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7th STANDARD

FULL YEAR GUIDE

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Based on the Updated New Textbook

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It gives me great pride and pleasure in bringing to you **Sura's Mathematics Guide** for **7th Standard [Term-I+II+III]**. It is prepared as per the updated Textbook.

This guide encompasses all the requirements of the students to comprehend the text and the evaluation of the textbook.

♦ Additional questions have been provided exhaustively for clear understanding of the units under study.

♦ Chapter-wise Unit Tests with Answers.

In order to learn effectively, I advise students to learn the subject section-wise and practice the exercises given. It will be a teaching companion to teachers and a learning companion to students.

Though these salient features are available in this Guide, I cannot negate the indispensable role of the teachers in assisting the student to understand the subject thoroughly.

I sincerely believe this guide satisfies the needs of the students and bolsters the teaching methodologies of the teachers.

I pray the almighty to bless the students for consummate success in their examinations.

Subash Raj, B.E., M.S.
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CONTENTS

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NUMBER SYSTEM

IMPORTANT POINTS

INTEGERS :

✦ Collection of the natural numbers, zero and the negative numbers gives integers. The collection of integers are denoted by *Z*.

✦ Negative integers are represented on the number line to the left of zero and the positive integers to the right of zero.

✦ Every integers on the number line is placed in an increasing order from left to right.

ADDITION OF INTEGERS :

✦ The sum of two positive integers is positive.

E.g: $(+5) + (+4) = +9$

✦ The sum of two negative integers is negative.

E.g: $(-2) + (-5) = -7$

✦ The sum of a positive and a negative integer is the difference of the two numbers in value and has the sign of the greater integer.

E.g: $(-3) + (+5) = +2$

$(+3) + (-5) = -2$

PROPERTIES OF ADDITION :

✦ **Closure Property:** The sum of two integers is always an integer i.e. for any two integers *a* and *b*; $a + b$ is also an integer. This property is known as 'closure property' of integers on addition.

✦ **Commutative Property:** For any two integers *a* and *b*; $a + b = b + a$. This property is known as 'commutative property' of integers.

Associative Property:

✦ For any three integers *a*, *b*, and *c*; $a + (b + c) = (a + b) + c$. This property is known as Associative property of integers under addition.

Additive Identity:

✦ When '0' is added to an integer, we get the same integer.

i.e. For any integer *a*, $a + 0 = a = 0 + a$

Due to this property zero is called the additive identity.

Additive Inverse

✦ When opposites are added together always give the value zero.

E.g. $(-5) + (+5) = 0$

In this case either of the pair of opposites is known as the additive inverse of the other.

i.e. For any integer a, $-a$ is the additive inverse.

$a + (-a) = 0 = (-a) + a$

Subtraction of Integers:

✦ To subtract an integer from another, we add the additive inverse of the integer which is to be subtracted.

E.g. (i) $\quad 7 - (-5) \quad = \quad 7 + (+5) \quad\quad = 12$

(ii) $\quad (-7) - (+5) \quad = \quad (-7) + (-5) \quad\quad = -12$

✦ Every subtraction statement has a corresponding addition statement.

E.g. $8 - 5 = 3$; Subtraction statement. $3 + 5 = 8$; Addition statement.

Properties of Subtraction :

✦ The difference of two integers is always an integer.

i.e. For any two integers a, b; $a - b$ is also an integer. Closure property is true for integers on subtraction.

✦ For any two integers a, b; $a - b \neq b - a$. ∴ Commutative property does not hold for subtraction of integers.

E.g. $\quad\quad\quad 3 - (-1) \quad = \quad 3 + 1 = 4$

$\quad\quad\quad\quad (-1) - (3) \quad = \quad -1 + (-3) = -4$

$\quad\quad\quad\quad 3 - (-1) \quad \neq \quad (-1) - 3$

🙌 TRY THESE

(Text book Page No. 1)

1. Write the following integers in ascending order: –5, 0, 2, 4, –6, 10, –10

Sol : Plotting the points on the number line, we get

$$\overset{\text{−10 −9 −8 −7 −6 −5 −4 −3 −2 −1 0 1 2 3 4 5 6 7 8 9 10}}{\longleftrightarrow}$$

The numbers are placed in an increasing order from left to right.

∴ Ascending order: $-10 < -6 < -5 < 0 < 2 < 4 < 10$

2. If the integers –15, 12, –17, 5, –1, –5, 6 are marked on the number line then the integer on the extreme left is _____.

Sol : The least number will be on the extreme left.

∴ –17 will be on the extreme left.

3. Complete the following pattern:

___, – 40, ___, ___, –10, 0, ___, 20, 30, ___, 50.

Sol : The difference between the consecutive number is 10.

So the pattern is –50, – 40, – 30, – 20, –10, 0, 10, 20, 30, 40, 50

4. **Compare the given numbers and write "<", ">" or "=" in the boxes.**

    (a) -65 ⬚ 65 **(b)** 0 ⬚ 1000 **(c)** -2018 ⬚ -2018

Sol : **(a)** -65 $<$ 65, A positive number is greater than a negative number.

    (b) 0 $<$ 1000, 0 is less than all positive integers.

    (c) -2018 $=$ -2018

5. **Write the given integers in descending order, –27, 19, 0, 12, –4, –22, 47, 3, –9, –35.**

Sol : Separating positive and the negative integers, we get $-27, -4, -22, -9, -35$

    Arranging the numbers in descending order $-4 > -9 > -22 > -27 > -35$

    The positive numbers are 19, 12, 47, 3

    Arranging in descending order, we get $47 > 19 > 12 > 3$

    0 stands in the middle.

    ∴ Descending order: $47 > 19 > 12 > 3 > 0 > -4 > -9 > -22 > -27 > -35$

TRY THIS

1. **Find the value of the following using the number line activity.**

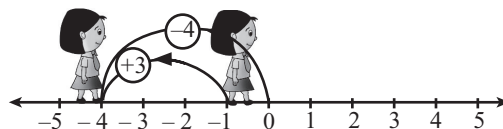   **(i)** $(-4) + (+3)$ **(ii)** $(-4) + (-3)$ **(iii)** $(+4) + (-3)$

Sol : **(i)** $(-4) + (+3)$

    To find the sum of (-4) and $(+3)$, we start at zero facing positive direction continuing in the same direction and move 4 units backward to represent (-4).

    Since the operation is addition we maintain the same direction and move three units forward to represent $(+3)$

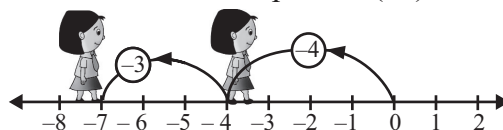   We land at -1

    So $(-4) + (+3) = -1$

    (ii) $(-4) + (-3)$

    From zero move 4 steps backward to represent (-4)

    From the same direction again move 3 units backward to represent (-3)

    We land at -7

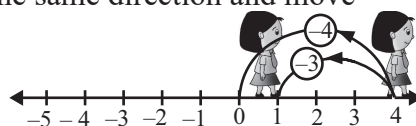   So $(-4) + (-3) = -7$

    (iii) $(+4) + (-3)$

    We start at zero facing positive direction and move 4 steps forward to represent $(+4)$

    Since the operation is addition we maintain the same direction and move three units backward to represent (-3).

    We land at $+1$.

    So $(+4) + (-3) = +1$

Term I

🖊 Sura's ➡ **7th Std - Mathematics**

👥 PROPERTIES OF ADDITION   (Text book Page No. 6)

1. **Complete the given table and check whether the sum of two integers is an integer or not?**

(i) $7 + (-5)$ = **(+2)**   (ii) $(-6) + (-13)$ = **(-19)**

(iii) $25 + 9$ = **34**   (iv) $(-12) + 4$ = **-8**

(v) $41 + 32$ = **73**   (vi) $(-19) + (-15)$ = **(-34)**

(vii) $52 + (-15)$ = **(+37)**   (viii) $(-7) + 0$ = **(-7)**

(ix) $0 + 12$ = **12**   (x) $14 + 0$ = **14**

(xi) $(-6) + (-6)$ = **(-12)**   (xii) $(-27) + 0$ = **-27**

Sol : ∴ The sum of two integers is an integer.

👥 TRY THESE   (Text book Page No. 7)

1. **Fill in the blanks:**

  (i) $20 + (-11)$ = **– (11)** + 20   [∵ Addition is commutative]

  (ii) $(-5) + (-8) = (-8) +$ **(-5)**   [∵ Addition is commutative]

  (iii) $(-3) + 12$ = **12** $+ (-3)$ [∵ Addition is commutative]

2. **Say True or False.**

  (i) $(-11) + (-8) = (-8) + (-11)$ - **True,** because addition is commutative for integers.

  (ii) $-7 + 2$ $= 2 + (-7)$ - **True,** by commutative property on integers.

  (iii) $(-33) + 8$ $= 8 + (-33)$ - **True,** by commutative property on integers.

3. **Verify the following.**

  (i) $[(-2) + (-9)] + 6$ = $(-2) + [(-9) + 6]$

  (ii) $[7 + (-8)] + (-5)$ = $7 + [(-8) + (-5)]$

  (iii) $[(-11) + 5] + (-14)$ = $(-11) + [5 + (-14)]$

  (iv) $(-5) + [(-32) + (-2)]$ = $[(-5) + (-32)] + (-2)$

Sol : (i) $[(-2) + (-9)] + 6$ = $(-2) + [(-9) + 6]$

         $[(-2) + (-9)] + 6$ = $(-11) + 6 = -5$

     Also $(-2) + [(-9) + 6]$ = $(-2) + (-3) = -5$

     Both the cases the sum is –5.

       ∴ $[(-2) + (-9)] + 6$ = $(-2) + [(-9) + 6]$

     (ii) $[7 + (-8)] + (-5)$ = $7 + [(-8) + (-5)]$

       Here $[7 + (-8)] + (-5)$ = $(-1) + (-5) = -6$

       Also $7 + [(-8) + (-5)]$ = $7 + (-13) = 7 - 13 = -6$

       In both the cases the sum is –6.

       ∴ $[7 + (-8)] + (-5)$ = $7 + [(-8) + (-5)]$

     (iii) $[(-11) + 5] + (-14)$ = $(-11) + [5 + (-14)]$

     Here $[(-11) + 5] + (-14)$ = $(-6) + (-14) = (-20)$

         $(-11) + [5 + (-14)]$ = $(-11) + (-9) = (-20)$

In both the cases the sum is –20.

$$\therefore [(-11) + 5] + (-14) = (-11) + [5 + (-14)]$$

(iv) $(-5) + [(-32) + (-2)] = [(-5) + (-32)] + (-2)$

$\quad\quad (-5) + [(-32) + (-2)] = (-5) + (-34) = -39$

Also $[(-5) + (-32)] + (-2) = (-37) + (-2) = -39$

In both the cases the sum is –39.

$$\therefore (-5) + [(-32) + (-2)] = [(-5) + (-32)] + (-2)$$

4. Find the missing integers:

(i) $0 + (-95)$ = **–95**

(ii) $-611 +$ **0** $= -611$

(iii) **Any Integer** $+ 0 =$ **same integer**

(iv) $0 + (-140)$ = **–140**

5. Complete the following:

(i) $-603 + 603$ = **0**   (ii) $9847 + (-9847) =$ **0**

(iii) $1652 +$ **(–1652)** $= 0$ (iv) $-777 +$ **777** $= 0$

(v) **–5281** $+ 5281$ $= 0$

EXERCISE 1.1

1. Fill in the blanks:

(i) $(-30) + \_\_\_ = 60$ **[Ans: 90]**

(ii) $(-5) + \_\_\_ = -100$ **[Ans: –95]**

(iii) $(-52) + (-52) = \_\_\_$ **[Ans: –104]**

(iv) $\_\_\_ + (-22) = 0$ **[Ans: 22]**

(v) $\_\_\_ + (-70) = 70$ **[Ans: 140]**

(vi) $20 + 80 + \_\_\_ = 0$ **[Ans: –100]**

(vii) $75 + (-25) = \_\_\_$ **[Ans: 50]**

(viii) $171 + \_\_\_ = 0$ **[Ans: –171]**

(ix) $[(-3) + (-12)] + (-77) = \_\_\_ + [(-12) + (-77)]$ **[Ans: –3]**

(x) $(-42) + [\_\_\_ + (-23)] = [\_\_\_ + 15] + \_\_\_$ **[Ans: +15; –42; –23]**

2. Say True or False.

(i) The additive inverse of (-32) is -32 **[Ans: False]**

(ii) $(-90) + (-30) = 60$ **[Ans: False]**

(iii) $(-125) + 25 = -100$ **[Ans: True]**

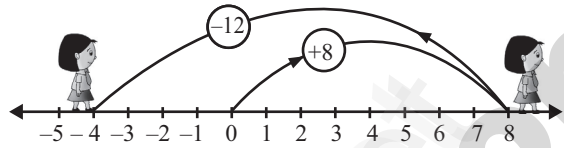**Chapter -1 - Number System**

3. **Add the following.**

    (i)   8 and –12 using number line.

Sol : Starting at zero on the number line facing positive

direction and move 8 steps forward

reaching 8.

Then we move 12 steps

backward to represent –12

and reach at –4.

$\therefore$ 8 + (–12) = –4
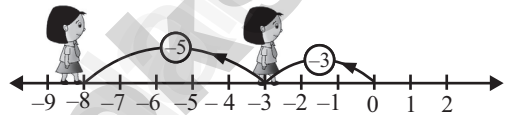

(ii)   (–3) and (–5) using number line.

Sol : Starting at zero on the number line facing positive direction and move 3 steps backward reaching –3.

Then we move 5 steps backward to represent –5 and reach –8.

$\therefore$ (–3) + (–5) = –8

(iii)   (–100) + (–10)   **Sol :** (–100) + (–10) = –100 – 10 = –110

(iv)   20 + (–72)   **Sol :**   20 + (–72) = 20 – 72 = –52

(v)   82 + (–75)   **Sol :**   82 + (–75) = 82 – 75 = 7

(vi)   –48 + (–15)   **Sol :**   –48 + (–15) = –48 – 15 = –63

(vii) –225 + (–63)   **Sol :**   –225 + (–63) = –225 – 63 = –288

4.   **Thenmalar appeared for competitive exam which has negative scoring of 1 mark for each incorrect answers. In paper I she answered 25 question incorrectly and in paper II 13 questions incorrectly. Find the total reduction of marks.**

Sol :   For each incorrect question the score   =   –1
          In paper I, score for 25 incorrect questions   =   25 × (–1) = –25
          In paper II, for 13 incorrect question the score   =   13 × (–1) = –13
          The total marks get reduced   =   (–25) + (–13) = –38

–38 marks will be reduced.

5.   **In a quiz competition, Team A scored +30, –20, 0 and team B scored –20, 0,+30 in three successive rounds. Which team will win? Can we say that we can add integers in any order?**

Sol :   Total score of team A =   [(+30) + (–20)] + 0 = (+10) + 0 = 10
          Total score of team B   =   [(–20) + 0] + (+30)
                    =   –20 + 30 = +10

          Score of team A = Score of team B. Yes, we say that we can add integers in any order.

UNIT TEST

Time: 1 hr **Max Marks : 25**

Chapter -1 - Number System

I. Choose the best answer from the options given below. **5 × 1 = 5**

1. The additive identity for integers is
   (a) −1   (b) 0
   (c) 1   (d) None of these

2. When 5 is multiplied by 0 we get
   (a) 5   (b) −5
   c) 10   (d) 0

3. What is the quotient when zero is divided by a non-zero integer?
   (a) 1   (b) −1
   (c) 0   (d) The integer itself

4. Name the property which says that "if two integers are added or subtracted, the answer is always an integer".
   (a) Closure property
   (b) Associative property
   (c) Distributive property
   (d) Identity

5. The product of 5 and −3 is
   (a) 0   (b) 15
   (c) −15   (d) 8

II. Fill in the blanks **5 × 1 = 5**

6. The additive inverse of 0 is _____

7. 300 + (−300) = _____

8. 2 + 0 + (−15) = _____ + 0 + 2

9. 50 × _____ = 0

10. The product of _____ and −1 is −15.

III. Answer the following question

5 × 2 = 10

11. If the product of two integers is −84. One of them is −6, then what is the other integer?

12. Find the product of
    (−1) × (−1) × (−2) × (−2)

13. Use >, < or = in the boxes.
    (a) (−5) + (−3) ☐ (−5) − (−3)
    (b) (−3) + 7 − (19) ☐ 15 − 8 + (−9)

14. Write a negative integer and a positive integer whose difference is −4?

15. Write a pair of integers whose sum is smaller than both the integers.

IV. Answer the following **1 × 5 = 5**

16. (a) An elevator descends into a mine shaft at the rate of 6m/min. If the descend starts from 10 m above the ground level. How long will it take to reach −350 m?

    (or)

    (b) Write five pairs of integers a, b such that $\dfrac{a}{b} = -3$

ANSWERS

I.

1. (b) 0   2. (d) 0
3. (c) 0   4. (a) closure property
5. (c) −15

II.

6. 0   7. 0
8. −15   9. 0
10. 15

III.

11. 14   12. 4
13. (a) <   (b) <   14. −2, 2
15. −25, 3

IV.

16. (a)   1 hour
    (b)   (9, −3), (−3, 1), (−18, 6) (6, −2) (−15, 5)

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CHAPTER 2
MEASUREMENTS

IMPORTANT POINTS

✦ SI unit of Distance is metre.

✦ SI unit of Weight is gram.

✦ SI unit of Time is second.

✦ International system of units were introduced in the year1971.

✦ Perimeter is the distance around.

✦ Area is the region occupied by the closed shape.

PARALLELOGRAM :

✦ A parallelogram is a four sided closed shape in which opposite sides are both parallel and equal.

✦ Area of the parallelogram = $b \times h$ sq. units, where b = base; h = height.

✦ The perimeter of a parallelogram is the sum of the lengths of the four sides.

RHOMBUS :

✦ In a parallelogram if all the sides are equal then it is called a rhombus.

✦ In a rhombus (i)   all the sides are equal

(ii) opposite sides are parallel

(iii) diagonals divide the rhombus into 4 right angles triangles of equal area.

(iv) the diagonals bisect each other at right angles.
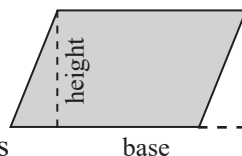
✦ Area of the rhombus = (base × height) sq. units

✦ Area of the rhombus = $\frac{1}{2}(d_1 \times d_2)$ sq. units. Where d_1 and d_2 are the diagonals.
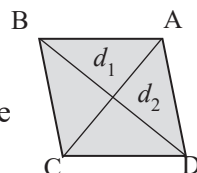
TRAPEZIUM :

✦ A parallelogram with one pair of non-parallel sides is known as a Trapezium.

✦ Area of the Trapezium = $\frac{1}{2} \times h(a+b)$ sq. units. Where a and b are lengths of parallel sides.

✦ If the non-parallel sides of Trapezium are equal then it is known as an <u>isosceles Trapezium</u>.

PARALLELOGRAM

Chapter - 2 - Measurements
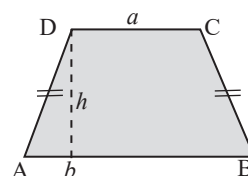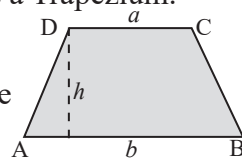
👫 TRY THESE   (Text book Page No. 33)

1. **Find the missing values for the following:**

S.No.	Length	Breadth	Area	Perimeter	
(i)	12 m	8 m			**Hint** : The perimeter of a rectangle $= 2 \times (l + b)$ units. Area of a rectangle $= l \times b$ square units. (l and b are length and breadth of a rectangle)
(ii)	15 cm		90 sq. cm		
(iii)		50 mm		300 mm	
(iv)	12 cm			44 cm	

Sol :   (i) Given Length $l = 12$ m ; **Breadth $b = 8$ cm**

∴   Area of rectangle $= l \times b$ sq. units $= 12 \times 8$ m^2 $= 96$ m^2

Perimeter of the rectangle $= 2 \times (l + b)$ units $= 2 \times (12 + 8)$ m $= 2 \times 20 = 40$ m

(ii) Given Length $l = 15$ cm ; Area of the rectangle $= 90$ sq. cm

$l \times b = 90$; $15 \times b = 90$; $b = \dfrac{90}{15} = 6$ cm

Perimeter of the rectangle $= 2 \times (l + b)$ units $= 2 \times (15 + 6)$ cm $= 2 \times 21$ cm $= 42$ cm

(iii) Given Breadth of rectangle $= 50$ mm ; Perimeter of the rectangle $= 300$ mm

$$2 \times (l + b) = 300$$
$$2 \times (l + 50) = 300$$

$$l + 50 = \frac{300}{2} = 150$$

$$l = 150 - 50$$

$$l = 100 \text{ mm}$$

Area $= l \times b$ sq. units $= 100 \times 50$ mm^2 $= 5000$ mm^2

(iv)   Length of the rectangle $= 12$ cm ; Perimeter $= 44$ cm

$2(l + b) = 44$	$12 + b = 22$; $b = 22 - 12$; $b = 10$ cm
$2(12 + b) = 44$	Area $= l \times b$ sq. units
$12 + b = \dfrac{44}{2}$	$= 12 \times 10$ cm^2 $= 120$ cm^2

S.No.	Length	Breadth	Area	Perimeter
(i)	12 m	8 m	96 m^2	40 m
(ii)	15 cm	6 cm	90 sq. cm	42 cm
(iii)	100 mm	50 mm	5000 sq.mm	300 mm
(iv)	12 cm	10 cm	120 cm^2	44 cm

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2.

S.No.	Side	Area	Perimeter	
(i)	60 m			**Hint :**
(ii)		64 sq. m		Perimeter of a square = 4 × a units.
(iii)			100 mm	Area of a square = a × a square units.
				('a' is the side of the square)

Sol : (i)   Given side a = 60 cm

Area of the square = $a \times a$ sq.units = 60 × 60 cm^2 = 3600 cm^2

Perimeter of the square = 4 × a units = 4 × 60 cm = 240 cm

(ii)   Given area of a square = 64 sq. m

$$a \times a = 64 \qquad \qquad \text{Perimeter} = 4 \times a$$
$$a \times a = 8 \times 8 \qquad \qquad \qquad = 4 \times 8$$
$$a = 8 \text{ m} \qquad \qquad \qquad = 32 \text{ m}$$

(iii) Given perimeter of the square = 100 mm

$$4 \times a = 100 \qquad \qquad \text{Area} \quad = a \times a \text{ sq. units}$$
$$a = \frac{100}{4} \text{ mm} \qquad \qquad = 25 \times 25 \text{ mm}^2$$
$$a = 25 \text{ mm} \qquad \qquad = 625 \text{ mm}^2$$

S.No.	Side	Area	Perimeter
(i)	60 cm	3600 cm^2	240 cm
(ii)	8 m	64 sq. m	32 m
(iii)	25 mm	625 mm^2	100 mm

3.

S. No.	Base	Height	Area	
(i)	13 m	5 m		**Hint :**
(ii)	16 cm		240 sq. cm	Area of the right angled triangle = $\frac{1}{2}(b \times h)$
(iii)		6 mm	84 sq. mm	square units
				('b' is the base and 'h' is the height of the triangle)

Sol : (i)   Given base of the right angled triangle = 13 m ; height = 5 m

Area = $\frac{1}{2}$ × (b × h) sq. units = $\frac{1}{2}$ × (13 × 5) m^2 = $\frac{65}{2}$ m^2 = 32.5 m^2

(ii)   Base = 16 cm ; Area = 240 sq. cm ; $\frac{1}{2} \times b \times h = 240$

$\frac{1}{2} \times \cancel{16}^{8} \times h = 240$; $h = \frac{240}{8}$; $h = 30$ cm

Term I

CHAPTER

5

GEOMETRY

LINES AND LINE SEGMENTS

✦ A line extends along both directions without any end. It is denoted by l, m,...... or $\overleftrightarrow{AB}$.

A ———————————————— B

✦ A line segment has two end points. It is represented by $\overline{AB}$.

A ———————————————— B
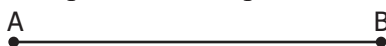
✦ A ray is a line that starts from a point and extends without any end in a particular direction. It is denoted by $\overrightarrow{AB}$.

A ———————————————— B

✦ If two lines m and n are parallel, then we denoted $m \parallel n$. Parallel lines never intersect each other.

m

n

✦ When two lines have a common point they are called intersecting lines and the common point is called point of intersection

l

0

m
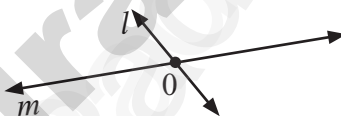
✦ If three or more points lie on the same line then they are called collinear points, otherwise they are called non collinear points.

A   B   C   P   Q

R
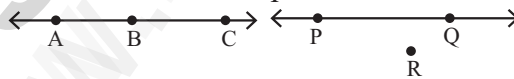
A,B and C are   P,Q and R are
collinear points   non-collinear points

ANGLES

✦ An angle is formed when two rays diverge from a common point. The rays forming and angles are called arms of the angle and the common point is called the vertex of the angle.

(i) Acute Angle:

An angle whose measure is less than 90° is called an acute angle.
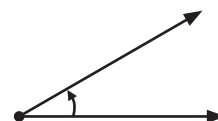
(ii) Right Angle:

An angle whose measure is exactly 90° is called a right angle.

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(iii)   Obtuse Angle :

An angle whose measure is greater than 90° is called an Obtuse angles

(iv)   Straight Angle :

An angle whose measure is exactly 180° is called a straight angle.

(v)   Reflex Angle :

An angles whose measure is greater than 180° and less than 360° is called a reflex angle

(vi)   Complementary Angle :

Two angles are called complementary angle if their sum is 90°.

The pair of angles 35° and 55° are complementary to each other.

(vii)   Supplementary Angles :

Two angles are called supplementary angles if their sum is 180°.

Angles 70° is and 110° are supplement to each other.

(viii)   Adjacent Angles :

Two angles which have a common vertex and a common arm, whose interiors do not overlap are called Adjacent angles.
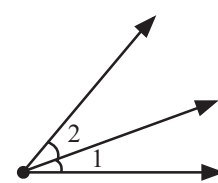
∠1 and ∠2 are the adjacent angles.

(ix)   Linear pair:

If the resultant angle is a straight angle then the angles are called supplementary angle.
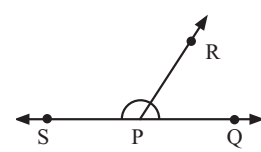
The adjacent angles that are supplementary lead us to a   pair of angles that lie on straight line. This pair of angles are called linear pair of angles. ∠QPR and ∠RPS are linear pair of angles.
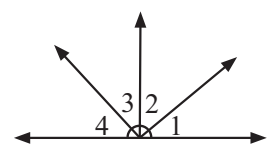
The sum of angles on one side of straight line is 180°.

$\Rightarrow \angle 1 + \angle 2 + \angle 3 + \angle 4 = 180°$

The sum of the angles around a point is always 360°.

$\Rightarrow \angle 1 + \angle 2 + \angle 3 + \angle 4 = 360°$

(x)   Vertically opposite Angles :

When two lines intersect eachother, two pair of non- adjacent angles formed are called vertically opposite angles
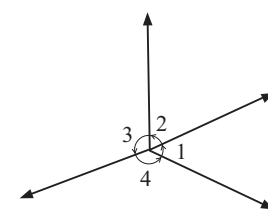
∠1 and ∠3 are vertically opposite angles.

∠2 and ∠4 are vertically opposite angles.
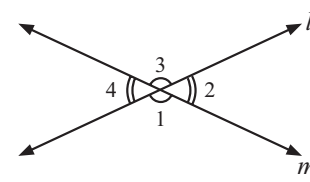
TRANSVERSAL:

✦ A transversal is a line that intersects two lines at distinct point. Line ' *l* 'is the transversal here.
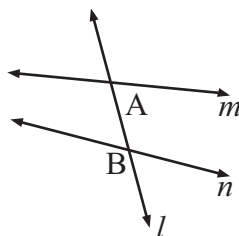
TRY THESE

1. **Complete the following statements.**

   (i)   A **Line** is a straight path that goes on endlessly in two directions.

   (ii) A **Line segment** is a line with two end points.

   (iii) A **Ray** is a straight path that begins at a point and goes on and extends end-lessly the other direction.

   (iv) The lines which intersect at right angles are **Perpendicular lines.**

   (v)   The lines which intersect each other at a point are called **Intersecting lines.**

   (vi) The lines that never intersect are called **Parallel lines.**

2. **Use a ruler or straightedge to draw each figure.**

   (i)   line CD   **Sol :** Line CD

   (ii) ray AB   **Sol :** Ray AB

   (iii) line segment MN **Sol :** Line segment MN

3. **Look at the figure and answer the following questions.**

   (i)   Which line is parallel to AB.

   (ii) Name a line which intersect CD.

   (iii) Name the lines which are perpendicular to GH

   (iv) How many lines are parallel to IJ

   (v)   Will EF intersect AB? Explain.
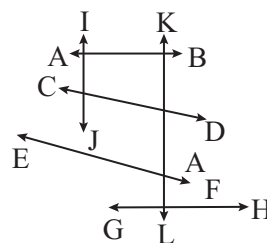
Sol : (i) $\overleftrightarrow{GH}$ is parallel to $\overleftrightarrow{AB}$

   (ii) $\overleftrightarrow{IJ}$ and $\overleftrightarrow{KL}$ intersect $\overleftrightarrow{CD}$

   (iii) $\overleftrightarrow{IJ}$ and $\overleftrightarrow{KL}$ are perpendicular to $\overleftrightarrow{GH}$

   (iv) Only one line $\overleftrightarrow{KL}$ is parallel to $\overleftrightarrow{IJ}$

   (v)   Yes, $\overleftrightarrow{EF}$ will intersect $\overleftrightarrow{AB}$ at some point.

Term I

Sura's ➡ 7th Std - Mathematics

TRY THESE   (Text book Page No. 85)

### Choose the correct answer

1. **A straight angle measures**

 (a) 45° (b) 90° (c) 180° (d) 100°

                 [Ans (c) 180°]

2. **An angle with measure 128° is called _____ angle.**

 (a) a straight (b) an obtuse (c) an acute (d) Right

              [Ans (b) an obtuse]

3. **The corner of the A4 paper has**

 (a) An acute angle   (b) A right angle

 (c) Straight   (d) An obtuse angle **[Ans (b) a right angle]**

4. **If a perpendicular line is bisecting the given line, you would have two**

 (a) right angles   (b) obtuse angles

 (c) acute angles   (d) reflex angles **[Ans (a) right angle]**

5. **An angle that measure 0° is called**

 (a) right angle   (b) obtuse angle

 (c) acute angle   (d) Zero angle. **[Ans (d) Zero angle]**

Think   (Text book Page No. 86)

In each of the following figures, observe the pair of angles that are marked as ∠1 and ∠2. Do you think that they are adjacent pairs? Justify your answer.
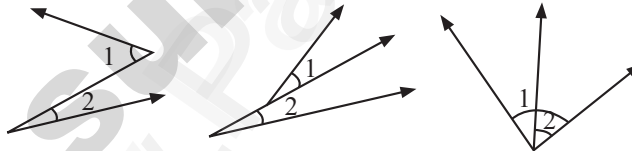
Sol : No, they are not adjacent pairs.

  In (i) and (ii) angles ∠1 and ∠2 have no common vertex.

  In (iii) the interiors of ∠1 and ∠2 overlaps.

  ∴ they are not adjacent angles.

TRY THESE   (Text book Page No. 87)

1. **Few real life examples depicting adjacent angles are shown below.**
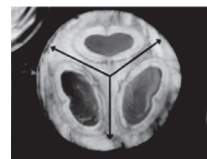
Can you give three more examples of adjacent angles seen in real life?

Term I

Sol :
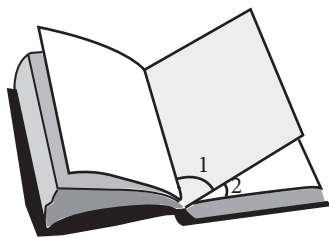
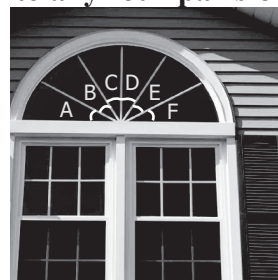(i)   (ii)   (iii)

(i)   Angles between leaf veins. [∠1 and ∠2].

(ii) Angles between adjacent pages of a book, when it is open [∠1 and ∠2].

(iii) Adjacent angles of scissors [∠1 and ∠2]

2.   Observe the six angles marked in the picture shown. Write any four pairs of adjacent angles and that are not.
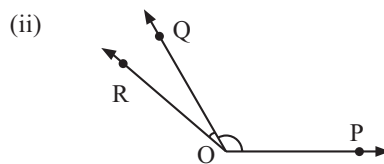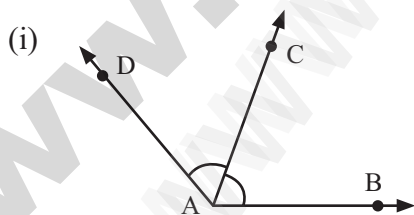
Sol : Four pairs of adjacent angles are

1. ∠A and ∠B

2. ∠B and ∠C

3. ∠C and ∠D

4. ∠D and ∠E

Four pairs of non adjacent angles are.

1. ∠A and ∠C   2. ∠C and ∠F

3. ∠D and ∠F   4. ∠A and ∠F

3.   Identify the common arm, common vertex of the adjacent angles and shade the interior with two colours in each of the following figures.
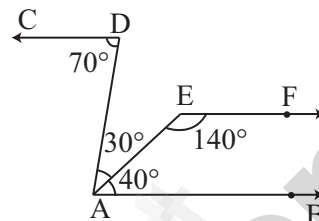
(i)

(ii)

Sol : (i) $\overrightarrow{AC}$ is the common arm

A is the common vertex

∠BAC and ∠CAD are adjacent angles.
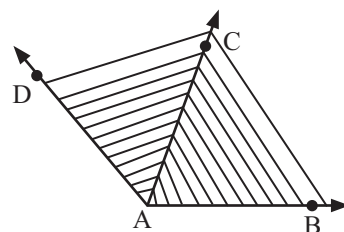
ADDITIONAL QUESTIONS

1. In the following figure, show that CD||EF

Sol:
$$\angle BAD = \angle BAE + \angle EAD$$
$$= 40° + 30° = 70°.$$

and $\angle CDA = 70°$

$$\angle BAD = \angle CDA$$

But they form a pair of alternate angles

$$\Rightarrow AB||CD \qquad ...(1)$$

Also $\angle BAE + \angle AEF = 40° + 140° = 180°$

But they form a pair of interior opposite angles.

$$\Rightarrow AB||EF \qquad ...(2)$$

From (1) and (2), we get

AB||CD||EF

$\Rightarrow$ CD||EF

2. In the adjoining figure, the lines $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ intersect at 'O'. If $\angle COB = 50°$, find the measures of the other three angles.

Sol :
$$\angle COB = 50°$$

$\angle AOD = 50°$ (vertically opposite angles)
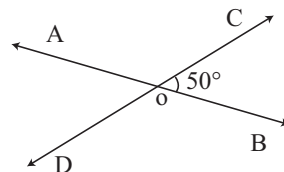
Now $\angle AOC$ and $\angle COB$ form a linear pair,

Thus $\angle AOC + \angle COB = 180°$

$$\Rightarrow \quad \angle AOC + 50° = 180°.$$

$\angle AOC = 180° - 50° = 130°$

Also $\angle AOC$ and $\angle BOD$ are vertically opposite angles.

$$\therefore \angle BOD = \angle AOC = 130°$$

Thus the three angles are

$$\angle AOD = 50°$$
$$\angle AOC = 130°$$
$$\angle BOD = 130°$$

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📖 Sura's ➠ 7th Std - Mathematics

UNIT TEST

Time: 1 hr   **Max Marks : 25**

Term I

I. Choose the best answer from the options given below.   5 × 1 = 5

1. **Which of the following pairs can form a linear pair.**
   - (i) Pair of complementary angles
   - (ii) Pair of supplementary angles
   - (iii) Pairs of adjacent angles
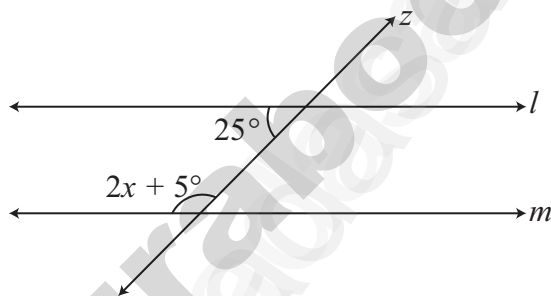   - (iv) Pairs of vertically opposite angles

2. **Vertically opposite angles are always**
   - (i) Equal to each other
   - (ii) Supplementary
   - (iii) Complementary
   - (iv) Unequal to each other

3. **Which of the following is a pair of complementary angles?**
   - (i) 10° and 170°
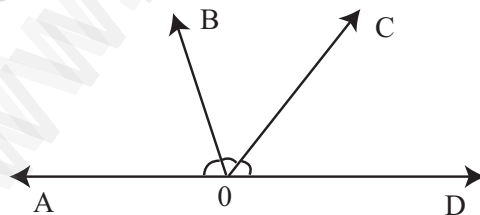   - (ii) 80° and 10°
   - (iii) 110° and 80°
   - (iv) 10° and 70°

4. **In the figure $l \parallel m$ and z is the transversal. The measure of $(x + 5)°$ is**

   - (i) 75°
   - (ii) 80°
   - (iii) 35°
   - (iv) 30°

5. **In the figure if $\angle AOB : \angle BOC : \angle COD = 2 : 3 : 1$ then $\angle COD$ is**
   - (i) 30°
   - (ii) 60°
   - (iii) 90°
   - (iv) 15°

II. Fill in the blanks.   5 × 1 = 5

6. The sum of two angles in a linear pair is _____.
7. Two adjacent angles have a common _____ and a common vertex.
8. Vertically opposite angles are _____.
9. If the sum of two angles is 180°, then each is the _____ of the other.
10. Two _____ adjacent angles form a linear pair.

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Chapter - 5 - Geometry

**III. Answer the following questions.** $5 \times 2 = 10$

11. The difference in the measure of two complementary angles is 12°. Find the measure of the angles.

12. Among two supplementary angles the measure of the larger angle is 50° more than the measure of the smaller. Find the measure.

13. Are the angles ∠1 and ∠2 are adjacent angles? Why?
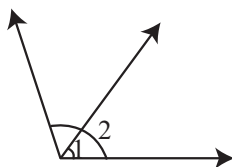
14. In the adjoining fig. is ∠1 is adjacent to ∠2? Why?
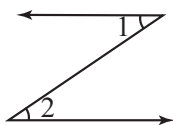
15. Find the value of x, y and z in the following fig.
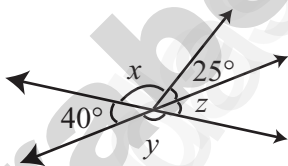
IV. Answer the following : $1 \times 5 = 5$

16. (a) Construct 135° using ruler and compass only.

(or)

(b) Construct an angle 130° using protractor and draw a bisector to it using ruler and compass.

CHAPTER
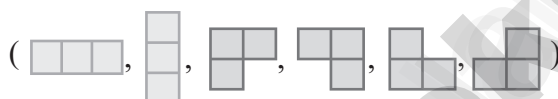6

INFORMATION PROCESSING

IMPORTANT POINTS

1. TETROMINO :

✦ Joining two squares of size 1cm × 1cm edge to edge, we get a formation is called Domino

(▭ ▯)

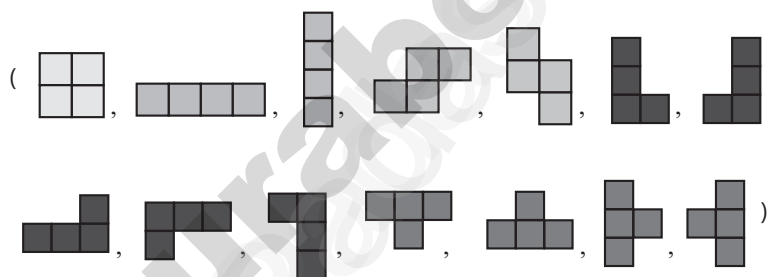✦ 'Tri' means three

✦ When we joint three squares along their edges, we get the formation called Trinomino

(▭▭▭ , ▯ , ⌐ , ⌐ , ∟ , ∟)

✦ Tetra means 4.

✦ All the formation of four squares formed by joining edge to edge are called Tetrominoes.

(⊞ , ▭▭▭▭ , ⌐ , ⌐ , ⌐ , L , ⌐ ,

⌐ , ⌐ , ⌐ , ⌐ , ⌐ , ⌐ , ⌐)

✦ The concept of tetrominoes will be useful in many places in real life situation like tiling a floor, packing things in a box and so on.
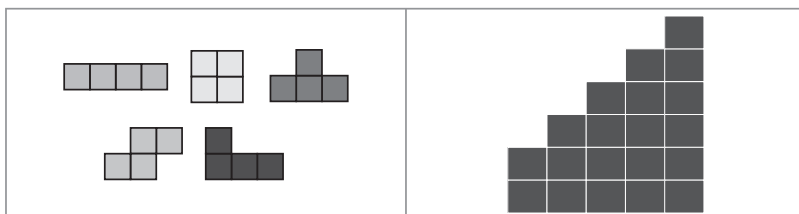
2. ROUTE MAP :

✦ Maps are used to display a wide variety of information.

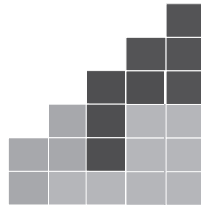✦ A route map helps us to choose a way suitable for our purpose or need.

⭐ TRY THIS   (Text book Page No.111)

1. Use the given five tetrominoes only once and create the shape given below.

Sol : Using the given five tetrominoes in the proper places we can make the given shape as follows.

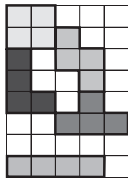**TRY THESE**   (Text book Page No. 113)
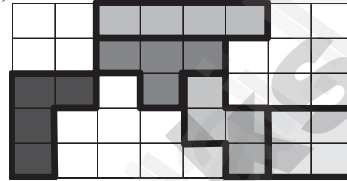
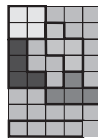**1.   Complete the rectangle given below using five tetrominoes only once**

(i)   (ii)

Sol : The given rectangle is halfly filled with the five tetrominoes.

Using the five tetrominoes only once we can fill the rectangles as follows:
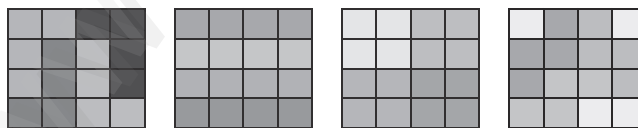
(i)   (ii)

2.   In Figure (1) one 4 × 4 square is filled by a tetromino shape '▢▢▢'. In the same way try to fill the other 4 × 4 square grids (Figure (2) to Figure (5)) using the other four tetrominoes (▢ , ▢▢▢▢ , ▢ and ▢). Find which tetromino shape cannot fill the 4 × 4 square grid completely.

Sol :

(1)   (2)   (3)   (4)   (5)

(2)   (3)   (4)   (5)

(5) ▢ - tetromino shape cannot fill the 4 × 4 square completely.

EXERCISE 6.1

1.   A tetromino is a shape obtained by........................... squares together.   **[Ans: 4]**

2.   Draw a tetromino which passes symmetry.................................   **[Ans: ▢]**

Term I

3. **Complete the table.**

S.No.	Tetro Minoes	Rotation of Tetrominoes°			
		90°	180°	270°	360°
1				—	
2			—	—	
3		—			—

Sol :

S.No.	Tetro Minoes	Rotation of Tetrominoes°			
		90°	180°	270°	360°
1					
2					
3					

4. **Shade the figure completely, by using five tetrominoes shapes only once.**
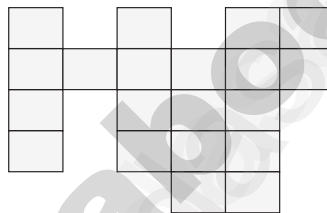
Sol :

Using the five tetrominoes , , , , and , we get the shaded figure as follows.
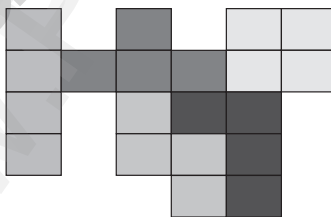
5. **Using the given tetromino shaded in two different ways** (   ) **, fill the grid in such a way that, no two adjacent boxes have the same colour.**

Chapter - 6 - Information Processing

Term I
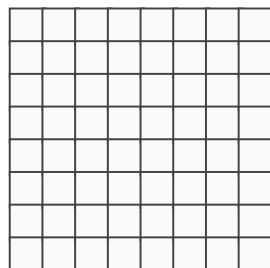
Sol :
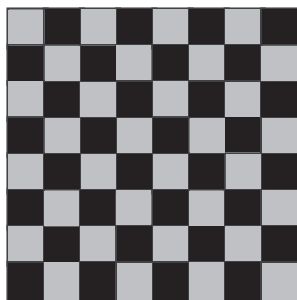
∴ There are more possible ways to shade these region.

6. **Match the tetrominoes of same type.**

(i)

Sol : (i)

(ii)

(ii)

(iii)

(iii)

(iv)
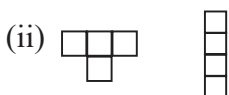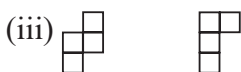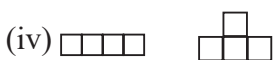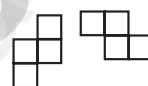
(iv)
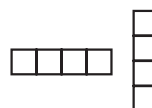
7. **Using the given tetrominoes with numbers, complete the 4 × 4 magic square.**
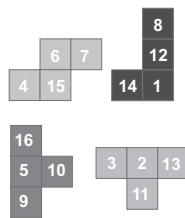
Sol :

16	3	2	13
5	10	11	8
9	6	7	12
4	15	14	1

(more possible ways are these)

th **7** **STD** Time : 2.00 hrs.	**Common First Term Summative Examination 2019** **MATHEMATICS**	Reg. No. ⬜⬜⬜⬜⬜ Marks : 60

Part - A

I. Choose the correct answer : 5×1= 5

1. Which property is illustrated by the equation $(5 \times 2) + (5 \times 5) = 5 \times (2 + 5)$
 (a) commutative
 (b) closure
 (c) distributive
 (d) associative

2. The angle between the diagonals of a rhombus is
 (a) 120°   (b) 180°
 (c) 90°   (d) 100°

3. Choose the pair of like terms
 (a) $7p, 7x$ (b) $7r, 7x,$
 (c) $-4x, 4$ (d) $-4x, 7x$

4. If Mani buys 5 kg of potatoes for ₹ 75 then he can buy _____ kg of potatoes for ₹ 105.
 (a) 6   (b) 7
 (c) 8   (d) 5

5. The sum of all angles at a point is
 (a) 360°   (b) 180°
 (c) 90°   (d) 0°

II. Say true or false : 5×1= 5

6. $(-675) - (-400) = -1075$

7. The area of the rhombus with side 4 cm and height 3 cm is 12 sq.cm.

8. The sum of $a - b + c$ and $- a + b - c$ is zero.

9. Number of students in a hostel and consumption of food are not in direct proportion.

10. Vertically opposite angles are equal in measure.

III. Match the following : 5×1= 5

11. Multiplicative identity of integers. - 3

12. Area of trapezium - Indirect proportion

13. $x + 5 = 8$ - Complementry angles

14. $xy = k$ - $\frac{1}{2} \times h(a+b)$ sq. units

15. Sum of two angles is 90° - 1

IV. Fill in the blanks : 5×1= 5

16. $(-40) \div$ ____ $= 40$

17. Area of the parallelogram = _____.

18. If a = 5, find the value of $2a + 5 =$ _____.

19. If 7 m cloth cost ₹ 294, then the cost of 5m of cloth is _____.

20. A tetromino is a shape obtained by _____ squares together.

Part - B

V. Answer any 10 questions : 10×2= 20

21. Subtract the following using number line : $-3 - (-2)$

22. Find the value of $(-35) \times 22$

23. How many –4's are there in (-20)?

24. One of the sides and the corresponding height of the parallelogram are 12m and 8m respectively. Find the area of the parallelogram.

25. Calculate the area of the rhombus having a diagonals equal to 6m and 8m.

26. Define isosceles Trapezium.

27. **Subtract :** $13x + 12y - 5$ from $27x + 5y - 43$

28. Solve : $7x + 10 = 80$

29. Write the variables, constants and terms of $18 + x - y$

30. A dozen bananas costs ₹ 20. What is the price of 48 bananas?

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31. 60 workers can spin a bale of cotton in 7 days. In how many days 42 workers spin it?

32. In figure find $\angle AOC$
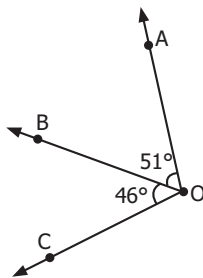
33. Find the value of x if $\angle AOB$ is a right angle.
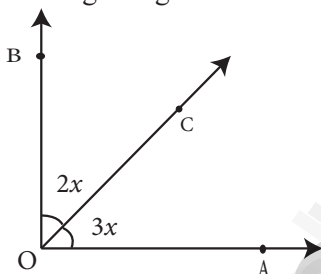
34. Define transversal.

35. Draw a tetromino which passes symmetry

<h2 align="center">Part - C</h2>

VI. Answer any 5 questions : $5 \times 3 = 15$

36. Verify $(8 - 13) \times 7 = 8 - (13 \times 7)$

37. Add 2 to me. Then multiply by 5 and subtract 10 and divide now by 4 and I will give you 15. Who am I?

38. The parallel sides of a trapezium are 23 cm and 12 cm. The distance between the parallel sides is 9 cm. Find the area of the trapezium.

39. A person has ₹ 960 in denominations of ₹ 1, ₹ 5 and ₹ 10 notes. The number of notes in each denomination is equal. What is the total number of notes?

40. Six times a number subtracted from 40 gives – 8. Find the number.

41. It takes 60 days for 10 machines to dig a hole. Assuming that all machines work at the same speed, how long will it take 30 machines to dig the same hole?

42. Find the value of x, y and z.

TERM

II

CONTENTS

CHAPTER 1

NUMBER SYSTEM

Representing a Decimal Number

✦ $\dfrac{1}{10}$ (one-tenth of a unit can be written as 0.1 in decimal notation)

✦ The dot represents the decimal point and it comes between ones place and tenths place.

✦ The place value of the decimal digits of a number are tenths $\left(\dfrac{1}{10}\right)$, hundredths $\left(\dfrac{1}{100}\right)$, thousandths $\left(\dfrac{1}{1000}\right)$ and so on.

TRY THESE

1. **Observe the following and write the fraction of the shaded portion and mention in decimal form also.**

(i)   (ii)   (iii)
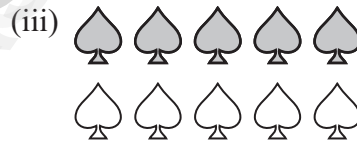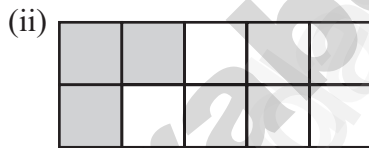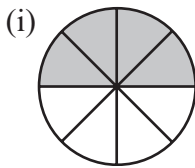
Sol : **(i)** Total parts = 8

Shaded parts = 4

Fraction of the shaded portion = $\dfrac{4}{8}$

Decimal form of $\dfrac{4}{8}$ is 0.5

$$\begin{array}{r} 0.5 \\ 8\overline{\smash{\big)}\,4.0} \\ \underline{40} \\ 0 \end{array}$$

(ii) Total parts = 10

Shaded parts = 3

Fraction of the shaded portion = $\dfrac{3}{10}$

Decimal form of $\dfrac{3}{10}$ is 0.3

$$\begin{array}{r} 0.3 \\ 10\overline{\smash{\big)}\,3.0} \\ \underline{30} \\ 0 \end{array}$$

(iii) Total parts = 10

Shaded parts = 5

Fraction of the shaded portion = $\dfrac{5}{10}$

Decimal form of $\dfrac{5}{10}$ is 0.5

$$\begin{array}{r} 0.5 \\ 10\overline{\smash{\big)}\,5.0} \\ \underline{50} \\ 0 \end{array}$$

Chapter -1 - Number System

2. **Represent the following fractions in decimal form by converting denominator into ten or powers of 10.**

S.No.	Fraction	Decimal Form
(i)	$\dfrac{3}{5}$	**Sol :** $\dfrac{3}{5} = \dfrac{3 \times 2}{5 \times 2} = \dfrac{6}{10} = 0.6$
(ii)	$\dfrac{4}{10}$	**Sol :** $\dfrac{4}{10} = 0.4$
(iii)	$\dfrac{2}{4}$	**Sol :** $\dfrac{2}{4} = \dfrac{2 \times 25}{4 \times 25} = \dfrac{50}{100} = 0.50 = 0.5$
(iv)	$\dfrac{4}{20}$	**Sol :** $\dfrac{4}{20} = \dfrac{4 \times 5}{20 \times 5} = \dfrac{20}{100} = 0.20 = 0.2$
(v)	$\dfrac{7}{10}$	**Sol :** $\dfrac{7}{10} = 0.7$

3. **Give any two life situations where we use decimal numbers.**

Sol : **(i)** Measuring weight of gold.

(ii) Weighing our height

🙌 TRY THIS

(Text book Page No. 4)

1. **Represent the following decimal numbers pictorially.**
   (i) 5 ones and 3 tenths   **(ii) 6 tenths**
   (iii) 7 ones and 9 tenths   **(iv) 6 ones and 4 tenths**
   (v) Seven tenths

Sol : **(i)** 5 ones and 3 tenths

5 ones   3 tenths

(ii) 6 tenths

6 tenths

(iii) 7 ones and 9 tenths
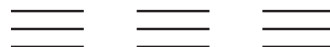
7 ones   9 tenths

(iv) 6 ones and 4 tenths
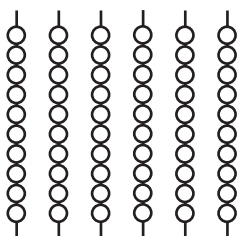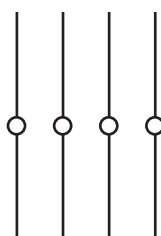
6 ones   4 tenths

(v) seven tenths
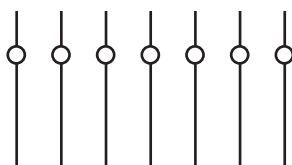
seven tenths

👥 TRY THESE   (Text book Page No. 5 &6)

1. **Express the following decimal numbers in an expanded form and place value grid form.**

(i) **56.78**   **(ii)** **123.32**   **(iii)** **354.56**

Sol : **(i)** **56.78**

    (a) Expanded form

$$56.78 = 5 \times 10^1 + 6 \times 10^0 + 7 \times 10^{-1} + 8 \times 10^{-2}$$

    (b) Place value grid

56.78	Tens	Ones	Tenths	Hundredths
	5	6	7	8

(ii) **123.32**

    (a) Expanded form

$$123.32 = 1 \times 10^2 + 2 \times 10^1 + 3 \times 10^0 + 3 \times 10^{-1} + 2 \times 10^{-2}$$

    (b) Place value grid

123.32	Hundreds	Tens	Ones	Tenths	Hundredths
	1	2	3	3	2

(iii) **354.56**

    (a) Expanded form

$$354.56 = 3 \times 10^2 + 5 \times 10^1 + 4 \times 10^0 + 5 \times 10^{-1} + 6 \times 10^{-2}$$

Term II

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Chapter -1 - Number System

(b) Place value grid

354.56	Hundreds	Tens	Ones	Tenths	Hundredths
	3	5	4	5	6

2. **Express the following measurements in terms of metre and in decimal form. One is done for you.**

Sol :

S.No.	Measurements	In meter	Decimal form
1.	7 m 36 cm	7 and 36 hundredths of a m	7.36
2.	26 m 50 cm	26 and 50 hundredths of a m	26.50
3.	93 cm	93 hundredths of a m	0.93
4.	36 m 60 cm	36 and 60 hundredths of a m	36.60
5.	126 m 45 cm	126 and 45 hundredths of a m	126.45

3. **Write the following numbers in the place value grid and find the place value of the underlined digits.**

(i)   36.$\underline{3}$7   (ii)   267.0$\underline{6}$ (iii) 0.$\underline{2}$3   (iv) 27.6$\underline{9}$ (v) 53.$\underline{2}$7

Sol :

S.No.	Hundreds	Tens	Ones	Tenths	Hundreths
1.	-	3	6	3	7
2.	2	6	7	0	6
3.	-	-	0	2	3
4.	-	2	7	6	9
5.	-	5	3	2	7

(i)   Place value of 3 in 36.$\underline{3}$7 is Tenths.

(ii)   Place value of 6 in 267.0$\underline{6}$ is Hundredths.

(iii)   Place value of 2 in 0.$\underline{2}$3 is Tenths.

(iv)   Place value of 9 in 27.6$\underline{9}$ is Hundredths.

(v)   Place value of 2 in 53.$\underline{2}$7 is Tenths.

Representing Decimal Numbers on the Number line

DIVISION OF INTEGERS

TRY THESE   (Text book Page No. 18)

1.   Mark the following decimal numbers on the number line.

(i) 0.3   **(ii) 1.7**   **(iii) 2.3**

Sol : (i)   0.3

We know that 0.3 is more than 0, but less than 1.

There are 3 tenths in it. Divide the unit length between 0 and 1 on the number line into 10 equal parts and take 3 parts, which represent 0.3.
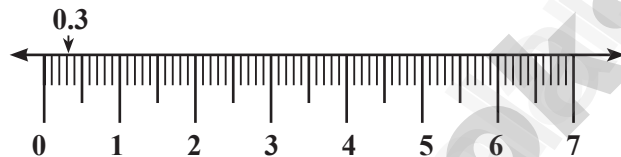
(ii) 1.7

We know that 1.7 is more than 1, but less than 2.

There are one ones and 7 tenths in it. Divide the unit length between 1 and 2 on the number line into 10 equal parts and take 7 parts which represents $1.7 = 1 + 0.7$
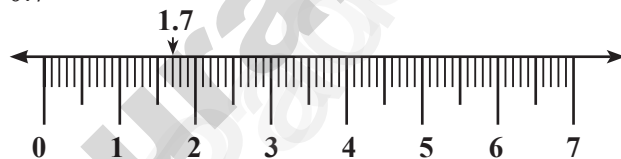
(iii) 2.3

We know that 2.3 is more than 2 and less than 3.

There are 2 ones and 3 tenths in it. Divide the unit length between 2 and 3 into 10 equal parts and take 3 parts, which represents $2.3 = 2 + 0.3$
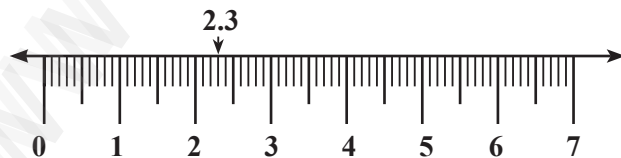
2.   Identify any two decimal numbers between 2 and 3.

Sol : 2.5 and 2.9

3.   Write any decimal number which is greater than 1 and less than 2.

Sol : 1.7, 1.9, 1.6,........

Term II

EXERCISE 1.4

Chapter -1 - Number System

1. **Write the decimal numbers represented by the points P, Q, R and S on the given number line.**
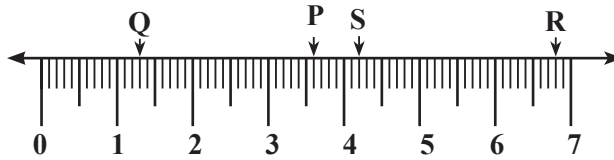
Sol : The unit length between 1 and 2 is divided into 10 equal parts and the third part is taken as Q.

∴ Q represents $1 + 0.3 = 1.3$

The unit length between 3 and 4 is divided into 10 equal parts and the 6th part is taken as P.

∴ P represents $3 + 0.6 = 3.6$

The unit length between 4 and 5 is divided into 10 equal parts and the second part is taken as S.

∴ S represents $4 + 0.2 = 4.2$

The unit length between 6 and 7 is divided into 10 equal parts and the 8th part is taken as R.

∴ R represents $6 + 0.8 = 6.8$

P(3.6), Q(1.3), R(6.8), S(4.2).

2. **Represent the following decimal numbers on the number line.**

(i) **1.7** **(ii)** **0.3** **(iii)** **2.1**

Sol : (i) 1.7

We know that 1.7 is more than 1, but less than 2.

There are one ones and 7 tenths in it. Divide the unit length between 1 and 2 on the number line into 10 equal parts and take 7 parts which represents $1.7 = 1 + 0.7$
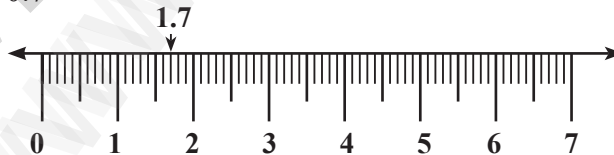
(ii) 0.3

We know that 0.3 is more than 0, but less than 1.

There are 3 tenths in it. Divide the unit length between 0 and 1 on the number line into 10 equal parts and take 3 parts, which represent 0.3.

(iii) 2.1

We know that 2.1 is more than 2 and less than 3.

There are 2 ones and 1 tenths in it.

Divide the unit length between 2 and 3 into 10 equal parts and take 1 part, which represent $2.1 = 2 + 0.1$
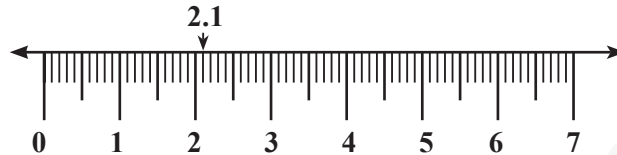
3. Between which two whole numbers, the following decimal numbers lie?

(i) 3.3   **(ii)** 2.5   **(iii)** 0.9

Sol : (i) 3.3

3.3 lies between 3 and 4.

(ii) 2.5

2.5 lies between 2 and 3.

(iii) 0.9

0.9 lies between 0 and 1.

4. Find the greater decimal number in the following.

(i) 2.3, 3.2   **(ii)** 5.6, 6.5   **(iii)** 1.2, 2.1

Sol : (i) 2.3, 3.2

Comparing the whole number parts of 2.3 and 3.2 we get $3 > 2$.

$\therefore 3.2 > 2.3$

$\therefore$ Greater number is 3.2

(ii) 5.6, 6.5

Comparing the whole number parts of 5.6 and 6.5, we get $6 > 5$.

$\therefore 6.5 > 5.6$

$\therefore$ Greater number is 6.5

(iii) 1.2, 2.1

Comparing the whole number parts of 1.2 and 2.1, we get $2 > 1$.

$\therefore 2.1 > 1.2$

$\therefore$ Greater number is 2.1

5. Find the smaller decimal number in the following.

(i) 25.3, 25.03   **(ii)** 7.01, 7.3   **(iii)** 5.6, 6.05

Sol : (i) 25.3, 25.03

The whole number parts of both the numbers are equal.

$\therefore$ Comparing the digits at tenths place we get $0 < 3$.

$\therefore 25.03 < 25.3$

$\therefore$ Smaller number is 25.03

Term II

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Sura's ➡ 7th Std - Mathematics

UNIT TEST

Time: 1 hr   **Max Marks : 25**

I. **Choose the best answer from the options given below.**   **5 × 1 = 5**

1. Lowest form of decimal 0.005 is

(i) $\dfrac{3}{1000}$ (ii) $\dfrac{1}{200}$ (iii) $\dfrac{2}{200}$ (iv) $\dfrac{5}{100}$

2. Which of the following decimals is the smallest?

(i) 0.37 (ii) 1.52 (iii) 0.087 (iv) 0.105

3. The decimal 0.238 is equal to

(i) $\dfrac{119}{500}$ (ii) $\dfrac{238}{25}$ (iii) $\dfrac{119}{25}$ (iv) $\dfrac{119}{50}$

4. 0.7499 lies between

(i) 0.7 and 0.74   (ii) 0.75 and 0.79

(iii) 0.749 and 0.75   (iv) 0.74992 and 0.75

5. 0.023 lies between

(i) 0.2 and 0.3   (ii) 0.02 and 0.03

(iii) 0.03 and 0.029   (iv) 0.026 and 0.024

II. **Answer the following questions.**   **5 × 2 = 10**

6. Write three hundred five and four hundredth as decimal form.

7. Write 3.4 as fraction in lowest form.

8. Write $300 + 40 + 5 + \dfrac{2}{100}$ as decimals.

9. Which is greater 1 or 0.99?

10. Convert 5244 g to kg.

III. **Answer the following questions.**   **2 × 5 = 10**

11. Arrange 12.143, 12.125, 12.105, 12.402 and 12.214 in ascending order.

12. Which one is greater 1 m 40 cm + 60 cm or 2.6 m?

Term II

CHAPTER 2

MEASUREMENTS

Circle

✦ Circle is a round plane figure whose boundary (the circumference) consists of points equidistant from the fixed point (the centre).

✦ The equidistance from the centre to the boundary is the radius (r) of the circle.

✦ Diameter = 2 × radius (i.e) $d = 2r$

✦ All circles are similar to one another.

✦ Distance around the circular region is called circumference or perimeter.

✦ In circles, the ratio of the circumference to that of diameter is a constant.

✦ $\dfrac{\text{Circumference}}{\text{Diameter}} = \pi$ (say pi)

✦ Circumference of a circle C = 2πr units or C = πd

✦ $\pi = \dfrac{22}{7}$ or 3.14 approximately

TRY THESE

(Text book Page No. 23)

1. **A few real life examples of circular shapes are given below.**
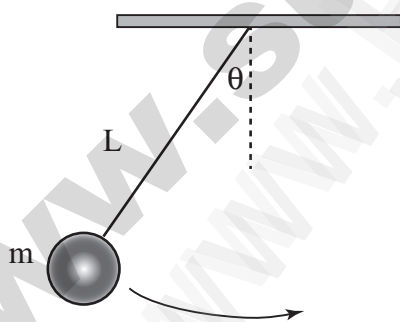
Give three more examples.

Sol : **(i)** One and Two rupee coins

(ii) Bangles

(iii) Mouth of Bottle

2. **Find the diameter of your bicycle wheel?**

Sol : Diameter of my bicycle wheel is 700 mm

3.   If the diameter of the circle is 14cm, what will be it's radius?

Sol : Diameter d = 14 cm

Radius = $\dfrac{d}{2} = \dfrac{14}{2}$ = 7cm

4.   If the radius of a bangle is 2 inches then find the diameter.

Sol : Given radius of the bangle   =   2 inches

Diameter   =   2 × radius

=   2 × 2 = 4 inches

Activity

Calculating the perimeter of a circle:

Make the students to draw five circles with different radii on a paper and instruct them to measure the radius, diameter and circumference of each of the circle using thread and scale. Note down the measurements in the following table.

Circle	Radius (r)	Diameter (d)	Circumference (C)	Ratio of Circumference to diameter $\left(\dfrac{c}{d}\right)$
1	2 cm	4 cm	12.56 cm	3.14
2	3 cm	6 cm	18.84 cm	3.14
3	4 cm	8 cm	25.12 cm	3.14
4	5 cm	10 cm	31.4 cm	3.14
5	6 cm	12 cm	37.68 cm	3.14

What do you infer from the above table? Can you conclude that the circumference of a circle is always greater than three times its diameter?

Sol : Yes, the circumference of a circle is three times greater than its diameter.

Think

A circle has the shortest perimeter of all closed figures with the same area. Justify with an example.

Sol : A circle has the shortest perimeter of all closed figures with the same area.

Let the area of circle = 100 m

$$\pi r^2 \;=\; 100$$

$$\dfrac{22}{7} \times r^2 \;=\; 100$$

$$r^2 \;=\; 100 \times \dfrac{7}{22}$$

$$r^2 = 31.8 \text{ cm}$$
$$r = 5.6 \text{ cm}$$

Perimeter of the circle $= 2\pi r = 2 \times \dfrac{22}{7} \times 5.6 = 35.2 \text{ cm}$

Let the area of a square $= 100 \text{ cm}^2$
$$a^2 = 100$$
$$a = 10 \text{ cm}$$

Perimeter of a square $= 4a = 4 \times 10 = 40 \text{ cm}$

Hence $35.2 < 40$

By this example we can see that perimeter of circle < perimeter of square, having the same area.

Think

(Text book Page No. 27)

1. **Is the circumference of the semicircular arc and semicircular shaped disc same? Discuss.**

Sol :
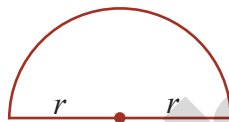
Semi circular arc   **Semi circular disc**

Circumference of the semicircular arc $= \dfrac{1}{2} \times 2\pi r = \pi r$ units

But circumference of the semicircular disc $= \dfrac{1}{2} \times 2\pi r + r + r = \pi r + 2r$

$$= r(\pi + 2) \text{ units}$$

Both are not the same

2. **The traffic lights are circular. Why?**

Sol : Because the circumference will be smaller and cost of making will be less as the outer size becomes small.

3. **When you throw a stone on still water in pond, ripples are circular. Why?**

Sol : Waves always travel with a constant speed and so they need to be circular.

EXERCISE 2.1

1. **Find the missing values in the following table for the circles with radius (r), diameter (d) and Circumference (C).**

S.No.	radius (r)	diameter (d)	Circumference (C)
(i)	15 cm		
(ii)			1760 cm
(iii)		24 m	

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Sol : (i)

Given radius r = 15cm

∴ Diameter d = 2×15 = 30 cm

Circumference C = πd units

$= \dfrac{22}{7} \times 30 = \dfrac{660}{7} = 94.28$ cm

(ii)

Given circumference C = 1760 cm

$2\pi r$ = 1760

$2 \times \dfrac{22}{7} \times r$ = 1760

$r = \dfrac{1760 \times 7}{2 \times 22} = \dfrac{160 \times 7}{2 \times 2} = 40 \times 7 = 280$ cm

diameter = $2 \times r$

= $2 \times 280 = 560$ cm

(iii)

diameter d = 24 m

radius r = $\dfrac{d}{2} = \dfrac{24}{2} = 12$ m

Circumference C = $2 \pi r$ units

$= 2 \times \dfrac{22}{7} \times 12$

$= \dfrac{528}{7} = 75.4$ m

Tabulating the results

S.No.	radius (r)	diameter (d)	Circumference (C)
(i)	15 cm	30 cm	94.28 cm
(ii)	280 cm	560 cm	1760 cm
(iii)	12 m	24 m	75.4 m

2. **Diameters of different circles are given below. Find their circumference**

(i) $d = 70$cm (ii) $d = 56$m (iii) $d = 28$mm (Take $\pi = \dfrac{22}{7}$)

Sol : (i)

Diameter d = 70 cm

Circumference C = πd units

$= \dfrac{22}{7} \times 70 = 22 \times 10 = 220$ cm

(ii)

Diameter d = 56 m

Circumference C = πd units

$= \dfrac{22}{7} \times 56 = 22 \times 8 = 176$ m

(iii)

Diameter d = 28 mm

Circumference C = πd units

$= \dfrac{22}{7} \times 28 = 22 \times 4 = 88$ mm

3. **Find the circumference of the circles whose radii are given below.**

(i) **49 cm** **(ii)** **91 mm**

Sol : **(i)** Radius r = 49 cm

Circumference C = $2 \pi r$ units

= $2 \times \dfrac{22}{7} \times 49 = 2 \times 22 \times 7 = 44 \times 7 = 308$ cm

(ii) Radius r = 91 mm

Circumference C = $2 \pi r$ units

= $2 \times \dfrac{22}{7} \times 91 = 2 \times 22 \times 13 = 44 \times 13 = 572$ mm

4. **The diameter of a circular well is 4.2 m. What is its circumference?**

Sol : Given the diameter d = 4.2 m

Circumference C = πd units

= $\dfrac{22}{7} \times 4.2$ m = $22 \times 0.6 = 13.2$ m

5. **The diameter of the bullock cart wheel is 1.4 m. Find the distance covered by it in 150 rotations?**

Sol : Diameter of the bullock cart wheel d = 1.4 m

Distance covered in 1 rotation = Its circumference

= πd units

= $\dfrac{22}{7} \times 1.4$ m = $22 \times 0.2 = 4.4$ m

Distance covered in one rotation = 4.4 m

Distance covered in 150 rotations = $4.4 \times 150 = 660.0$

Distance covered in 150 rotations = 660 m

6. **A ground is in the form of a circle whose diameter is 350 m. An athlete makes 4 revolutions. Find the distance covered by the athlete.**

Sol : Diameter of the ground d = 350 m

Distance covered in 1 revolution = Circumference of the circle

= πd units

= $\dfrac{22}{7} \times 350$ m = $22 \times 50 = 1100$ m

Distance covered in 1 rotation = 1100 m

Distance covered in 4 revolutions = $1100 \times 4 = 4400$ m

7. **A wire of length 1320 cm is made into circular frames of radius 7 cm each. How many frames can be made?**

Sol : Length of the wire = 1320 cm

Radius of each circular frame = 7cm

Term II

📖 **Sura's ➡ 7th Std - Mathematics**

UNIT TEST

Time: 1 hr   **Max Marks : 25**

I.   **Fill in the blanks.**   **5 × 1 = 5**

1. The diameter of a circle is 14 cm. Its area is _____ cm^2.

2. The radius of a circle is 1 cm, then the perimeter of its semi-circle is _____ cm.

3. Perimeter of a semicircle is _____

4. The length and breadth of a rectangle are 3.5 cm and 2.2 cm respectively, then its area is _____ cm^2.

5. The area of a rectangle is 150 cm^2. If its breadth 10 cm, then its length _____ cm.

II.   **Answer the following questions.**   **5 × 3 = 15**

6. What is the area of a circle whose circumference is 31.3 cm?

7. Find the area of a circular disc whose circumference is 88 cm.

8. The circumference of a circle is 12.56 cm, find its diameter.

9. The radius of a circular park is 7 m. Find its area.

10. Find the circumference of a circle, whose diamter is 21 cm.

III.   **Answer the following question.**   **1 × 5 = 5**

11. A path 5 m wide runs along inside a square park of side 100 m. Find the cost of cementing the path at the rate of ₹100 per 10 m^2.

Term II

ANSWERS

I.

1. 154   **2.** $\dfrac{36}{7}$ **3.** πr + d

4. 7.7   **5.** 15

II.

6. 78.5 cm^2 **7.** 616 cm^2 **8.** 4 cm

9. 154 m^2 **10.** 66 cm

III.   **11.** ₹ 19,000

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Common Second Term Summative Examination - 2019

7th STD MATHEMATICS

(with answers)

Time : 2.00 hrs.

Reg. No.

Marks : 60

PART - A

I. Choose the correct answer :

$5 \times 1 = 5$

1. The place value of 3 in 85.073 is _____.
   (a) tenths (b) hundredths
   (c) thousands (d) thousandths

2. Area of a circle of radius 'n' units is
   (a) $2\pi r$ sq. units
   (b) πm^2 sq. units
   (c) πr^2 sq. units
   (d) πn^2 sq. units

3. $a \times a \times a \times a \times a$ is equal to
   (a) a^5 (b) 5^a
   (c) $5a$ (d) $a + 5$

4. The angles of a triangle are in the ratio 2 : 3 : 4. Then the angles are
   (a) 20, 30, 40 (b) 40, 60, 80
   (c) 80, 20, 80 (d) 10, 15, 20

5. Identify the correct relationship between x and y from the given table.

x	1	2	3	4
y	4	8	12	16

   (a) $y = 4x$ (b) $y = x + 4$
   (c) $y = 4$ (d) $y = 4 \times 4$

II. Say true or false :

$5 \times 1 = 5$

6. The simplest form of 0.35 is $\dfrac{7}{20}$.

7. Circumference of a circle is always three times of its radius.

8. The formula to find the width of the circular path is $(R - r)$ units.

9. The exponential form of 72 is 7^2.

10. The sum of three angles in a triangle is 360.

III. Match the following :

$5 \times 1 = 5$

11. 2.5 - $\dfrac{\pi r}{2}$ units

12. Circumference of quadrant arc - 11

13. The area of the rectangular path - 180°

14. The degree of the term $a^3b^2c^4d^2$ - $\dfrac{25}{10}$

15. Linear pair of angles - $LB - lb$ sq. units

IV. Fill in the blanks :

$5 \times 1 = 5$

16. A cricket pitch is about 264 cm wide. It is equal to _____ m.

17. The area of the circle is _____ sq. units.

18. The value of $(14 \times 21)°$ is _____.

19. The unit digit of the numeric expression $10^{71} + 10^{72} + 10^{73}$ is _____.

20. Each angle of an equilateral triangle is of _____ measure.

PART - B

V. Answer any 10 questions :

$10 \times 2 = 20$

21. Expand 37.3

22. Convert 0.04 into simplest fraction.

23. Represent 1.7 on the number line.

24. What is the circumference of the circular disc of radius 14 cm?

25. Find the area of the circle of radius 21 cm.

26. Find the area of a circular pathway whose outer radius is 32 cm and inner radius is 18 cm.

27. Simplify : $4^3 \times 2^3 \times 5^3$

28. Find the unit digit of 25^{23}

29. If $p = -2$, $q = 1$ and $r = 3$ find the value of $3p^2q^2r$.

30. If two angles of a triangle having measures 65º and 35º, Find the measure of the third angle.

31. Observe the figure and find the value of

$\angle A + \angle N + \angle G + \angle L + \angle E + \angle S$

32. In a $\triangle ABC$, AB = AC. Find the value of x.
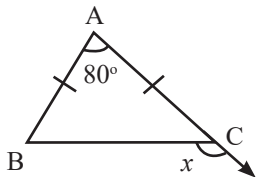
33. If $\triangle ABC \cong \triangle XYZ$ then list the corresponding sides.
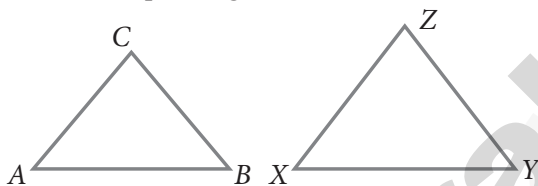
34.

x	1	2	3	4
y	1	3	6	10

Verify whether the relationship

$y = \dfrac{x(x+1)}{2}$ between x and y for the

given value is true.

35. Find the relationship between x and y from the given table.

x	–2	–1	0	1	2
y	4	5	6	7	8

PART - C

VI. Answer any 5 questions : 5×3= 15

36. Find the decimal form of

$999 + 99 + 9 + \dfrac{9}{10} + \dfrac{9}{100}$

37. The area of the Circular region is 2464 cm². Find its radius and diameter.

38. Simplify $25 \times 32 \times 625 \times 64$ using product rule of exponents.

39. Simplify and find the degree of $10x^2 - 3xy + 9y^2 - (3x^2 - 6xy - 3y^2)$

40. Find the value of x.
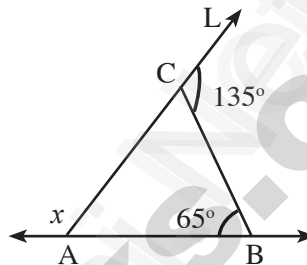
41. In the given figure find the value of x.
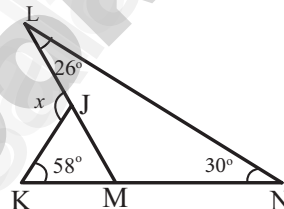
42. The following hexogonal shapes are taken from Pascal's Triangle. Fill in the missing number.
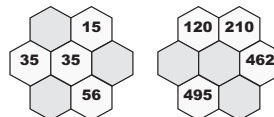
43. Find the elements along the sixth row of the pascal's Triangle.

PART - D

VII. Answer any one of the following :
1×5= 5

44. Construct a triangle ABC with given conditions AB = 7 cm, AC = 6.5 cm and $\angle A = 120º$.

45. Construct an equilateral triangle XYZ of side 7.5 cm.

❀ ❀ ❀

TERM

III

CONTENTS

CHAPTER 1

NUMBER SYSTEM

Representing a Decimal Number

✦ To round a decimal

✦ First underline the digit that is to be rounded. Then look at the digit to the right of the underlined digit.

✦ If that digit is less than 5, then the underlined digit remains the same.

✦ If that digit is greater than or equal to 5, add 1 to the underlined digit.

✦ After rounding of leave all the digits after the underlined digit.

👫 TRY THESE

1. Represent the fraction $\dfrac{1}{4}$ in decimal form.

Sol. $\dfrac{1}{4} = \dfrac{1 \times 25}{4 \times 25} = \dfrac{25}{100} = 0.25$

2. What is the place value of 5 in 63.2$\underline{5}$7.

Sol. Place value of 5 in 63.257 is 5 hundredths (Hundreth place)

3. Identify the digit in the tenth place of 75.036.

Sol. 0

4. Express the decimal number 3.75 as a fraction.

Sol. $3.75 = \dfrac{375}{100} = \dfrac{15}{4}$

5. Write the decimal number for the fraction $5\,\dfrac{1}{5}$.

Sol. $5\dfrac{1}{5} = \dfrac{26}{5} = \dfrac{26 \times 2}{5 \times 2} = \dfrac{52}{10} = 5.2$

6. Identify the bigger number : 0.567 and 0.576.

Sol. Comparing the digits of 0.567 and 0.576 from left to right, we have the tenths place same and comparing the hundredths place we have 7 > 6. Here the whole number is equal in both the numbers.

$\Rightarrow$ 0.576 > 0.567. Greater number is 0.576

7. Compare 3.30 and 3.03 and identify the smaller number.

Sol. The whole number is equal in both the numbers.

Now comparing the tenths place we have 3 > 0

$\Rightarrow$ 3.03 < 3.30. Smaller number is 3.03

8. Put the appropriate sign (<, >, =). 2.57 $\boxed{}$ 2.570

Sol. 2.57 $\boxed{=}$ 2.570

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9. **Arrange the following decimal numbers in ascending order.**

5.14, 5.41, 1.54, 1.45, 4.15, 4.51.

Sol. Comparing the numbers from left to right.

Ascending order : 1.45, 1.54. 4.15, 4.51, 5.14, 5.41

EXERCISE 1.1

1. **Round each of the following decimals to the nearest whole number.**

(i)	8.71	(ii)	26.01	(iii)	69.48	(iv)	103.72
(v)	49.84	(vi)	101.35	(vii)	39.814	(viii)	1.23

Sol. **(i)** 8.71

Underlining the digit to be rounded gives 8.71. The digit next to the underlined digit is 7 which is greater than 5, so we add 1 to the underlined digit. Hence the number 8.71 rounds to 9.

(ii) 26.01

Underlining the digit to be rounded gives 26.01. The digit next to the underlined digit is 0 which is less than 5, so the underlined digit 6 remains the same.

∴ The number 26.01 rounds to 26.

(iii) 69.48

Underlining the digit to be rounded gives 69.48. The digit next to the underlined digit is 4 which is less than 5, so the underlined digit 9 remains the same.

∴ The number 69.48 rounds to 69.

(iv) 103.72

Underlining the digit to be rounded gives 103.72. The digit next to the underlined digit is 7 which is greater than 5, so we add 1 to the under lined digit.

Hence the number 103.72 rounds to 104.

(v) 49.84

Underlining the digit to be rounded gives 49.84. The digit next to the underlined digit is 8 which is greater than 5, so we add 1 to the underlined digit.

Hence the nearest whole number 49.84 rounds to 50.

(vi) 101.35

Underlining the digit to be rounded gives 101.35. The digit next to the underlined digit is 3, which is less than 5, so the underlined digit 1 remains the same.

Hence the number 101.35 rounds to 101.

(vii) 39.814

Underlining the digit to be rounded gives 39.814. The digit next to the underlined digit is 8 which is greater than 5, so we add 1 to the underlined digit.

Hence the number 39.814 rounds to 40.

(viii) 1.23

Underlining the digit to be rounded gives 1.23. The digit next to the underlined digit is 2, which is less than 5, so the underlined digit 1 remains the same.

Hence the number 1.23 rounds to 1.

2. **Round each decimal number to the given place value.**

   (i)   **5.992; tenth place**

   (ii) **21.805; hundredth place**

   (iii) 35.0014; thousandth place

Sol. **(i)**   5.992; tenths place

    Underlining the digit to be rounded gives 5.9<u>9</u>2. Since the digit next to the underlined digit is greater than 5, we add 1 to the underlined digit.

    Hence the rounded number is <u>6</u>.0.

   (ii) 21.805; hundredth place

    Underlining the digit to be rounded gives 21.8<u>0</u>5. Since the digit next to the underlined digit is equal to 5, we add 1 to the underlined digit.

    Hence the rounded number is 21.81.

   (iii) 35.0014; thousandth place

    Underlining the digit to be rounded gives 35.00<u>1</u>4. Since the digit next to the underlined digit is less than 5, the underlined digit remains the same.

    Hence the rounded number is 35.001.

3. **Round the following decimal numbers upto 1 places of decimal.**

   (i) **123.37**   **(ii)** **19.99**   **(iii)** **910.546**

Sol. **(i)**   123.37

    Rounding 123.37 upto one places of decimal means round to the nearest tenth place. Underlining the digit in the tenth place of 123.37 gives 123.<u>3</u>7.

    Since the digit next to the tenth place value is 7, which is greater than 5, we add 1 to the underlined digit to get 123.4.

    Hence the rounded value of 123.37 upto one places of decimal is 123.4.

   (ii) 19.99

    Rounding 19.99 upto one places of decimal means round to the nearest tenth place. Underlining the digit in the tenth place of 19.99 gives 19.<u>9</u>9.

    Since the digit next to the tenth place value is 9, which is greater than 5, we add 1 to the underlined digit to get 20.

    Hence the rounded value of 19.99 upto one places of decimal is 20.0.

   (iii) 910.546

    Rounding 910.546 upto one places of decimal means round to the nearest tenth place. Underlining the digit in the tenth place of 910.546 gives 910.<u>5</u>46.

    Since the digit next to the tenth place value is 4, which is less than 5, so the underlined digit remains the same.

    Hence the rounded value of 910.546 upto one places of decimal is 910.5.

Term III

4. **Round the following decimal numbers upto 2 places of decimal.**

(i) 87.755 **(ii) 301.513** **(iii) 79.997**

Sol. **(i)** 87.755

Rounding 87.755 upto 2 places of decimal means round to the nearest hundredth place. Underlining the digit in the hundredth place of 87.755 gives 87.7<u>5</u>5. Since the digit next to the hundredth place value is equal to 5, which is equal to 5, we add 1 to the underlined digit.

Hence the rounded value of 87.755 upto two places of decimal is 87.76.

(ii) 301.513

Rounding 301.513 upto 2 places of decimal means round to the nearest hundredths place. Underlining the digit in the hundredth place of 301.513 gives 301.5<u>1</u>3. Since the digit next to the underlined digit is 3, which is less than 5, the underlined digit remains the same.

∴ The rounded value of 301.513 upto 2 places of decimal is 301.51.

(iii) 79.997

Rounding 79.997 upto 2 places of decimal means round to the nearest hundredths place. Underlining the digit in the hundredth place of 79.997 gives 79.9<u>9</u>7. Since the digit next to the underlined digit is 7, which is greater than 5, we add 1 to the underlined number.

Hence the rounded value of 79.997 upto 2 places of decimal is 80.00.

5. **Round the following decimal numbers upto 3 places of decimal**

(a) 24.4003 **(b) 1251.2345** **(c) 61.00203**

Sol. **(a)** 24.4003

Rounding 24.4003 upto 3 places of decimal means rounding to the nearest thousandths place. Underlining the digit in the thousandths place of 24.4003 gives 24.40<u>0</u>3. In 24.40<u>0</u>3 the digit next to the thousandths value is 3 which is less than 5.

∴ The underlined digit remains the same. So the rounded value of 24.4003 upto 3 places of decimal is 24.400.

(b) 1251.2345

Rounding 1251.2345 upto 3 places of decimal means rounding to the nearest thousandths place. Underlining the digit in the thousandths place of 1251.2345 gives 1251.23<u>4</u>5. The digit next to the thousandths place value is 5 and so we add 1 to the underlined digit. So the rounded value of 1251.2345 upto 3 places of decimal is 1251.235.

(c) 61.00203

Rounding 61.00203 upto 3 places of decimal means rounding to the nearest thousandths place. Underlining the digit in the thousandth place of 61.00203 gives 61.00<u>2</u>03. In 61.00<u>2</u>03, the digit next to the thousandths place value is 0, which is less than 5.

Hence the underlined digit remains the same. So the rounded value of 61.00203 upto 3 places of decimal is 61.002.

📖 **Sura's ➡ 7th Std - Mathematics**

UNIT TEST

Time: 1 hr   **Max Marks : 25**

I.   Fill in the blanks.   **5 × 1 = 5**

1. 67.4 rounds to the nearest whole number is _____.

2. 87.006 rounds to the nearest hundredths place is _____.

3. 80.0097 rounds to the nearest thousands place is _____.

4. 9.23 round to 1 place of decimal is _____.

5. 8.764 + 9.32 = _____.

II. Answer the following questions.   **5 × 2 = 10**

6. What should subtracted from 7.439 to get 2.97?

7. Cost of 5 kg apple is ₹ 498.976. Cost of 5 kg orange is ₹ 270.730. Find the total amount to be paid?

8. A wheel covers 50.3 cm in one rotation. Find the distance covered on 10 rotations.

9. Find the area of a square if one side is 4.93 cm.

10. If the area of a room is 110.32 sq.ft. If it is covered by 20 tiles perfectly what is the area of 1 tile?

III. Answer the following questions.   **2 × 5 = 10**

11. Simplify: 18.234 + 16.7 – 9.39.

12. Simplify: 18.23 × 6.2 ÷ 3.2.

ANSWERS

I. **1.** 67   **2.** 87.01

3. 80.010   **4.** 9.2

5. 18.084

II. **6.** 4.469   **7.** ₹ 769.706

8. 503 cm   **9.** 24.3049 cm^2

10. 5.516 sq.ft.

III. **11.** 25.544

12. 35.320625

∞•∞

Term III

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7th STD — Third Term - Summative Assessment (SA) - 2022

MATHEMATICS
(with answers)

Reg. No.

Time Allowed : 2.00 Hours]   [Max. Marks : 60

Part - I

I.   Choose the correct answer :   10×1=10

1.   Subtract 1.35 from 3.51

 (a)   6.21   (b) 4.86   (c) 8.64   (d) 2.16

2.   A frog jumps 5.3 cm in one jump. The distance travelled by the frog in 10 jumps is _____

 (a)   0.53 cm   (b) 530 cm

 (c)   53.0 cm   (d) 53.5 cm

3.   Kavin scored 15 out of 25 in a test. The percentage of his marks is

 (a)   60%   (b) 15%   (c) 25%   (d) 15/25

4.   If $a + b = 5$ and $a^2 + b^2 = 13$, then $ab = ?$

 (a)   12   (b) 6   (c) 5   (d) 13

5.   The interest for a principle of ₹ 4,500 which gives an amount of ₹ 5,000 at end of certain period is _____

 (a)   ₹ 500 (b) ₹ 200 (c) 20%   (d) 15%

6.   The common factors of the algebraic expressions ax^2y, bxy^2 and $cxyz$ is _____

 (a) x^2y (b) xy^2 (c) xyz (d) xy

7.   A _____ is a flip over a line.

 (a)   Translation   (b) Rotation

 (c)   Reflection (d)   Glide Reflection

8.   The mean of the first fifteen even number is _____ .

 (a)   4   (b) 16   (c) 5   (d) 10

9.   If the median of a, $2a$, $4a$, $6a$, $9a$ is 8, then find the value of a is _____ .

 (a)   8   (b) 6   (c) 2   (d) 10

10.   _____ is used to represent the start and end of the task

 (a) →   (b) ◇

 (c) ▭   (d) ▭(rounded)

II.   Fill in the blanks :   5×1= 5

11. $2.08 \times 10 =$ _____

12.   _____ is the percentage of the principal paid every year.

13. $(p - q)^2 =$

14.   The average of integers between –10 to 10 is _____

15.   The median of ten even natural number is _____.

III.   Match the following :   5×1= 5

16.   Simple Interest   -   Input / output

17. $(a + b)^2$ - $\dfrac{\text{Sum of all Observation}}{\text{Number of Observation}}$

18.   Width of the Circular ring   - $\dfrac{Pnr}{100}$

19.   Mean   - $r_2 - r_1$

20.   ▱   - $a^2 + 2ab + b^2$

Part - II

IV.   Answer any 10 questions.Q.No. 35 is Compulsory.   10×2= 20

21.   Round 52.6583 upto 2 places of decimal

22.   A Wheel of a baby cycle cover 49.7 cm in one rotation. Find the distance covered in 10 rotations.

23.   Simplify the following :

 i) $93.7 \div 10$ ii) $4.08 \div 4$

24.   Write 1/5 as percent.

25.   14 out of the 70 magazines at the books store are comedy magazines. What percentage of the magazines at the bookstore are comedy magazines?

26.   Find the simple interest on ₹ 35,000 at 9% per annum for 2 years?

27.   Express $36x^3y^2z$ as the product of its factors.

28.   Factorise : $z^2 – 16$.

29.   Evaluate : 103^2 (using suitable identity)

30.   Define Translation.

31.   Find the width of the circular ring of the concentric circles whose radii are 4 cm and 6 cm

32.   Find the mean of the following number. 48, 43, 37, 38, 36, 27, 35, 34, 38, 49, 33.

[437]

33. Find the mode of the following data. 2, 4, 5, 2, 6, 7, 2, 7, 5, 4, 8, 6, 10, 3, 2, 4, 2.

34. Find the median of 25, 16, 15, 10, 8, 30.

**35.** Find the perimeter of an equilateral triangle with a side measuring 3.8 cm.

Part - III

V. **Answer any 5 of the following questions.**
**Q.No. 43 is compulsory.** **5×3= 15**

36. A man walks around a circular park of distance 23.761 m. How much distance will he cover in 100 rounds.

37. Iniyan bought 5 dozen eggs. Out of that 5 dozen eggs, 10 eggs are rotten. Express the number of good eggs as percentage.

38. Kumaravel has paid simple interest on a certain sum for 2 years at 10% per annum is ₹ 750. Find the sum.

39. Show that $(m - n)^2 + (m + n)^2 = 2 (m^2 + n^2)$

40. Identify the Transformation.

i)

ii)

iii)
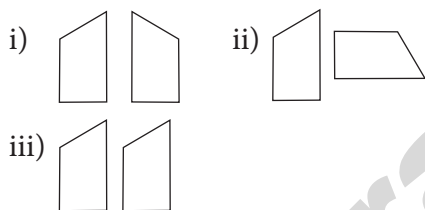
41. The marks of 14 students in a science test out of 50 are given below. 34, 23, 10, 45, 44, 47, 35, 37, 41, 30, 28, 32, 45, 39. Find (i) the mean mark (ii) the maximum mark obtained (iii) the minimum mark obtained.

42. Fill in the flow chart to print the average mark by giving your marks as inputs.

Input T, E, M, S, SS

Average = **(T + E + M + S + SS) / 5**
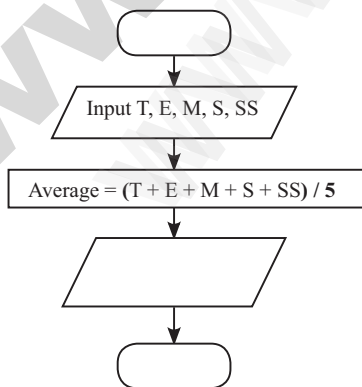
43. Find the mean and mode of 6, 11, 13, 12, 4, 2.

Part - IV

VI. **Answer the following :** **1×5= 5**

44. **a)** Construct a circle of radius 6.5 cm.

(OR)

b) Draw concentric circles with radii 5 cm and 7.5 cm find the width of the circular ring.

Answers

Part - I

I. **1.** (d) 2.16 **2.** (c) 53.0 cm
3. (a) 60% **4.** (b) 6
5. (a) ₹500 **6.** (d) xy
7. (c) Reflection **8.** (b) 16
9. (c) 2 **10.** (d)

II. **11.** 20.8 **12.** Interest
13. $p^2 - 2pq + q^2$ **14.** 0
15. 11

III.
16. Simple Interest - $\dfrac{Pnr}{100}$

17. $(a + b)^2$ - $a^2 + 2ab + b^2$

18. Width of the Circular ring - $r_2 - r_1$

19. Mean - $\dfrac{\text{Sum of all Observation}}{\text{Number of Observation}}$

20. - Input / output

Part - II

IV.
21. 52.66

22. Length covered in 1 rotation = 49.7 cm
Length covered in 10 rotations
= (49.7 × 10) cm = 497 cm

23. i) 9.37 ii) 1.02

24. $\dfrac{1}{5} \times 100 = 20$ %

25. Total number of magazines in the bookstore = 70
Number of comedy magazines = 14
Percentage of comedy magzines
= $\dfrac{14}{70} \times 100\% = 20\%$

20% of the magazines are comedy magazines.