MAGNOLIA LESSON PLAN MATHS

A – Curriculum to Learning Objectives: Geometry

Prior Knowledge	• *Basic 2D shapes*

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
4	1	Shapes	1.1	Circle and its Parts	1.1.a	• circle and its parts
					1.1.b	• drawing a circle
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
	14	Data Handling	14.1	Circle Graphs	14.1.a	• the term ‘circle graph’
					14.1.b	• interpreting and constructing circle graphs

B – Vision-to-Action Plan: 1.1 Circle and its Parts

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 2-dimensional figures. • List and identify different closed and open figures.	• Using Concrete Material • Direct Instruction	• Geoboard	TB: Pg. 2 (Q. a-d)	WB: Pg. 1 (Q. 1-3)	
2 DD/MM/YYYY	2, 3 – REM/UND	1.1.a	• List and identify different parts of a circle.	• Activity Method • Direct Instruction	• Chart of Parts of a Circle	WB: Pgs. 1, 2 (Q. 4-11)	WB: Pg. 3 (Q. 16)	
3 DD/MM/YYYY	4, 5 – REM/UND	1.1.b	• Draw a circle with the help of a compass.	• Using Concrete Material • Direct Instruction	• blackboard compass	TB: Pgs. 4, 5 (Examples 1, 2)	–	
4 DD/MM/YYYY	5, 11 – REM/UND, Drill Time	1.1.b	• Draw and name all parts of a circle.	• Peer Learning	–	TB: Pg. 11 (Drill Time Q. 1)	WB: Pgs. 2 (Q. 12-15)	
5 DD/MM/YYYY	5, 6 – APP	1.1.a	• Find the diameter of a circle from its radius, or radius from diameter.	• Interactive Discussion • Practising	• thread and circular objects	TB: Pgs. 5, 6 (Examples 3, 4) WB: Pg. 4 (Q. 17, 18)	WB: Pg. 4 (Q. 19, 20)	

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	6, 11 – Drill Time, APP	1.1.a	• Find the diameter of a circle from its radius, or radius from diameter.	• Practising	–	TB: Pg. 6 (Examples 3, 4) TB: Pg. 11 (Drill Time Q. 2)	–	
7 DD/MM/YYYY	6 – HOTS	1.1.b	• Draw figures using circles and concentric circles.	• Interactive Discussion • Practising	–	TB: Pg. 6 (Examples 5, 6)	WB: Pg. 5 (Q. 21, 22)	

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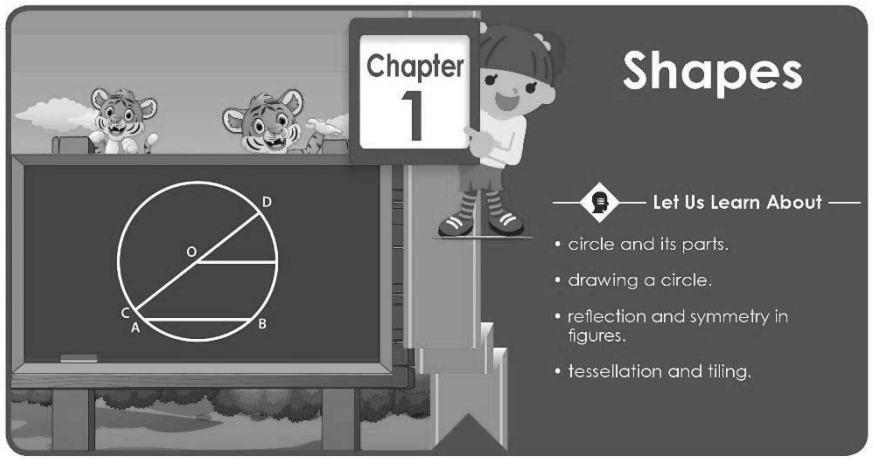

Concept 1.1: Circle and its Parts

Think

Jasleen drew around the inner edge of a bangle on a sheet of paper. She got a circle. She cut the circle and folded it twice in such a way that each of the folds passes over the other. She was excited to show it to her teacher.

What do you think those lines are?

Recall

We have learnt about 2-dimensional figures. We also know the different types of open figures and closed figures.

Let us recall them.

Important Words **Duration: 1 min**

- Today: open and closed figures

Transactional Tip(s) **Duration: 27 min**

Using Concrete Material (11 min):

- Instruct learners to read TB: Pg. 1, 'Think'.
- Ask learners to:
  - draw a circle on a paper and cut it out,
  - fold it twice in such a way that each of the folds passes over the other,
  - note down their observations.

Direct Instruction (16 min):

- Use Geoboard to explain and differentiate: open and closed figures.
- Draw some shapes on the blackboard and ask the learners to identify them as open or closed figures.
- Ask learners solve TB: Pg. 2, 'Recall', a-d.

Class Pulse Check **Duration: 2 min**

1) A square is an example of a ___ figure.
2) A curve is an example of a ___ figure.

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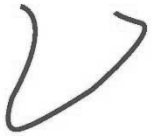
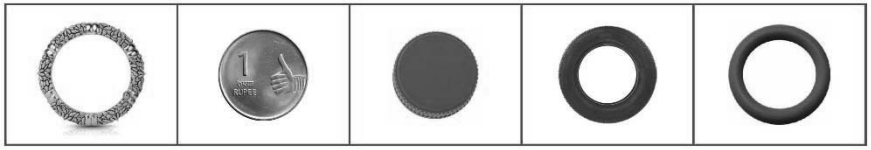
Identify the following 2-dimensional figures as open or closed.

a)  b)  c)  d) 

Remembering and Understanding

We know that a circle is a simple closed 2D figure with no edges or corners. A circle is formed by joining many points from the same fixed point. A bangle, a coin, a bottle lid, a tyre and a ring are a few common items which are in the shape of a circle.

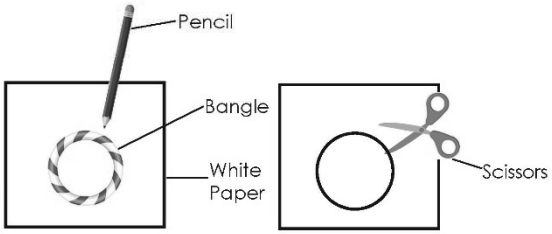


Parts of a circle

Let us now understand the different parts of a circle through an activity.

What we need:

A paper sheet, a bangle, a pencil or pen, a pair of scissors

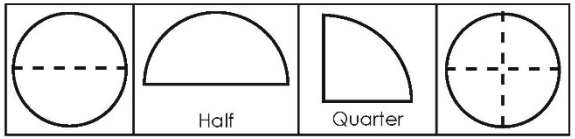


Step 1: Take a white sheet of paper and draw a circle on it using a bangle.

Step 2: Take a pair of scissors and cut along the circle drawn on the sheet.

Step 3: Separate the circle from the sheet of paper.

Fold the circle into two halves and four quarters as shown.



Important Words **Duration: 1 min**

- Last class: open and closed figures
- Today: circle, fixed point, fixed distance

Transactional Tip(s) **Duration: 11 min**

Activity Method:

- Conduct the activity to find the parts of a circle as given in TB: Pg. 2.
- Inform learners about bringing all the required material as given in 'What we need' for the activity in advance.
- Divide the class into small groups and then ask them to read all the details given in the TB and carry them out simultaneously.
- Refer Chart of Parts of a Circle.
- Ask learners to solve WB: Pgs. 1, 2, Q. 4-11.

Class Pulse Check **Duration: 1 min**

1) How many quarters did you get after folding the paper twice?

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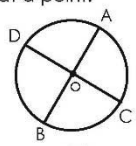
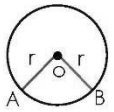
When we unfold the circle, two lines appear on it. These lines cross each other at a point.

Let us now define the parts of a circle.



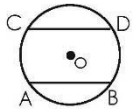
Centre: The fixed point 'O' of a circle is called its centre. This point is at the same distance from any point on the edge of the circle.

Radius: The line segment drawn from the centre 'O' to the edge of the circle is called its **radius**. The plural of radius is radii. We can draw any number of radii in a circle. The length of radius is same for a circle.



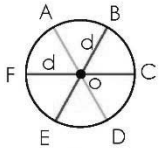
All radii of a circle are of the same length. A radius of a circle is denoted as 'r'. In the figure, $\overline{AO}$ and $\overline{BO}$ are two radii.

Chord: A **chord** is a line segment that joins any two points on a circle. In the figure, AB and CD are two chords.



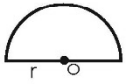
Diameter: A line segment drawn from one point on a circle to another and passing through the centre is known as its **diameter**.

The diameter is the longest chord of a circle. We can draw any number of diameters in a circle. All the diameters of a circle are of the same length. A diameter of a circle is denoted as 'd'. In the figure, $\overline{AD}$, $\overline{BE}$ and $\overline{CF}$ are three diameters.



From the figure, we observe that $d = 2 \times r$ or $r = d \div 2$.

Semicircle: The diameter of a circle divides the circle into two halves. Each half is called a **semicircle**.



Circumference: The length of a circle is called the **circumference** of the circle.

Let us summarise the parts of a circle from the figure:

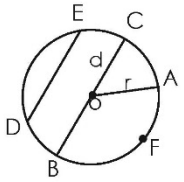
O = Centre of the circle

$\overline{OA}$ = Radius

$\overline{BC}$ = Diameter

$\overline{DE}$ = Chord

$\overset{\frown}{BFC}$ = Semicircle



Try This!

Draw circles using a bangle and the cap of a bottle. Show the radii, centres and diameters of these circles.

Important Words **Duration: –**

- Today: centre, radius, radii, diameter, chord, semicircle, circumference

Transactional Tip(s) **Duration: 16 min**

Direct Instruction:

- Use the same paper and chart of Parts of Circle to explain all the parts of a circle.
- Give definitions.
- Instruct learners to practise TB: Pg. 3, 'Try This'.

Class Pulse Check **Duration: 1 min**

1) Draw a circle and name all its parts. Ask learners to identify the circle, its radius, chord, diameter, semicircle and circumference.

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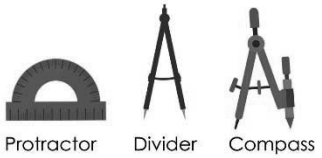
Let us now learn to draw a circle using a compass.

Drawing a circle using a compass

In your geometry box or compass box, there are instruments such as a ruler, a divider, a compass, a protractor, a set squares, a pencil and an eraser.



Look at the picture of the compass.

The needle of the compass: It is kept on a sheet of paper while drawing a circle. It should not be moved from its position while drawing a circle. It marks the centre of the circle on the sheet of paper.

Hinge: It is used to tighten the compass to control the movement of its two arms.

Pencil holder: It holds the pencil used to draw the circle.

How to use a compass

Step 1: Insert a well-sharpened small pencil in the pencil holder. Tighten the screw of the pencil holder till the pencil is fixed firmly.

Step 2: Align the pencil with the needle of the compass.

Step 3: Press down the needle on a sheet of paper. The point where the needle touches the paper is the centre of the circle. Turn the arm having the pencil holder to the right or left till the pencil returns to the starting point. The curve drawn is the required circle. The distance between the needle and pencil tip is the radius of the circle.

To draw a circle of a given radius follow the steps given below:

Example 1: Draw a circle of radius 3 cm.

Solution: Follow the steps given below to draw a circle of a given radius.

Step 1: Fix the pencil in the pencil holder. Align it with the tip of the needle by placing it on a flat surface.

Step 2: Adjust the pencil holder to get some distance between the needle and the tip of the pencil.

Step 3: Place the needle of the compass at '0' cm mark on the ruler.

Adjust the pencil holder such that the pencil is at the 3 cm mark on the ruler. The distance between the needle and the pencil is the radius, which is 3 cm.

Important Words **Duration: 1 min**

- Last class: centre, radius, radii, diameter, chord, semicircle, circumference
- Today: protractor, compass, divider, ruler, set square, hinge

Transactional Tip(s) **Duration: 27 min**

Using Concrete Material (7 min):

- Show a geometry box.
- Explain the instruments in it.
- Use a blackboard compass and demonstrate.
- Explain the steps given in TB: Pg. 4.

Direct Instruction (20 min):

- Use the steps given in TB: Pg. 4.
- Demonstrate how to draw a circle using a compass on the blackboard.
- Use different radii to draw circles of different sizes.
- Ask learners to:
  - read through the steps given on TB: Pg. 4,
  - solve TB: Pgs. 4, 5, Examples 1, 2.
  - draw circles of different radii.

Class Pulse Check **Duration: 2 min**

1) What instrument do you need to draw a circle?
2) What measurement do you need to draw a circle?

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Step 4: Place the needle of the compass on the sheet of paper. Without moving this arm, hold the hinge. Move the pencil holder arm right or left, till the pencil returns to the point where it started.

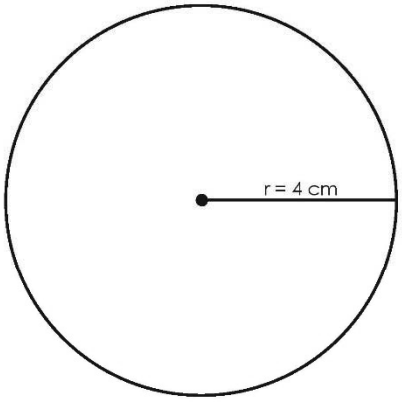
Step 5: Remove the compass from the paper. Mark the needle point as 'O', the centre of the circle.

Using a ruler, draw a line from O to a point A on the circle. This line $\overline{OA}$ is the radius of the circle, which is 3 cm long.

Thus, the circle of the given radius can be drawn.

Example 2: Draw a circle of radius 4 cm.

Solution:



Application

Let us see a few examples where we use the concept of radius and diameter.

We know that the diameter of a circle is two times its radius. So, the radius of a circle is half its diameter.

$d = 2 \times r$ and $r = d \div 2$

Example 3: Sonu has a circular disc of diameter 6 cm. What is its radius?

Solution: We know that radius, $r = d \div 2$

Diameter of the disc = 6 cm

So, radius $r = 6 \div 2$ cm = 3 cm

Important Words **Duration: 1 min**

- Last class: centre, radius, radii, diameter, chord, semicircle, circumference, protractor, compass, divider, ruler, set square, hinge

Transactional Tip(s) **Duration: 27 min**

Peer Learning:

- Divide the class into groups.
- Discuss all the steps to draw a circle using a compass.
- Learners should:
  - draw circles with different radii and discuss their experiences,
  - draw circles and will measure their radii and diameters,
  - solve TB: Pg. 11, 'Drill Time', Q. 1,
  - discuss their experiences.

Class Pulse Check **Duration: 2 min**

1) Draw a circle on the blackboard and name all its parts. Then, ask learners to identify: a) radius, b) diameter, c) centre d) chords

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Therefore, the radius of the circular disc is 3 cm.

Example 4: The cap of a water bottle is 2 cm in radius. What is its diameter?

Solution: Radius of a bottle cap = 2 cm

We know that diameter, d = radius × 2.

So, the diameter, d = 2 × 2 cm = 4 cm.

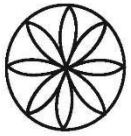
Therefore, the diameter of the cap of the bottle is 4 cm.

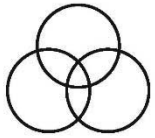
Higher Order Thinking Skills (H.O.T.S.)

Let us now see some figures drawn using circles.

Can you guess how these figures are drawn?

a) 

b) 

c) 

a) We observe that all the circles in this figure have the same centre. These circles are drawn with the same centre but different radii. Such circles are called **concentric circles**.

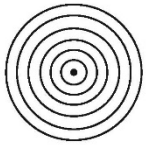
Now try guessing how the figures b) and c) are drawn.

Example 5: Draw a figure that has only circles.

Solution: The symbol of the Olympic games has only circles.

Example 6: How many circles can be drawn with the same point as the centre?

Solution: We can draw any number of circles with the same point as the centre.



Important Words **Duration: 1 min**

- Last class: centre, radius, radii, diameter, chord, semicircle, circumference

Transactional Tip(s) **Duration: 27 min**

Interactive Discussion (10 min):

- Ask learners to draw circles having different radii and measure their diameters.
- Teach them to use a piece of thread and circular objects to carry out the activity.
- Instruct learners to:
  - discuss and draw a conclusion about the relationship between the radius and diameter,
  - draw chords and discuss whether the diameter is also a chord or not,
  - draw a conclusion about the longest chord.

Practising (17 min):

- Ask learners to:
  - find the radius of an object using a piece of thread,
  - solve TB: Pgs. 5, 6, Examples 3, 4,
  - solve WB: Pg. 4, Q. 17, 18.

Class Pulse Check **Duration: 2 min**

1) Explain the relation between the radius and the diameter of a circle.
2) State true or false - Diameter is smaller than the radius.

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Therefore, the radius of the circular disc is 3 cm.

Example 4: The cap of a water bottle is 2 cm in radius. What is its diameter?

Solution: Radius of a bottle cap = 2 cm

We know that diameter, d = radius × 2.

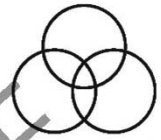
So, the diameter, d = 2 × 2 cm = 4 cm.

Therefore, the diameter of the cap of the bottle is 4 cm.

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

Let us now see some figures drawn using circles.

Can you guess how these figures are drawn?

a)  b)  c) 

a) We observe that all the circles in this figure have the same centre. These circles are drawn with the same centre but different radii. Such circles are called **concentric circles.**

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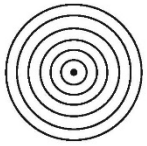

Important Words **Duration: –**

–

Transactional Tip(s) **Duration: 29 min**

Practising :

- Instruct learners to:
  - draw circles of different given diameters and radii,
  - find the value of the other measurement (radius or diameter) for each circle,
  - check the relationship between the radii and diameters in each solution,
  - solve TB: Pg. 11, 'Drill Time', Q. 2.

Class Pulse Check **Duration: 1 min**

1) What will happen when two concentric circles have the same radius?

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Therefore, the radius of the circular disc is 3 cm.

Example 4: The cap of a water bottle is 2 cm in radius. What is its diameter?

Solution: Radius of a bottle cap = 2 cm

We know that diameter, d = radius × 2.

So, the diameter, d = 2 × 2 cm = 4 cm.

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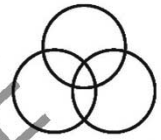
c) 

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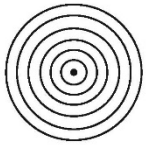

Important Words **Duration: 1 min**

- Last class: centre, radius, radii, diameter, chord, semicircle, circumference
- Today: concentric circles

Transactional Tip(s) **Duration: 25 min**

Interactive Discussion (10 min):

- Discuss the three diagrams in TB: Pg. 6, a-c.
- Ask learners to note their differences.
- Divide the class into groups to have a discussion.
- Ask learners to draw similar figures.

Practising (15 min):

- Instruct learners to solve TB: Pg. 6, Examples 5, 6.

Class Pulse Check **Duration: 4 min**

1) Will two circles having the same radii differ in size?
2) Is it possible to draw a circle having radius larger than its diameter?
3) How many circles can you draw from the given centre?
4) Are the radii of concentric circles equal?

C – Exit Assessment

	Suggested questions to test the learning objective(s)	Learning objective(s)	Number of learners who answered correctly
1	The length of the longest chord in a circle is 15 cm. Calculate the length of the diameter of the circle. (Ans. 15 cm)	Period 2 - circle and its parts	
2	What is circumference? (Ans. The length of a circle is called the circumference of the circle.)	Period 3 - circle and its parts	
3	How many chords can be drawn for a circle ? (Ans. Many)	Period 4 - circle and its parts	
4	Draw a circle with diameter 12 cm. (Ans. Learner's response)	Period 5 - drawing a circle	
5	How many measurements do you require to draw a circle? (Ans. One)	Period 4 - drawing a circle	
6	The length of chord which is passing through the centre of the circle is 14 cm. Can you draw a circle using this information? If 'Yes', what is the radius? (Ans. Yes, 7 cm)	Period 5 - drawing a circle	

Post-lesson Reflection			
TB completed	Yes ☐	No ☐	WB completed Yes ☐ No ☐
Enthusiastic participation	😀 ☐	🙂 ☐	😐 ☐
Concept clarity in the classroom	😀 ☐	🙂 ☐	😐 ☐
Concept clarity through the workbook	😀 ☐	🙂 ☐	😐 ☐

	Handhold Learners	Challenge Learners
Names		
Exam Revision Strategy	**Reteach** ☐ **Revise** ☐	**Practise** ☐
App Report	**Number** _____	**Signature** _____