5 Step Lesson Design for Mathematics

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General objectives of Mathematics Teaching:

1. To develop mathematical attitude among students.

2. To develop knowledge of mathematical facts.

3. To develop power of logical thinking.

(Note: Mention the general objectives on the first page of lesson plan book. No need to mention them with each lesson.)

Date:
Class: 7th
Subject: Mathematics
Topic: Circumference of a circle.

Entry behaviour:

Students are expected to know about different geometrical shapes like square, triangle, rectangle and circle. They are also expected to know about calculation of perimeter for line segments.

Learning outcomes: SWBAT

- Understand and calculate the perimeter of a circle.

Learning resources:

- Different geometrical shapes like square, rectangle, circle, ring, disc

OPENING: (Introduction or Launch)

Showing different geometrical figures the teacher may ask the following questions.

1. What do you mean by the perimeter of a geometrical figure?

Exp Ans :- Total length of all sides.

2. What will be the perimeter of triangle with sides 4,5 and 3 cms ?

Exp Ans :- Perimeter = 4+5+3 = 12cms

3. Showing the cut out picture of a circle the teacher says,what is this figure called?

Exp Ans :-This is a circle.

4. Give some examples of objects which are circular in shape?

Exp Ans :-Bangle, coin, ring, wheel etc

5. Can you find the perimeter of the circle?

Ans: No

6. Why?

Ans: Because there are no line segments. (Or they may not e able to answer)

7. So, how we measure perimeter (circumference) of a circle?

Ans: No response

So, today we will discuss how to calculate the circumference (perimeter) of a circle.

I DO (Modelling/Explain):

Using different learning aids the teacher will explain the following:

Circumference of a circle:- The perimeter of a circle is called its circumference. So how to measure the circumference of a circle as there are no line segments in circle which could be measured?

Activity to measure the circumference:-

Place the disc on a flat surface. Take a thin transparent tape measure and wind it round the rim of disc. Unwind and measure the circumference of the disc using a scale, i.e. the length of the tape that winds around the rim exactly once.

Diameter when the centre of the circle is unknown:-

Diameter of a circle is the greatest distance across it. So take a thread place one end of it at a point (edge) on the circle, hold it fast and move the other end of the thread across the circle till you determine the greatest length of the thread that can be stretched across the circle. This gives the diameter of the circle.

Relation between diameter and circumference:-

Take three circular discs of different sizes say 1,2,3. Use a tape to measure the circumference. Also, measure the diameters of the same three discs. For each disc, compute the ratio C/d (circumference/diameter). Finally take the average value of C/d.

The ratio of the circumference of a circle to its diameter is same for all circles and is denoted by π (pie).

Average value of $\frac{c}{d} = \pi$

$$d = 2r$$

$$\frac{c}{2r} = \pi$$

$$c = 2\pi r$$

Example: - Find the circumference of a circle whose radius is 21cm?

Solution:- we know C =2 π r

here r =21cm

therefore , $c = 2 \times \frac{22}{7} \times 21$

C = 132cm

We Do: (EXPLORE)

The teacher divides the students into groups and gives them problems on circumference of a circle including the resources as learning aids (different sizes of circular shapes).

Find the circumference of a circle whose radius is 42cm? (Provides them the cut-out circle as well to give them an idea)

Find the circumference of a circle whose diameter is 50cm? (Provides them the cut-out circle as well to give them an idea)

Find radius and diameter of a circle whose circumference is 243? (Provides them the cut-out circle as well to give them an idea)

Now, the teacher selects one of the students from any group and tells them to solve the question on the board.

Find the circumference whose diameter is 28 cm?

$$c = \pi d$$

$$c = \frac{22}{7} \times 28$$

$$c = 88cm$$

You Do: (Independent practice/Summarise)

The teacher gives some problems to the students to solve independently/individually.

1. Define circumference of a circle.
2. Diameter =?
3. What is the formula for circumference of a circle?
4. C/d =?

Closing:-

The teacher may ask some evaluative questions where the students could think about some more examples of circles in real life of which the circumference and diameter could be found.

At the end of session the teacher tells students to practice circumference of a circle correctively at home.