

Shapes and Angles

CBSE, Maths, Class - V, Lesson 2

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Angles through mathematical eye

Lesson Objectives:

- Gets a sense of how angles determine the shape of the polygon.
- shapes can differ even when the number of sides is the same.
- Identify angles in the environment.
- Classify angles into right, acute and obtuse angles.
- Represents right, acute and obtuse angle through drawing.

Lesson outcome

- Identify angles in our surroundings and know how to classify it.
- Learn that shapes can differ even when the number of sides is the same.

Process:

Build on prior knowledge:

Geoboard: By using geo board I asked the children to form different closed shapes (rectangle, triangle, octagon, and pentagon). After making various shapes they counted and wrote the number of sides in each shape.

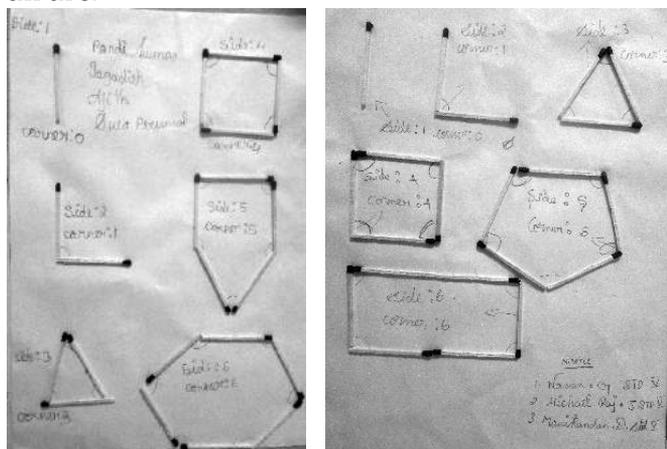
Reflection: Initially the students started doing the basics. In this activity students were interested in making shapes by using rubber band. First they made rectangle, square and triangle. After pausing for a few minutes they started forming octagon, pentagon, rhombus and

trapezium. It was very interesting to see how children created different shapes.

Creating shapes with match sticks: I asked the students to paste the matchsticks on a chart sheet in the following sequential order and write how many sides and corners it had. (See student work in Student artefact 1)

Reflection: I divided the students into 3 groups. Each group was given match sticks to create shapes. They started doing closed shapes with sticks and ends touching each other, and they wanted it to be closed with no gap between the sticks. But one group had pasted sticks with little gap in between. They enjoyed pasting matchsticks in groups.

Here I explained to the students that when two lines meet, it makes an angle, we can make it as an arc.

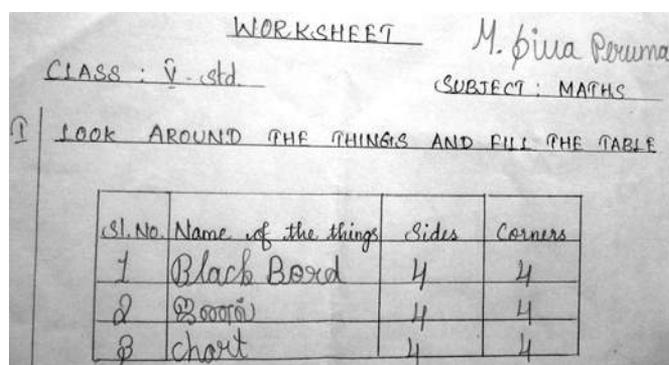


Student artefact 1: Students use match sticks to make closed figure

Identifying shapes around them

I asked them to tell me where all they can find such shapes in their environment. Students started giving examples of other closed pictures like square etc. Then I asked the students to find out closed shaped things in the classroom and write how many sides and corners each shape had.

Reflection: Students went around the class and wrote the names, number of sides and corners of such closed objects that were present in 2D things,



Sl.No	Name of the things	Sides	Corners
1	Black Board	4	4
2	Board	4	4
3	chart	4	4

Student artefact 2 : number of sides and corners identified by student

but they could not do the same for 3D objects for example the cupboard. Then I asked the students to count how many sides and corners were there on the front and then on the other side of the cupboard. Similarly I asked them to look at all the 4 sides. They said that in each side there were four sides and four corners.

Explore it on their own:

Creating closed shapes using match sticks or ice cream sticks

Reflection: Children found out from this task that the shapes can differ even when the number of sides are the same. Students did this activity on

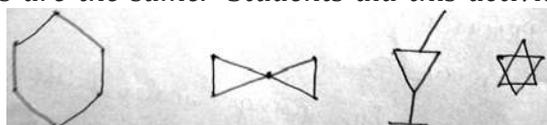


Figure 1: Different closed shapes using same number of sticks

their own. The same activity was there in their text book too and the students were able to do this with ease. I asked questions like: "How many sides are there in your picture?" and "How many corners are there?" The students were able to find and count the sides and corners. Then I explained that when two lines meet, one could mark the angle at every corner.

Picture puzzle using match sticks:

I drew two cocktail glasses on the blackboard and I asked the students to make similar cocktail glasses using matchsticks on the floor. Then I instructed them to move 6 matchsticks to change the cocktail glasses into a house.

Reflection: Students didn't know how to change cocktail glass figure into a house. By trial and error they arranged the matchsticks in different ways but they were not able to do it. I gave them clues after which they were able to rearrange the matchsticks and successfully make a house.

Teachers' Instruction :

Now I introduced the word angle. An angle is made up of two rays that have the same point of origin which is called vertex. The two rays are the sides of the angles. (I showed the corner of things, corner of a table, a note book, where the two lines meet as vertex).

Then I asked, if all the angles that we had seen in the previous activity were the same? The students said no and added that some angles were small and some were big and some others bigger.

By using an angle tester I introduced the concept of right, acute and obtuse angle.

Practice:

Using familiar objects to create arcs:

By using a water bottle like a hose pipe I made an arc on the floor. By using chalk piece I drew

sides for the arc and asked the students what angle it represented.

Reflection: Angle size depends on length of arc.

Some children believed (incorrectly) that the length of the arc which labels the angle is the factor which determines the size of the angle. So children believed that angle A in the picture was smaller than angle B.

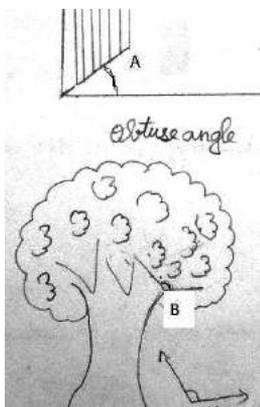


Figure 2 : Relationship between size of arc and angles

Angle tester to measure angles: By using angle tester, students found out and wrote where the tester opens like the letter L, less than L and more than L in the worksheet.

Reflection: I suggested a few things around the class and told them to predict the angles, like table, board and door. The students were able to identify the right angles. Then I asked them to measure the angles. Students moved all over the place and used the angle tester to find angles. It was easier as I had already got ready the angle tester.

Angle card game : I divided the class into two groups. I placed some picture cards (marked with angle) between them. On the opposite side I placed 3 boxes named right angle, acute angle and obtuse angle. Each student (one by one) in the group had to pick a picture card and put it in the appropriate box.

Reflection: Students did this activity well and were able to identify and drop the picture of angles in the appropriate boxes.

Using body learn angles : I made the students stand in a circle and do actions according to

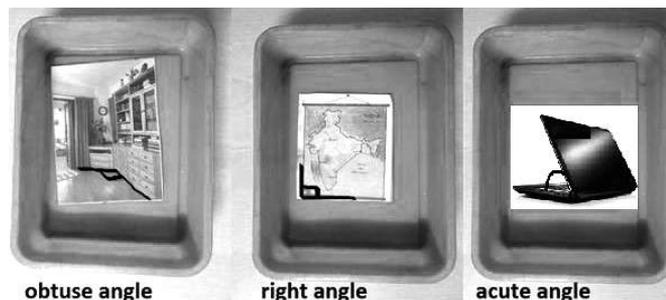


Figure 3 : This image has been recreated to show how the activity was done

what I said. If I said acute, obtuse and right angle students will form the angles using their hands to represent them.

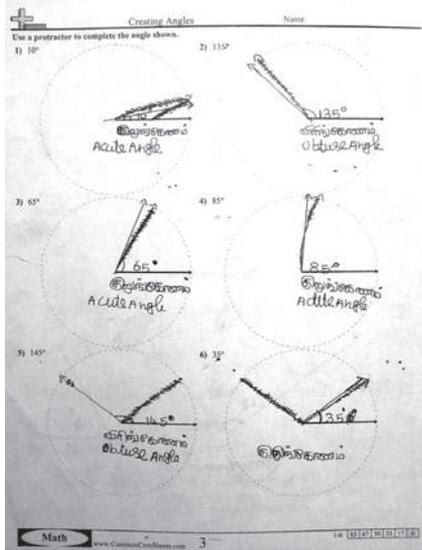
Reflection: Using body to learn math is a new innovative idea that I used. Students were able to show their hands on my instruction. For example, if I said acute angle, they moved their hands to show acute angle. This they did for all the angles. They were able to gain an understanding about angles easily and could remember it well.

One student did the acute angle action in a slightly different way (ie. when all the students did an action for acute angle by showing their hands tilted to 45 degree, he showed his hand action at 60 degree and thought that his action was wrong. I told him that the action was correct and that till the hand comes to the vertical position, it is acute angle and then he understood the concept)

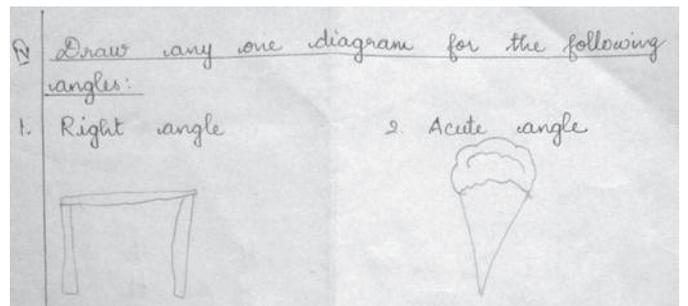
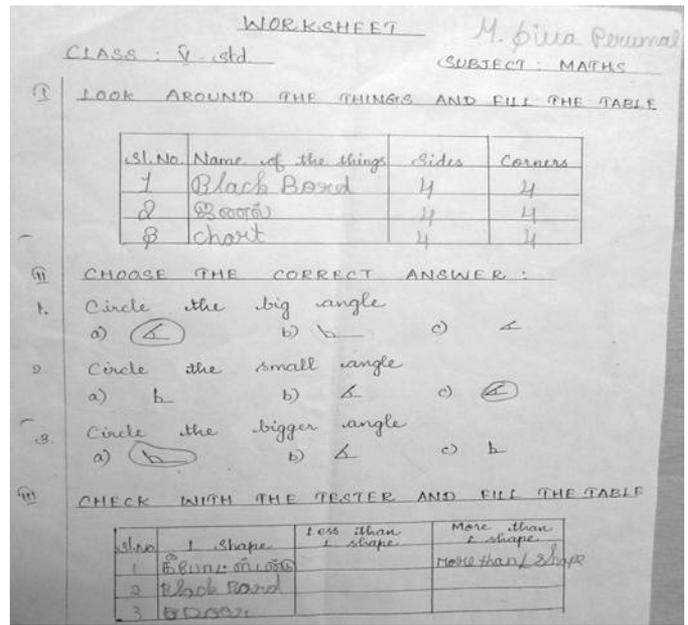
Evaluation:

Evaluate the students through worksheet. Most students did this assessment. Even if they had mistakes they corrected it while re checking it. Students were able to identify different angles when given as visuals but were not able to answer when it was given in degrees to represent angles.

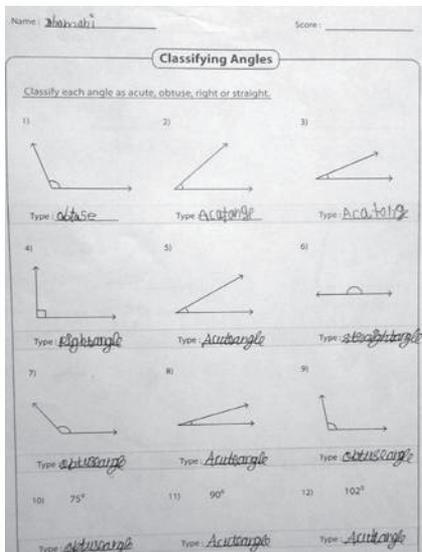
Worksheet 3



Student artefact 3 : Creating angles



Student artefact 5: Assessment sheet filed by student



Student artefact 4: Classifying angles



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