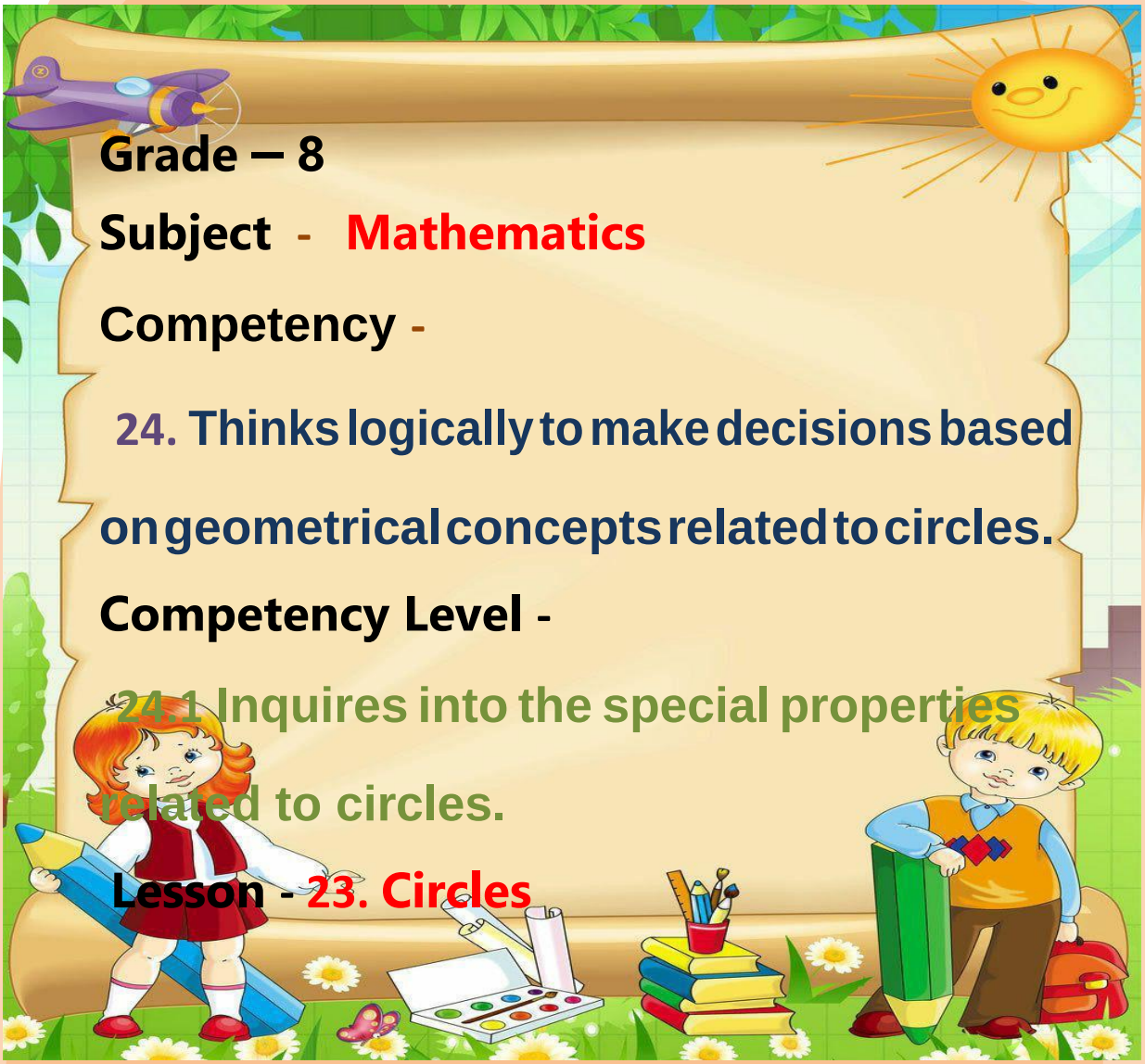

Grade – 8

Subject - Mathematics

Competency -

24. Thinks logically to make decisions based on geometrical concepts related to circles.

Competency Level -

24.1 Inquires into the special properties related to circles.

Lesson - 23. Circles

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23. Circle

After learning this unit you will be able to,

1. Identify that there are infinite number of symmetrical axes in a circle.
2. Identify what a chord of a circle is
3. Identify that the longest chord as the circle.
4. Identify what is an arc, a sector of a circle and a segment of a circle.

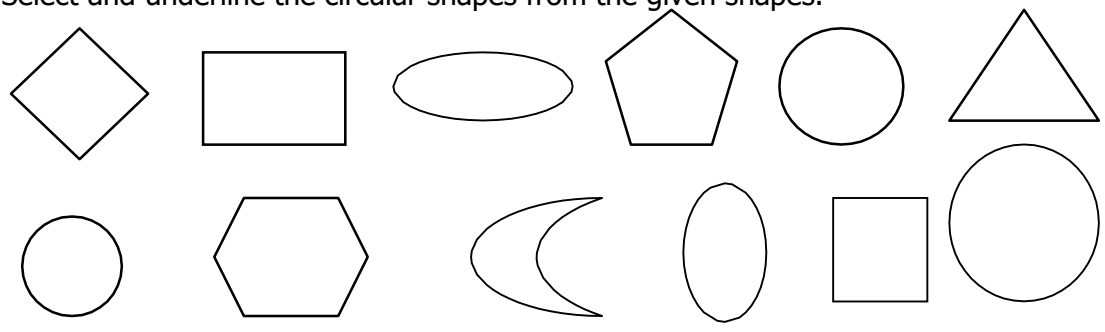
23.1 Introduction

You had learnt that how to draw circles by using circular shapes and by using the pair of compasses in prior grades. Let us explore on some properties of a circle by studying this unit.

Do the following exercise to revise what you learnt in other grades.

Exercise 1

1. Select and underline the circular shapes from the given shapes.



2. Draw three circles in different sizes by using a pair of compasses.
3. Draw the following rectilinear plane figures and mark all the symmetrical axes of them. Equilateral triangle, Rectangle, Square, Regular hexagon and the Isosceles

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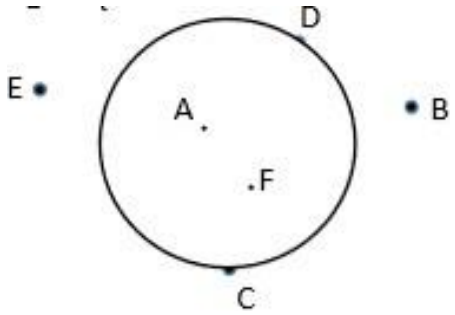
4. State whether the points A, B, C, D, E and F are on the circle, in the circle or outside the circle in the given diagram.



A = ...

B = ...

C = ...

D = ...

E = ...

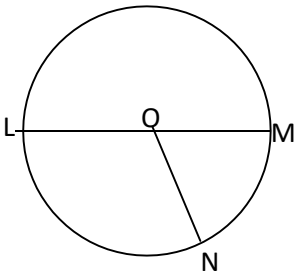
F = ...

5. In this circle,

the centre is .....

radii are ..... , ... and .....

the diameter is .....



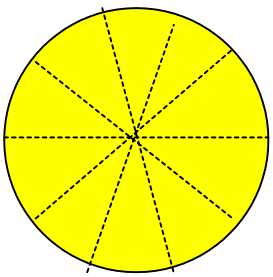
23.1 – Symmetrical axes of a circle

Do the following activity to investigate on the number of symmetrical axes of a circle.

Activity 01

1. Do the first activity in unit 23 of the Grade 08 textbook

According to that activity there are infinite symmetrical axes of a circle. The following diagram shows some such symmetrical axes of a circle.



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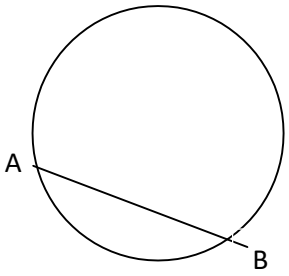
23.2 – Chord of a circle

The straight line segment which is joining any two points of a circle is called a **chord** of that circle

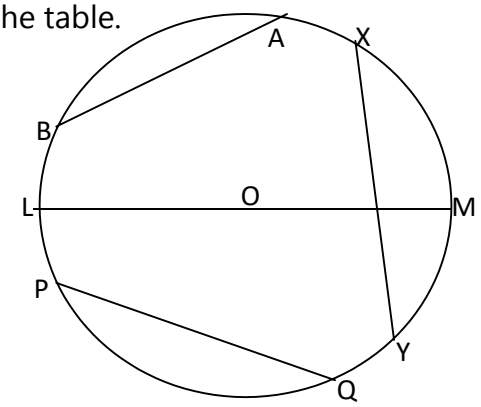


AB is a chord of the circle.

Do the following activity related to the chord of a circle.

Activity 02

1. Measure the lengths of the chords marked in the given diagram and complete the table.



Chord	Length
AB	
PQ	
XY	
LM	

1. What is the chord with the highest (maximum)

2. Write the special name that we can use to name that chord.

The largest chord of a circle is the diameter of it.

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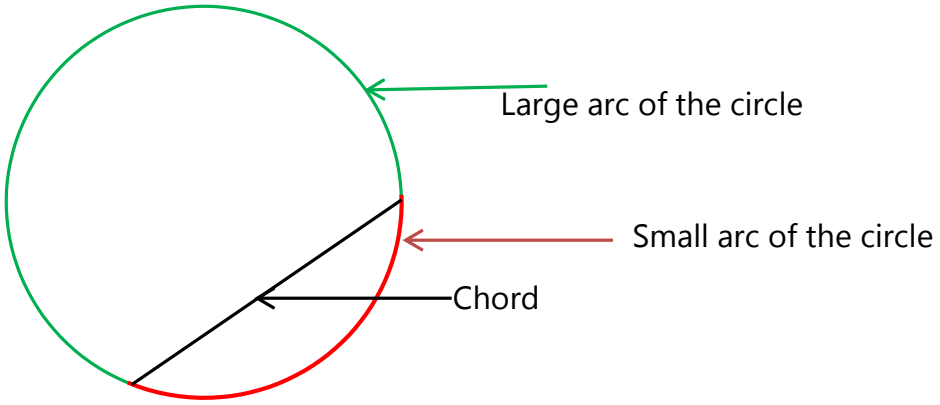
23.3- Arc of the circle

Do the following activity to identify the segments of the circle.

Activity 03

Do the third activity in unit 23 of the Grade 8 textbook



23.4- Segments of a circle and Sectors of a circle

23.4.1 Segments of a circle

Now let us do an activity to explore on the segments of a circle.

Activty 04

1. Draw a circle by using a pair of compasses in a piece of paper and cut it off.
2. Mark any chord on it which is not the diameter of it and name it as AB
3. Cut along the line AB and separate two parts of the circle.
4. Paste those two parts in your note book.
5. Compare the two segments and write the larger portion as the larger segment of the circle and the other as the smaller segment of the circle.

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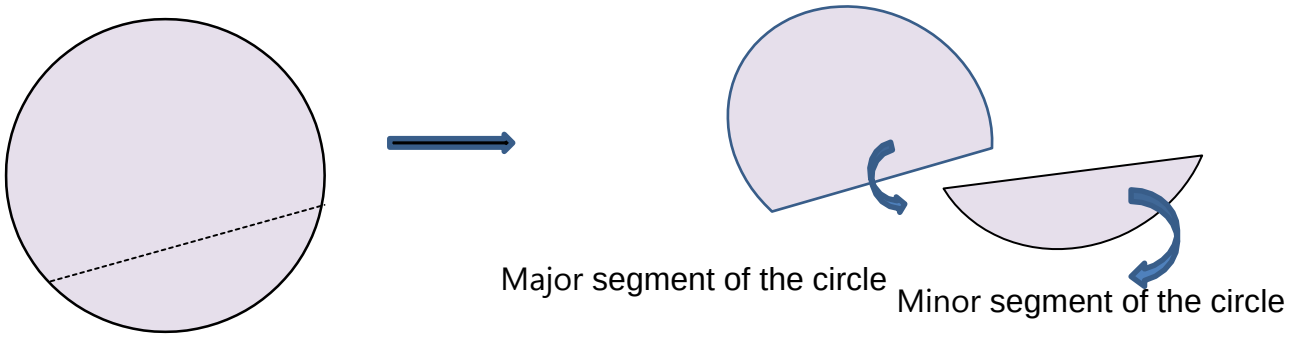


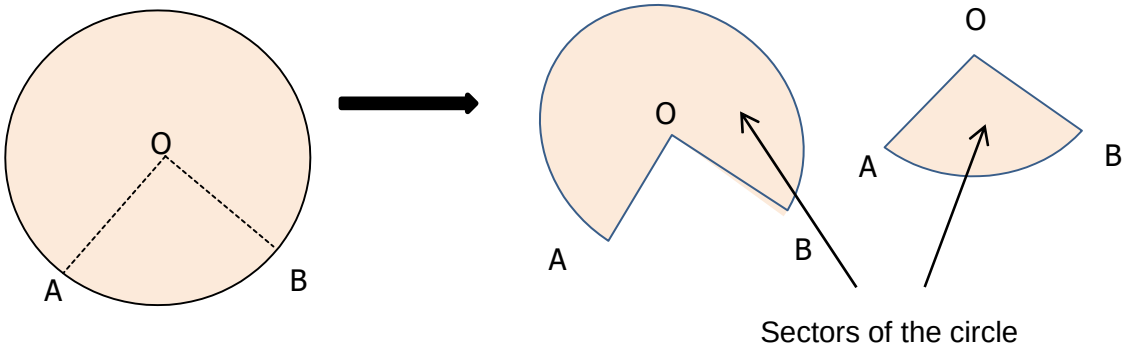
A region bounded by a chord of a circle and an arc is called a segment of the circle

23.4.2 Sector of a circle

Let us do the following activity to identify the sector of a circle

Activity 05

1. Draw a circle by using a pair of compasses in a piece of paper and cut it out.
2. Mark the centre of the circle as O.
3. Draw two radii of that circle as OA and OB.
4. By using a scissor cut them off and paste them in your note book.



Sectors of the circle

A region bounded by two radii and an arc is called a sector of the circle and the angle subtended at the center of the circle by the arc is called the central angle of that sector of the circle.

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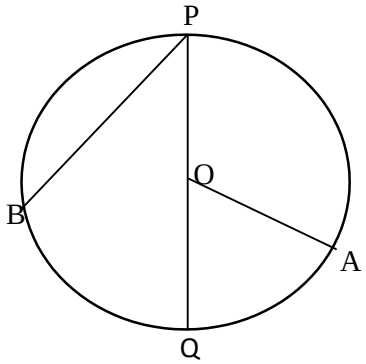
Exercise 02

1. According to the given diagram, answer for the following questions.



(i) What is named as O?

(ii) OA is a ..... of the circle.

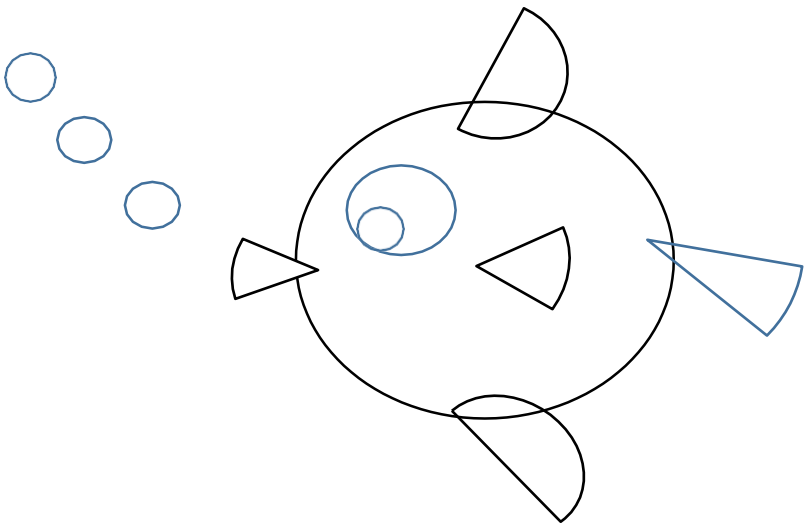
(iii) PQ is the largest ..... of the circle and name it as a ..... of the circle.

(iv) PB is called as a ..... of the circle.

(v) Color the minor segment of the circle in Red.

(vi) Color the sector of the circle which is bounded by the arc AQ and two radii OA and OQ in Yellow.

2. The following diagram was created by using circles, Sectors of circles and segments of circles.



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Color the above diagram by following the instructions given below.

Segments of circles – Yellow
Sectors of circles – Red
Smallest circles – Black
Largest circle – Light green
Other circles - Blue

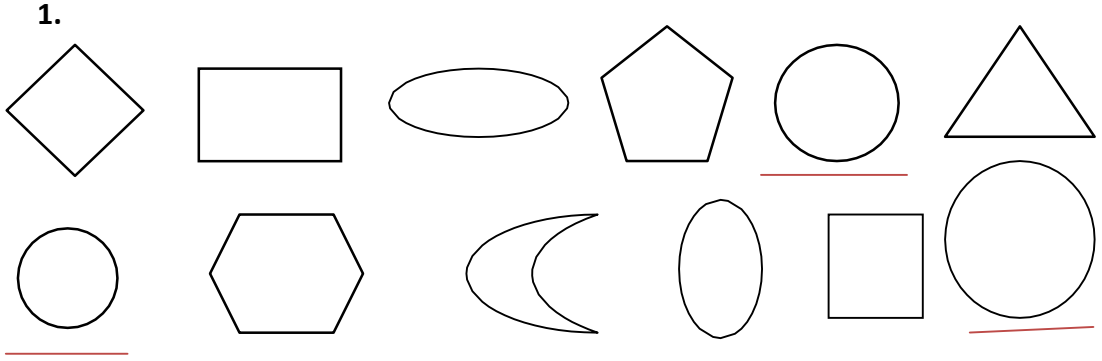
3. By using color A4 sheets or varnish, do any construction by using circles, segments of circles and sectors of circles and paste it in your note book.

Extra Exercises – Do the exercise 23.1 and 23.2 in the text book

Answers

Exercise 1

1.



2. You have to draw three circles in different sizes.

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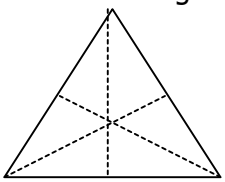
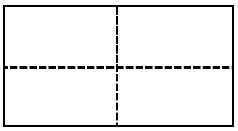
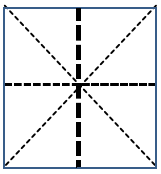
3. . Equilateral Triangle



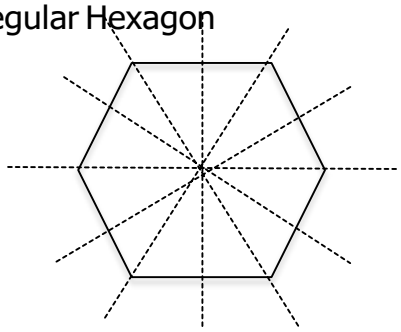
Rectangle



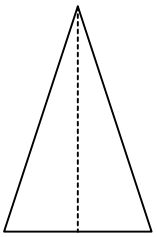
Square



Regular Hexagon



Isosceles Triangle



4. A = Inside the circle B = Outside the circle

C = On the circle D = On the circle

E = Outside the circle F = Inside the circle

5. O is the center of the circle.

OM, ON and OL are the radii of the circle.

Diameter of the circle is LM.

Exercise 2

(i) Centre

(ii) Radius

(iii) Chord, Diameter

(iv) Chord

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