ST. JOSEPH'S ACADEMY
HOLIDAY HOMEWORK (2025-26)
CLASS – X

Dear Students, Greetings!!
As the summer vacation begins, it's a wonderful time to relax, recharge, and enjoy with family and friends. However, it is also important to stay connected with your learning journey. To help you make the most of your time and to ensure a balance between rest and study, we have designed a set of holiday homework tasks. These assignments aim to revise essential concepts, enhance creativity, and encourage independent learning. We hope you will complete them sincerely and return refreshed, ready for the next part of the academic year.

ENGLISH PROJECT :

Note:
Use A4 size sheets coloured or designer paper sheets for the project. Use sketch pens for heading and coloured pens for content. Make a creative cover page. Handwriting should be neat and tidy. After compiling it should be submitted in spiral binding.

To be submitted on or before 4th July.

1. PORT FOLIO: PREPARE A PORTFOLIO WITH THE FOLLOWING:

Page 1

In first sheet write about your name, class, division, roll number, school name etc

Page 2

Autobiography

• Self Introduction • My strengths • My weakness, I need to improve on... • My achievements • I have participated in... • The books I have read • The book I wish to read, My goals in life.

2. Interdisciplinary project: Topic- “Sustainable Industrial Development in Andaman and Nicobar Islands.”

Create an Infographic on Andaman and Nicobar Island emphasizing on sustainable industrial development. An infographic is a collection of imagery, data visualizations like pie charts and bar graphs and minimal text that gives an easy to understand overview of a topic. Use striking, engaging visuals to communicate information clearly. Do this work on an A3 sheet and try to make it vivid and clear. Or in soft copy (PPT)

3. Art integrated activity : Brochure- Prepare a brochure on the works of any two of the authors / poets from the list. Make sure that you pick up one Indian and one foreign author/ poet each.

Suggested list of authors:

i. R.K. Narayan
ii. 2.Ruskin Bond
iii. Rabindranath Tagore

i. Agatha Cristie
ii. J.K.Rowling
iii. William Shakespeare

4.Speaking Skill: ASL

Prepare a 2 minute speech on any one of the given topics. This will be a part of ASL internal assessment to be conducted after the vacation.

i. Artificial intelligence Boon or Bane?
ii. Social Media: Connecting or Isolating Us?
iii. Mental Health Awareness in Teenagers

5. Watch any ONE movie and write a review in 300-400 words:

i. The Sound of Music
ii. Life of Pi
iii. Journey 2: The Mysterious Island
iv. Gandhi.
v. Labyrinth
vi. Hugo

HINDI CLASS: 10 TH

सामान्य निर्देश

- **सभी प्रश्न भित्ति पत्रिका (PROJECT FILE ,SIZE A4) में करे।**
- **परियोजना कार्य साफ़ और सूंदर अक्षरों में लिखे।**
- **विषय संबंधित चित्रों को भी लगाए या बनाए।**
- **रंगो के प्रयोग द्वारा अपनी सृजनात्मकता से आकर्षित बनाये।**
- **सभी प्रश्नो के उतर निर्देशानुसार दीजिए ।**

Q1. **बड़े भाई साहब** कहानी में जिंदगी से प्राप्त अनुभवों को किताबी ज्ञान से ज्यादा महत्वपूर्ण बताया गया है। इस पर अपने विचार, बड़ो से बातचीत के बाद और बेहतर जिंदगी के लिए क्या उपयोगी है बताये ?

Q2. भगवान विष्णु के दस अवतार माने जाते है। जिसमे राम और कृष्ण प्रमुख है। अन्य अवतारों के चित्र लगाकर उनके बारे मे लिखे ।

Q3. कबीर के चित्र के साथ कबीर की भक्ति भावना का वर्णन करे।

Q4. अपने घर परिवार के बुजुर्ग सदस्यों से कुछ लोककथाओं को सुनिए व अपने शब्दों में लिखे।

Q5. किसी एक ऐसी घटना का वर्णन चित्र के साथ कीजिए जब अपने मनोरंजन के लिए मानव द्वारा पशु -पक्षियों का उपयोग किया गया हो ।

Q6. 'आधुनिक जीवन शैली दुःख और विषाद का क्या कारण है। ' इस कथन के पक्ष और विपक्ष में अपने विचार अभिव्यक्त करे ।

Q7. बच्चे का सम्पूर्ण विकास के लिए संयुक्त परिवार अनिवार्य है। पक्ष व विपक्ष में अपने लिखिए।

Q9. भक्तिकाल के किन्ही पांच कवियों के जीवन पर आधारित परियोजना कार्य तैयार कीजिए।

Q10. व्यक्ति के जीवन में परिवार का क्या महत्व होता है ? "हरिहर काका" पाठ के आधार पर बताइए।

Q11. प्लास्टिक की चीज़ो से हो रही हानि के बारे में किसी समाचार पत्र के संपादक को पत्र लिखकर अपने सुझाव दीजिए।

Q12. अपने किसी भी मनपसंद विषय पर एक विज्ञापन तैयार कीजिए।

Q13. अपने किसी भी मनपसंद विषय पर एक पोस्टर बनाए।

MATHEMATICS

1. **MATHEMATICS PROJECT**

   Make a project on the topics given below roll number wise:
   R.No. 1 – 10 = GEOMETRY IN NATURE AND ARCHITECTURE
   R.No. 11 – 20 = MATHEMATICAL MANDALAS
   R.No. 21 – 30 = ORIGAMI AND MATHEMATICS
   R.No. 31 – 40 = MATHS IN RANGOLI AND KOLAM DESIGNS
   R.No. 41 and above = 3D ART AND VOLUME/SURFACE AREA

2. Do the following activities in MATHS ACTIVITY FILE.

Activity 3

OBJECTIVE

To verify the conditions of consistency/ inconsistency for a pair of linear equations in two variables by graphical method.

MATERIAL REQUIRED

Graph papers, pencil, eraser, cardboard, glue.

METHOD OF CONSTRUCTION

1. Take a pair of linear equations in two variables of the form

   $a_1x + b_1y + c_1 = 0$ (1)

   $a_2x + b_2y + c_2 = 0$, (2)

   where a_1, b_1, a_2, b_2, c_1 and c_2 are all real numbers; a_1, b_1, a_2 and b_2 are not simultaneously zero.

There may be three cases :

Case I : $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$

Case II: $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$

Case III: $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

2. Obtain the ordered pairs satisfying the pair of linear equations (1) and (2) for each of the above cases.
3. Take a cardboard of a convenient size and paste a graph paper on it. Draw two perpendicular lines X′OX and YOY′ on the graph paper (see Fig. 1). Plot the points obtained in Step 2 on different cartesian planes to obtain different graphs [see Fig. 1, Fig. 2 and Fig.3].

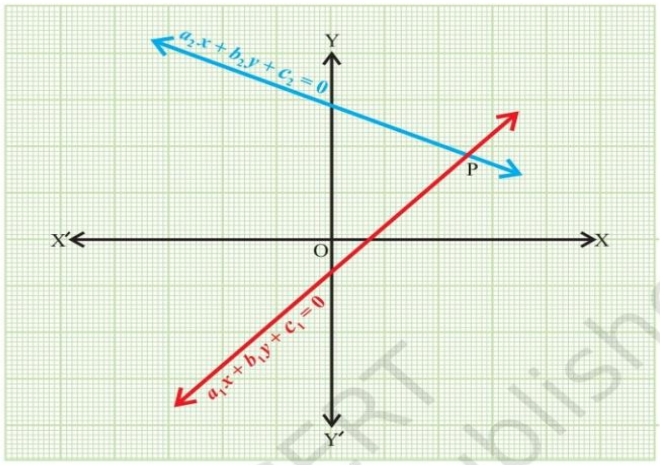

Fig. 1

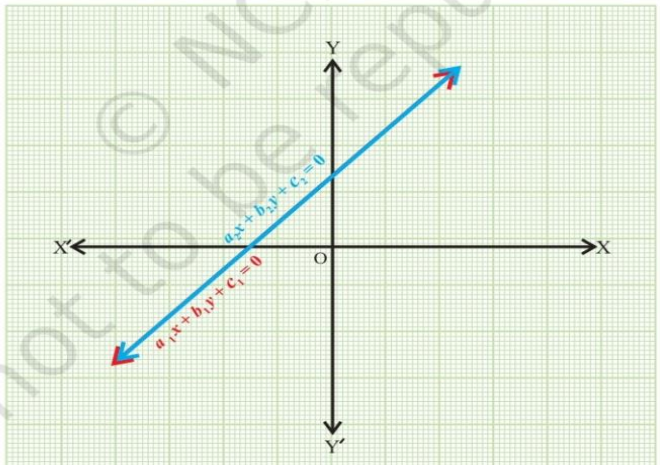

Fig. 2

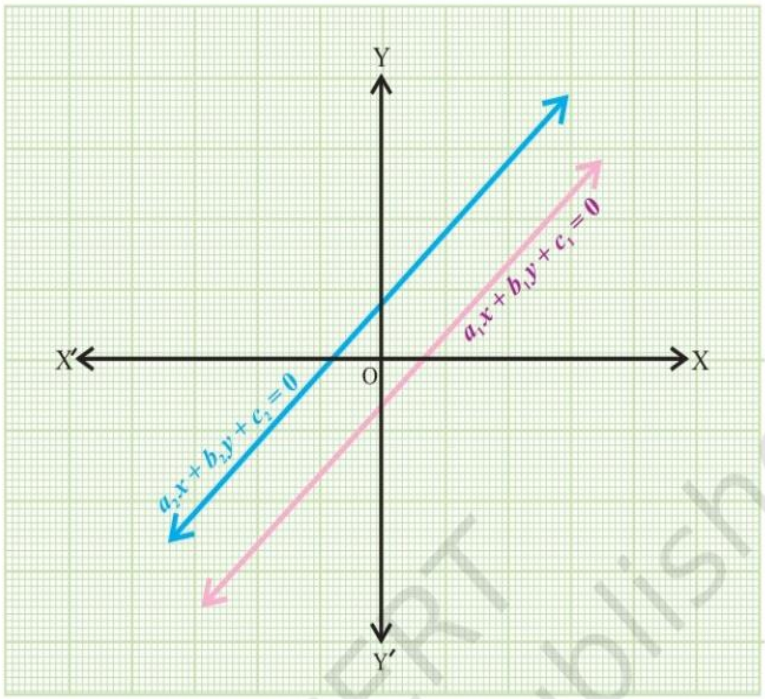

Fig. 3

DEMONSTRATION

Case I: We obtain the graph as shown in Fig. 1. The two lines are intersecting at one point P. Co-ordinates of the point P (x,y) give the unique solution for the pair of linear equations (1) and (2).

Therefore, the pair of linear equations with $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ is consistent and has the unique solution.

Case II: We obtain the graph as shown in Fig. 2. The two lines are coincident. Thus, the pair of linear equations has infinitely many solutions.

Therefore, the pair of linear equations with $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ is also consistent as well as dependent.

Case III: We obtain the graph as shown in Fig. 3. The two lines are parallel to each other.

This pair of equations has no solution, i.e., the pair of equations with $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ is inconsistent.

Observation

1. a_1 = _____, a_2 = _____,

   b_1 = _____, b_2 = _____,

   c_1 = _____, c_2 = _____.

So, $\frac{a_1}{a_2}$ = ..., $\frac{b_1}{b_2}$ = ..., $\frac{c_1}{c_2}$ = ...

$\frac{a_1}{a_2}$	$\frac{b_1}{b_2}$	$\frac{c_1}{c_2}$	Case I, II or III	Type of lines	Number of solution	Conclusion Consistent/ inconsistent/ dependent

Application

Conditions of consistency help to check whether a pair of linear equations have solution (s) or not.

In case, solutions/solution exist/exists, to find whether the solution is unique or the solutions are infinitely many.

Activity 5

Objective

To identify Arithmetic Progressions in some given lists of numbers (patterns).

Material Required

Cardboard, white paper, pen/pencil, scissors, squared paper, glue.

Method of Construction

1. Take a cardboard of a convenient size and paste a white paper on it.
2. Take two squared papers (graph paper) of suitable size and paste them on the cardboard.

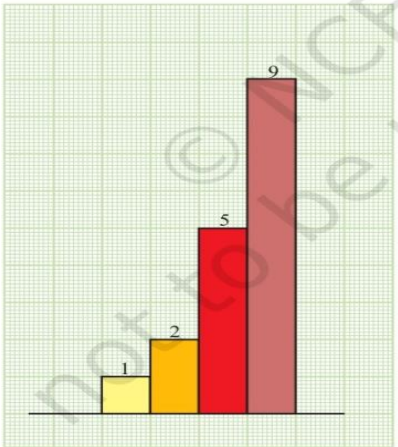

Fig. 1

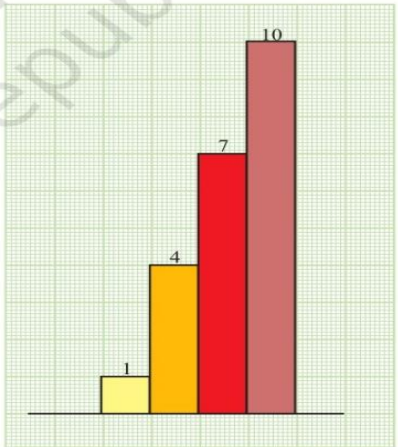

Fig. 2

3. Let the lists of numbers be

   (i) 1, 2, 5, 9, ... (ii) 1, 4, 7, 10, ...

4. Make strips of lengths 1, 2, 5, 9 units and strips of lengths 1, 4, 7, 10 units and breadth of each strip one unit.

5. Paste the strips of lengths 1, 2, 5, 9 units as shown in Fig. 1 and paste the strips of lengths 1, 4, 7, 10 units as shown in Fig. 2.

DEMONSTRATION

1. In Fig. 1, the difference of heights (lengths) of two consecutive strips is not same (uniform). So, it is not an AP.

2. In Fig. 2, the difference of heights of two consecutive strips is the same (uniform) throughout. So, it is an AP.

OBSERVATION

In Fig. 1, the difference of heights of first two strips = _____

the difference of heights of second and third strips = _____

the difference of heights of third and fourth strips = _____

Difference is _____ (uniform/not uniform)

So, the list of numbers 1, 2, 5, 9 _____ form an AP. (does/does not)

Write the similar observations for strips of Fig.2.

Difference is _____ (uniform/not uniform)

So, the list of the numbers 1, 4, 7, 10 _____ form an AP. (does/does not)

APPLICATION

This activity helps in understanding the concept of arithmetic progression.

NOTE

Observe that if the left top corners of the strips are joined, they will be in a straight line in case of an AP.

Activity 7

Objective

To find the sum of the first n odd natural numbers.

Material Required

Cardboard, thermocol balls, pins, pencil, ruler, adhesive, white paper.

Method of Construction

1. Take a piece of cardboard of a convenient size and paste a white paper on it.
2. Draw a square of suitable size on it (10 cm × 10 cm).
3. Divide this square into unit squares.
4. Fix a thermocol ball in each square with the help of a pin as shown in Fig. 1.
5. Enclose the balls as shown in the figure.

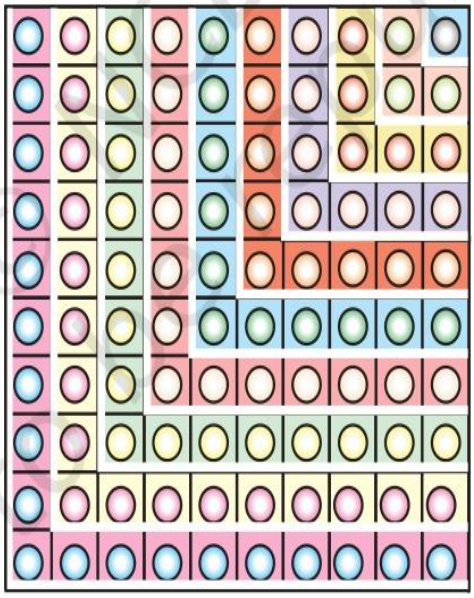

Fig. 1

Demonstration

Starting from the uppermost right corner, the number of balls in first enclosure (blue colour) = 1 ($=1^2$),

the number of balls in first 2 enclosures = 1 + 3 = 4 ($=2^2$),

the number of balls in first 3 enclosures = 1 + 3 + 5 = 9 ($=3^2$),

the number of balls in first 10 enclosures = 1 + 3 + 5 + ... + 19 = 100 ($=10^2$).

This gives the sum of first ten odd natural numbers. This result can be generalised for the sum of first n odd numbers as:

$S_n = 1 + 3 + \ldots\ldots\ldots + (2n - 1) = n^2$ (1)

OBSERVATION

For $n = 4$ in (1), S_n = ...

For $n = 5$ in (1), S_n = ...

For $n = 50$ in (1), S_n = ...

For $n = 100$ in (1), S_n = ...

APPLICATION

The activity is useful in determining formula for the sum of the first n odd natural numbers.

Activity 10

OBJECTIVE

To verify the distance formula by graphical method.

MATERIAL REQUIRED

Cardboard, chart paper, graph paper, glue, pen/pencil and ruler.

METHOD OF CONSTRUCTION

1. Paste a chart paper on a cardboard of a convenient size.
2. Paste the graph paper on the chart paper.
3. Draw the axes X′OX and Y′OY on the graph paper [see Fig. 1].
4. Take two points A(a, b) and B(c,d) on the graph paper and join them to get a line segment AB [see Fig. 2].

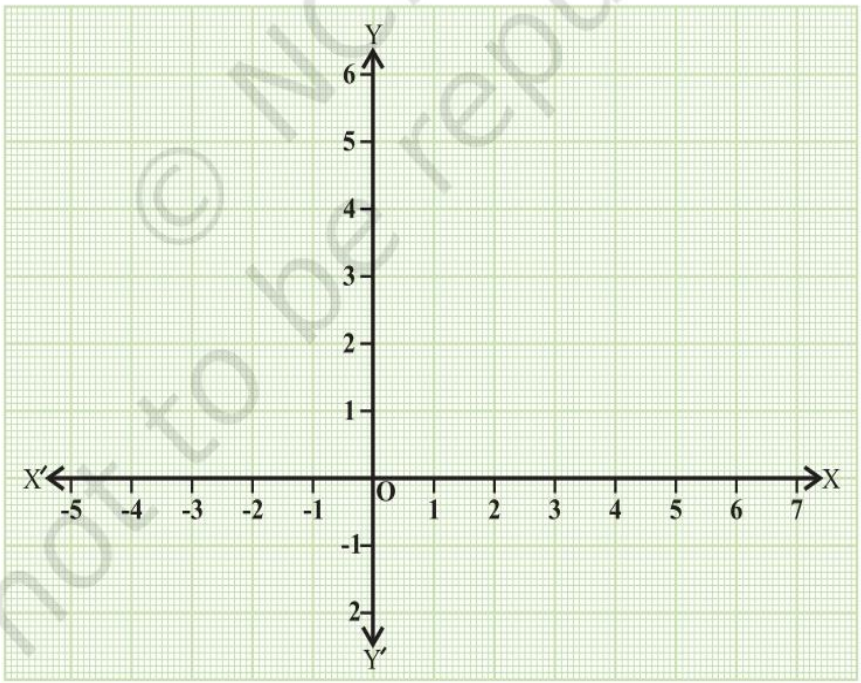

Fig. 1

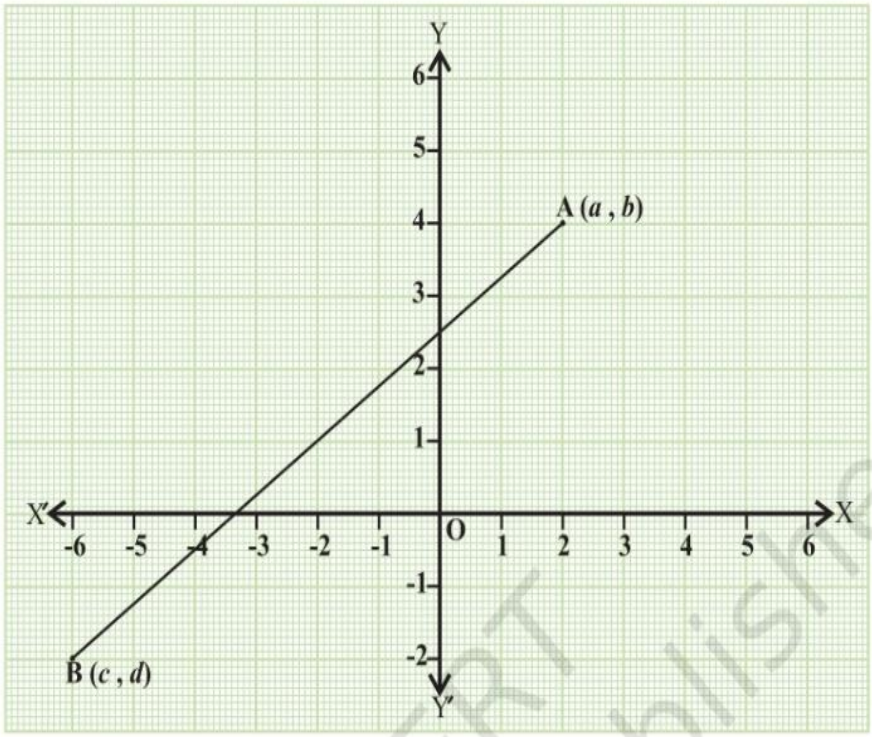

Fig. 2

Demonstration

1. Calculate the distance AB using distance formula.
2. Measure the distance between the two points A and B using a ruler.
3. The distance calculated by distance formula and distance measured by the ruler are the same.

Observation

1. Coordinates of the point A are _____.

   Coordinates of the point B are _____.
2. Distance AB, using distance formula is _____.
3. Actual distance AB measured by ruler is _____.
4. The distance calculated in (2) and actual distance measured in (3) are ____.

Application

The distance formula is used in proving a number of results in geometry.

Activity 11

OBJECTIVE

To verify section formula by graphical method.

MATERIAL REQUIRED

Cardboard, chart paper, graph paper, glue, geometry box and pen/pencil.

METHOD OF CONSTRUCTION

1. Paste a chart paper on a cardboard of a convenient size.
2. Paste a graph paper on the chart paper.
3. Draw the axes X′OX and Y′OY on the graph paper [see Fig. 1].

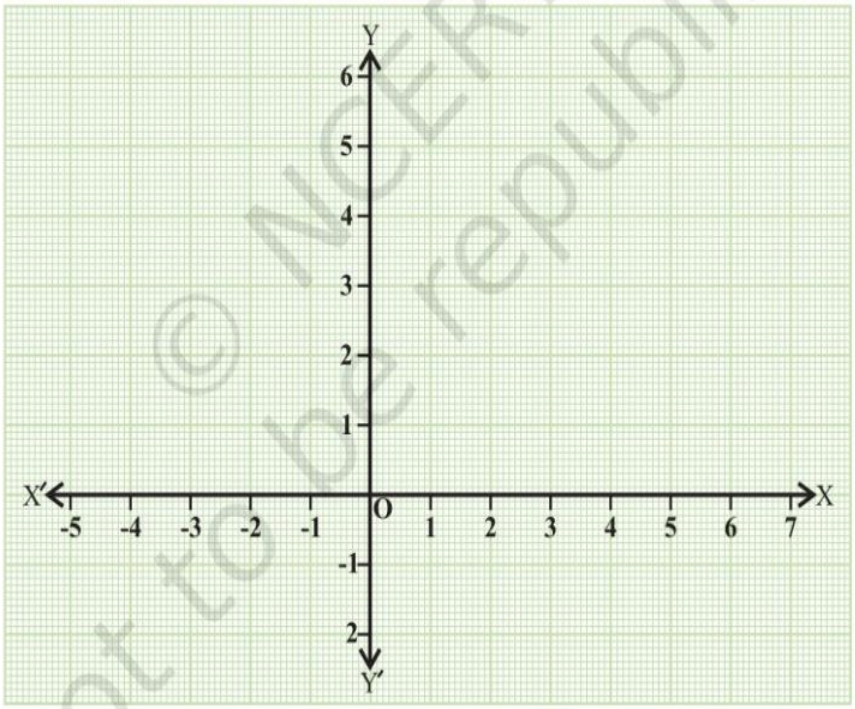

Fig. 1

4. Take two points A (x_1, y_1) and B (x_2, y_2) on the graph paper [see Fig. 2].
5. Join A to B to get the line segment AB.

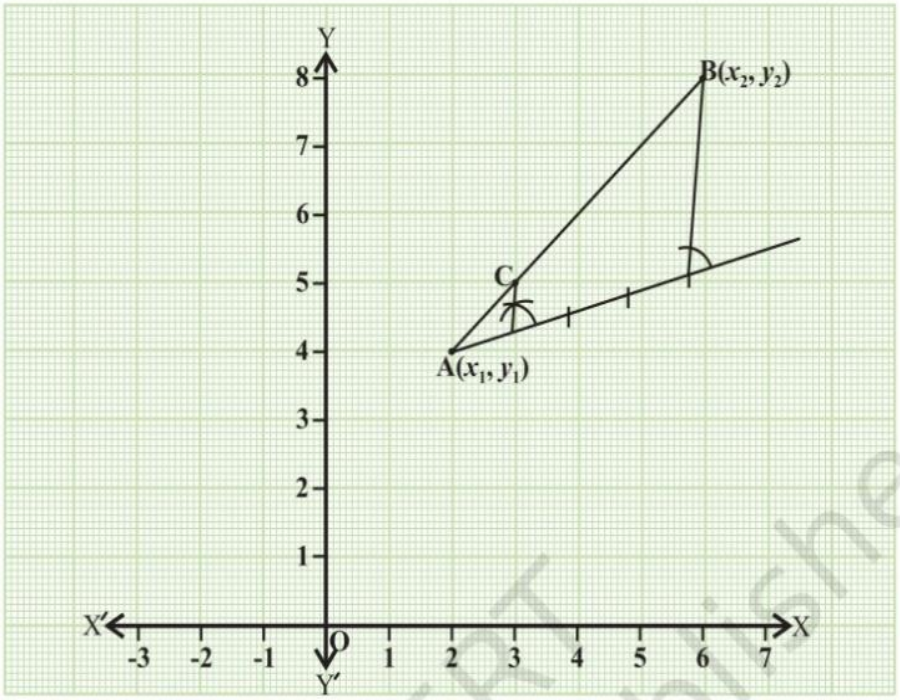

Fig. 2

Demonstration

1. Divide the line segment AB internally (in the ratio $m:n$) at the point C [see Fig. 2].
2. Read the coordinates of the point C from the graph paper.
3. Using section formula, find the coordinates of C.
4. Coordinates of C obtained from Step 2 and Step 3 are the same.

Observation

1. Coordinates of A are _____.
2. Coordinates of B are _____.
3. Point C divides AB in the ratio _____.
4. Coordinates of C from the graph paper are _____.
5. Coordinates of C by using section formula are _____.
6. Coordinates of C from the graph paper and from section formula are _____.

Application

This formula is used to find the centroid of a triangle in geometry, vector algebra and 3–dimensional geometry.

Activity 13

OBJECTIVE

To establish the criteria for similarity of two triangles.

MATERIAL REQUIRED

Coloured papers, glue, sketch pen, cutter, geometry box .

METHOD OF CONSTRUCTION

I

1. Take a coloured paper/chart paper. Cut out two triangles ABC and PQR with their corresponding angles equal.

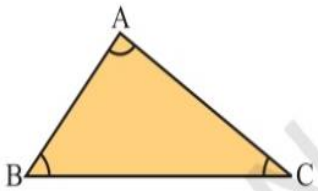

Fig. 1

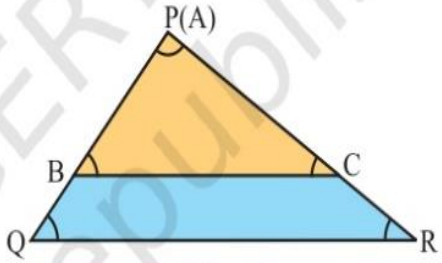

Fig. 2

2. In the triangles ABC and PQR, $\angle A = \angle P$; $\angle B = \angle Q$ and $\angle C = \angle R$.
3. Place the ΔABC on ΔPQR such that vertex A falls on vertex P and side AB falls along side PQ (side AC falls along side PR) as shown in Fig. 2.

DEMONSTRATION I

1. In Fig. 2, $\angle B = \angle Q$. Since corresponding angles are equal, BC||QR
2. By BPT, $\frac{PB}{BQ} = \frac{PC}{CR}$ or $\frac{AB}{BQ} = \frac{AC}{CR}$

   or $\frac{BQ}{AB} = \frac{CR}{AC}$

or $\frac{BQ + AB}{AB} = \frac{CR + AC}{AC}$ [Adding 1 to both sides]

or $\frac{AQ}{AB} = \frac{AR}{AC}$ or $\frac{PQ}{AB} = \frac{PR}{AC}$ or $\frac{AB}{PQ} = \frac{AC}{PR}$ (1)

II

1. Place the ΔABC on ΔPQR such that vertex B falls on vertex Q, and side BA falls along side QP (side BC falls along side QR) as shown in Fig. 3.

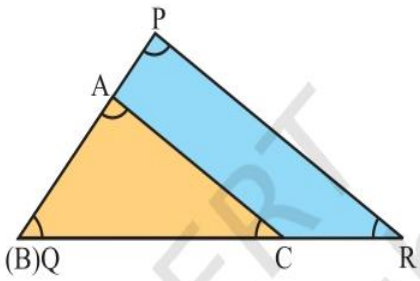

Fig. 3

DEMONSTRATION II

1. In Fig. 3, $\angle C = \angle R$. Since corresponding angles are equal, AC||PR

2. By BPT, $\frac{AP}{AB} = \frac{CR}{BC}$; or $\frac{BP}{AB} = \frac{BR}{BC}$ [Adding 1 on both sides]

or $\frac{PQ}{AB} = \frac{QR}{BC}$ or $\frac{AB}{PQ} = \frac{BC}{QR}$ (2)

From (1) and (2), $\frac{AB}{PQ} = \frac{AC}{PR} = \frac{BC}{QR}$

Thus, from Demonstrations I and II, we find that when the corresponding angles of two triangles are equal, then their corresponding sides are proportional. Hence, the two triangles are similar. This is AAA criterion for similarity of triangles.

Alternatively, you could have measured the sides of the triangles ABC and PQR and obtained

$$\frac{AB}{PQ} = \frac{AC}{PR} = \frac{BC}{QR}.$$

From this result, ΔABC and ΔPQR are similar, i.e., if three corresponding angles are equal, the corresponding sides are proportional and hence the triangles are similar. This gives AAA criterion for similarity of two triangles.

III

1. Take a coloured paper/chart paper, cut out two triangles ABC and PQR with their corresponding sides proportional.

i.e., $\frac{AB}{PQ} = \frac{BC}{QR} = \frac{AC}{PR}$

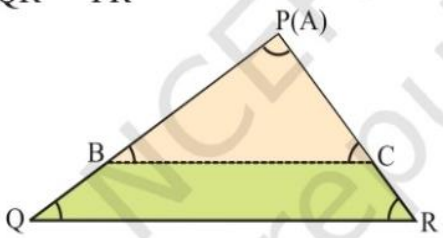

Fig. 4

2. Place the ΔABC on ΔPQR such that vertex A falls on vertex P and side AB falls along side PQ. Observe that side AC falls along side PR [see Fig. 4].

DEMONSTRATION III

1. In Fig. 4, $\frac{AB}{PQ} = \frac{AC}{PR}$. This gives $\frac{AB}{BQ} = \frac{AC}{CR}$. So, BC||QR (by converse of BPT)

i.e., $\angle B = \angle Q$ and $\angle C = \angle R$. Also $\angle A = \angle P$. That is, the corresponding angles of the two triangles are equal.

Thus, when the corresponding sides of two triangles are proportional, their corresponding angles are equal. Hence, the two triangles are similar. This is the SSS criterion for similarity of two triangles.

Alternatively, you could have measured the angles of ΔABC and ΔPQR and obtained $\angle A = \angle P$, $\angle B = \angle Q$ and $\angle C = \angle R$.

From this result, ΔABC and ΔPQR are similar, i.e., if three corresponding sides of two triangles are proportional, the corresponding angles are equal, and hence the triangles are similar. This gives SSS criterion for similarity of two triangles.

IV

1. Take a coloured paper/chart paper, cut out two triangles ABC and PQR such that their one pair of sides is proportional and the angles included between the pair of sides are equal.

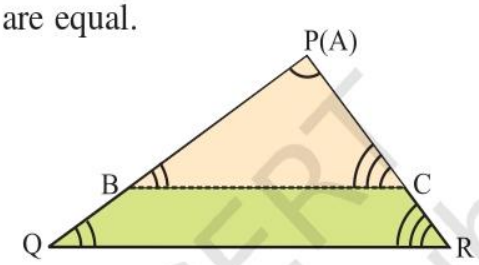

Fig. 5

i.e., In ΔABC and ΔPQR, $\frac{AB}{PQ} = \frac{AC}{PR}$ and $\angle A = \angle P$.

2. Place triangle ABC on triangle PQR such that vertex A falls on vertex P and side AB falls along side PQ as shown in Fig. 5.

DEMONSTRATION IV

1. In Fig. 5, $\frac{AB}{PQ} = \frac{AC}{PR}$. This gives $\frac{AB}{BQ} = \frac{AC}{CR}$. So, BC||QR (by converse of BPT)

Therefore, $\angle B = \angle Q$ and $\angle C = \angle R$.

From this demonstration, we find that when two sides of one triangle are proportional to two sides of another triangle and the angles included between the two pairs of sides are equal, then corresponding angles of two triangles are equal.

Hence, the two triangles are similar. This is the SAS criterion for similarity of two triangles.

Alternatively, you could have measured the remaining sides and angles of ΔABC and ΔPQR and obtained $\angle B = \angle Q$, $\angle C = \angle R$ and

$$\frac{AB}{PQ} = \frac{AC}{PR} = \frac{BC}{QR}.$$

From this, ΔABC and ΔPQR are similar and hence we obtain SAS criterion for similarity of two triangles.

OBSERVATION

By actual measurement:

I. In ΔABC and ΔPQR,

$\angle A =$ _____, $\angle P =$ _____, $\angle B =$ _____, $\angle Q =$ _____, $\angle C =$ _____, $\angle R =$ _____,

$\frac{AB}{PQ} =$ _____; $\frac{BC}{QR} =$ _____; $\frac{AC}{PR} =$ _____

If corresponding angles of two triangles are _____, the sides are _____. Hence the triangles are _____.

II. In ΔABC and ΔPQR

$\frac{AB}{PQ} =$ _____; $\frac{BC}{QR} =$ _____; $\frac{AC}{PR} =$ _____

$\angle A =$ _____, $\angle B =$ _____, $\angle C =$ _____, $\angle P =$ _____,

$\angle Q =$ _____, $\angle R =$ _____.

If the corresponding sides of two triangles are _____, then their corresponding angles are _____. Hence, the triangles are _____.

III. In ΔABC and ΔPQR ,

$\frac{AB}{PQ}$ = _____; $\frac{AC}{PR}$ = _____

$\angle A$ = _____, $\angle P$ = _____, $\angle B$ = _____, $\angle Q$ = _____,

$\angle C$ = _____, $\angle R$ = _____.

If two sides of one triangle are _____ to the two sides of other triangle and angles included between them are _____, then the triangles are _____.

APPLICATION

The concept of similarity is useful in reducing or enlarging images or pictures of objects.

Activity 16

OBJECTIVE

To verify Basic Proportionality Theorem (Thales theorem).

MATERIAL REQUIRED

Two wooden strips (each of size 1 cm wide and 30 cm long), cutter, adhesive, hammer, nails, bard board, white paper, pulleys, thread, scale and screw etc.

METHOD OF CONSTRUCTION

1. Cut a piece of hardboard of a convenient size and paste a white paper on it.

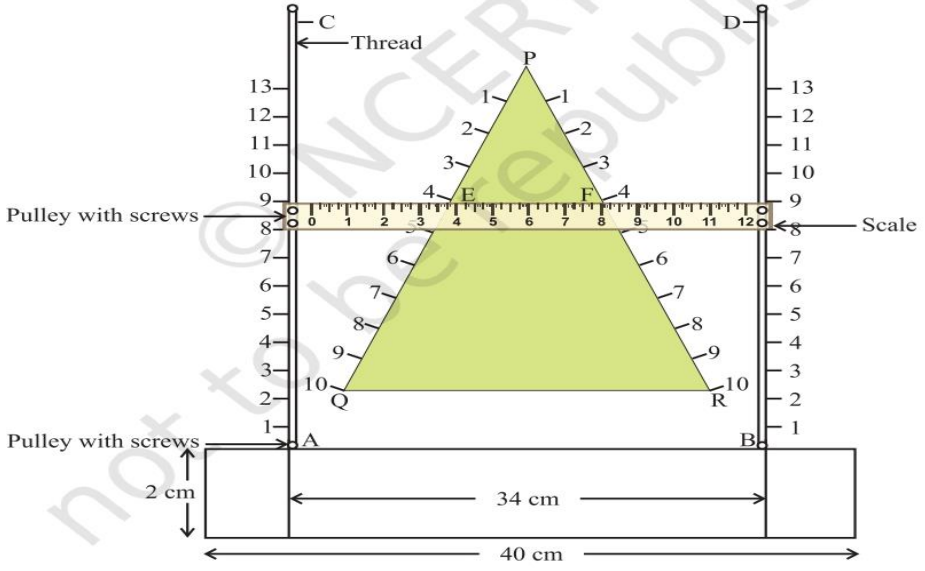

Fig. 1

2. Take two thin wooden strips with markings 1, 2, 3, ... at equal distances and fix them vertically on the two ends of the horizontal strip as shown in Fig. 1 and call them AC and BD.
3. Cut a triangular piece PQR from hardboard (thickness should be negligible) and paste coloured glazed paper on it and place it between the parallel strips AC and BD such that its base QR is parallel to the horizontal strip AB as drawn in Fig. 1.
4. Graduate the other two sides of the triangular piece as shown in the figure.
5. Put the screws along the horizontal strip and two more screws on the top of the board at the points C and D such that A, B, D and C become four vertices of a rectangle.
6. Take a ruler (scale) and make four holes on it as shown in the figure and fix four pulleys at these holes with the help of screws.
7. Fix the scale on the board using the thread tied to nails fixed at points A, B, C and D passing through the pulleys as shown in the figure, so that the scale slides parallel to the horizontal strip AB and can be moved up and down over the triangular piece freely.

DEMONSTRATION

1. Set the scale on vertical strips parallel to the base QR of D PQR, say at the points E and F. Measure the distances PE and EQ and also measure the distance PF and FR. It can be easily verified that

$$\frac{PE}{EQ} = \frac{PF}{FR}$$

This verifies Basic Proportionality Theorem (Thales theorem).

2. Repeat the activity as stated above, sliding the scale up and down parallel to the base of the triangle PQR and verify the Thales theorem for different positions of the scales.

OBSERVATION

By actual measurement:

PE = _____, PF = _____, EQ = _____,

FR = _____

$\frac{PE}{EQ}$ = _____, $\frac{PF}{FR}$ = _____

Thus, $\frac{PE}{EQ} = \frac{PF}{FR}$. It verifies the Theorem.

APPLICATION

The theorem can be used to establish various criteria of similarity of triangles. It can also be used for constructing a polygon similar to a given polygon with a given scale factor.

Activity 22

Objective

To verify experimentally that the tangent at any point to a circle is perpendicular to the radius through that point.

Material Required

Coloured chart paper, adhesive, scissors/cutter, geometry box, cardboard.

Method of Construction

1. Take a coloured chart paper of a convenient size and draw a circle of a suitable radius on it. Cut out this circle and paste it on a cardboard.
2. Take points P, Q and R on the circle [see Fig. 1].
3. Through the points P, Q and R form a number of creases and select those which touch the circle. These creases will be tangents to the circle.

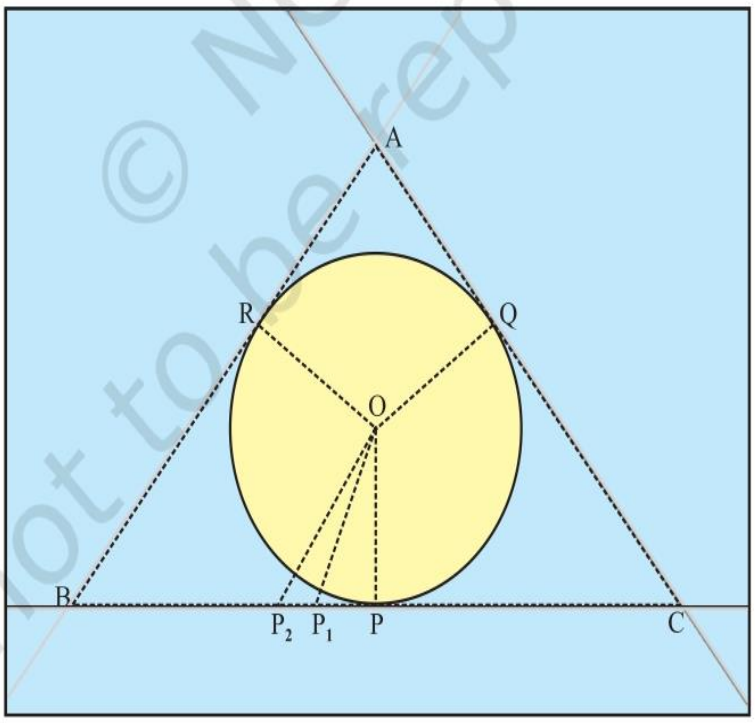

Fig. 1

4. Let the creases intersect at the points A, B and C forming a ΔABC (creases has been shown by dotted lines)
5. The circle now can be taken as incircle of ΔABC with O as its centre. Join OP, OQ and OR.
6. Take points P_1 and P_2 on the crease BC.

DEMONSTRATION

Take triangles POP_1 and POP_2

Clearly $OP_1 > OP$, $OP_2 > OP$.

In fact, OP is less than any other line segment joining O to any point on BC other than P, i.e., OP is the shortest of all these.

Therefore, $OP \perp BC$.

Hence, tangent to the circle at a point is perpendicular to the radius through that point.

Similarly, it can be shown that $OQ \perp AC$ and $OR \perp AB$.

OBSERVATION

By actual measurement:

OP = ..., OQ =....., OR = ...

OP_1 = ..., OP_2 =.....

$OP < OP_1$, OP ..... OP_2

Therefore, OP ..... BC

Thus, the tangent is ..... to the radius through the point of contact.

APPLICATION

This result can be used in proving various other results of geometry.

Activity 24

OBJECTIVE

To verify that the lengths of tangents to a circle from some external point are equal.

MATERIAL REQUIRED

Glazed papers of different colours, geometry box, sketch pen, scissors, cutter and glue.

METHOD OF CONSTRUCTION

1. Draw a circle of any radius, say a units, with centre O on a coloured glazed paper of a convenient size [see Fig. 1].
2. Take any point P outside the circle.
3. Place a ruler touching the point P and the circle, lift the paper and fold it to create a crease passing through P [see Fig. 2].

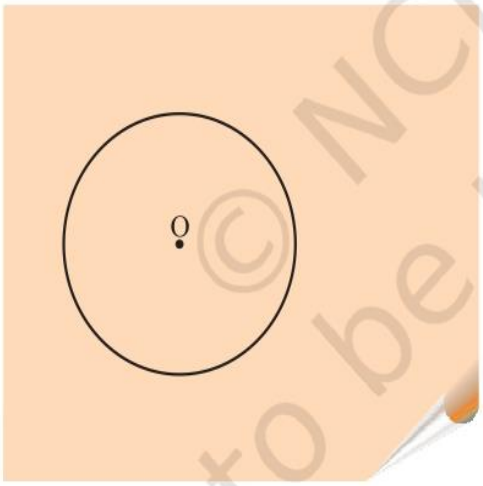

Fig. 1

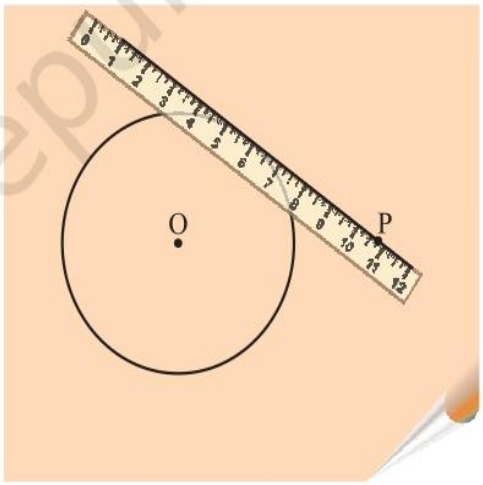

Fig. 2

4. Created crease is a tangent to the circle from the point P. Mark the point of contact of the tangent and the circle as Q. Join PQ [see Fig. 3].
5. Now place ruler touching the point P and the other side of the circle, and fold the paper to create a crease again [see Fig. 4].

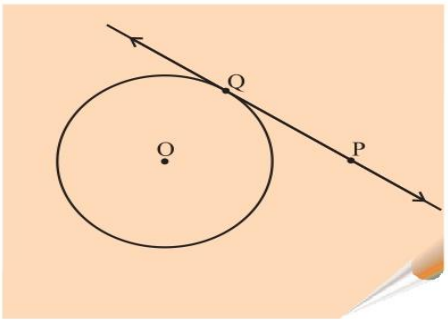

Fig. 3

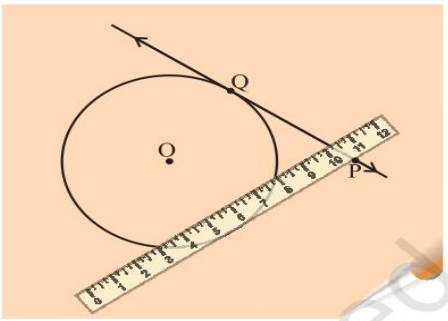

Fig. 4

6. This crease is the second tangent to the circle from the point P. Mark the point of contact of the tangent and the circle as R. Join PR [see Fig. 5].
7. Join the centre of the circle O to the point P [see Fig. 6].

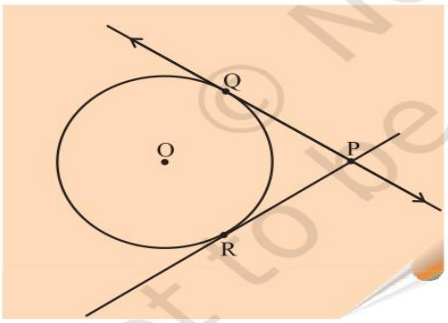

Fig. 5

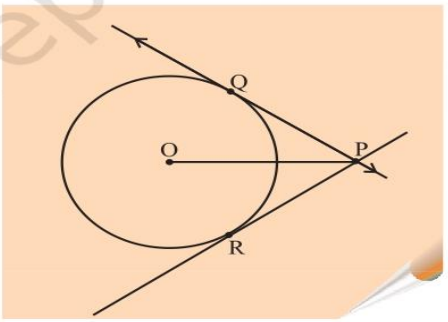

Fig. 6

DEMONSTRATION

1. Fold the circle along OP.
2. We observe that Q coincides with R. Therefore, QP = RP, i.e., length of the tangent QP = length of the tangent RP.
   This verifies the result.

OBSERVATION

On actual measurement:

1. Length of tangent QP = ...
2. Length of tangent RP = ...
   So, length of tangent QP = length of tangent .....

APPLICATION

This result is useful in solving problems in geometry and mensuration.

Activity 26

Objective

To obtain formula for area of a circle experimentally.

Material Required

Threads of different colours, scissors, cardboard, thick sheet of paper, adhesive, ruler.

Method of Construction

1. Draw a circle of radius say r units on a thick sheet of paper, cut it out and paste it on the cardboard.
2. Cut the coloured threads of different sizes in pairs.
3. Fill up the circle by pasting one set of coloured threads of different sizes in concentric pattern so that there is no gap left in between the threads as shown in Fig. 1.
4. Arrange the other set of coloured threads starting from smallest to the largest in the pattern shown in Fig. 2. Last thread will be of same colour and same length as that of the outermost thread of the circle as shown in Fig. 2.

Fig. 1

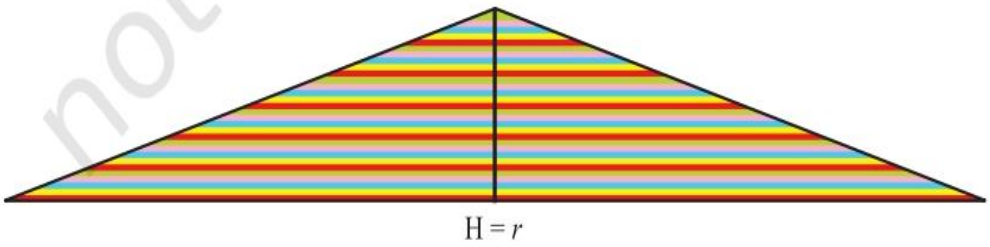

Fig. 2

DEMONSTRATION

1. Number and size of threads pasted on the circle and number and size of thread pasted in the form of triangle are the same.
2. Therefore, area covered by threads on the circle and area of triangular shaped figure formed by threads is the same.
3. Area of triangle $= \frac{1}{2}$ Base × Height
4. Base of triangle is equal to the circumference of the circle ($2\pi r$) and height of the triangle is equal to radius of circle, i.e., r.
5. Area of the circle = Area of triangle $= \frac{1}{2} \times 2\pi r \times r = \pi r^2$

OBSERVATION

On actual measurement:

1. Base of the triangle = ------- units.
2. Height of triangle = ------- units (i.e., radius of the circle).
3. Area of triangle = $\frac{1}{2}$ (Base × Height) sq. units.
4. Area of circle = Area of triangle = ----------.

APPLICATION

This result can be used in finding areas of flower beds of circular and semi-circular shapes and also for making circular designs and in estimating the number of circular tiles required to cover a floor.

NOTE

Thinner the thread more is the accuracy. Fig. 2 is not drawn to scale.

SOCIAL STUDIES

A. PROJECT WORK

1. As per division of topics done in class. Topics are as follows
   i) Sustainable Development
   ii) Consumer Awareness
   iii) Social Issues
2. Follow the guidelines of CBSE.
3. Format should be same as taught in class.

- Do it in **science practical file**.
- Cover the file with **blue cover**.
- Maintain the order of file
- Paste pictures

B. Prepare all the 5 chapters of PT- 1 and complete assignment book work.

SUB – PHYSICS

1. Write the following practicals in your practical file:
   a) Tracing path of a ray of light through a glass slab.
   b) Determination of focal length of concave mirror and convex lens.
   c) Tracing path of rays of light through a glass prism.

2. Prepare 20 MCQs along with the answer key from LIGHT on A4 sheet.

3. Do the following questions on A4 sheets:

   a) With the help of a ray diagram, define refraction of light. State Snell's law and express it mathematically. (A4 sheet)

   b) One half of a convex lens of focal length 10 cm is covered with a black paper. Can such a lens produce an image of a complete object placed at a distance of 30 cm from the lens? Draw a ray diagram to justify your answer. (A4 sheet)

   c) The absolute refractive indices of glass and water are 4/3 and 3/2 respectively. If the speed of light in glass is $2x10^8$m/s, calculate the speed of light in water and vacuum.

   d) An object 4 cm in size, is placed 25 cm in front of a concave mirror of focal length 15 cm. At what distance from the mirror should a screen be placed in order to obtain a sharp image? Also, find the size of the image and draw the ray diagram to show the image formation.

   e) A narrow ray PQ of whit light is passing through a glass prism. Show the path of the emergent beam with the help of a ray diagram.

SUBJECT: CHEMISTRY

- Complete the experiments in practical file as discussed in class.
- Make 10 MCQs and 5 'Assertion Reason 'questions from Chapter: Chemical Reactions and Equations.
- Write the Answers of the following questions on A4 size sheet.

  Q.1 List any two observations when ferrous sulphate is heated in a dry test tube. Name the type of chemical reaction taking place. Write the chemical equation of the reaction.

  Q.2 Give an example of the chemical reaction in which the following changes are seen:
  (i) Change in temperature

(ii) Change in colour
(iii) Evolution of a gas

Q.3 What colour changes do you observe when:
(i) You add Zinc to a solution of Copper Sulphate
(ii) You add Lead to a solution of Cupric Chloride

Q.4 A white salt on heating decomposes to give brown fumes and a yellow residue is left behind. Name the salt and write the equation of the reaction. Also mention the type of reaction.

Q.5 What is Redox reaction? When a magnesium ribbon burns in the air with a dazzling flame and forms a white ash, is magnesium oxidised or reduced? Why?

Q.6 Write any two observations in an activity which may suggest that a chemical reaction has taken place. Give an example in support of your answer.

Q.7 In the following reaction name the substance oxidised, name the substance reduced, name the oxidizing agent and the reducing agent also. Justify your answer.

$$2PbO + C \rightarrow 2Pb + CO_2$$

Q.8 An aqueous solution of metal nitrate P reacts with sodium bromide solution to form yellow precipitate of compound Q, which is used in photography. Q on exposure to sunlight undergoes decomposition reaction to form metal present in P along with reddish brown gas. Identify P and Q. Write the chemical reaction and type of chemical reaction.

Q.9 A student has mixed the solution of lead nitrate and potassium iodide. What is the colour of the precipitate formed. Name the compound. Also write the balanced chemical equation for the reaction.

Q.10 Rita has been collecting silver coins and copper coins. One day she observed a black coating on silver coins and a green coating on copper coins. Which chemical phenomenon is responsible for these coatings? Write the chemical name of black and green coatings.

Q.11 With the help of an activity show that iron is more reactive than copper.

Q.12 Write the balanced equations for the following reactions:
(i) Barium chloride + Aluminum Sulphate → Barium Sulphate + Aluminum Chloride.
(ii) Potassium + Water → Potassium hydroxide + Hydrogen
(iii) Sodium Bromide + Barium Iodide → sodium Iodide + Barium Bromide
(iv) Ferric Oxide + Aluminum → Aluminum Oxide + Iron
(v) Calcium Hydroxide + Sulphuric Acid → Calcium Sulphate + Water

BIOLOGY

- Complete the experiments in practical file as discussed in class.
- Make 10 MCQs and 5 ‘Assertion Reason ‘ questions from Chapter: Life processes (Till Respiration).
- Do these questions in A4 size sheet

Q1. If a plant is releasing carbon dioxide and taking in oxygen during the

day, does it mean that there is no photosynthesis occurring? Justify your answer.

Q2. What will happen if mucus is not secreted by gastric glands?
Q3. Why the rate of breathing in aquatic organism is much faster than terrestrial organisms?
Q4. Why do desert plants take up carbon dioxide at night?
Q5. How opening and closing of stomata regulated?
Q6. What is extracellular digestion? Give example.
Q7. Explain the process of nutrition in amoeba with the help of labelled diagram.
Q8. What are enzymes? Name two digestive enzymes and their functions.
Q9. In what form carbohydrates, proteins and fats are absorbed by the body?
Q10. How the movement of food from stomach to intestine is regulated?
Q11. How trachea is prevented from collapsing in absence of air?
Q12. Name the respiratory organ and respiratory pigment of human beings.
Q13. How lungs are designed to maximize exchange of gases?
Q14. Name the respiratory organs of following:

1. Fishes
2. Frogs
3. Earthworm
4. Cockroach

Q15. Draw the diagram of respiratory system.

PHYSICAL EDUCATION

Q1. Write the history of your game in 300 words.
Q2. Write any 15 Rules and Regulation of your game.
Q3. Explain any 10 terminologies related to your game.
Q4. Write the achievements of your any 5 sports personalities and paste their pictures also.
Q5. Write any 10 Sports competitions of your game.

INFORMATION TECHNOLOGY(402)

Note :- The holiday homework is divided into two segments.
One segment is HAND WRITTEN ASSIGNMENT and another segment is LIBRE OFFICE-WRITER PROJECT.

Instructions for Segment -1 (HAND WRITTEN ASSIGNMENT):-

- Attempt all the questions in ruled colourful sheets.
- Make sure that all the questions to be done are handwritten.
- Paste relevant pictures with each specified example.

- Submit whole project in form of spiral file.

Q1. Answer the following :-

1. What is Stress? What are its casual agents? Also write symptoms of stress?
2. Explain Self-Motivation and types of motivation?
3. What is the importance of Feedback ? Mention various categories of Feedback?
4. Explain the 7Cs of effective communication.
5. Explain Visual Communication fully with proper pictures pasted?
6. Write two sentences of each type:
    a) Exclamatory
    b) Declarative
    c) Interrogative
    d) Imperative
7. Who are Seekers? Explain?

Q2. Competency based questions:-

8. Bupesh is discussing a problem with his teacher and wants to get the teachers attention. What should he do to ensure this?
9. Shalini wants to improve her organizational skills but often finds it difficult to manage her tasks effectively. How can she apply the self-awareness technique of identifying weakness to become more organized?
10. Pankaj has an exam in a few days but has been distracted by social media. How can he use Time-management techniques to prepare effecticvely?
11. During a political rally, a leader addresses a large crowd. What type of verbal communication is being used here, and how can the leader enhance communication?
12. You are discussing a sensitive topic with a friend, and they become very defensive and emotional, causing the conversation to break down. How would you overcome the emotional barrier?

Instructions for Segment -2 (LIBRE OFFICE-WRITER PROJECT):-

1. **Take the print outs of whole project and submit in form of spiral file.**
2. **Attempt all the questions by reading the instructions carefully.**
3. **Don’t forget to add the introductory page mentioning :-> your rollno.,name,class,section,subject,topic name and submitted to whom :- the respective Teacher’s name.**

Do as directed :--

1. Create a document on the topic **“India is a developing nation”.** Write at least three paragraphs.
   - ❖ Add a suitable heading style to the title.
   - ❖ Apply a paragraph style on the first paragraph as Body Text, Indented.
   - ❖ Apply Fill format feature to the rest of the paragraphs.
   - ❖ Save and close the document.
2. Write a paragraph on “Conservation of Water”. Add a picture related to it. Do the following modifications:
   - ❖ Resize the image according to the page size by setting the width as 3.77 and height as 3.99.
   - ❖ Crop the picture with the scaling parameters of width as 50% and height as 50%.
3. Complete the following activities:
   - ❖ Create a template to display the front page of science project.
   - ❖ Create a template of Birthday Greeting Card.
   - ❖ Create a template for business card of ABC Corporation using existing templates.

Happy Holidays.... !!!!!!