

Pre-Content/content Post-Content	Learning outcomes/Objectives	
Pre-Content Recall - Basic terms and definitions - Intersecting lines & parallel Lines. - Types of Angles - Pairs Of Angles Content - Axioms of linear pair - Theorem on Vertically Opposite angles - Parallel Lines and Transversal - Axioms And Theorems - Angle sum property of a triangle - Exterior Angle Theorem Post-content - To work out extra practice questions - To work out assignment from learning series	Students will be able to ✓ recall the meaning of basic terms and definitions ✓ define intersecting lines and parallel lines. ✓ recall different types of angles ✓ recall pairs of angles ✓ assimilate the linear pair axiom and apply them in solving problems ✓ motivate and prove the theorem that vertically opposite angles are always equal. ✓ visualise the angles made by a transversal on parallel lines. ✓ Learn the axioms and theorems and apply them in solving problems ✓ recall the angle sum property of a triangle ✓ Learn the theorem on exterior angles of a triangle ✓ to apply the knowledge of theorems in solving practical problems	Students will be able to ✓ recall and explain the terms like a point, line, line segment, ray and an angle ✓ define and explain intersecting lines and parallel lines. ✓ recall and Identify different types of angles like Acute, Obtuse, Right, Reflex, Complementary and Supplementary. ✓ define various pairs of angles like Adjacent angles, Linear Pair ✓ assimilate the axioms and make use of the same to solve problems. ✓ prove the theorem and make use of the concept in solving problems.. ✓ visualise the angles made by a transversal on parallel lines ✓ assimilate the axioms and theorems based on the angles made by a transversal on parallel lines ✓ apply and logically prove that the sum of angles of three angles of a triangle and uses it to solve various problems. ✓ appreciate the exterior angle theorem and make use of the concept in solving problems.. ✓ apply the knowledge of theorems learnt to solve practical problems. ✓ acquire Problem Solving skills and perform the required calculations to solve various problems

Home Work /Assignments

1. NCERT Exercise /solved examples given as home task
2. Questions from sample papers to solve
3. Selected questions from NCERT Exemplar

MONTH: JULY'20 2/7

TIME: MID TERM

Teacher's Activity	Student's Activity	Teacher's observation and Remedial
Teacher will ask students to recall their previous knowledge in the interactive session. based on which the concept of Lines and angles is further extended to various new concepts. pose different questions to help them recall intersecting and parallel lines. help them recall types of angles learnt in previous class. explain with the help of figures and enable them to recall pairs of angles and write their properties. tell the students about the axioms and theorems associated with linear pair explain the theorem on vertically opposite angles. help them recall transversal on parallel lines tell them about various axioms and theorems of transversal intersecting parallel lines. explain angle sum property Annexure: 2 tell the theorem based on exterior angle of a triangle. give extra practice assignment	Students will recall the concepts learnt in previous classes and link the known to new concept of learning Lines and Angles and try to answer the questions and recall the concept of intersecting and parallel lines. recall different types of angles learnt in previous classes recall the rule of division and will learn the process of dividing a polynomial by another polynomial. solve problems given in the exercise. understand the process and apply it to solve various problems Annexure: 1 recall all the angles made by a transversal on parallel lines. learn the axioms and theorems and apply them in solving various problems. perform the activity based on finding the sum of angles of a triangle to be 180 and will be able to prove it. Annexure: 2 assimilate the theorem and apply it in solving problems based on it. try to solve it	

Teaching Aids : Smart board, ICR, Cartesian Plane, Graph Paper

Methodology/Innovative Methods: Discussion, Question-Answer method, Activity, problem solving, Drawing skills

Interdisciplinary Links: Architecture, Interior Designing, Geometry and Real life Problems.

Faculty Head

Coordinator

Vice-Principal

Principal

ANNEXURE -1

Subject	MATHEMATICS
Class	IX
Chapter/Unit	Geometry
Topic	Lines and angles
Time	15 minutes
Nature of Activity	Individual

What will I learn(Learning outcome)?

To show that vertically opposite angles are equal

Skills:- Psychomotor, accuracy, precision, Interpretation

What I have to do?

To verify that vertically opposite angles are equal made by two intersecting lines

What do I require?

Paper, pencil , ruler, pair of scissors

What do I need to know?

Intersecting lines, opposite angles

➤ Teacher's Activity

The teacher will ask students to draw a pair of intersecting lines and mark the four angles so formed in order . Cut the angles and place opposite angles on each other and write the observations

How will I proceed?**➤ Student's Activity**

- Draw two lines say l and m intersecting at a point O
- Mark the four angles so formed as $\angle 1, \angle 2, \angle 3, \angle 4$ in order such that $\angle 1$ is opposite to $\angle 3$ and $\angle 2$ is opposite to $\angle 4$
- Cut all the four angles
- Place $\angle 1$ on $\angle 3$ and $\angle 2$ on $\angle 4$

What have I observed?

On placing $\angle 1$ on $\angle 3$, what do you observe?

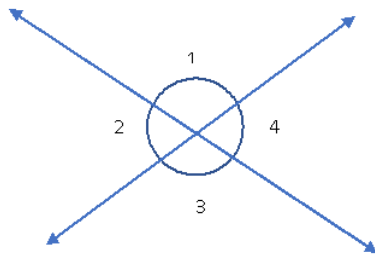
On placing $\angle 2$ on $\angle 4$, what do you observe?

What have I learnt?

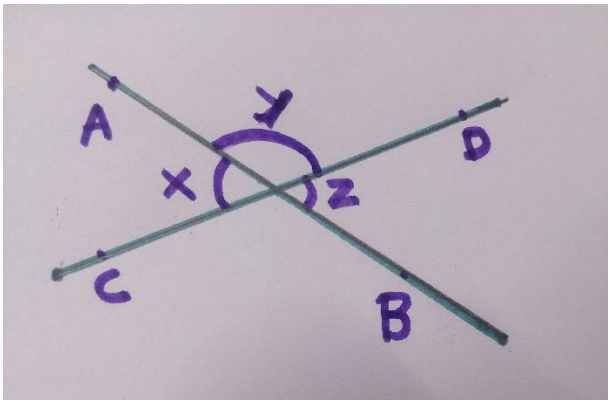
The vertically opposite angles formed by a pair of intersecting lines are _____

What am I curious to know?

Try out the same concept using protractor and record your observations

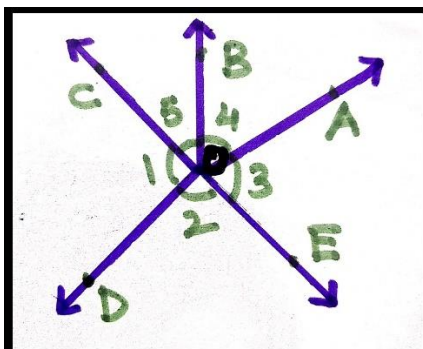
**Let me evaluate myself**

1. Two lines AB and CD intersect at O, forming the angles as shown below:



If $x:y = 7:11$, what is the value of z ?

3. Five rays originate from a point O, as shown below:



Five angles are formed, which have been marked as shown. What is the sum of these angles?

2. If two adjacent angles form a linear pair, show that their **angle bisectors** are perpendicular.

ANNEXURE-2**ACTIVITY– LINES AND ANGLES****1. What we have to do?**

To show that the sum of all the angles of a triangle is 180°

2. What is required?

Coloured Paper, pencil , ruler, pair of scissors, glue

3. What do you need to know?

Angle made by a straight line.

4. How will you proceed?

- Draw a triangle on a sheet of paper
- Cut off its corners
- Draw a straight line on a sheet of paper using the ruler
- Assemble the corners on the straight line

5. What have you observed?

What is the measure of angles so formed by placing the three angles adjacent to each other?

6. What have you learnt?**7. What would you be interested in doing?**

Verify this property for Right angled triangle and obtuse angled triangle

Real life application :- this concept is widely used in our day to day activities.

Architecture and Engineering use this concept extensively.

