



MAGNOLIA LESSON PLAN MATHS

A – Curriculum to Learning Objectives: Geometry

Prior Knowledge		• Basic lines and figures				
Class	Ch. No.	Chapter Name	C. No.	Concept Name	L. Obj. No.	Learning Objectives
1	1	Shapes	1.1	Understand Spatial Words	1.1.a	• basic flat and solid figures
					1.1.b	• corners and sides of objects/figures
					1.1.c	• outlines of the bases of the objects
2	1	Shapes	1.1	Identify the Geometrical Features of Objects	1.1.a	• lines, open figures and closed figures
					1.1.b	• drawing figures using lines
					1.1.c	• basic flat and solid figures
					1.1.d	• flat figures as outlines of the surfaces of solid figures
3	1	Shapes	1.1	Vertices and Diagonals of Two-Dimensional Shapes	1.1.a	• identifying 2D shapes with straight and curved lines
					1.1.b	• identifying sides, corners and diagonals
					1.1.c	• making a tangram
					1.1.d	• recognising 3D shapes and their faces and edges
4	1	Shapes	1.1	Circle and its Parts	1.1.a	• circle and its parts
					1.1.b	• drawing a circle
			1.2	Reflection and Symmetry	1.2.a	• reflection and symmetry in figures
					1.2.b	• tessellation and tiling
5	1	Shapes	1.1	Identify and Classify Angles	1.1.a	• angles and naming the angles
					1.1.b	• using a protractor
					1.1.c	• properties of a protractor
					1.1.d	• types of angles
			1.2	Nets and Views of Solids	1.2.a	• nets of cubes, cuboids, cylinders and cones
					1.2.b	• top, front and side views of objects

B – Vision-to-Action Plan: 1.1 Vertices and Diagonals of Two-dimensional Shapes

Period and Planned Date	TB Page No. and Key Competency	L. Obj. No.	Learning Outcome(s)	Teaching Strategies	Resources	Practice		Areas to Focus
						CW	HW	
1 DD/MM/YYYY	1, 2 – THK, RCL	1.1.a	- Recall types of lines and figures. - Draw and identify 2D shapes using lines.	- Using Concrete Material - Direct Instruction	Sheets of paper for each learner	TB: Pg. 2 (Try this!) TB: Pg. 2 (table)	WB: Pg. 1 (Q. 1, 2, 3)	
2 DD/MM/YYYY	3 – REM/UND	1.1.b	Identify and name shapes, sides, vertices and diagonals.	- Direct Instruction - Activity Method	- geoboard - Chart 'Diagonals and Vertices' - drinking straws	TB: Pg. 3 (Try this!) WB: Pg. 2 (Q. 7-12)	WB: Pgs. 1, 2 (Q. 4, 5, 6) Pgs. 2, 3 (Q. 13-16)	
3 DD/MM/YYYY	3, 4 – APP	1.1.b	- Label sides of equal length. - Find 2D shapes in real-life objects.	- Peer Learning - Guided Learning	–	TB: Pg. 4 (second table)	WB: Pgs. 3, 4 (Q. 17-20)	
4 DD/MM/YYYY	4, 5, 6 – APP	1.1.c	Make a tangram set and create basic shapes.	Activity Method	Cardboard for tangrams	TB: Pg. 5, 6 (tangram instructions)	–	
5 DD/MM/YYYY	6, 7 – HOTS	1.1.d	- Define 3D shapes. - Identify the 3 dimensions of 3D shapes. - Use 2D shapes to draw 3D shapes.	- Guided Learning - Practising	–	–	WB: Pg. 5 (Q. 21, 22)	

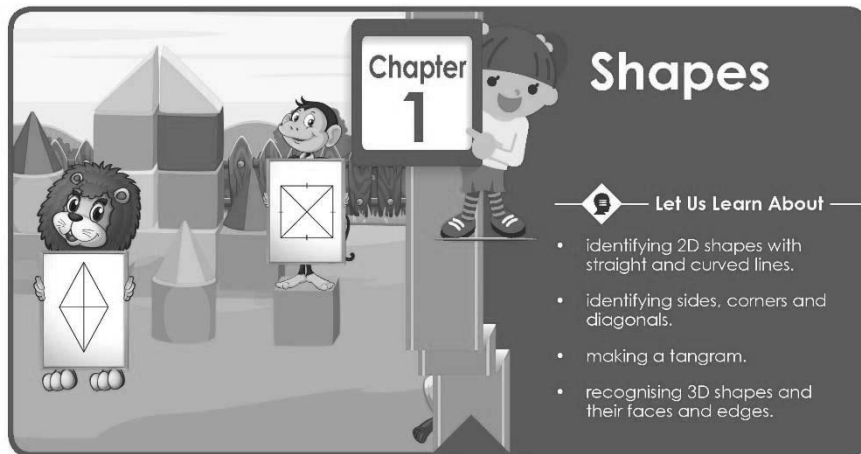
Period and Planned Date	TB Page No. and Key Competency	L. Obj. No.	Learning Outcome(s)	Teaching Strategies	Resources	Practice		Areas to Focus
						CW	HW	
6 DD/MM/YYYY	8 – Drill Time	1.1.a	• Revise geometrical features of shapes.	• Practising	–	TB: Pg. 8 (Drill Time)	–	
		1.1.b						
		1.1.d						

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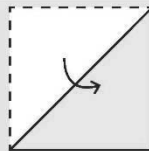


Concept 1.1: Vertices and Diagonals of Two-dimensional Shapes



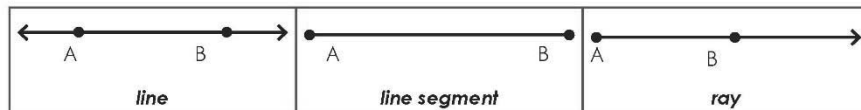
Think

There is a paper folding activity in Farida's class. Her teacher asked the students to fold the paper across the vertices or the diagonals. How will Farida fold the paper?



Recall

We have learnt various shapes formed by straight lines or curved lines. Let us recall them.



Important Words

Duration: 1 min

- Today: line, line segment, ray, straight, curved, horizontal, vertical, slant, open, closed, dimension

Transactional Tip(s)

Duration: 12 min



Using Concrete Material:

- Ask learners to read TB: Pg. 1, 'Think'. Discuss Neena's problem in class.
- Conduct the paper-folding activity in the class. Make a triangle and a rectangle by folding a square sheet of paper. Ask learners to fold the paper into squares of different sizes.

Class Pulse Check

Duration: –



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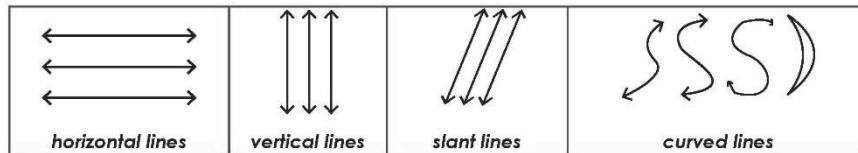
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Important Words

Duration: –



The straight and curved lines help us make closed and open figures.

Figures which end at the point from where they start are called **closed figures**. Figures which do not end at the point from where they start are called **open figures**.



Try this!

Write 'open figure' or 'closed figure' in the given blanks.



Shapes such as rectangle, triangle, square and circle that can be drawn flat on a piece of paper are called **two-dimensional shapes**. Their outlines are called **two-dimensional figures**. In short, they are called **2D figures**.

Identify the following shapes and separate them as 1D or 2D shapes. One has been done for you.

Object				
Shape				
Name of the shape	Triangle			
1D or 2D	2D			

Transactional Tip(s)

Duration: 15 min



Direct Instruction:

- Draw a dot grid on the blackboard.
- Show how lines are drawn by connecting the dots. Revise definitions of line, line segment and ray.
- Explain horizontal lines, vertical lines, slant lines and curved lines.
- Draw various figures on the blackboard. Demonstrate how to identify closed and open figures. Have learners do TB: Pg. 2, 'Try this'.
- Ask learners to draw a few open and closed shapes.
- Revise the different 2D figures. Ask learners to complete the table given in the TB: Pg. 2.

Class Pulse Check

Duration: 2 min



- 1) Does a 'tubelight' look like a straight line or curved line?
- 2) Make one open figure and one closed figure using your hands.



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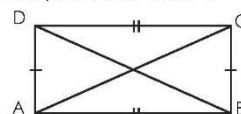
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Remembering and Understanding

As we have already learnt various shapes, let us now name their parts. Consider a rectangle ABCD as shown.

In the given rectangle, AB, BC, CD and DA are called its **sides**. There are lines joining A to C and B to D. These lines named AC and BD are called the **diagonals** of the rectangle.



Points A, B, C and D where two sides of the rectangle meet are called the **vertices**.

Vertex: The point where at least two sides of a figure meet is called a **vertex**. The plural of vertex is **vertices**.

Diagonal: A straight line inside a shape that joins the opposite vertices is called a **diagonal**.

A square also has sides, diagonals and vertices.

Note: A triangle and a circle do not have any diagonals.

Try this!

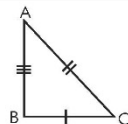
Complete the table with vertices, sides and diagonals of the given different shapes. One has been done for you.

Shape			
Vertices	A, B, C, D		
Sides	AB, BC, CD, DA		
Diagonals	AC, BD		



Application

We know that a 2D shape has length and breadth. Let us now learn to find the number of sides of a 2D shape. Consider a triangle as shown.



Shapes

3

Important Words

Duration: 1 min

- Last class: line, line segment, ray, straight, curved, horizontal, vertical, slant, open, closed, dimension
- Today: sides, vertex, diagonals

Transactional Tip(s)

Duration: 28 min



Direct Instruction (8 min):

- Explain:
 - how to name shapes using alphabets,
 - the definitions of vertex and diagonal.
- Show:
 - the 'Diagonals and Vertices' chart,
 - how to identify and name individual vertices and diagonals in a shape.

Activity Method (20 min):

- Ask:
 - each learner to use drinking straws (6 straws per learner) to make 2D shapes,
 - one learner to make a shape while a partner identifies the diagonals and vertices,
 - learners to complete the table given in TB: Pg. 3, 'Try this'.

Class Pulse Check

Duration: 1 min



- How many sides, vertices and diagonals does a blackboard have?

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Important Words

Duration: 1 min

- Last class: sides, vertex, diagonal
- Today: equal sides

Transactional Tip(s)

Duration: 27 min



Peer Learning (20 min):

- Use TB: Pgs. 3, 4 to show how to indicate equal sides of 2D shapes by using small lines.
- Ask:
 - learners to read and discuss the first table given in the TB: Pg. 4.
 - each learner to make a table of their own, using different shapes in the first column, without labels.
 - learners to exchange tables with their partners. Each learner will fill out the remaining columns of their partner's table. They will label vertices and equal sides, and write shape names, number of sides and names of sides.

Guided Learning (7 min):

- Ask learners to:
 - give the basic shapes of a few common objects, complete the second table given in TB: Pg. 4.

Class Pulse Check

Duration: 2 min



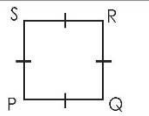
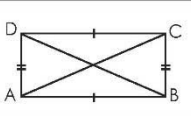
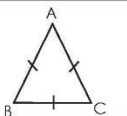
- 1) What is the shape of the wall of classroom?
- 2) How many diagonals does a carrom board have?

The given triangle has 3 sides named as AB, BC and CA. We can also name them as BA, CB and AC.

The different number of markings on the sides of the triangle show that the lengths of all the 3 sides are different.

If all the sides have the same number of markings, we can say that the lengths of all the 3 sides are the same.

Let us now find the number of sides of a few 2D shapes and name them.

Shape			
Name of the shape	Square	Rectangle	Triangle
Number of sides	4 (All sides are equal.)	4 (Opposite sides are equal.)	3 (All sides are equal in this case.)
Names of sides	PQ, QR, RS, SP	AB, BC, CD, DA	AB, BC, CA

We find objects of various shapes around us.

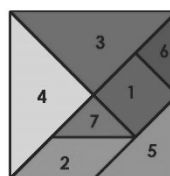
Complete in the following table by writing the basic shapes, number of the vertices and diagonals of the given objects.

Object			
Basic shape			
Number of vertices			
Number of diagonals			

Tangram

A tangram is a Chinese geometrical puzzle. It consists of a square that is cut into pieces as shown in the given figure.

To create different shapes, we arrange these tangram pieces with their sides or vertices touching one another.



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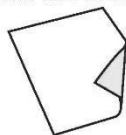
Important Words

Duration: 1 min

- Last class: equal sides
- Today: tangram

Let us make our own tangram.

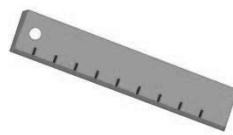
Materials needed:



a square sheet of paper



a pair of scissors



a ruler (optional)

Procedure:

Steps	Figure
Step 1: Fold the square sheet of paper as shown.	
Step 2: Cut the square into two triangles, across the fold.	
Step 3: Cut one of the triangles obtained in step 2, into two equal parts. We get two smaller triangles as shown.	
Step 4: Fold the bigger triangle as shown.	
Step 5: Unfold this piece and cut it across the fold. We get one more triangle.	

Transactional Tip(s)

Duration: 29 min



Activity Method:

- Use TB: Pgs. 4, 5, 6 as the basis for an activity.
- Before class, prepare cardboard squares which can be cut into tangrams.
- In class, explain what tangrams are, showing TB: Pgs. 4, 5.
- Draw a square on the blackboard and stick the tangram pieces to cover it. Show how the pieces fit into the square. Repeat the same using a rectangle.
- Ask learners to follow the procedure given in TB: Pgs. 5, 6 to make tangrams.
- When they complete the task, Ask Learners to make basic shapes with tangrams. Challenge them to use all the pieces to make particular shapes.
- They can also explore making their own shapes, to look like real-world objects.
- Challenge learners with other tangram puzzles. Have them challenge each other in the same way.

Class Pulse Check

Duration: –



Shapes

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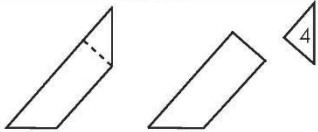
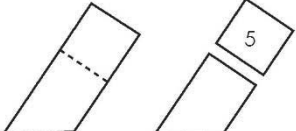
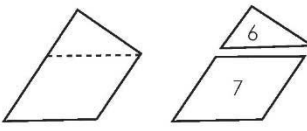
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Important Words

- Yesterday: tangram
- Today: 3D shapes, solid shapes, edge, face, cube, cuboid, cone

Duration: 1 min

Steps	Figure
Step 6: Fold the boat-shaped piece from one end as shown. We get a triangle again on cutting at the fold.	
Step 7: Fold the remaining part of the paper as shown. We get a square on cutting at the fold.	
Step 8: Fold the remaining paper again as shown. We now get one more triangle on cutting at the fold. We, thus, get the seven pieces of the tangram.	
Step 9: Colour these shapes using different colours. You can use these tangram pieces to make different shapes.	



Higher Order Thinking Skills (H.O.T.S.)

Observe the given figure. It looks like a box. Each side of the box is a square.

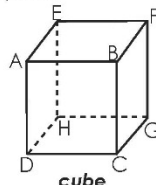
In the figure, AB is the length and BF is the breadth of the box. AD is called the height of the box. So, this shape has three dimensions - length, breadth and height.

Such shapes are called **three-dimensional shapes** or **3D shapes** or **solid shapes**.

In the figure,

- The points A, B, C, D, E, F, G and H are called **vertices**.
- The lines AB, BC, CD, DA, BF, FE, EA, CG, GH, HD, HE and GF are called **edges**.
- The squares ABCD, ABFE, BFGC, GCDH, EFGH and AEHD are called **faces**.

Solid shapes with all flat square faces are called **cubes**.



Transactional Tip(s)

Duration: 18 min



Guided Learning:

- Before class, prepare a cardboard cube using six squares, to be used as a teaching aid.
- Use a duster or a textbook to explain 3D shapes. Explain their length, breadth and height. Ask learners to explain the same using different examples.
- Use six cardboard squares to show how a familiar 2D shape can be used to make a 3D shape.
- Draw a cube by following the steps given in the TB: Pg. 7.

Class Pulse Check

Duration: –



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Day:
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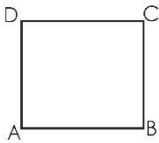
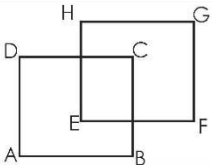
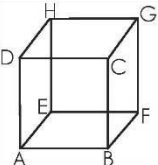
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Important Words

Duration: –

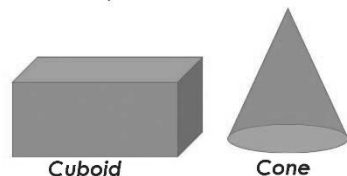
Let us learn how to draw a cube in a few simple steps.

Steps	Step 1: Draw a square ABCD.	Step 2: Draw another square EFGH cutting square ABCD as shown.	Step 3: Join DH, AE, BF and CG.
Figure			

A few other such three-dimensional shapes are **cuboids** and **cones**.

Solid shapes with **flat rectangular faces** are called **cuboids**.

A solid shape with **a circular base**, **a vertex** and **a curved surface** is called a **cone**.



Cuboid

Cone

Try this!

Draw a cuboid and a cone showing the formation of the figure in steps.

Shape	Step 1	Step 2	Step 3
Cuboid			
Cone			

Transactional Tip(s)

Duration: 8 min



Practising:

- Have learners independently work through TB: Pg. 7, 'Try this!'.
- Follow up with correct step-by-step instructions. Emphasise the 2D shapes which are used to make the 3D shapes.

Class Pulse Check

Duration: 3 min



- 1) What is the difference between a square and a cube?
- 2) What are the three dimensions?
- 3) Which 2D shapes make a cuboid and a cone?



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Important Words

Duration: 1 min

- Last class: 3D shapes, solid shapes, edge, face, cube, cuboid, cone
- Today: –



Drill Time

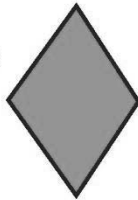
Concept 1.1: Vertices and Diagonals of Two-dimensional Shapes

1) Find the number of vertices and diagonals of the following shapes:

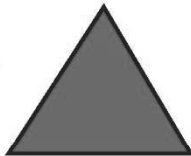
a)



b)



c)



d)



e)



Transactional Tip(s)

Duration: 29 min



Practising:

- Ask learners to complete TB: Pg. 8, 'Drill Time'.
- Give time for additional practice work and correcting mistakes.

Class Pulse Check

Duration: –





C – Exit Assessment

	Suggested questions to test the learning objective(s)	Learning objective(s)	Number of learners who answered correctly
1	How many curved lines does a rectangle have? (Ans. zero)	Period 1 - identifying 2D shapes with straight and curved lines	
2	How many diagonals does a circle have? (Ans. zero)	Periods 2, 3 - identifying sides, corners and diagonals	
3	How many diagonals does a square have? How many vertices? (Ans. 2, 4)	Period 4 - making a tangram	
4	What is the shape of a face of a cuboid? (Ans. rectangle)	Period 5 - recognising 3D shapes and their faces and edges	
5	Which 3-D figure can you make using six square-shaped cards of the same size? (Ans. cube)	Period 5 - recognising 3D shapes and their faces and edges	

Post-lesson Reflection				Handhold Learners		Challenge Learners
TB completed Yes ☐ No ☐ WB completed Yes ☐ No ☐				Names		
Enthusiastic participation ☐ ☐ ☐				Exam Revision Strategy		
Concept clarity in the classroom ☐ ☐ ☐				Reteach ☐	Revise ☐	Practise ☐
Concept clarity through the workbook ☐ ☐ ☐				App Report Number _____		Signature _____