



BAL BHARATI PUBLIC SCHOOL ,PITAMPURA

SUBJECT : MATHEMATICS

CLASS :VI

WEEK : 25th January '21 to 29th January '21

No of Blocks : 3

Ch 12 : Ratio and Proportion

Ch 14: Practical Geometry

GUIDELINES

Dear Students

Kindly refer to the following notes / videos for the Chapter - Ratio and Proportion (Part II) & Ch.- Practical Geometry and thereafter do the questions in your Mathematics notebook.

NOTE: The students can download NCERT textbook using the following link :-

<http://ncert.nic.in/textbook/textbook.htm?hemh1=0-16>

SUBTOPICS

- 1) Unitary Method
- 2) Construction - Circle
- 3) Construction -Perpendicular Bisector

LEARNING OUTCOMES :

Each student will be able to :

- 1) Apply unitary method to find the required quantity.
- 2) Construct a circle with a given radius using a compass.
- 3) Construct the line and its perpendicular bisector using a compass.

TEACHING AIDS USED:

E lesson

Whiteboard or register using device camera

Construction softwares

You tube videos

Khan Academy link

BLOCK I

Lesson development

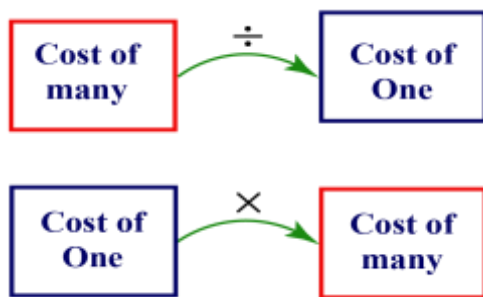
Unitary Method

In unitary method we will learn how to find the value of a unit from the value of a multiple and the value of a multiple from the value of a unit.

When we go to the market to buy any article, we ask the shopkeeper to tell the price of the article. This is called unit price. We calculate the price of number of articles, we want to buy, with the help of this unit price. Sometimes, we calculate unit price when the price of a multiple is given.

The method to calculate the price of the required articles is called unitary method.

Generally, first we find the value of one article from the value of a multiple and then we find the value of the desired number of articles from the value of one. Usually this method involves the operations of multiplication and division both.



For example,

- (i) A pack of 6 balls costs ₹ 48 and we have to buy 4 balls.
- (ii) 20 oranges cost ₹ 60 and we have to buy 8 oranges.
- (iii) The cost of 100 kg of wheat is ₹850 and we have to buy 40 kg of wheat.

In all such cases, first we find the unit cost for calculating the cost of the desired number of articles. To find the unit cost we divide the cost of many articles by the number of articles.

Let us consider some examples

1. Cost of 1 book is ₹200. What is the cost of 10 such books?

Cost of 1 book = ₹20.

Cost of 10 books = ₹200 × 10 = ₹ 2000

2. 6 pens cost ₹96. How much will 2 such pens cost?

Cost of 6 pens = ₹96

Cost of 1 pen = ₹ 96 ÷ 6 = ₹ 16

Cost of 2 pens = ₹16 × 2 = ₹32

Problem: If it has rained 276 mm in the last 3 days, how many cm of rain will fall in one full week (7 days)? Assume that the rain continues to fall at the same rate.



Solution:

Amount of rain in the last 3 days = 276mm

Amount of rain in 1 day = $276/3$

Amount of rain in 1 day = 92 mm

Amount of rain in a week = Amount of rain in 7 days

Amount of rain in 7 days = $7 \times (\text{Amount of rain in 1 day})$

$$= 7 \times 92$$

Amount of rain in 7 days = 644 mm.

Problem: A truck requires 108 litres of diesel for covering a distance of 594 km. How much diesel will be required by the truck to cover a distance of 1650 km?



Litres of diesel used in covering 594 km = 108 litres

Litres of diesel used in covering 1km = $108/594$

$$= 0.1818 \text{ litres}$$

Litres of diesel required in covering 1650 kms

= $1650 \times (\text{litres of diesel used to cover 1 km})$

Litres of diesel required in covering 1650 kms = 1650×0.1818

$$= 299.97 \text{ litres.}$$

$$= 300 \text{ litres (Apporx.)}$$



EXERCISE 12.3

1. If the cost of 7 m of cloth is Rs 294, find the cost of 5 m of cloth.
2. Ekta earns Rs 1500 in 10 days. How much will she earn in 30 days?
3. If it has rained 276 mm in the last 3 days, how many cm of rain will fall in one full week (7 days)? Assume that the rain continues to fall at the same rate.
4. Cost of 5 kg of wheat is Rs 30.50.
 - (a) What will be the cost of 8 kg of wheat?
 - (b) What quantity of wheat can be purchased in Rs 61?
5. The temperature dropped 15 degree celsius in the last 30 days. If the rate of temperature drop remains the same, how many degrees will the temperature drop in the next ten days?
6. Shaina pays Rs 7500 as rent for 3 months. How much does she has to pay for a whole year, if the rent per month remains same?
7. Cost of 4 dozens bananas is Rs 60. How many bananas can be purchased for Rs 12.50?
8. The weight of 72 books is 9 kg. What is the weight of 40 such books?
9. A truck requires 108 litres of diesel for covering a distance of 594 km. How much diesel will be required by the truck to cover a distance of 1650 km?
10. Raju purchases 10 pens for Rs 150 and Manish buys 7 pens for Rs 84. Can you say who got the pens cheaper?
11. Anish made 42 runs in 6 overs and Anup made 63 runs in 7 overs. Who made more runs per over?

ASSIGNMENT

From NCERT text book the following questions are to be done in Mathematics Notebook

Class Assignment Ex 12.3 Q 3, 4, 6, 7, 9

Home Assignment. Ex 12.3 Q1, 2, 5, 8, 10, 11

BLOCK II.

Ch 14 - Practical Geometry

The geometrical instruments to be used are :

- a) The ruler
- b) The compasses
- c) The protractor
- d) The set square

Exercise 14.1

1. Draw a circle of radius 3.2 cm.

Solutions:

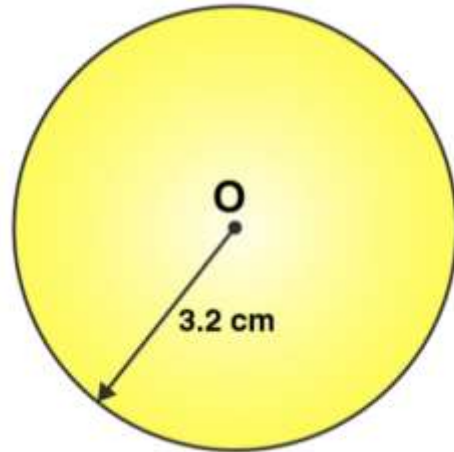
The required circle may be drawn as follows:

Step 1: For the required radius 3.2 cm, first open the compasses.

Step 2: For the centre of a circle, mark a point 'O'.

Step 3: Place a pointer of compasses on 'O'.

Step 4: Now, turn the compasses slowly to draw the required circle.



[Click here for the demonstration of Q1](#)

Q3) Draw a circle and any two of its diameters, if you join the ends of these diameter what is the figure obtained? What figure is obtained if the diameters are perpendicular to each other? How do you check your answer?

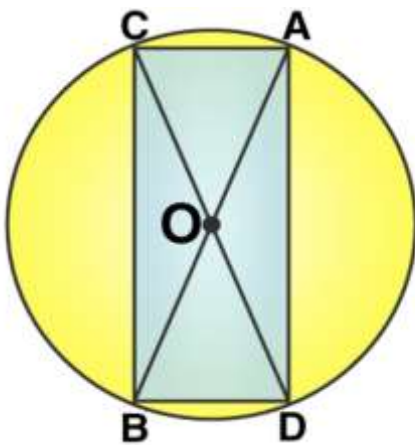


Fig (i)

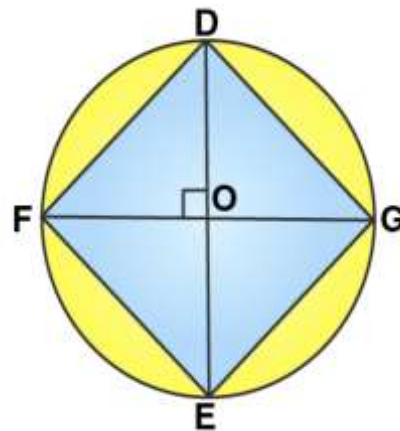


Fig (ii)

Fig I - A rectangle ACBD is formed as the diagonals AB and CD are equal in lengths (as AB & CD are forming diameters of the circles, hence equal in lengths)

Fig II- A square DFEG is formed as the diagonals are-

- a) Equal in length
- a) Perpendicular bisector of each other

[Click here for the demonstration of Q3](#)



EXERCISE 14.1

1. Draw a circle of radius 3.2 cm.
2. With the same centre O , draw two circles of radii 4 cm and 2.5 cm.
3. Draw a circle and any two of its diameters. If you join the ends of these diameters, what is the figure obtained? What figure is obtained if the diameters are perpendicular to each other? How do you check your answer?
4. Draw any circle and mark points A , B and C such that
 - (a) A is on the circle.
 - (b) B is in the interior of the circle.
 - (c) C is in the exterior of the circle.
5. Let A, B be the centres of two circles of equal radii; draw them so that each one of them passes through the centre of the other. Let them intersect at C and D . Examine whether \overline{AB} and \overline{CD} are at right angles.

ASSIGNMENT

From NCERT text book the following questions are to be done in Mathematics Notebook

Class Assignment Ex 14.1 Q1,3,5

Home Assignment Ex 14.1 Q2 , 4

Refer to the following link for more construction questions of Ex 14.1

Q2- <http://www.robocompass.com/share?id=vf9qbr793om9>

Q4- <http://www.robocompass.com/share?id=1jyocnxou07co>

Q5- <http://www.robocompass.com/share?id=t4l3a7tfmu04>

Note : Ex 14.2 & 14.3 are deleted from the syllabus

Block III.

Ex 14.4. Construction of perpendiculars

Costruction I

Construction of a perpendicular to a line from a point on the line.

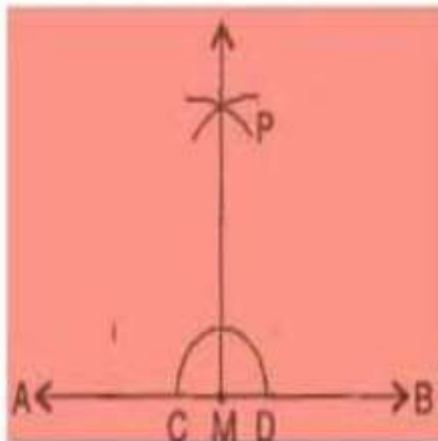
Question 1

Draw any line segment \overline{AB} . Mark any point M on it. Through M , draw a perpendicular to \overline{AB} . (Use ruler and compasses)

Answer 1:

Steps of construction:

- (i) With M as a centre and a convenient radius, draw an arc intersecting the line AB at two points C and D .
- (ii) With C and D as centres and a radius greater than MC , draw two arcs, where both cut each other at P .
- (iii) Join PM . Then PM is perpendicular to AB through the point M .



Refer to the following link for the construction
Ex 14.4 - Q1 <http://www.robocompass.com/share?id=1hrbeymanrcj4>
https://youtu.be/Zhgz52gR_08
<https://youtu.be/soLcpl80nRE>

Construction II

Construction of a perpendicular to a line from a point lying outside the line

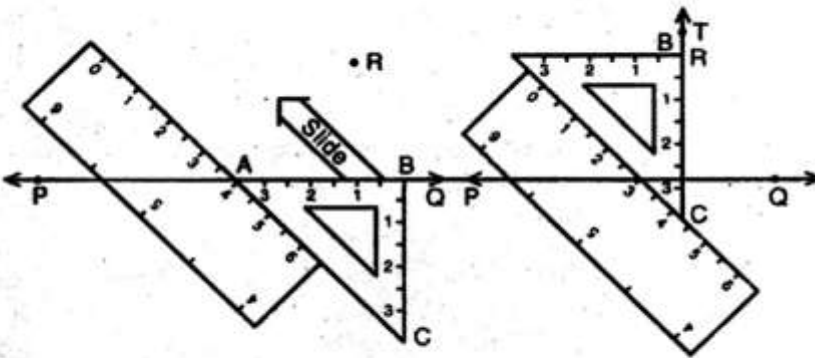
Ex 14.4 Class 6 Maths Question 2.

Draw any line segment \overline{PQ} . Take any point R not on it. Through R, draw a perpendicular to \overline{PQ} . (use ruler and set-square)

Solution:

Steps of Construction:

1. Let PQ be the line and R is any point not lying on PQ.
2. Place the set-square so that the base AB of the set-square lies exactly on the line PQ.
3. Hold the set-square fixed and place a ruler so that its edge position lies along the side AC of the set-square.
4. Holding the ruler fixed, slide the set-square along the ruler till the point R coincides with the point B of the set-square.
5. Keeping the set-square fixed in this position, draw a line RT along the edge BC of the set-square through R.



Thus, RT is the required perpendicular line to the line PQ passing through R.

Refer to the following links

Ex 14.4 - Q2 <http://www.robocompass.com/share?id=1k1u07ee9kz77>

Ex 14.4 -Q3. <http://www.robocompass.com/share?id=s101ozn0efl0>

<https://youtu.be/5bZLpHVIUyE>

<https://youtu.be/soLcpl80nRE>

ASSIGNMENT

From NCERT text book the following questions are to be done in Mathematics Notebook

Class Assignment - Ex 14.4 Q1,2

Home Assignment- Ex 14.4. Q3

SUMMARY

We are going to consider “**Ruler and compasses constructions**”, using ruler, only to draw lines, and compasses, only to draw arcs.

Be careful while doing these constructions.

Here are some tips to help you.

- (a) Draw thin lines and mark points lightly.
- (b) Maintain instruments with sharp tips and fine edges.
- (c) Have two pencils in the box, one for insertion into the compasses and the other to draw lines or curves and mark points.

CASE STUDY QUESTIONS

Please attempt the following case study questions in your Maths notebook.

Q1) Ria went to an ice cream parlour to purchase the icecream . She bought 5 ice creams and paid Rs 125 for it. Next day she again goes to the ice cream parlour and wanted to purchase 3 ice creams.



- (i) How much will she pay for the 3 ice creams ?
a) Rs 75 b) Rs 100 c) Rs 25 d) Rs 50
- (ii) What is the total amount she spent on the icecream on both the days ?
a) Rs 225 d) Rs 8 c) Rs 200 d) Rs 175
- (iii) Ria treated some of her friends with the same ice cream, she paid Rs500 to the shopkeeper. How many ice creams did she purchase?
a) 10 b) 50 c) 15 d) 20

Q2) Edwin wants to buy a bottle of ink. At a stationary shop he was given two options -

Option A : Bottle A costs him Rs 55 for 2 litres

Option B : Bottle B costs him Rs 70 for 3 litres



- i) Can you help him decide which option would be the best buy ?
- ii) How much will he have to pay if he purchases 6 l of option A?
- iii) How much will he have to pay if he purchases (litres of option B) ?
- iv) He ended up buying both the inks. He paid a total of Rs 250 to the shopkeeper .What quantity of option A did he buy, if he purchased 6 litres of option B ?

Q3) Sally has invited some of her friends to her birthday party.



She can spend Rs 4000 for her party. Of that she has already spent Rs 2000 on the cake and decorations. She has the following food choices available -

- A toffee costs Rs 6
- A pack of 5 cookies costs Rs 300
- A pack of 10 juice cans costs Rs 210
- A pack of 2 pastries costs Rs 90

Choose Yes or No to answer the following -

- i) Does she have enough money to buy 20 toffees and 20 cookies ?

- ii) Does she have enough money to buy 20 juice cans and 20 pastries?
- iii) Does she have enough money to buy 80 toffees and 80 juice cans ?
- iv) Does she have enough money to buy 20 juice cans and 20 cookies ?

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