONS

- Unmarked Ruler
- Compass



Balancing & Sharing



Patterns & Sequences



Planning Calendars



Data Analysis

11. REAL LIFE APPLICATIONS

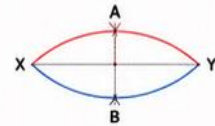
12. KEY TAKEAWAYS

- Equations help us find unknown values.
- Properties of equality make solving easy.
- Average gives a fair comparison.
- Constructions use logic and tools.
- Maths connects with real life!

3. GEOMETRIC CONSTRUCTIONS

A. EYES CONSTRUCTION (RECAP)

- Draw a line XY (supporting line).
- From X and Y, draw arcs above and below XY with the same radius.
- Mark the intersection points as A (above) and B (below).
- Draw arcs from A (upper) and B (lower) to meet at X and Y.



B. PERPENDICULAR BISECTOR

- AB is the perpendicular bisector of XY.
- Any point equidistant from X and Y lies on the perpendicular bisector of XY.

Construction Steps

- From X and Y, draw arcs above XY.
- From X and Y, draw arcs below XY (same radius).
- Join the intersection points A and B. AB is the perpendicular bisector.

6. PROPERTIES OF EQUALITY

- If the same number or expression is added, subtracted, multiplied or divided on both sides of an equation, the equality remains true.

Operation on Both Sides	Example
Add	$15 + 8 = 23 \rightarrow 15 + 8 + 10 = 23 + 10$
Subtract	$15 + 8 = 23 \rightarrow 15 + 8 - 5 = 23 - 5$
Multiply	$15 + 8 = 23 \rightarrow (15 + 8) \times 2 = 23 \times 2$
Divide	$15 + 8 = 23 \rightarrow (15 + 8) \div 5 = 23 \div 5$

Use this idea to solve equations systematically.

8. LEAP YEAR & GREGORIAN CALENDAR

Earth takes 365.2422 days to go around the Sun.

Our calendar uses 365 or 366 days.



Gregorian Calendar Rules

- If year is divisible by 400 $\rightarrow$ Leap year (366 days)
- Else if divisible by 100 $\rightarrow$ Common year (365 days)
- Else if divisible by 4 $\rightarrow$ Leap year (366 days)
- Otherwise $\rightarrow$ Common year



These rules keep our calendar in sync with Earth's revolution around the Sun.



REMEMBER!

Understand



Practice



Observe Patterns



Apply in Real Life



Excel in Maths!



MCQs (Part-2)(10 × 1 = 10 marks)

11. If $x - 7 = 12$, what is the value of x ?

- A) 5 B) 19 C) 14 D) -5

12. Which value of y satisfies the equation $4y = 28$?

- A) 6 B) 8 C) 7 D) 9

13. The algebraic statement for "3 more than twice a number p is 15" is:

- A) $3p + 2 = 15$ B) $2p + 3 = 15$ C) $2p - 3 = 15$ D) $3 + p = 15$

14. If $\frac{m}{5} = -3$, then the value of m is:

- A) -15 B) 15 C) -8 D) 2

15. The solution to the equation $2x + 5 = 5$ is:

- A) 5 B) 1 C) 0 D)

16. The sum of a number and **18** is **45**. Which equation correctly represents the situation?

- (a) $x - 18 = 45$ (b) $18 - x = 45$ (c) $x + 18 = 45$ (d) $18x = 45$

17. The length of a rectangle is **4 cm more than** its width. If the width is **w cm**, which expression represents the perimeter of the rectangle?

- (a) $2w + 4$ (b) $4w + 4$ (c) $2(w + w + 4)$ (d) $w + 4$

18. Which value of x satisfies the equation: $5x - 8 = 27$?

- (a) 5 (b) 6 (c) 7 (d) 8

19. A shopkeeper sells a notebook for **₹15 more** than a pencil. If the notebook costs **₹55**, what is the cost of the pencil?

- (a) ₹35 (b) ₹40 (c) ₹45 (d) ₹50

20. The sum of two consecutive integers is **51**. What is the smaller integer?

- (a) 24 (b) 25 (c) 26 (d) 27

WORKSHEET-2

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

1. Solve the linear equation: $4x - 7 = 13$.

2. Find the unknown value z : $\frac{z}{3} + 2 = 7$.

3. Convert this word problem into an equation and solve: "Subtracting 8 from twice a number yields 14."

4. Check if $x = 3$ is the correct solution for the equation $5x - 2 = 13$.

5. Solve for the unknown variable: $2(x + 4) = 18$.

6. Find k if the algebraic expression $3k + 1.5 = 7.5$.

7. The width of a rectangle is w cm. Its length is 5 cm more than its width. Write an expression for the perimeter.

8. Solve for p : $-4p + 9 = -11$.

9. A notebook costs ₹25 more than a pen. If their total cost is ₹65, find the cost of the pen.

10. Solve the expression for y : $2y/5 = -6$.

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

11. Solve the equation by isolating the variable step-by-step: $\frac{3n - 2}{5} = 5$.

12. The base angles of an isosceles triangle are equal. The vertical angle is 40° . Find the unknown base angles.

13. Raju's father's age is 5 years more than three times Raju's age. Find Raju's age if his father is 44 years old.

14. Solve for x: $3(2x - 1) + 4 = 25$.

15. Sum of two numbers is 95. If one exceeds the other by 15, find both the unknown numbers.

16. Solve the following equation: $0.5x + 1.2 = 3.7$.

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

17. Solve the complex equation for the unknown variable x : $4(2x - 3) - 3(x + 5) = 8$

18. Shikha has some 2-rupee coins and 5-rupee coins in her bag. The number of 5-rupee coins is three times the number of 2-rupee coins. If the total money in her bag is ₹170, find the unknown number of coins of each type.

19. The length of a rectangular park is 7 metres less than twice its width. If the total perimeter of the park is 148 metres, find the unknown length and width of the park.

20. In a class of 42 students, the number of girls is $\frac{2}{5}$ of the number of boys. Find the unknown number of boys and girls in the class.

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

21. The School Book Stall

To encourage reading, a school library sets a fixed charge for the first three days of borrowing a book, and an additional charge for each day thereafter. Aarav paid ₹27 for a book kept for seven days, while Anand paid ₹21 for a book kept for five days.

Let the fixed charge for the first 3 days be ₹ x and the additional charge per day be ₹ y .

1. Write down the linear equation representing Aarav's situation.
2. Write down the linear equation representing Anand's situation.
3. Find the unknown daily additional charge (y).
4. Find the unknown fixed charge (x).

22. Planting Trees for Environment Day

For World Environment Day, students of Class 7 decided to plant saplings around the school boundary. Section A planted a certain number of trees. Section B planted 12 more trees than Section A. Section C planted twice the number of trees planted by Section A. Together, all three sections planted a total of 112 trees.

Let the number of trees planted by Section A be the unknown variable t .

- Q1.** Write an algebraic expression for the trees planted by Section B and Section C in terms of t .
- Q2.** Formulate a complete equation representing the total trees planted.
- Q3.** Solve the equation to find how many trees Section A planted.
- Q4.** Determine how many trees were planted by Section B and Section C respectively.

Self Assessment:

I understood all concepts:

☐ Yes

☐ No

I need more practice

☐ Yes

☐ No

Name of Concepts having doubts/Not Cleared: _____

Parent's Assessment:

My ward understood the 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

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Answers of Worksheet-1:

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

Answers of Worksheet-2:

Q.No.	1	2	3	4	5	6	7	8
Ans	5	15	11	$X=3$	5	2	$4w+10$	5
Q.No.	9	10	11	12	13	14	15	16
Ans	20	-15	9	70^0	13yrs	$X=4$	$40\&55$	$X=5$
Q.No.	17	18	19	20	21		22	
Ans	$x=7$	10&30	$W=27, l=47$		$x+4y=27$ $x+2y=21$ $y=3$ $x=15$		$B:t+12, C:2t$ $T+(t+12)+2t=112$ $T=25$ $B:37, C:50$	