



Master Lesson Plan

For

Shapes and Angles

Board	Standard	Subject	Chapter	Language	Reference Link	Creation Date
CBSE	STD V	Mathematics	Shapes and Angles	English	Shapes and Angles	2020-07

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Shapes and Angles

1. MS_Objectives- Shapes and Angles

Students will be able to:

1. Learn how different types of closed shapes are formed by lines and understand the reasons why shapes change.
2. Find how shapes and angles are related practically.
3. Discover more interesting facts about right angles.
4. Learn to identify the right angles in daily life.
5. Learn about the different types of Angles and identify the different types of angles one comes across in daily life.
6. Ascertain the different types of angles made by the hands of the clock. Identify and name the angles.
7. Learn how to measure angles using a protractor.
8. Understand to see the world, people and situations with a broader perspective.
9. Work out problems and answer questions pertaining to shapes, reasons for change in shapes, identifying angles and measuring angles.

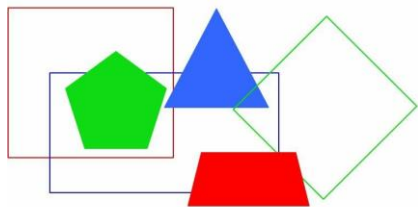
Time to teach	Asset Type	Theme	SubTheme
2 Minutes	Main Script	Line, Curve & Angle	

2. MS_ When does Shape change?

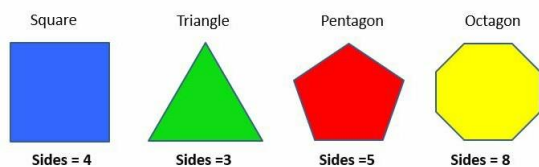
Aim: To make the students understand how the shapes change:

- when there is a change in number of sides.
- when there is change in the length of the sides.
- when there is a change in the angle.

Teacher to show the Students the shapes in this slide and ask them the names of the shapes.



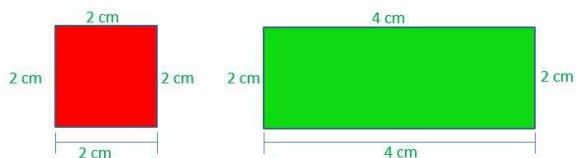
Ask the students what makes the shapes look different. (Elicit response from the students)



Yes it is the number of the sides in the figures which makes the shapes different.

Teacher to show the next slide and ask the students the following questions:

- What do you observe?
- How are the shapes different?
- Can you tell me what is causing the difference though the number of sides are the same?

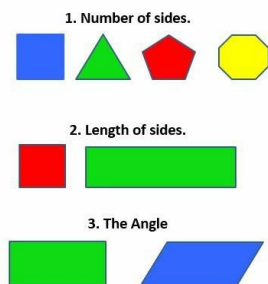


Yes , it is the difference in the Length of the sides that is making the shapes different.

Teacher to show the next slide and ask for children's observation.



Here we see that shapes change with change in angle.

Now to sum up, there is a change in shape when:

- the number of sides differ.
- the length of the sides differ even if the number of sides remain the same.
- the angles in the shape is changed.

In the last slide, there are four sided and five sided closed figures. Teacher to ask the following questions:

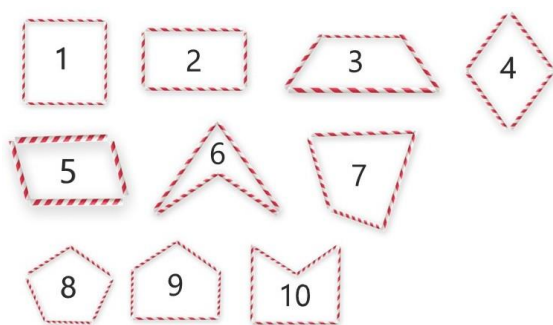
Can you tell me the reason for change in the shape between:

1 & 2

4 & 8

7 & 1

3 & 10



The teacher can ask more such questions so that the children learn the concept clearly.

Image Source:

SSSVV portal

Time to teach	Asset Type	Theme	SubTheme
10 Minutes	Main Script	Shapes	

3. SA_Relationship between Angles and shapes

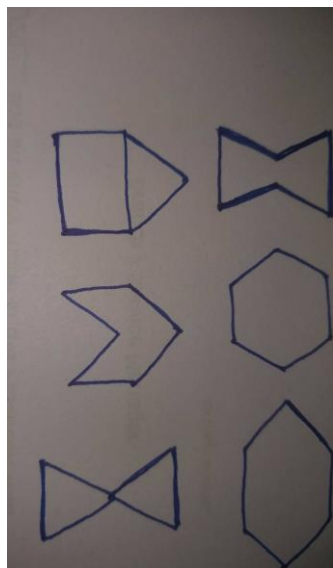
Aim: To make students understand that the Shape and Angles of objects are related. In a given closed shape, if the angle is changed, the shape changes or if the shape is changed, then the angle automatically changes. This happens, even when the number of sides are the same.

Materials Required - Each student has to get the following:

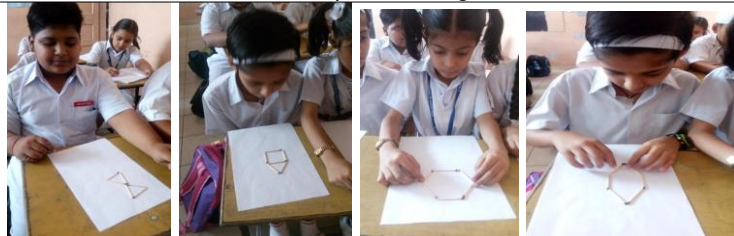
- 6 matchsticks
- A 4 Sheet
- 1 Pencil
- 1 Fevicol

Instructions to the Students:

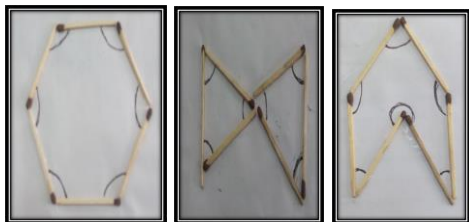
Step 1 : The students should be asked to draw any shape which has six sides.



Step 2 : Stick the match sticks on the shape drawn using Fevicol.



Step 3: The teacher should check whether the students have made a closed figure using six sides. Open figure don't make a polygon.



Step 4 - After the shapes are complete, the students should be asked to do the following:

- Identify the angles - Acute angle, Right angle, Obtuse angle or Straight angle.
- Measure the angles in the shapes they have made.

Step 5 - Children, what have you learnt from this activity?

(Elicit response from the students and write down their answers on the board as **OBSERVATION**)

OBSERVATIONS:

- With same number of sides, different shapes can be made.
- When the angles are changed in a closed figure, the shape changes.
- The change in shape changes the angles of the closed figure.
- Angles are formed when two arms (lines) meet or intersect.

After the activity is over, the teacher can show the video related to this activity.

https://www.youtube.com/watch?v=E0rLC_WY02Q

Source:

Image: Original clicks by SSSVV

Video: www.arvindguptatoys.com

Time to teach	Asset Type	Theme	SubTheme
10 Minutes	Suggested Activity	Line, Curve & Angle	

4. IA_Interesting Facts about Right angle

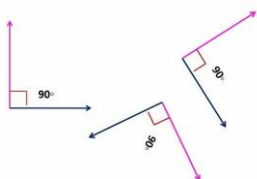
LET'S KNOW MORE ABOUT RIGHT ANGLES

When two straight lines intersect each other and are perpendicular to each other at the intersection, they form the right angle. We get four right angles.

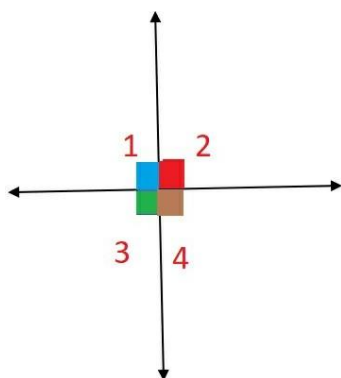


Have you wondered why a 90-degree angle is called a right angle and why not left angle? The term right in right angle is used because the standing line is upright in relation to the base line.

All right angles are the same. A right angle is represented by the symbol $\perp$. A Right angle 90° is always marked by a square mark where as the other angle are marked by an arc.



All right angles correspond to quarter of a complete turn. A complete turn is 360° . Therefore quarter of a complete turn is 90° .



We use right angle in a map to describe directions? Can you look at the below map and say HOW?

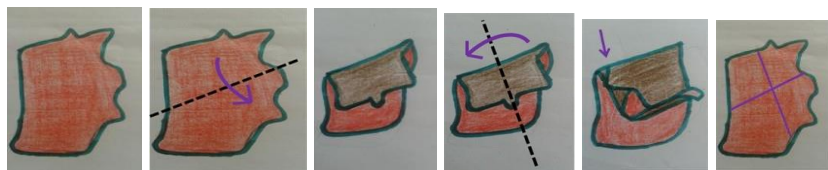


In this map, we say that 1st Cross makes a right angle with Main Street because it goes as 'straight' away from Main Street as possible.

We are always told to sit in a right posture. We also follow the right posture because it is very difficult to sit in a wrong posture. For how long can a person sit in an obtuse angle or acute angle position. The right posture comes at right angle i.e. 90 degrees.



You can construct a right angle just by folding paper, even one that has been ripped so that there are no straight edges!



When you unfold the piece of paper, the two creases will be perpendicular to each other. The four angles are all right angles. The straight line of the original crease forms a straight angle (180°) around any point on it. Folding through that point bisects the angle, so the resulting angles are each 90° , and so they are right angles.

Right angle is the correct angle required for many construction tasks-laying out buildings or putting a pile of notebooks etc. because right angle is the safest and correct angle maintaining balance.

Right angles are found in many geometric shapes and solids.

a) A rectangle has 4 right angles



b) a square has 4 right angles



c) a triangle has 1 right angle



d) A cross has 12 right angles



e) A cube has 24 right angles (6 faces $\times$ 4 right angles for each face)



f) A rectangular prism has 24 right angles (6 faces $\times$ 4 right angles for each face)



Image Source:

Sketches : ORIGINAL (HAND DRAWN SKETCH, USING SHAPES/MS PPT FEATURES)

https://commons.wikimedia.org/wiki/File:Right_angle.svg

Wrong Posture-- <https://pixabay.com/en/desk-chair-man-reading-studying-312591/>

Right Posture-- <https://pixabay.com/en/desk-chair-man-sitting-upright-312593/>

Time to teach	Asset Type	Theme	SubTheme
5 Minutes	Interesting Asides	Angles	

5. DD_Right angles around us

Students can any one tell what is a Right angle? (Elicit response from the children)

Can one of you come to the board and draw a right angle?

What is the measurement of this angle?

Now let us look around us and recollect examples of right angles that we see around us.

- When we stand straight, we make 90 degrees with the floor.
- We also make a right angle when we sit straight with our legs stretched long.
- The window panes have bars intersecting to make right angles.



- The railway track iron bars make right angles with the sleeper blocks, which are perpendicular to it. Have you ever observed it?



- The roads that intersect to form the four way path make a right angle.



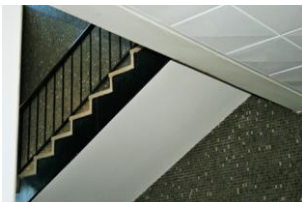
- The lines drawn in the football field make right angles at their corners.



- The corners of the bread are at right angles!



- The edges of the staircase are at right angles! You would have definitely noticed that.



- Right angle bends can be found in manufacturing units in industries.



Image Source:

<https://pixabay.com/en/window-mirroring-sky-reflection-818314>

<https://pixabay.com/en/seemed-railroad-tracks-railway-283811/>

https://en.wikipedia.org/wiki/Traffic#/media/File:Intersection_4way_overview.jpg

https://en.wikipedia.org/wiki/Aberdeen_University_Sports_Union#/media/File:GCASVFootball.jpg – In Public domain

<https://pixabay.com/photos/bread-sandwich-food-plate-table-1867208/>

<http://www.publicdomainpictures.net/view-image.php?image=78001&picture=scala-e-mosaico>

https://en.wikipedia.org/wiki/Bottling_line#/media/File:Budweiser_Plant.jpg

Time to teach	Asset Type	Theme	SubTheme
7 Minutes	Day-to-day Relevance	Angles	

6. MS_Different types of Angles

Instruction to teacher:

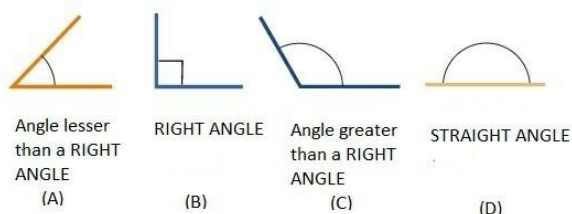
Begin the class with the help of the following questions:

What is a right angle?

Can someone come up to the board and draw a right angle?

Can you identify the right angles visible in the classroom?

Observe the following figures



From the above diagram, we notice that as the angle increases, the description also changes.

Therefore,

1. An angle whose measure is equal to 90° is called a Right Angle.



2. An angle whose measure is less than 90° is called an Acute Angle.



3. An angle whose measure is more than 90° is called an Obtuse Angle.



4. An angle whose measure is equal to 180° is called a Straight Angle.



TYPE OF ANGLE	DESCRIPTION
ACUTE ANGLE	Is less than 90°
RIGHT ANGLE	Is 90° exactly
OBTUSE ANGLE	Is greater than 90° but lesser than 180°
STRAIGHT ANGLE	Is 180° exactly

Image Source:

<https://pixabay.com/photos/house-front-green-door-window-768707/>

<https://pixabay.com/photos/crocodile-mouth-lunch-thailand-1999427/>

<https://pixabay.com/photos/pizza-cheese-food-delicious-tomato-3759513/>

<https://pixabay.com/photos/fan-wind-hand-fan-decorative-4334902/>

<https://pixabay.com/photos/windmill-turbine-renewable-resource-932125/>

<https://pixabay.com/vectors/protractor-angle-geometry-46461/>

Time to teach	Asset Type	Theme	SubTheme
15 Minutes	Main Script	Angles	Types of Angles, Types of A

7. MS_ Angles made by the clock

The teacher can start the class by posing the following questions to the students;

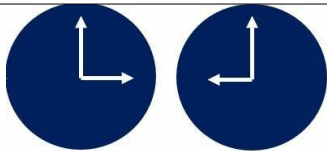
- ▷ Children have you seen a clock?
- ▷ How many hands are there on a clock?
- ▷ What does the big hand indicate (show)?
- ▷ What does the small hand indicate?
- ▷ What does the third hand indicate?
- ▷ Now tell me children, does the position of the hands at different times remind you of anything?

(Elicit response from the kids for the above question)

Now, Children, we're going to take a look at the relationship between clocks and angles. We'll see the kinds of angles that can be formed by the hands of a clock. On a clock, we can see different kinds of angles. Each time the hour hand moves from one number to the next number, it has moved by 30° .

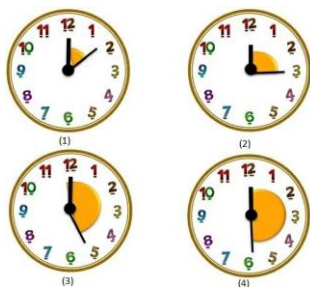


There are many times in a day when the hands of a clock make a right angle. Identify the time in the below clocks:



ANSWERS: 3 O'CLOCK 9 O' CLOCK

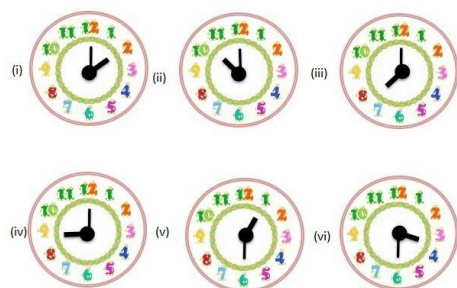
Now, we're going to see other angles that are formed by the two hands of a clock at different times. We can start by looking at the minute hand, the long hand that indicates the minutes. Can you tell from the picture the time and what angle it is?



ANSWERS:

Sl.No	TIME	ANGLE
(1)	12:10	Acute Angle
(2)	12:15	Right Angle
(3)	12:25	Obtuse Angle
(4)	12:30	Straight Angle

Based on what you have learnt now, verify whether the shown angles below are Acute, Right or Obtuse.



ANSWERS :

(i) Acute Angle (ii) Acute Angle (iii) Obtuse Angle (iv) Right Angle (v) Obtuse Angle (vi) Acute Angle

Image Source:

<https://www.needpix.com/photo/1192577/clock-face-clock-time-dial-numbers-colorful-glossy-round>

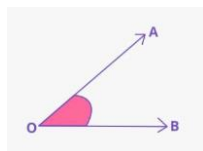
<https://www.publicdomainpictures.net/en/view-image.php?image=325356&picture=clock-face-cartoon-numbers>

All others are original contribution by venkannababu.sssvv@gmail.com.

Time to teach	Asset Type	Theme	SubTheme
15 Minutes	Main Script	Angles	Angles and Time, Angles a

8. MS_Using protractor to measure angles

Let us now learn the parts of an Angle.



□

Arms: The two rays joining to form an angle are called arms of an angle.

Vertex: The common end point at which the two rays meet to form an angle is called the vertex.

It is easy to know the measurement of some angles just by looking at it. Can you tell me which are those?



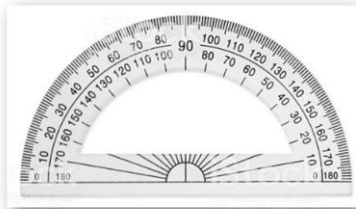
RIGHT ANGLE
Exactly 90 degrees.



STRAIGHT ANGLE
Exactly 180 degrees.

Yes, it is easy to identify and tell the measurement of a Right Angle and a Straight angle.

In case of other angles, you can only say it is an Acute angle or Obtuse angle or say whether the angle is more than 90° or less than 90° . Therefore to find the measurement of an angle we use a PROTRACTOR

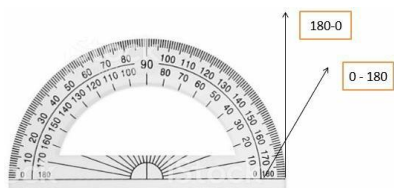


How to measure an angle with a PROTRACTOR

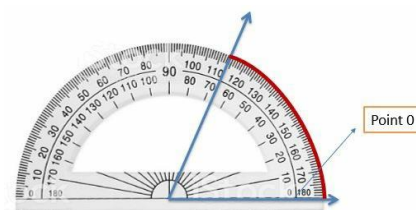
- Place the midpoint of the protractor on the VERTEX of the angle.
- Line up one side of the angle with the zero line of the protractor (where you see the number 0).



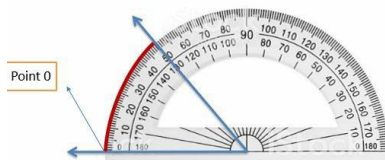
Take care to read from the right set of numbers. A protractor has two sets of numbers: one set goes from 0 to 180, the other set from 180 to 0.



Which one you read depends on how you place the protractor: place it so that one side of the angle lines up with one of the zeros, and read that set of numbers.



In the above figure we lined up the one side of the angle with the zero of the **lower** set of numbers, so we need to read the **lower** set of numbers.



In the above figure we lined up the one side of the angle with the zero of the **higher** set of numbers, so we need to read the **higher** set of numbers.

Now hold your Protractors with you I have some questions for you:

1. Ramu measured an acute angle as 110° . Can you tell what is the actual measure of the angle.
2. Kamala measured an obtuse angle as 60° .
3. Tell me the measure of the below angles by using a protractor.

(The teacher can draw some angles on the board and ask the students to measure the same with the big protractor)

ANSWERS:

1: 70° 2: 120°

<https://pixabay.com/images/search/protractor/>

Time to teach	Asset Type	Theme	SubTheme
20 Minutes	Main Script	Angles	Measuring Angles with Prot Angles with Protractor

9. VA_Shapes &Angles

Always keep your thoughts very high

We have learned that the measure of a right angle is 90° and hence that of a straight angle is 180° . An angle is *acute* if its measure is smaller than that of a right angle and is *obtuse* if its measure is greater than that of a right angle and less than a straight angle.

Looking at people, things and events through a narrow (acute) angle makes us many a time miss more important and more useful or beneficial details because we are looking from a narrow perspective. When you look at life through narrow angle there will be lots of reasons to complain and be miserable.

On the other hand, looking at the problem from a wider angle may make the problem appear very small or insignificant. When you look at life through wider angle which is positive and optimistic you will find better solutions for your problems and there will be lots of reasons to be enthusiastic and joyful.

A family had twin boys whose only resemblance to each other was their looks. If one felt it was too hot, the other thought it was too cold. If one said the TV was too loud, the other claimed the volume needed to be turned up. Opposite in every way, one was an eternal optimist, the other a doom and gloom pessimist.

Just to see what would happen, on Christmas day their father loaded the pessimist's room with every imaginable toy and game. The optimist's room he loaded with horse manure.

That night the father passed by the pessimist's room and found him sitting amid his new gifts crying bitterly.

"Why are you crying?" the father asked.

"Because my friends will be jealous, I'll have to read all these instructions before I can do anything with this stuff, I'll constantly need batteries, and my toys will eventually get broken." answered the pessimist twin.

Passing the optimist twin's room, the father found him dancing for joy in the pile of manure. "What are you so happy about?" he asked.

To which his optimist twin replied, "See dad. I found horse manure here. So, there's got to be a pony in here somewhere!"

Children! Please look at any situation from a wide (positive) angle rather than a narrow (acute) angle and you will find your answer.

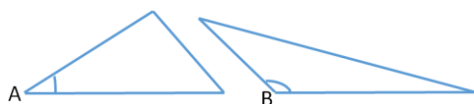
Time to teach	Value Type	Value Sub Type	Value Attribute
5 Minutes	Truth		Stories

10. QA_Questions on Shapes and Angles

All questions in this asset document can be asked in the form of oral quiz .

Based on the two triangles in each question, which of the following is true about angles A and B?

Ques:

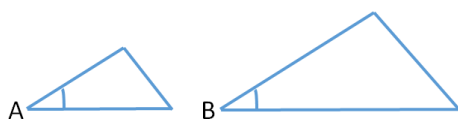


- $\angle A > \angle B$
- $\angle A < \angle B$
- $\angle A = \angle B$
- None of the above

Hint: Identify A & B are what type of Angles.

Ans: (b)

Ques:

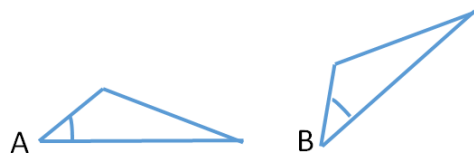


- a. $\angle A > \angle B$
- b. $\angle A < \angle B$
- c. $\angle A = \angle B$
- d. None of the above

Hint: Are the shapes the same? When shape is same, angles are the same even though the size is different.

Ans: (c)

Ques:



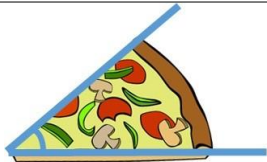
- a. $\angle A > \angle B$
- b. $\angle A < \angle B$
- c. $\angle A = \angle B$
- d. None of the above

Hint: Angles remain the same when shapes are the same even though the shape is rotated.

Ans: (c)

Questions illustrating changes in shapes with angles:

The teacher to show the following pizza slice and highlight the angle at its edge.

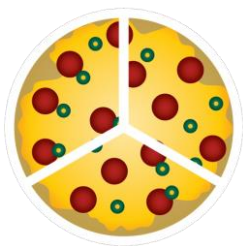


Ques:

What kind of angle is formed at the edge of each slice, when a full pizza is cut into three equal slices?

- a. Acute
- b. Obtuse
- c. Right
- d. Straight

Hint: A complete circle is 360° . Therefore $\frac{1}{3}$ rd of 360° is 120°



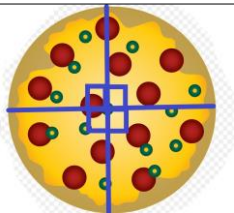
Ans: (b)

Ques:

What kind of angle is formed at the edge of each slice, when a full pizza is cut into four equal slices?

- a. Acute
- b. Obtuse
- c. Right
- d. Straight

Hint : A complete circle forms a 360° . Therefore, $\frac{1}{4}$ th of circle which is $\frac{1}{4}$ of 360° is 90° .



Ans: (c)

The teacher tells students to notice the differences in the shapes of pizza slices when the angle is changed from obtuse to right angle.

Questions using the hands of a clock:

Ques:

Fill in the blanks: What kind of angle is formed between the hands of a clock?



(A)



(B)



(C)



(D)



(E)

(A) : _____

(B) : _____

(C) : _____

(D) : _____

(E) : _____

Ans:

A – Obtuse

B – Acute

C – Right

D – Obtuse

E – Straight

Questions on angles inside alphabets:

The teacher explains that even alphabets contain angles. The teacher shows the following alphabet “L” and the right angle as an example:

L

Ques:

Can you fill the number of right, obtuse and acute angles in each alphabet in the following word?

A N G L E

	Number of Right Angles	Number of Obtuse Angles	Number of Acute Angles
A			
N			
G			
L			
E			

Ans:

A N G L E

	Number of Right Angles	Number of Obtuse Angles	Number of Acute Angles
A	0	2	3
N	0	0	2
G	4	0	0
L	1	0	0
E	4	0	0

Questions about angles in daily life:

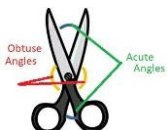
Ques:**Can you mark two right angles in the street lamp below?****Ans:****Ques:****Can you mark two acute and two obtuse angles in the scissors below?****Ans:**

Image source:

<https://pixabay.com/en/pizza-slice-food-lunch-dinner-31782>)

<https://pixabay.com/en/pepperoni-pizza-pizza-italian-976464>)

<https://pixabay.com/en/pepperoni-pizza-pizza-italian-976464>)

<http://www.freestockphotos.biz/stockphoto/16760>)

<http://www.publicdomainpictures.net/view-image.php?image=42343&large=1>)

<http://www.freestockphotos.biz/stockphoto/16537>)

Time to teach	Asset Type	Theme	SubTheme
15 Minutes	Assessments	Line, Curve & Angle	

11. MS_Summary-Shapes and Angles

Summary of the lesson - Shapes and Angles

1. Learnt different types of closed shapes that are formed by lines.
2. These shapes change based on
 - the number of sides
 - length of sides and
 - change in angles
3. Learnt about Right Angles.
4. Discussed Right angles around us.
5. Learnt about other types of angles with relation to Right Angles.
6. Discussed various angles in Daily life.
7. Learnt about angles made by the clock hands. Identified the angles and named them.
8. Learnt to measure the angles using Protractor.

Time to teach	Asset Type	Theme	SubTheme
5 Minutes	Main Script	Line, Curve & Angle	