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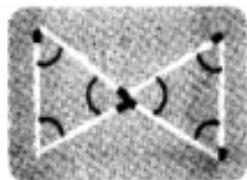
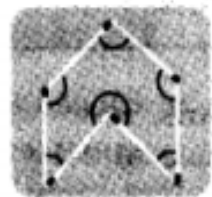
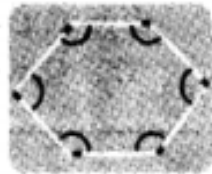
Rohini made this shape.

Mohini : Is it a closed shape or an open shape?

Rohini : It is a closed shape.

Mohini : How many sides are there?

Rohini : It has 6 sides.



1. Mohini made this. Now you give the answers.

(a) Is it a closed shape?

Ans. Yes.

(b) Does it have 6 sides?

Ans. Yes

But it is not the same as the one made by Rohini. So Mohini tried again.

2. This is what she made.

(a) Is it a closed shape with 6 sides?

Ans. Yes.

(b) Is it the same as one made by Rohini?

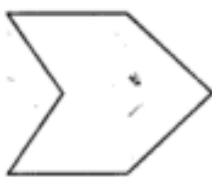
Ans. Now

(c) Is there some way to say in what way these shapes are different?

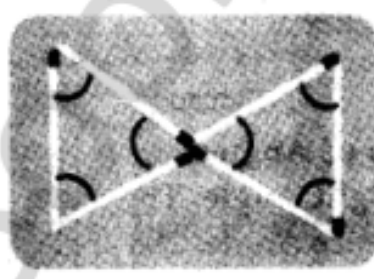
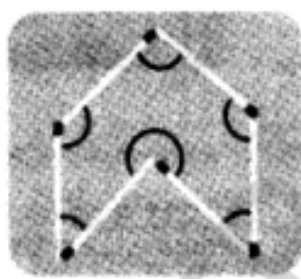
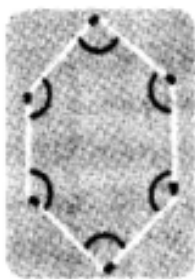
Ans. These shapes differ in angles.

(d) Mohini tried again but got different shapes. Guess and make two more shapes Mohini could have made.

Ans. Mohini could make following shapes.



(e) Look at the angles marked in these shapes. Can you see the difference?



Ans. Yes, angles made in these figures are different which change the shapes.

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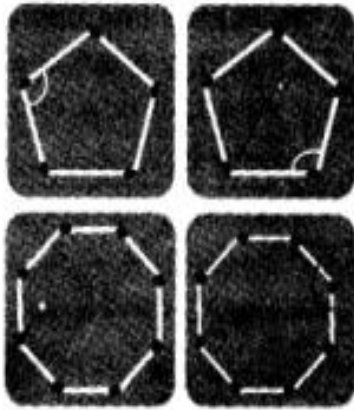
Practice Time

1. Look at the shape and answer.



• The angle marked in—colour is the biggest angle.

Ans. Black.



(a) Are the angles marked with yellow equal?

Ans. Yes.

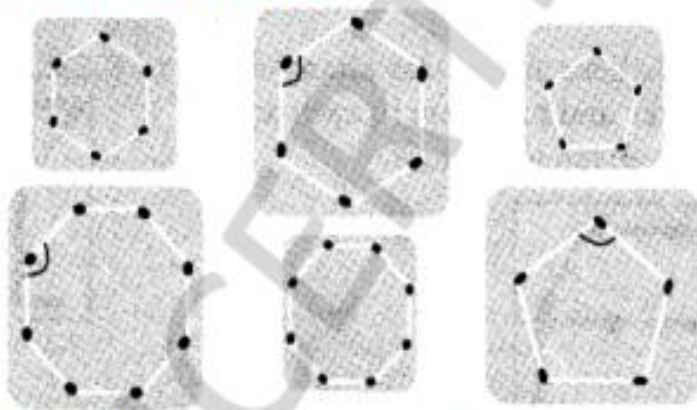
(b) Are the angles marked with green equal?

Ans. Yes.

(c) Are the angles marked with blue equal?

Ans. Yes.

2. Four different angles are marked in four colours. Can you find other angles which are the same as the one marked in red? Mark them in red. Do this for other colours.



Ans. The angle marked in yellow is same as the one marked in red.

All angles of the hexagon are same as the angle marked in green.

All angles of the octagon are same as the angle marked in black.

3. How many different shapes can you make by changing the angle between the matchsticks in each of these? Try.

Ans. Following shapes can be made by changing angles.



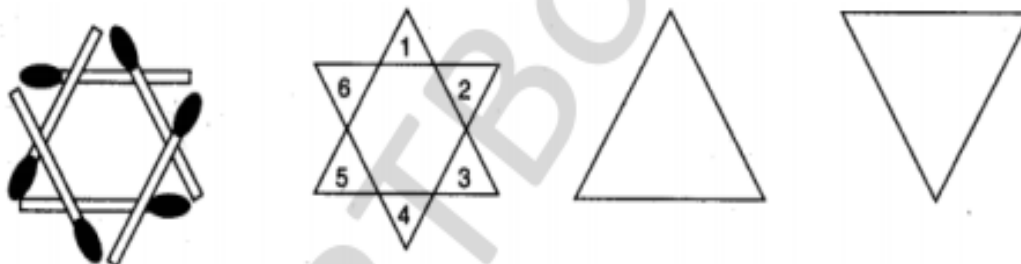
You can increase the number of matchsticks to make more shapes.

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Matchstick Puzzles

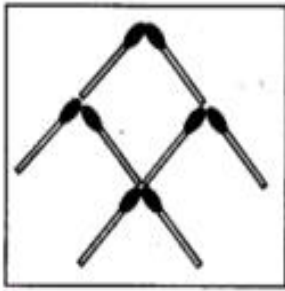
1. Make 8 triangles using 6 matchsticks. Try!

Ans.

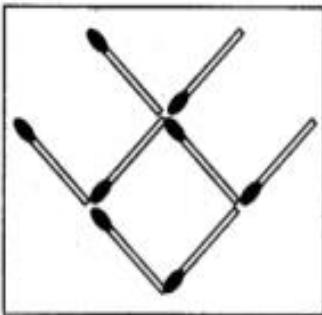


6 small triangles and 2 big triangles sum up to 8 triangles.

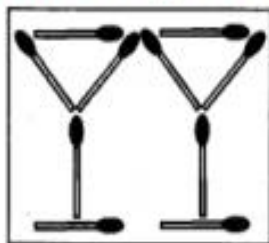
2. Take 8 matchsticks and make a fish like this. Now pick up any 3 matchsticks and put them in such a way that the fish now starts swimming in the opposite direction. Did it?



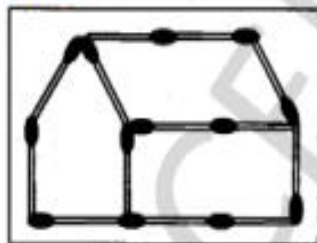
Ans.



3. Using 10 matchsticks make this shape. Pick any 5 matchsticks and put them in such a way that you get the shape of a house.



Ans.

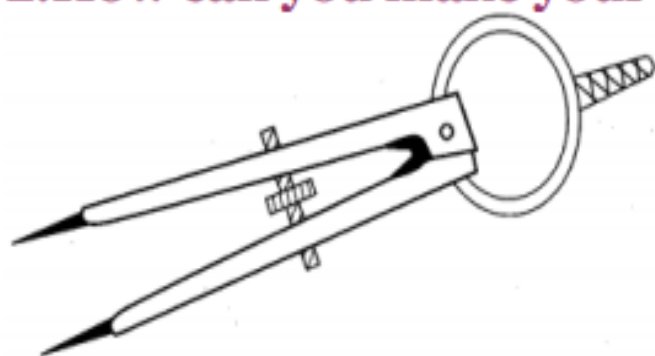


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Angle Tester**

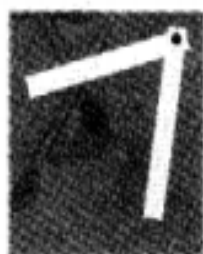
1. How do we make equal angles?

Ans. We can use the divider from the geometry box to make equal angles. Measure an angle with the help of the divider and make another angle of equal measurement. The divider is also called the angle tester.

2. How can you make your own angle tester?



Ans. For this, you need following materials; cardboard strips, drawing pins or split pin. Take two cardboard strips of same size. Join their one ends with the help of the drawing pin or split pin. Move the strips from joint so that they can freely rotate. Your angle tester is ready.



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1. Sukhman made this picture with so many angles. Use colour pencils to mark.

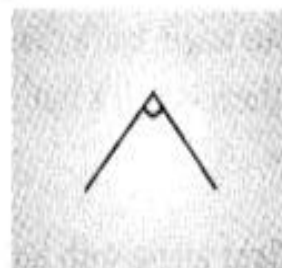
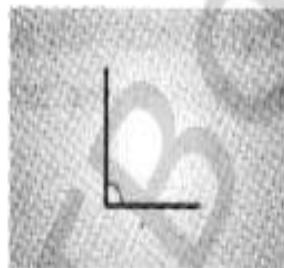
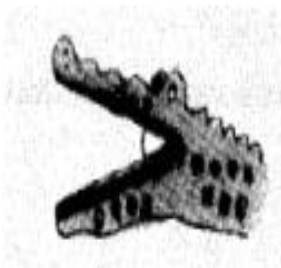
- Right angles with black colour.
- Angles which are more than a right angle with green.
- Angles which are less than a right angle with blue.



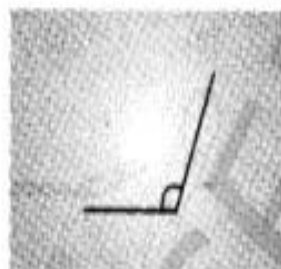
Ans. In the given picture:

- Right angles are shown by the letter 'R'.
- Angles which are more than the right angle are shown by the letter 'O'.
- Angles which are less than the right angle are shown by the letter 'L'.

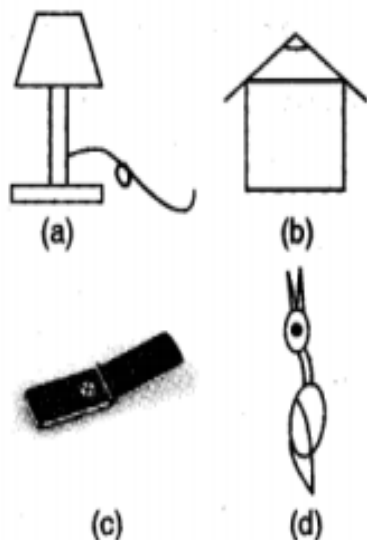
2. Draw anything of your choice around the angle shown. Also write what kind of angle it is. The first one is done.



Less than a right angle



Ans.



(a) Table Lamp (Right angle)

(b) Roof (More than right angle)

(c) Flip on mobile phone (More than right angle)

(d) Bird's beak (less than right angle)

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1. Activity

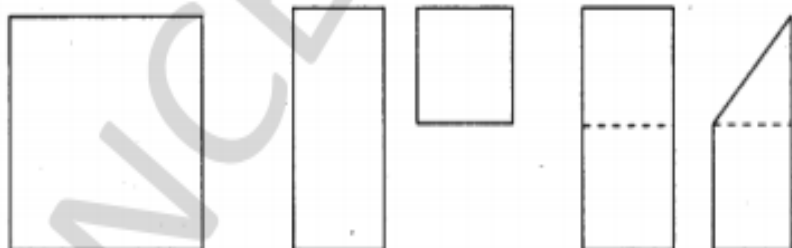
(a) Take a square sheet of paper.

(b) Fold it in half.

(c) Fold it once more and press it.

(d) Open the last fold so that the sheet is folded in half.

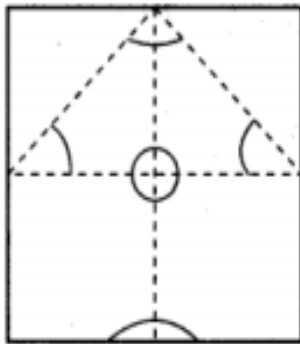
(e) Take one corner and fold it to meet the dotted line.



On the paper you will find lines making a right angle, an angle less than a right angle and an angle more than a right angle.

Look for each of the angles and mark them with different colours.

Ans. Angles are marked in the following figure;



2. Activity: Angles with your body Can you make these angles?

(a) A right angle with your hand?

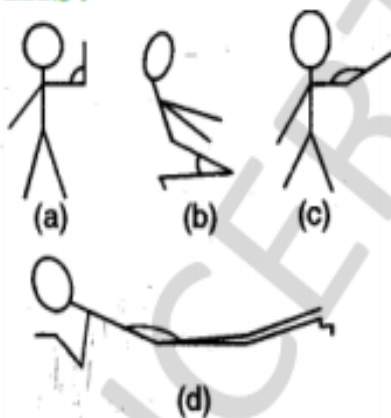
(b) An angle less than a right angle with your leg?

(c) An angle more than a right angle with your arm?

(d) An angle more than a right angle with your body?

Try them out. It's fun! Draw them in your notebook using stick drawings like these.

Ans.



(a) Right angle with hand

(b) Angle less than a right angle with legs

(c) Angle more than a right angle with arm

(d) Angle more than a right angle with body

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Activity

1. Collect some leaves from the garden. Colour each leaf and print it. Look at the angles on the leaves. Which of them are more or less than a right angle?

Ans. Collect leaves of different kind. Apply some paint on them and take the print on paper. With the help of a divider and protractor, measure the angles. Look for the birds which have beaks with small angles.



2. In the picture, mark angles between the two branches. Which two branches have the biggest angle?

Ans. Birds shown by p, q and r have beaks with small angles. Branches shown by A and B have the biggest angles.

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1. Write 3 names using straight lines and count the angles.

Name	Number of right angles	Number of angles more than a right angle	Number of angles less than a right angle

Ans.

Name	Number of right angles	Number of angles more than a right angle	Number of angles less than a right angle
MEENA	8	3	7
TEENA	9	2	2
LALLAN	3	4	4

2. Activity

(a) Put 10 Math-Magic books on top of each other. Keep one book slanting to make a slide.

(b) Now do this with six books.

• Roll a ball from the top. From which slide does the ball roll down faster?

• Which slide has the smaller angle?

Ans. The ball rolls down faster, from the slide made by 10 books.

The slide made by 6 books has smaller angle.

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1. These are two slides in a park.

• Which slide has a larger angle?

• Which slide do you think is safer for the little boy?

Why?

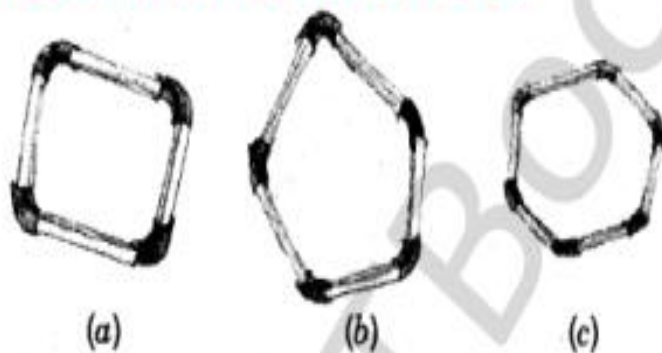


Ans. The slide on the left side has larger angle. The slide on the right side of the boy is safer for the little boys because its angle is smaller than the other slide.

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Changing Shapes

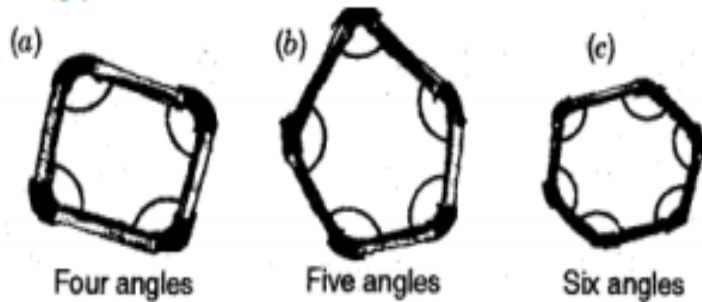
1. Now make these 4, 5, 6 sided shapes by using tube pieces and matchsticks.







Find out how many angles are there in each of these shapes. Mark them.

Now push each shape downwards with the tip of your finger. Does the angle change when pushed down by the finger? Find out and write your results in the table given:

Ans.



When a shape is pushed downwards by the finger, the angles are shown in the following table:

Shape				
Change in angle	Yes	Yes	Yes	No

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1. Shapes and Towers

- From the activity 'Changing Shapes' can you guess why triangles are used in these towers, bridges, etc.?
- Look around and find out more places where triangles are used.

Ans. • A triangular shape is strong and does not change easily when pressed.

Triangular shapes are used in bridges, towers, etc. to make them stronger.

- Triangles can be found in following structures:

Railings, Bus stops, railway stations, community halls, etc.

2. Angle and Time

There are many times 4 in a day when the hands of a clock make a right angle. Now you draw some more.

Ans.



3:00



9:00



10:05

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1. Write what kind of angle is made by the hands at these times. Also write the time.

Ans.



7:25



8:15



9:10



9:25

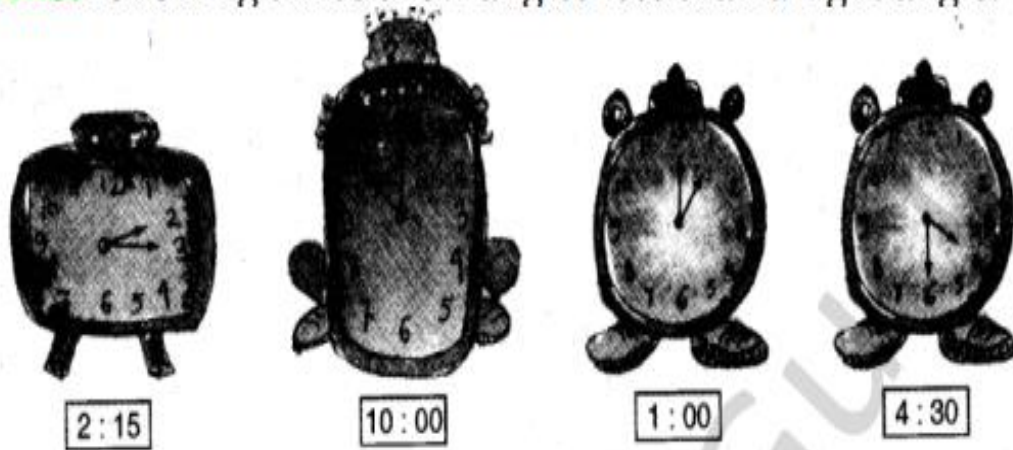


10:00

2. Draw the hands of the clock when they make an angle which is less than a right angle, Also write the time.



Ans. Following times show angles less than a right angle.



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Degree Clock

1. Use your degree clock to measure the right angle of your pencil box. **Ans.** 90° is the measure of the right angle.

Can you guess how many degrees is the angle which is:

- (a) $1/2$ of a right angle
- (b) $1/3$ of a right angle
- (c) 2 times of a right angle

Ans. (a) 45° (b) 30° (c) 180°

2. Measure the angles from where Kittu should hit the striker on page 30.

Ans. The measure of the angle from where Kittu should hit the striker is 30° .

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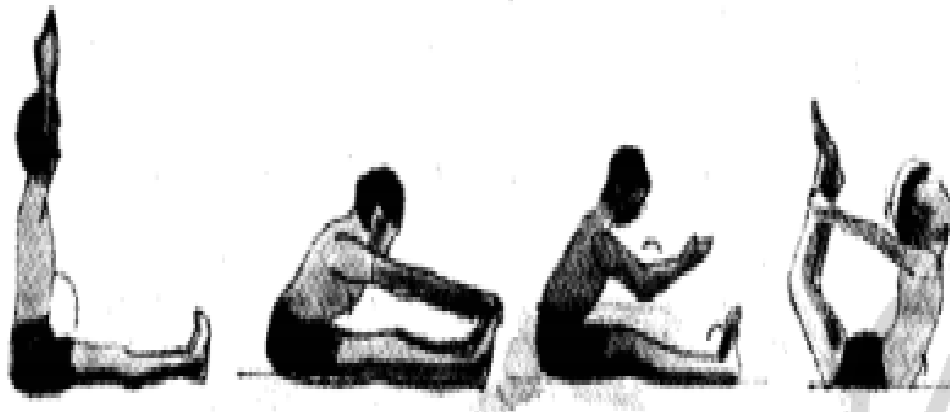
1. Find the angle of 45° and 90° when you open your plane.

Ans. For this, make a paper airplane and measure the angles at different folds.

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Angles With Yoga

Rahmat is doing yoga. These are the pictures of different 'Asanas' he does everyday.



2. Measure as many angles as you can made by different parts of the body while doing 'Asanas'

Ans.

	<i>Angle between body parts</i>	<i>Measurement of angle</i>
(a)	Thigh and abdomen	90°
(b)	Thigh and abdomen	Less than 90°
(c)	Arm and hand	More than 90°
(d)	Thigh and leg	More than 90°