CHAPTER-10

Angles

You are given a picture below with some hidden angles. Find as many angles as you can and mark them. (Ask your friends to do the same exercise). Find out who has succeded in finding the maximum angles, and where are these angles?



Where are the angles made?

- 1. The joint of the roof tops on the hut.
- 2. _____
- 3. _____

The pictures given below show some items changing their positions. Are there some angles being made there?



Where are these angles made?

- 1. The lower position of the door with the door jamb is making an angle.
- 2.

3.

Is there any difference in the way the angles are being made in the given picture?

The picture on the previous page had angles where two lines interact each other or meet at some point. Whereas in the pictures shown above, the angles are being made because of the movement of some part or due to the change of direction.

Angles tell us how much a part of an object has turned or changed direction. We can say that angle is the measure on the basis of its turn.

Identify and Write-

Some figures are given below, try to identify them and write their names-



Another way of referring to the same:

The points are given some identification using letters of alphabets:

- We read A as "Point A".
- We read C as "Point C".

Similarly a line segment is named by giving some identification to the end points.



These line segments are read as Line segment CD or Line Segment MN

We can read to the same line segments as DC or NM.

Similarly we can name rays on Lines



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While writing a ray we have to write the originating point first -



While in a line segment however we can change the order of the points. For example in Line YZ and Line ZY both refer to the same Line.





Do angles have names?













Identify the angles in the picture shown below and write their names in the table given below.



Angles

S.No.	Angle	Vertex	Sides or arms
1.	∠XYZ	Y	YX,YZ
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

What does this box contain?

Children, you generally have a compass box or a geometry box. You may have used some of the items from this box. Come let us learn some more things about these items.



You call this object as the scale or ruler. This is used to draw a line segment or to measure its length.

This is known as a protractor. This is used to



measure an angle or to draw an angle of a given measure. The marking on this is from zero to one hundred and eighty. Each part is of one degree. The



marking are made from both ends. The line joining both the zeros is known as the baseline. The mid

point of this line is known as the centre. While making or measuring an angle, this base line and centre are very helpful.



These are known as setsquares. These are used to make angles of special measure such as- 30° , 45° , 60° , 75° , 90° etc. We can also make use of these to draw a pair of lines which never meet, like the lines in your copy.

You might have seen a similar instrument with a mason who builds a house. Find out how they make use of it.

This is a divider. It is used along with a scale to measure a line segment accurataly.



There is another instrument just like the divider in which we can fit a pencil in one of its leg. This is known as compass. It is used to draw a circle.

Besides these a compass box may have a pencil, eraser and a sharpner also.

R

How to measure an angle -

Measuring an angle means to measure the inclination between the two sides or to measure how much part of any thing is rotated. To measure the angle, consider one side of the angle as the base.

Now place the protractor on the angle in such a way that base line of the angle completely covers the base line of the protractor.

> Move the protractor along the base line so that the mid point of the



base line of the protractor coincides with the vertex of the angle.

You will see that the base line of the angle is at zero of the protractor. Now move upwards from this point until you find the line which coincides with the other side of the angle. Read the measure given at this point to know the measure of the angle.



Now let us draw an angle

You know that by fixing a vertex and drawing two rays from this point will give you an angle. But can we draw an angle of a given measure.

You will need a protractor to do this. Let us try to draw an angle of measure 70° using a protractor.

Draw line segment using a scale.



Draw a ray OA.

Place the protractor on OA in such a way that OA completely covered by the base line of the protractor.

Along the base line of the protractor with this base ray OA.

0.





Move the protractor until the mid point and the base line coincides with the vertex O. Take care that the base line of protractor still coincides with ray OA.

- A

Ray OA will pass through 0° (0 degree) on the protractor. Now move upwards reading 10° , 20° until you find 70° . Mark this point with a pencil. Naming it B. Now remove the protractor.

Draw a ray from O, passing through B.

Thus an angle BOA has been drawn whose measure is 70° .

 \angle BOA = 70°

or $\angle AOB = 70^{\circ}$

Now draw angles of the measure given below:

40°, 90°, 130°, 35°, 72°, 168°, 180°, 10°, 0°, 30°,

45°

Look around you. You will see angles of different measures. Observe the angles being made at the joints of the doors, windows, blackboards, books etc.





Angles



Are there any angles equal to the ones you drew earlier.

Is there any angle drawn by you which appears to be equal to the angle given above? What is the measure of that angle?

Let us measure the angle being made at the corner of your book. Keep the corner of your book in your copy and trace it out. Measure the angle you have made. Let your friends do the same activity. Take the measures of all these angles and find the average measure.

Is it around 90° ?

An angle of measure 90° is known as a right angle.

The angles whose measures are less than 90° is known as **Acute angle** and angles whose measures are more than 90° but less than 180° are known as **obtuse angles**.

Measure the angles drawn below and say what type they are : acute, obtuse or right angle.

