



Master Lesson Plan

For

Mensuration

Board	Standard	Subject	Chapter	Language	Reference Link	Creation Date
CBSE	STD VI	Mathematics	Mensuration	English	Mensuration	2020-09

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Mensuration

1. MS_Objectives - Mensuration

Notes to the teacher: This asset lays down the proposed plan for transacting this chapter. It states the asset objectives of the MLP. This asset is for teacher's reference and need not be taught to the students. There is no ppt for this asset.

Students will be able to:

1. Identify the distance covered by an athlete or a child running in the playground.
2. To relate to the concept of perimeter and calculate the perimeter of closed figures.
3. To calculate the perimeter of regular polygons and rectangle.
4. To solve the problems to find the perimeter.
5. To apply the method of counting squares for finding the area of any closed figure.
6. To distinguish the concepts of perimeter and area.
7. To calculate the area of a rectangle and square by using formula.
8. To apply the concept of perimeter and area while performing the activities.
9. To accept what you are and be helpful.
10. To list the use of area and perimeter in daily life.
11. To discover an interesting formula to find the area of a circle with the help of a square.
12. To solve the questions based on the concepts of area and perimeter.
13. To solve the word problems using the appropriate formula.

Time to teach	Asset Type	Theme	SubTheme
5 Minutes	Main Script	Perimeter & Area	Unit of area and conversion regular shapes (square and triangle), Perimeter of regular shapes (square and equilateral triangle), Perimeter of rectangle, Definition of Perimeter, Area of regular polygon, Perimeter of rectangle and square, Unit conversions, Perimeter of irregular shapes (square and equilateral triangle), Perimeter of regular polygon, Definition of Perimeter, Perimeter of irregular polygons, Area of square

2. IQ_Method of Measuring Distances

Do you have an idea how to find out the total length of the playground or stadium?

Also, do you know how much distance has the athlete covered?



Possible Answers

- 1) We get the total length of the playground by measuring the sides of the playground or stadium with the help of a tape and then adding them all up.
- 2) We can calculate the distance covered by measuring the distance covered in each round and multiplying it with the number of rounds the athlete has completed.



If the ground/stadium does not have sides, i.e. if it is in the shape of an oval or a circle, how will you find the distance?

How do you Measure Distances Covered in Oval and Circular Shapes?

Sometimes, we observe children running in the playground of our school or stadium. Athletes and students who are practicing for sports need to practice running certain distances in fixed time.

Answer:

Measure the boundary of the ground using the rope and then find the length of the rope.

Similarly, there are many situations where we need to measure the boundaries.

Conclusion: Children will correlate the concept of Perimeter by answering the above questions.

Image Source:

Playground: <https://pixabay.com/photos/stadium-brisbane-aerial-view-sport-560668/>

Athlete : <https://pixabay.com/photos/olympics-2004-athens-greece-10-84221/>

Time to teach	Asset Type	Theme	SubTheme
5 Minutes	Inquisitive Questions	Perimeter & Area	Definition of Perimeter, Defi Perimeter

3. MS_Perimeter of Closed Figures

Observe the following figures:

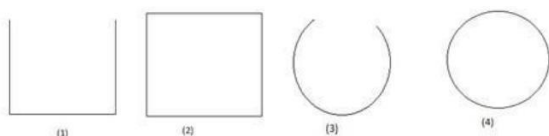


Fig (2) and (4) are closed figures as they start and end at the same point.

To understand the boundary of a plane figure, we need to select closed figures.

Example 1 :

In order to fence the boundary of a field, a farmer takes the total length of a boundary.

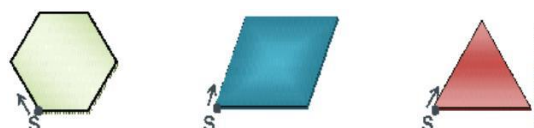
While building a compound around a house, an engineer measures the boundary of that compound.

Hence, the total length of the boundary is nothing but the perimeter.

Perimeter of a closed plane figure is the total length of the boundary of the figure.

Example 2:

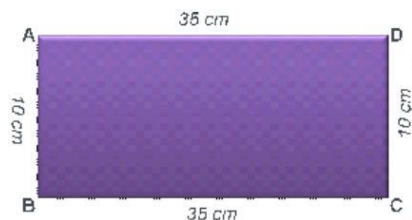
Draw the following figures on the board.



Start from the point 'S' in each figure and move along the line segments, finally to reach the same 'S' point. These kind of figures are known as closed figures. The starting point to the end point of a closed figure makes a complete round. The distance from the starting point to the end point is known as the '**PERIMETER**' of the closed figure.

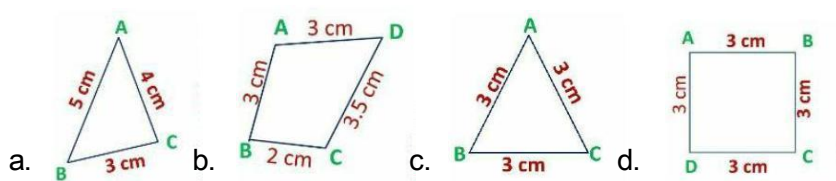
Perimeter is the distance covered along the boundary of a closed figure when you go around the figure once.

Find the perimeter of the following figure:



Perimeter of the figure ABCD = $AB + BC + CD + DA = 10 + 35 + 10 + 35 = 90$ cm

Some More Examples



Solution

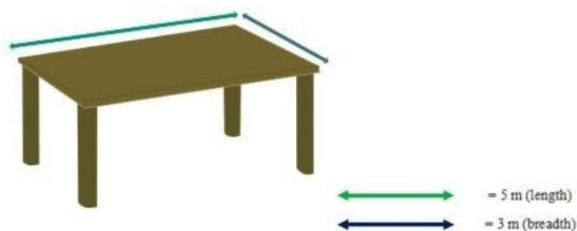
a) $3 + 5 + 4 = 12$ cm (b) 11.5 cm (c) 9 cm (d) 12 cm

[For the above figures students can find the perimeter]

Let us see another example.

Example 3

Sheebawants to decorate a rectangular table cover with a lace border. The table cover is 5 m long and 3 m wide. Find the length of the lace required.



Sheebawants to put a lace border all around the table cover. Therefore, the length of the lace required will be equal to the perimeter of the rectangular table cover.

The perimeter of the table is $= l + b + l + b = 5 + 3 + 5 + 3 = 16$ m.

Hence, Sheeba needs 16 m of lace.

Image Source:

Table – CC0 - <https://openclipart.org/detail/29252/wooden-table>

All the other images are original (girijashankeran@gmail.com)

Time to teach	Asset Type	Theme	SubTheme
20 Minutes	Main Script	Perimeter & Area	Definition of Perimeter, Defi Perimeter

4. MS_Perimeter of Regular Polygon and Rectangle

Regular Polygons

A polygon is a closed plane figure bounded by straight lines.

A regular polygon is a polygon in which all sides and angles are equal.

To find the Perimeter of a regular polygon, we measure the length of a side and multiply it by the number of sides of the polygon.

Square:

Perimeter of a Square = Sum of the 4 sides

Since all the 4 sides and all the 4 angles are equal in a square,

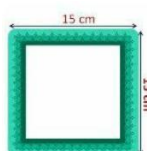
Perimeter of a square = $4 \times$ Length of a side.

Teacher can show any picture that is shaped in the form of a square.

For example, look at the following figure.

If you want to place coloured ribbon all around the shape, what will be the length of the coloured ribbon you would require?

Fig 1



Perimeter of this square picture = $15\text{ cm} \times 4 = 60\text{ cm}$.

We require 60 cm of coloured ribbon to decorate around the shape.

Equilateral triangle:

Equilateral triangle is a triangle in which all the three sides and all the three angles are equal.



Look at the above equilateral triangle with each side equal to 6 cm. We can find the perimeter of this shape by adding 6 three times. So, Perimeter = $6 + 6 + 6 = 18$. This can also be written as $3 \times 6\text{ cm} = 18\text{ cm}$.

Therefore, we find that

Perimeter of an equilateral triangle = $3 \times \text{Length of a side}$.

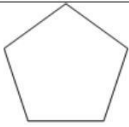
Similarity between a square and an equilateral triangle:

- a) Both the shapes have all sides of equal length.
- b) Both the shapes have all the angles of equal measure.

Such figures are known as Regular closed figures or Regular Polygons.

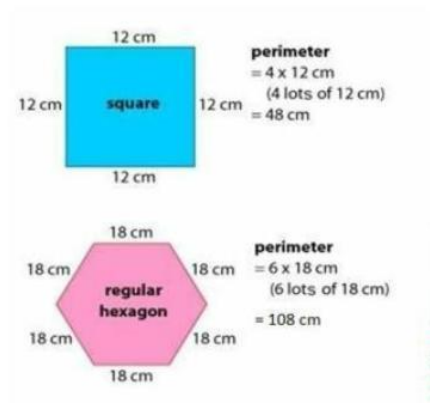
Regular pentagon:

A regular pentagon has five equal sides and 5 equal angles.



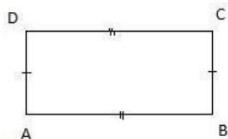
Perimeter of a regular pentagon = $5 \times$ Length of a side.

Some more examples.



Perimeter of a Rectangle - Formula

In a rectangle, opposite sides are equal.



$$AB = CD$$

$$BC = AD$$

Consider a rectangle ABCD of length 'l' units and breadth 'b' units then

$$AB = CD = l \text{ units}$$

$$BC = AD = b \text{ units}$$

$$\text{Perimeter of a rectangle ABCD} = AB + BC + CD + DA$$

$$= l + b + l + b$$

$$= 2l + 2b$$

Hence, perimeter of a rectangle = $2(l + b)$.

Ex:- Calculate the perimeter rectangle of length 7 cm and breadth 4 cm.

Answer:

Given $l = 7$ cm and $b = 4$ cm

Perimeter of a rectangle $= 2(l + b)$

$= 2(7 + 4) = 2 \times 11 = 22$ cm.

Some more examples:

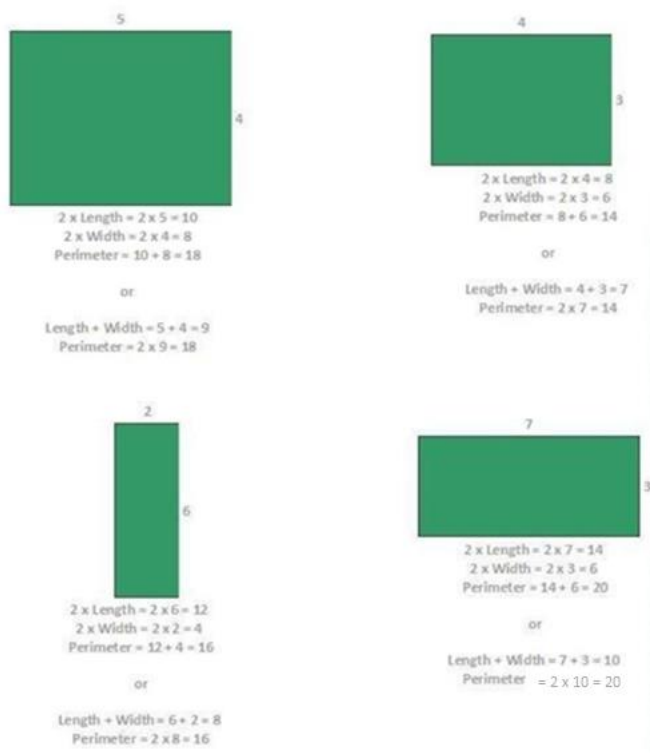


Image Source:

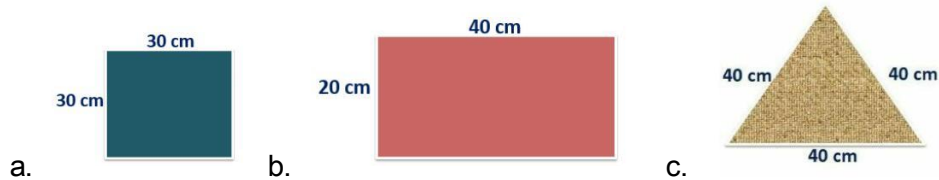
Image of square picture (Fig 1) -1. <https://pixabay.com/pl/illustrations/rama-wst%C4%85%C5%BCka-po-stronie-notatnik-1578146/>

All the rest of the images are original (girijashankeran@gmail.com)

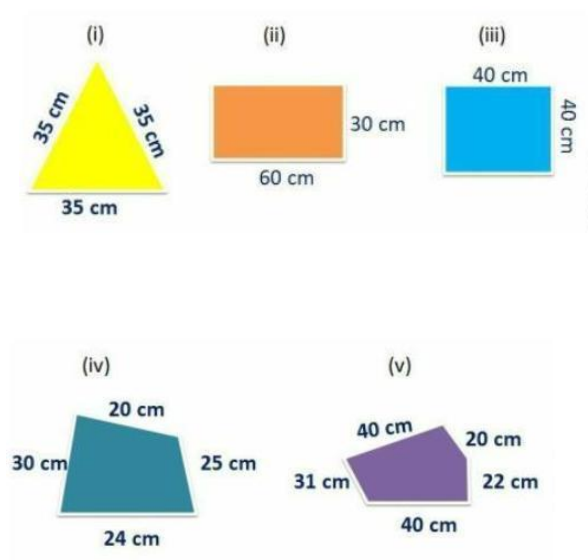
Time to teach	Asset Type	Theme	SubTheme
20 Minutes	Main Script	Perimeter & Area	Perimeter of regular shapes (equilateral triangle), Perimeter of irregular shapes (square and equilateral triangle)

5. QA_Exercise on Perimeter

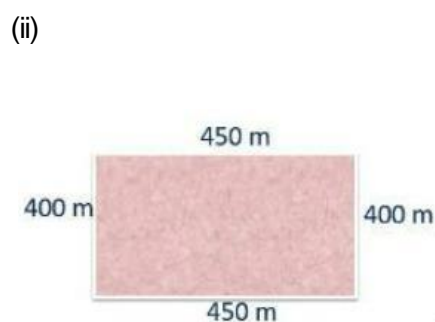
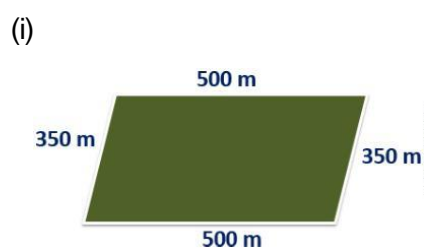
1. Find the perimeter of the following figures.



2) Find the perimeter of each of the following polygons.



3) The measure of each side of the following shapes is given. Find the perimeter of each shape.



(iii)



4. A piece of lace is 45 cm. What will be the length of each side if the lace is used to form:

- I) A square.
- II) An equilateral triangle.

Solutions:

1) (a) $4 \times 30 = 120$ cm (b) $2 \times (20 + 40) = 120$ cm (c) $3 \times 40 = 120$ cm

2) (i) 105 cm (ii) 180 cm (iii) 160 cm (iv) 99 cm (v) 153 cm

3) (i) 1700 m (ii) 1700 m (iii) 2750 m

4) (i) Let side of a square be "a". Then $4a = 45$, $a = 45/4$, $a = 11.25$ cm

(ii) Let side of an equilateral triangle be "a". Then $3a = 45$, $a = 45/3$, $a = 15$ cm

Image Source: All images are original contribution (girijashankaran@gmail.com)

Time to teach	Asset Type	Theme	SubTheme
20 Minutes	Assessments	Perimeter & Area	Perimeter of regular shapes (equilateral triangle), Perimeter of shapes (square and equilateral triangle)

6. MS_Area - Method of Counting Squares

Introduction

We have learnt how to calculate the perimeter of a rectangle, a square, an equilateral triangle and some more regular shapes.

Now we are going to study something more about these figures, which we call it as AREA.

The amount of surface enclosed by a closed figure is called its AREA.

Now, let us observe the following figures. We can easily see that the area of (a) is greater than that of (b).

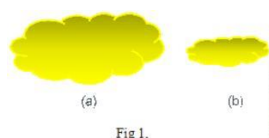


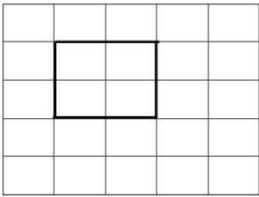
Fig 1.

In the following figure, the shapes are different. It is not easy to compare their areas.

Graph sheets are used to find the area of different shapes. The area of one full square is taken as 1 sq unit. If it is a cm sq sheet, then every square measures 1 cm x 1 cm and the area of one full square will be 1 sq cm.



By counting the number of squares the shape covers, we can calculate the area of the shape. In the graph sheet, a figure covers 4 squares. Hence, **it's area is 4 sq.cm.**



But all the shapes cannot be drawn as neat as this and cannot cover squares so perfectly.

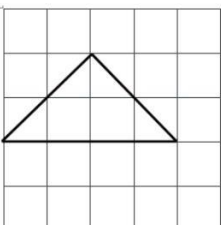
Let us look at the following figures:



Finding the area of the above figure is not easy.

We can overcome this by adopting a convention:

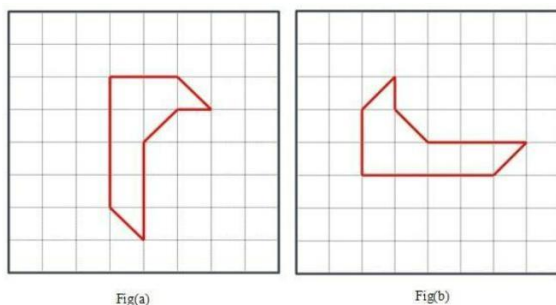
- 1) The area of one full square is taken as 1 sq unit. If it is a cm sq sheet, the area of one full square will be 1 sq cm.
- 2) Ignore portions of the area that are less than half a square.
- 3) If more than half of a square is included in a region, just count it as one square.
- 4) If exactly half the square is counted, take its area as $\frac{1}{2}$ sq. unit.
- 5) This gives a fair estimate of the desired area.



This triangle covers 2 full squares and 4 half squares. Now 4 half squares cover 2 full squares. Therefore, totally it covers 4 squares.

By counting the number of squares the shapes cover, we can compare the areas of different shapes.

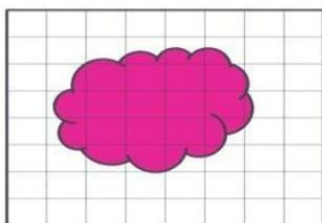
Look at following figures:



Figure(a) occupies 5 squares and 3 half squares and Figure(b) occupies five squares and three half squares. Therefore, both figures occupy 6 squares and one half square and hence, cover the same area.

To compare areas, graph sheets are useful.

Let us find the area of the following figure.



Covered area	Number	Area estimate (sq.units)
Fully-filled squares	10	10
Approx. half-filled squares	3	$3 \times \frac{1}{2}$
More than half-filled squares	5	5
Less than half filled squares	8	0

$$\text{Total Area} = 10 + 3 \times \frac{1}{2} + 5$$

$$= 10 + \frac{3}{2} + 5$$

$$= \frac{(20+3+10)}{2}$$

$$= \frac{33}{2}$$

$$= 16\frac{1}{2} \text{ sq. units.}$$

Image Source:

Leaves : <https://pixabay.com/en/leaves-autumn-fall-foliage-leaf-2854358>

<https://pixabay.com/en/leaves-foliage-nature-leaf-autumn-2815397>

Image of graph sheet : Original by girjashankeran@gmail.com

Time to teach	Asset Type	Theme	SubTheme
15 Minutes	Main Script	Perimeter & Area	Area of rectangle and square rectangle and square

7. IQ_Analyse your answer

1. If we double the sides of a rectangle, which of the answers is correct?

- (a) Area only doubled
- (b) Perimeter only doubled
- (c) Perimeter and Area both doubled
- (d) None is true

Solution: Perimeter will be doubled but not the area.

Reason: Suppose l and b are the length and breadth of a rectangle then,

Area of a rectangle $= l \times b$.

If length $= 2l$ and breadth $= 2b$ then,

New Area $= 2l \times 2b = 4 \times (l \times b) = 4$ times area of original rectangle.

Perimeter of Rectangle $= 2(l + b)$

New Perimeter $= 2(2l + 2b) = 2 \times 2(l + b) = 2$ times perimeter of original rectangle.

*$\therefore$ If the sides are doubled, then new perimeter
= double the old perimeter*

Hence, the answer is b.

Conclusion: Teacher can justify the above statement by giving some more examples and bring in the concept of Perimeter and Area.

Time to teach	Asset Type	Theme	SubTheme
5 Minutes	Inquisitive Questions	Perimeter & Area	Perimeter of rectangle, Perimeter of square

8. MS_Area of Rectangle and Square- Formula

To find the Area of Rectangle and Square using Formula:

Area of different shapes is calculated by counting the number of squares, half squares and more than half squares.

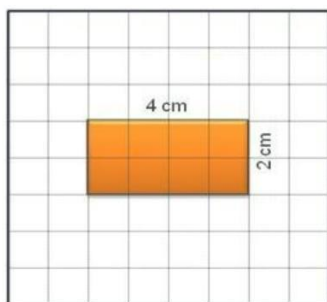
Now let us see how area of two known figures- rectangle and squares- are calculated with the help of formula.

Suppose l is the length and b is the breadth of a rectangle, then, area of the rectangle is defined by,

$$\text{Area} = \text{length} \times \text{breadth} = l \times b$$

If the length of a rectangle is 4 cm and breadth is 2 cm, then,

$$\text{Area} = 4 \times 2 = 8 \text{ Sq. cm}$$



Let us verify the same using a graph sheet. The rectangle covers 8 squares where each measures 1 cm x 1 cm.

$$\text{Thus, Area} = 8 \text{ Sq. cm}$$

If we take a square, then area of a square is defined by,

$$\text{Area} = \text{Side} \times \text{Side}$$

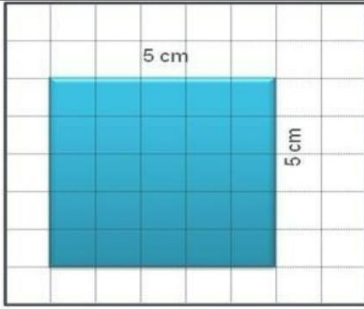
Hence, if ' a ' is the length of each side of a square, then $\text{area} = a \times a$ sq. unit.

Imagine a square has side of length 5 cm. Then,

$$\text{Area of the square} = 5 \times 5 = 25 \text{ Sq. cm.}$$

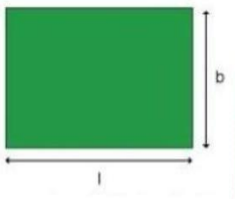
Again, let us verify it using graph

sheets.



In the graph sheet, the square covers 25 squares. Thus, the area of the square = 25 sq.cm.

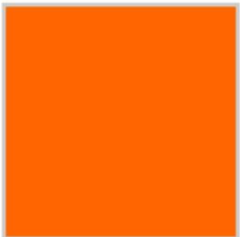
Example : Find the area of rectangle whose length is 10 cm and breadth is 7 cm.



Area = Length x Breadth

Area of the rectangle = Length x Breadth = $10 \times 7 = 70$ Sq. cm.

Example: Find the area of a square whose side is 25 cm.



Area of the square = side x side = $25 \times 25 = 625$ Sq. cm.

1) Find the area of the rectangular park whose length is 10m and width is 6m.

Ans: 60 Sq.m

2) Find the area of square water pond whose side is 6m.

Ans: 36 Sq.m.

All images are original (girijashankaran@gmail.com)

Time to teach	Asset Type	Theme	SubTheme
15 Minutes	Main Script	Perimeter & Area	Area of rectangle and square rectangle and square

9. SA_Fun with Activity

Activity 1

Type of Activity : Individual

Setting of Activity: Classroom

Aim: To make the children calculate the perimeter of an object available to them.

Materials Required: Mathematics text book, note book, pen, pencil and scale/ruler.

Step 1: Ask the children to take their Mathematics text book.

Step 2: Let them measure the sides of the book and write the values in their Mathematics note book.

Step 3: Ask the students to calculate the perimeter.

Step 4: Ask the students one by one to give the answer.

Step 5: Conclude that almost all of them get the same answer.

Conclusion: All their Mathematics books have the same perimeter.

Activity 2

Type of Activity : Individual

Setting of Activity : Classroom

Aim: To make the children calculate the perimeter of some figures they have drawn.

Materials Required: A white paper, a sketch pen and a string.

Step 1: Ask the students to draw different shapes on the white paper.

Step 2: Ask the children to name the shapes (Like figure 1, figure 2,...etc).

Step 3: Ask the children to draw a table as given below.

Step 4: Ask the children to find lengths of sides of figures using scale/ruler and write the values in the table.

Calculate the perimeter as the sum of lengths of sides and write the value in the last column.

Step 5: Ask the children to measure the perimeter of each figure using the string and write the value below the figure.

Fig/Shapes	No. of Sides	Length of each side	Perimeter(units)

Step 6: Compare the values obtained in Step 4 and Step 5.

Conclusion: To check whether the perimeter is the same when measured with the string and when calculated. Also, perimeter of any shape can be calculated.

Activity 3:

Type of Activity: Group (depending on the class strength, 2 or 3 students form a group each)

Setting of Activity : Classroom

(One student to draw the shape on the chart, another to count the no. of squares and the last one to find the area)

Aim: To make the children calculate area of improper shapes.

Material required: Graph sheet, 2 leaves each, pencil and eraser.

(Let the teacher inform the students to bring two leaves the previous day itself. Leaves should not be too large or not too small.)

They should be of medium size. Let it cover not more than half the page of a graph sheet)

Step 1: Keep the graph sheet on the table.

Step 2: Spread one of the leaves on the graph sheet.

Step 3: Outline the leaf on the graph sheet.

Step 4: Remove the leaf from the graph sheet.

Step 5: Draw a table as follows.

(Note: Area of 1 square in the graph sheet = 1 sq. unit)

Covered Area	Number	Area estimate(sq units)
Full Squares		
Half Squares		
More than half Squares		
Less than Half Squares		

Step 6: Find the total area by adding the last column. Area estimate will give the area of the object.

Conclusion: Children will be able to find out the area with the help of counting squares.

Time to teach	Asset Type	Theme	SubTheme
15 Minutes	Suggested Activity	Perimeter & Area	Perimeter of regular polygons regular polygons

10. VC_The Perfect Shape

We just learnt how to calculate the Perimeter and area of different types of Geometrical shapes and figures like Squares & rectangles etc. Perimeter of a rectangle = $2 \times (\text{length} + \text{breadth})$ and area = $\text{length} \times \text{breadth}$.

So generally bigger the sides, bigger the perimeter and larger the area.

But children! Remember, big or small, every shape has its own importance and use. The strongest student in the class may not be good in sports. Someone who is the shortest in the class may be the one who scores more marks or sings very well or dances very well.

Let me share a story with you:

One day a camel and a goat went for a walk. They passed over a grove of trees. Since the fence was very high, they could not go into the grove but the camel saw many branches hanging over the fence. Since it was tall, the camel munched up tender leaves from the branches till its stomach was full. It totally ignored the fact that the goat did not get anything to eat. Moreover the camel laughed and said, “**O** friend Goat, it is better to **be tall.**” **Goat** was upset but could not do anything.

They walked along. Soon, they reached a vegetable garden. This time the goat saw a tiny gate that was open. It rushed in and happily munched up plenty of fresh, juicy vegetables. The camel could not squeeze through the gates. After eating to its full, the goat came out and said, “**O** friend camel, **don't** you think it is sometimes better to be **small?**”

Both understood that it was good to be as each is made. They also decided to use each **other's** physical shapes to help each other.

So Children, what does it mean?

It simply means that everyone has a special talent. We need not be jealous of others or feel proud of our talent. Because **very one's** specialty is different. We have to identify special talent within ourselves and use that talent.

smartly to benefit everyone around us.

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

11. DD_Use of Area and Perimeter in our Daily life

Use of Area and Perimeter in our Daily life

Calculation of area and perimeter has a lot of relevance in our daily life. For example,

1) A painter calculates the area of walls to be covered in order to determine how many cans of paint would be needed to cover the walls.



2) In a farm, the area of the plot is used to estimate the number of bags of fertilizers needed for growing crops.



3) Professions such as carpentry and engineering make regular use of the area and the perimeter calculations.

Engineers use perimeters to find out how much material is needed to build a truss (support something with load bearing members).

Example - constructing bridge with iron bars.

Carpenters purchase wooden sheets according to area requirements of the doors. They purchase glass panes according to area of windows. Window frames are purchased by calculating perimeter of the window.



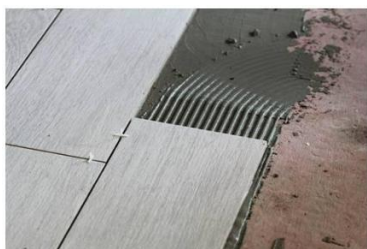
4) In order to fence a garden, the perimeter of the garden should be determined.



5) In order to frame a photo, the perimeter and area of the photo should be calculated in advance.



6) Laying tiles on the floor also requires calculation of the area to be covered.



7) For purchasing a carpet, the area to be covered needs to be calculated.



Image Source:

<Painting>- <<https://pixabay.com/illustrations/painter-wall-color-paint-1027853/>>

<Farm>- <http://www.publicdomainfiles.com/show_file.php?id=13526491218331>

<Engineer>- <http://www.publicdomainfiles.com/show_file.php?id=13548576619666>

<Carpenter>- <<https://pixabay.com/illustrations/craftsmen-schreiner-saw-wood-9470/>>

<Garden with fence>- <http://www.publicdomainfiles.com/show_file.php?id=13548576619666>

<Photo Frame>- <<https://www.goodfreephotos.com/vector-images/gold-and-black-frame-vector-clipart.png.php>>

<Tiles>- <<https://pixabay.com/photos/construction-repair-cement-2748665/>>

<Carpet Area>- <<https://pxhere.com/en/photo/135571>>

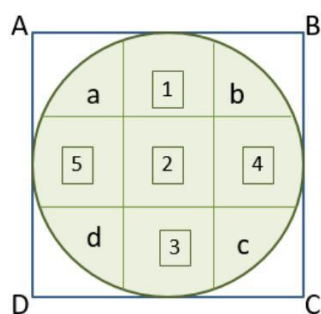
Time to teach	Asset Type	Theme	SubTheme
5 Minutes	Day-to-day Relevance	Perimeter & Area	Perimeter of regular shapes (equilateral triangle), Area of square, Perimeter of regular and equilateral triangle), Area and square

12. IA_Simple trick using vedic maths to find area of circle.

Finding the area of a circle with the help of vedic maths (by counting squares method).

Algorithm

- 1) Assume that a square is surrounding a circle where the diameter of a circle is equal to the side of the square.
- 2) Divide the square into 9 equal parts.



- 3) You can see that the circle covers approximately 7 parts out of 9 small parts of the square. (No. 1 to 5 - full squares and a, b, c, d are - 4 half squares approximately)
- 4) Hence, area of the circle = $\frac{7}{9} \times \text{area of the square}$.

Example:

Take the radius of the circle as 3 cm.

Then side of the square = a = diameter of the circle = 6 cm.

Area of the square = $a \times a = 36 \text{ sq. cm.}$

Area of the circle = $\frac{22}{7} \times 3 \times 3 = 28.29 \text{ cm}^2$.

Area of a circle with the help of counting square method = $\frac{7}{9} \times \text{area of the square} = \frac{7}{9} \times 36 = 28 \text{ cm}^2$.

Hence, area of circle is approximately equal to $\frac{7}{9}$ of area of square.

(Note: Teacher can give one or two examples to verify)

Image original (girijashankeran@gmail.com)

Time to teach	Asset Type	Theme	SubTheme
5 Minutes	Interesting Asides	Perimeter & Area	Area of rectangle and square rectangle and square

13. QA_ Worksheet on Area and Perimeter

1) Answer very short answer questions:

a) Find the cost of fencing a square field of side 75m at the rate of Rs. 15 per meter.

(Hint: the perimeter has to be multiplied by 15 to get the cost)

b) Find the perimeter of a regular pentagon whose side is 12cm.

c) Find the side of an equilateral triangle whose perimeter is 36 cm.

d) There is a rectangular field of length 500 m and breadth 250 m. There is another field of square shape with each side being 300 m. Which field has greater perimeter and by how much?

e) The perimeter of a square field is 200m. Find its side.

Word Problems

2) A rectangular field is 250 m long and 125 m wide.

What is the difference between the measures of its length and breadth? Find the perimeter of the field.

3) A person goes 1 km 500m North, then 1 km East, then 1 km 300m South and again 750m towards West.

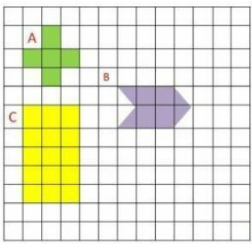
Find the total distance covered by the person.

4) The length of a rectangular park is 1 km 750m. Its breadth is 1 km 450m. Find the sum of its single length and breadth. Find also the perimeter of the park.

5) The perimeter of a rectangular park is 560m. Its breadth is 100m. Find the length of the park.

6) A rectangular field is 255m wide with perimeter 1400m. Find the length of the field.

7) Find the areas of the following figures by counting square:



8) Multiple choice questions:

1) If measure of a side of a regular octagon is 6 cm, then its perimeter is:

a) 48 cm (b) 36 cm (c) 54 cm (d) 56 cm

2) If a ribbon of length 20m is stitched around a table cloth making two rounds along its boundary, then the perimeter of the table cloth is:

a) 10 m (b) 20 m (c) 15m (d) 40 m

3) If the length of a rectangle is doubled and its breadth is halved. Then its area:

a) remains same (b) becomes half (c) doubles (d) becomes one-fourth

4) The cost of flooring at Rs. 20 per square meter is Rs. 4,200. If the length of the room is 21m, then its breadth is :

a) 5 m (b) 10 m (c) 15 m (d) 20 m

5) If the area of a square is numerically equal to its perimeter, then the length of each side is:

a) 2 units (b) 3 units (c) 4 units (d) 5 units

Solutions

1) (a) $4 \times 75 \times 15 = \text{Rs } 4500$

(b) $5 \times 12 = 60 \text{ cm}$

(c) $36 / 3 = 12 \text{ cm}$

(d) Perimeter of rectangle $= 2(500 + 250) = 1500 \text{ m}$

Perimeter of square $= 4 \times 300 = 1200 \text{ m}$

Perimeter of the rectangle is greater by 300m.

(e) $200 / 4 = 50 \text{ m}$

2) 125m, 750m

3) 4 km 550 m

4) 3km 200m, 6km 400m

5) Length of a rectangular park (l) = l

Breadth of a rectangular park (b) = 100m

Perimeter of a rectangular park (p) = 560m

$$2(l + b) = 560, \quad 2(l + 100) = 560,$$

$$l + 100 = 560 / 2 \quad l + 100 = 280$$

$$l = 280 - 100 = 180 \text{ m}$$

6) Length of a rectangular field (l) = l

Breadth of a rectangular park (b) = 255 m

Perimeter of a rectangular park (p) = 1400m

$$1400 = 2(l + b), \quad 1400 = 2(l + 255)$$

$$1400 / 2 = l + 255$$

$$700 = l + 255$$

$$l = 700 - 255 = 445 \text{ m}$$

7) Make a table of 5 x 3 for each shape. Example:

Fig a

Covered Area	No. of Squares	Estimated Area(sq.unit)
Full Squares	5	5
Half Squares		
More than Half Squares		
Less than Half Squares		

Fig a) Ans = 5 sq units.

(Similarly children can do for the rest.)

Ans (b) 4 Full + 4 Half = 4 + 2 = 6 sq units.

Ans (c) 15 full = 15 sq units

8) 1 (a)

2 (a)

3 (a)

4 (b)

5 (c)

All images are original (girijashankaran@gmail.com)

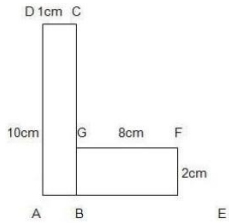
Time to teach	Asset Type	Theme	SubTheme
20 Minutes	Assessments	Perimeter & Area	Perimeter of regular shapes (equilateral triangle), Perimeter of shapes (square and equilateral triangle)

14. QA_ Questions on Area and Perimeter

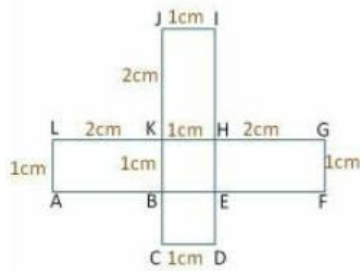
Answer the following questions :

1) A rectangle and a square are of equal areas. Area of the square is 144 sq cm. Find the length of the rectangle whose breadth is 8 cm.

2) Find the area of the following figures.



3) Find the area bounded by the figure.



4) Area of a rectangular table is 63sq. m. and its breadth is 7 m. Can you find out the length of the table?

5) A room is 5m 45cm long and 3m 22cm wide. A square carpet of sides 3.5m is laid on the floor. Find the area of the floor that is not carpeted.

{Hint: Find the area of the rectangular floor and then the area of the carpet. Then, subtract the second from the first.}

6) Take a cm graph paper. Ask the children to draw as many rectangles as they can which are of area 16sq. cm.

Now, answer the following:

- Which rectangle has the greatest perimeter?
- Which rectangle has the least perimeter?

7) Consider the following situations and identify whether you need to find the area or perimeter in each case and find it. First one has been done for reference.

- Tiles to cover a floor which is 4 m by 4m. Area = $4 \times 4 = 16$ sq.m
- Fencing a field which is 40 ft by 20ft.
- Framing a photograph which is 6 inches by 4inches.
- Painting the ceiling which is 6m by 7m.
- Carpeting the floor which is 3m by 4m.

Solutions:

1) Area of square = 144 sq. cm.

Area of rectangle = Area of square

$$l \times b = 144$$

$$l \times 8 = 144$$

$$l = 144 / 8$$

$$l = 18 \text{ cm.}$$

2) Area of rectangles (ABCD + BEFG) = $(10 \times 1 + 8 \times 2) = 26 \text{ sq. cm.}$

3) Area of rectangles (ABKL + EFGH + HIJK) + Area of Squares (BCDE + BEHK) = $(2 \times 1 + 2 \times 1 + 2 \times 1) + (1 \times 1 + 1 \times 1) = 6 + 2 = 8 \text{ sq. cm.}$

4) Area of the table = 63 sq. m. Area = $l \times b$ Therefore, $l = A / b = 63 / 7 = 9 \text{ m.}$

5) Area of rectangular floor = $545 \times 322 = 175490 \text{ sq. cm.}$ Area of Square carpet = $350 \times 350 = 122500 \text{ sq. cm.}$
(m converted to cm, 100 cm = 1 m)

Area left out = $175490 - 122500 = 52990 \text{ sq. cm (5. 299 sq m.)}$

6) (i) The possible rectangles are $(1 \times 16, 2 \times 8),$

Perimeter of 1×16 is

$$2(1+16) = 34 \text{ cm}$$

Perimeter of 2×8 is

$$2(2+8) = 20 \text{ cm}$$

Hence (i) 1×16 has the greatest perimeter (ii) 2×8 has the least perimeter.

7) (a) Area = 16 sq.m

(b) Perimeter = $2 \times (40 + 20) = 120 \text{ ft.}$

(c) Area = $6 \times 4 = 24 \text{ sq.inches}$

(d) Area = $6 \times 7 = 42 \text{ sq.m.}$

(e) Area = $3 \times 4 = 12 \text{ sq. m}$

Image source:

Original contribution by girijashankeran@yahoo.com

20 Minutes	Assessments	Perimeter & Area	Area of regular polygons, Area of irregular polygons
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15. MS_Summary - Mensuration

Summary – Mensuration

Calculate the distance covered

Perimeter

Define Perimeter

Perimeter of Irregular Closed Figures

Calculate Perimeter of Rectangle, Square, Triangle and Regular Polygon

Area

Define Area

Criteria to find Area by counting squares

Calculate Area by Counting Squares

Calculate Area of Rectangles and Squares

Distinguish Perimeter and Area

Drawing sketches using a Graph Sheet

Making tables to calculate Area of sketches on Graph Sheet

Calculating Area of the sketches by counting full squares, half squares, less than half squares and more than half squares

Accept what you are and be helpful

Time to teach	Asset Type	Theme	SubTheme
5 Minutes	Main Script	Perimeter & Area	Perimeter of regular shapes (equilateral triangle), Perimeter of irregular shapes (rectangle, square, triangle), Area of regular shapes (equilateral triangle), Area of irregular shapes (rectangle, square, triangle)