NEW ERA PUBLIC SCHOOL RAJBAGH SRINAGAR

SUBJECT:- MATH :- A/B CLASS :- 6TH

TERM :- 2ND

MATH :- 'A'

Solved ASSINGHEINT OF TERH 2ND [2021]

Chapter 11 (ALGEBRA) already done in UNIT 3RD

NOW CHAPTER 12 [RATIO AND PROPORTION]

Exercise 12.1

Q=1 Find the ratio of:

(a) 27 to 36

Solution 27 to 36 $\Rightarrow \frac{27}{36} \div 9 \Rightarrow \frac{3}{4} \Rightarrow 3:4$

(d) 30 minutes to 45 minutes

Sol. 30 minutes to 45 minutes $\Rightarrow \frac{30}{45} \div 3 \Rightarrow \frac{2}{3} \Rightarrow 2:3$

Q=2 Find the ratio of

(a) 40 Paise to Rs 2

Sol. $\frac{40P}{200P} \Rightarrow \frac{40}{200} = \frac{1}{5}$ or $1:5$ Rs 2 = 200 Paise

(c) 25cm to 2m $\Rightarrow \frac{25cm}{200cm} \Rightarrow \frac{25}{200} \div 25 \Rightarrow \frac{1}{8} \Rightarrow 1:8$ 2m = 200cm

(e) 21 days to 1 month $\Rightarrow \frac{21 \text{ days}}{30 \text{ days}} \Rightarrow \frac{21}{30} \div 7 \Rightarrow \frac{7}{10} \Rightarrow 7:10$ 1 month = 30 days

(f) 10 months to 2 years $\Rightarrow \frac{10 \text{ months}}{24 \text{ months}} \Rightarrow \frac{10}{24} \div 2 \Rightarrow \frac{5}{12} \Rightarrow 5:12$ 2 years = 24 months

Q=3 In a class there are 25 boys and 15 girls. What is the ratio of the number of boys to the number of girls?

Solution Number of boys = 25 , Number of girls = 15

Ratio of number of boys to the number of girls = 25 : 15

Or $\frac{25}{15} \div 5$ Or $\frac{5}{3}$ Or 5 : 3

Q=4 Ravi walks 6 Km in an hour while Roshan walks 4Km in an hour. What is the ratio of the distance covered by Ravi to the distance covered by Roshan?

Solution Ravi walks in an hour = 6Km, Roshan walks in an hour = 4Km
Ratio of the distance covered by Ravi to that of Roshan = 6:4
Or $\frac{6}{4}^{3}$ Or $\frac{3}{2}$ Or 3:2

Q=5 In a school there are 73 holidays in one year. What is the ratio of the number of holidays to the number of days in one year?

Solution Number of holidays in one year = 73
Number of days in one year = 365
Ratio of number of holidays to the total number of days
= 73:365 Or $\frac{73}{365}^{1}$ Or $\frac{1}{5}$ Or 1:5

Q=6 Do your self

Q=7 The length and breadth of a rectangular field are 50m and 15m respectively. Find the ratio of the length to the breadth of the field.

Solution length of the rectangular field = 50 m
breadth of the rectangular field = 15m
Ratio of the length to the breadth = 50m:15m
Or $\frac{50}{15}^{10}$ Or $\frac{10}{3}$ Or 10:3

Q=8 There are 45 persons working in an office. If the number of females is 25, and the remaining are males, Find the ratio of:
(a) The number of females to the number of males.

Sol. Total persons working in an office = 45
Females in an office = 25
So, males = 45 - 25 = 20
∴ The ratio of number of females to the no. of males = 25:20
Or $\frac{25}{20}^{5}$ Or $\frac{5}{4}$ Or 5:4

(b) Ratio of number of males to the no. of females = 20:25
Or $\frac{20}{25}^{4}$ Or 4/5 Or 4:5

Q=9 Do your self

Q=10 There are 102 Teachers and 3300 students in a class. Find the ratio of the number of Teachers to the number of students.

Solution Number of Teachers = 102 , Number of students = 3300

Ratio of number of Teachers to the number of students.

$= 102 : 3300$ Or $\frac{102}{3300}$ $\frac{\div 2}{\div 3}$ $\frac{17}{550}$ Or $\frac{17}{550}$ Or $17 : 550$

Q=11 Do your self

Q=12 In a year, a lady doctor earned Rs 4.4 lakhs and paid Rs 1.1 lakhs as Income tax. Find the ratio of her:

(a) Income to Income-Tax (b) Income-Tax to Income

Solution (a) Ratio of her Income to Income-Tax

$4.4 : 1.1$ Or $\frac{4.4}{1.1}$ Or $\frac{44}{11}$ Or $\frac{4}{1}$ Or $4 : 1$

(b) Ratio of her Income Tax to the Income.

$1.1 : 4.4$ Or $\frac{1.1}{4.4}$ Or $\frac{11}{44}$ Or $\frac{1}{4}$ Or $1 : 4$

Exercise 12.2

Q=1 Divide 35 in the ratio

(a) 3 : 2

Solution Sum of the two Terms $= 3+2 = 5$

1st part $\frac{3}{5} \times 35^{7} = 3 \times 7 = 21$

2nd part $\frac{2}{5} \times 35^{7} = 2 \times 7 = 14$

(c) 3 : 4

Sol: Sum of the two Terms $= 3+4 = 7$

1st part $\frac{3}{7} \times 35^{5} = 3 \times 5 = 15$

2nd part $\frac{4}{7} \times 35^{5} = 4 \times 5 = 20$

Q=2 Arjun divides Rs 50,000 between her two daughters Simmi and Nikki in the ratio 11:14. Find the share of each.

Solution Arjun divides Rs 50,000 in the ratio 11 : 14

Sum of the two terms $= 11+14 = 25$

Simmi's Share $= \frac{11}{25} \times$ Rs $50{,}000^{2000} = 11 \times 2000 =$ Rs 22000

Nikki's Share $= \frac{14}{25} \times$ Rs $50{,}000^{2000} = 14 \times 2000 =$ Rs 28000

P.T.O

Q=3 An alloy of copper and Iron weighs 6Kg 500g. The ratio of copper to iron is 8:5. How much Iron does it contain?

Solution An alloy of copper and Iron weighs = 6Kg 500 g

Ratio of copper to Iron = 8:5

Sum of two terms = 8+5=13

$$\text{copper} = \frac{8}{13} \times 6.500\text{Kg} = \frac{8}{13_1} \times \frac{6500^{+31}}{1000_2} = \frac{8^4}{21} = 4\text{ Kg}$$

$$\text{Iron} = \frac{5}{13} \times 6.500\text{Kg} = \frac{5^1}{13_1} \times \frac{6500^5}{1000_2} = \frac{5}{2}\text{Kg} = 2.5\text{ Kg}$$

Q=4 Two numbers are in the ratio 7:5. If their sum is 96, what are the two numbers?

Solution Sum of two numbers = 96

Ratio of the two numbers = 7:5

Sum of the two numbers = 7+5 = 12

$$\text{1st number} = \frac{7}{12_1} \times 96^8 = 7 \times 8 = 56$$

$$\text{2nd number} = \frac{5}{12_1} \times 96^8 = 5 \times 8 = 40$$

Q=5 50 l of milk kept in two vessels in the ratio 3:2. Find the quantity of milk in each vessel.

Solution Total quantity of milk = 50 l

Kept in Two vessels in the ratio = 3:2

Sum of the two terms = 3+2 = 5

$$\text{1st vessel contains} = \frac{3}{5_1} \times 50^{10}\,l = 3 \times 10\,l = 30\,l$$

$$\text{2nd vessel contains} = \frac{2}{5_1} \times 50^{10}\,l = 2 \times 10\,l = 20\,l$$

Exercise 12.3

Q=1 Which of the following statements are true?

(a) 2:5 = 5:2

Sol. 2:5 = 5:2

$2 \times 2 = 5 \times 5$

$4 \neq 25$

So, the statement is not true

(d) 21:7 = 36:12

Sol. 21:7 = 36:12

$21 \times 12 = 7 \times 36$

$252 = 252$

So, the statement is true.

Q=2 Which of the following statements are true?

(a) 12Km : 8Km = 27 Km : 18 Km

Sol. 12Km : 8Km = 27Km : 18 Km

$12 \times 18 = 8 \times 27$

$216 = 216$

So, The statement is true

(b) 440ml : 2l = 55cm : 3m

Sol. 440ml : 2000ml = 55cm : 300cm

$440 \times 300 = 2000 \times 55$

$132000 \neq 110000$

So, The statement is not true

Rough
1l = 1000 ml
2l = 2000 ml
1m = 100 cm
3m = 300cm

Q=3 Which of the following numbers in the given order are in proportion?

(a) 14, 12, 21, 30

Sol. 14, 12, 21, 30

$14 \times 30 = 12 \times 21$

$420 \neq 250$

So, the no,s are not in proportion

(e) 15, 3, 40, 8

Sol. 15, 3, 40, 8

$15 \times 8 = 3 \times 40$

$120 = 120$

So, the numbers are in proportion

Q=4 In each of the following re-arrange the four numbers so that they form a proportion.

(a) 10, 60, 90, 15

Sol. Re-arranged 10, 60, 15, 90

$10 \times 90 = 60 \times 15$

$900 = 900$

(c) 15, 3, 8, 40

Sol. Re-arranged 15, 3, 40, 8

$15 \times 8 = 3 \times 40$

$120 = 120$

[NOTE :- Rest of the Parts do yourself]

Q=5 Find x if the following are in proportion:

(a) x, 64, 30, 24

Sol. x, 64, 30, 24

$x \times 24 = 64 \times 30$

$x = \frac{64 \times 30}{24} = 80$

$x = 8 \times 10 \Rightarrow x = 80$

(c) 30, x, 18, 27

Sol. 30, x, 18, 27

$30 \times 27 = x \times 18$

$x = \frac{30 \times 27}{18} \Rightarrow x = 5 \times 9$

$x = 45$

Q=6 Find x, if :

(a) x, 36, 27 are in continued Proportion

Sol. x, 36, 27 are in continued Proportion

So, $x : 36 = 36 : 27$

$x \times 27 = 36 \times 36$

$x = \frac{36 \times 36}{27} = 4 \times 12$

$x = 48$

(c) 9, 36, x are in continued Proportion

Sol. 9, 36, x are in continued Proportion

So $9 : 36 = 36 : x$

$9 \times x = 36 \times 36$

$x = \frac{36 \times 36}{9} \Rightarrow x = 36 \times 4$

$x = 144$

P.T.O

Q=7 Check whether the numbers 8, 24, 72 are in continued proportion.

Sol. If 8, 24, 72 are in continued proportion

Then $8 : 24 = 24 : 72 \Rightarrow 8 \times 72 = 24 \times 24 \Rightarrow 576 = 576$

So, the numbers are in continued proportion.

Q=8 The ratio of the length and breadth of a football ground is 4:3. Find the length, if the breadth is 30 m.

Sol. Let the length of the breadth be x m

Then $4 : 3 = x : 30m \Rightarrow 3 \times x = 4 \times 30m \Rightarrow x = \frac{4 \times 30}{3_1}$ m (10)

$x = 4 \times 10m \Rightarrow x = 40m$ ∴ Length = 40 m.

Q=9 In a sports meet, group of boys and girls are formed. Each group consists of 4 boys and 6 girls. How many boys are required, if 102 girls are available?

Solution Let the number of boys required be x

Then $4 : 6 = x : 102 \Rightarrow 6 \times x = 4 \times 102 \Rightarrow x = \frac{4 \times 102^{34}}{6_3} \Rightarrow x = 2 \times 34$ (2)

$\therefore x = 68 \Rightarrow$ Boys = 68

Q=10 The ratio of the number of men to that of women in a party is 5:4. If the number of men is 40, Find the number of women in the party.

Solution Let the number of women in the party be x

Then $5 : 4 = 40 : x \Rightarrow 5 \times x = 4 \times 40 \Rightarrow x = \frac{4 \times 40^{8}}{5_1} \Rightarrow x = 4 \times 8$

$x = 32 \Rightarrow$ Women = 32

Q=11 For every 20 mangoes that Anu buys, 3 turn out to be rotten. At this rate, how many rotten mangoes will she have if she buys 100 mangoes?

Sol. Let the number of rotten mangoes be x

Then $20 : 3 = 100 : x \Rightarrow 20 \times x = 3 \times 100 \Rightarrow x = \frac{3 \times 100^{5}}{20_1}$

$x = 3 \times 5 \Rightarrow x = 15$ ∴ Rotten mangoes = 15

Q=12 The ratio of zinc and copper in an alloy is 5:8. The weight of copper in a sample of this alloy is 104 g. Find the weight of zinc in the alloy.

Sol. Let the weight of zinc in the alloy be x

Then $5 : 8 = x : 104 \Rightarrow 8 \times x = 5 \times 104 \Rightarrow x = \frac{5 \times 104^{13}}{8_1} \Rightarrow x = 5 \times 13$

$x = 65g$ ∴ zinc = 65 g

Q=13 12 apples are shared by 8 persons. How many apples are shared by 2 persons?

Solution Let the number of apples shared by 2 persons be x

Then $12 : 8 = x : 2 \Rightarrow 8 \times x = 12 \times 2 \Rightarrow x = \frac{\overset{3}{\cancel{12}} \times x^{1}}{\underset{4}{\cancel{8}}_{1}} \Rightarrow x = 3$ apples

Q=14 A lady prepares a sweet dish which needs 8 cups of milk and 3 cups of rice. She has 32 cups of milk. How much rice does she need?

Solution Let the rice required be x cups

Then $8 : 3 = 32 : x \Rightarrow 8 \times x = 3 \times 32 \Rightarrow x = \frac{3 \times \overset{4}{\cancel{32}}}{\underset{1}{\cancel{8}}} \Rightarrow x = 4 \times 3$

$x = 12$ cups $\Rightarrow$ 12 cups rice are required.

Q=15 The cost of 30 pencils is Rs 48. To buy 5 pencils, how much money is needed?

Sol. Let money needed be Rs x.

Then $30 : 48 = 5 : x \Rightarrow 30 \times x = 48 \times 5 \Rightarrow x = \frac{\overset{8}{\cancel{48}} \times 5^{1}}{\underset{6}{\cancel{30}}_{1}}$

$\therefore x =$ Rs 8 $\Rightarrow$ Rs 8 are needed.

Q=16 6 packets of rice weigh 10 kg. How many packets will weigh 25 kg?

Sol. Let the number of packets be x.

Then $6 : 10 = x : 25 \Rightarrow 10 \times x = 6 \times 25 \Rightarrow x = \frac{\overset{3}{\cancel{6}} \times 25^{5}}{\underset{1}{\cancel{10}}_{1}} \Rightarrow x = 3 \times 5$

$x = 15$ $\therefore$ 15 packets will weigh 25 kg.

Q=17 The ratio of number of women to that of men in a wedding party is 5:4. If the number of men is 140, Find the number of women in the party.

Solution Let the number of women in the party be x.

Then $5 : 4 = x : 140 \Rightarrow 4 \times x = 5 \times 140 \Rightarrow x = \frac{5 \times \overset{35}{\cancel{140}}}{\underset{1}{\cancel{4}}_{1}}$

$\Rightarrow x = 5 \times 35 \Rightarrow x = 175$. There are 175 women in the party.

Q=18 In a school library, the ratio of Mathematics books to science books is the same as the ratio of science books to Hindi books. If There are 450 books of science and 300 books of Hindi. Find the no. of books in mathematics.

Sol. Let the no. of Math books be x.

Then $x : 450 = 450 : 300 \Rightarrow x \times 300 = 450 \times 450 \Rightarrow x = \frac{\overset{15}{\cancel{450}} \times 450}{\underset{1}{\cancel{300}}_{1}}$

$x = 45 \times 15 \Rightarrow x = 675$. There are 675 Mathematics books.

P.T.O

Q=19 The ratio of Income to the expenditure of a family is 7:6. Find the savings, if the Income is Rs 14000.

Sol: Let the expenditure be Rs x

$7:6 = 14000 : x \Rightarrow 7 \times x = 6 \times 14000 \Rightarrow x = \frac{6 \times 14000}{7} \Rightarrow x = 6 \times 2000$

$x = Rs\ 12000 \Rightarrow$ [Saving = Income − Expenditure] $\Rightarrow$ Saving = Rs 14000 − Rs 12000

Saving = Rs 2000

Q=20 Do your self

Exercise 12.4

Q=1 The cost of 5 kg of wheat is Rs 30.50. Find the cost of 8kg of wheat.

Sol: ∵ The cost of 5 kg of wheat = Rs 30.50

∴ The cost of 1 kg of wheat = Rs $30.50 \div 5 \Rightarrow \frac{30.50}{5} \Rightarrow$ Rs 6.10

∴ The cost of 8 kg of wheat = Rs 6.10 × 8 = Rs 48.80

Q=2 The weight of 72 books is 9kg. What is the weight of 40 such books?

Sol: The weight of 72 books = 9kg $\Rightarrow$ The weight of 1 book = $\frac{9}{72}$ kg = $\frac{1}{8}$ kg

∴ The weight of 40 books = $\frac{1}{8} \times 40 = 1 \times 5$ kg = 5 kg.

Q=3 The cost of 6 cans of juice is Rs 210. Find the cost of 4 such cans.

Solution: The cost of 6 cans of juice = Rs 210

The cost of 1 can of juice = Rs $\frac{210}{6} = 35$

∴ The cost of 4 cans of juice = Rs 35 × 4 = Rs 140

Q=4 The cost of dozen soap is Rs 153.60. Find the cost of 15 such soaps.

Sol. The cost of 12 soaps = Rs 153.60

∴ The cost of 1 soap = Rs $\frac{153.60}{12} = \frac{51.20}{4} = Rs\ 12.8$

∴ The cost of 15 soaps = Rs 12.8 × 15 = Rs 192

Q=5 A car travels 180 km in 4 hours. How far will it travel in 7 hours?

Sol. The car travels in 4 hours = 180 km

∴ The car travels in 1 hour = $\frac{180}{4}$ km = 45 km

∴ The car travels in 7 hours = 45km × 7

= 315 km

Q=6 15 boys can type 270 pages a day. How many pages a day can 36 boys type?

Solution 15 boys can type = 270 pages

1 boy can type = $\frac{270}{15}$ pages

∴ 36 boys can type = $\frac{270}{\cancel{15}_{5}} \times \overset{12}{\cancel{36}}$ pages = $\frac{\overset{54}{\cancel{270}}}{\cancel{5}_{1}} \times 12 = 648$ pages

Q=7 A boat covers a distance of 15 Km in 6 hours. What distance will it cover in 24 hours?

Solution In 6 hours, the boat covers distance = 15 Km

∴ In 1 hour, the boat covers distance = $\frac{15}{6}$ Km

In 24 hours, the boat covers distance = $\frac{15}{\cancel{6}_{1}} \times \overset{4}{\cancel{24}}$ Km = 15×4 = 60 Km

Q=8 The cost of 5l of kerosene oil is Rs 180. What quantity of kerosene oil can be purchased for Rs 288?

Solution The quantity of K. oil purchased for Rs 180 = 5l

∴ The quantity of K. oil purchased for Rs 1 = $\frac{5}{180}$ l

∴ The quantity of K. oil purchased for Rs 288 = $\frac{\cancel{5}^{1}}{\cancel{180}_{36}} \times \overset{8}{\cancel{288}}$ l = 8l

Q=9 The cost of 105 envelopes is Rs 35. How many envelopes can be purchased for Rs 10.

Solution The envelope can be purchased for Rs 35 = 105

The envelopes can be purchased for Rs 1 = $\frac{105}{35}$

The envelopes can be purchased for Rs 10 = $\frac{\overset{15}{105}}{\cancel{35}_{7}} \times \cancel{10}^{2}$ = 15×2 = 30 envelopes

Q=10 A car travels 90 Km in $1\frac{1}{2}$ hours.

(a) How much time is required to cover 30 Km with the same speed?

(b) Find the distance covered in 2 hours with the same speed.

Solution (a) A car travels 90 Km in $\frac{3}{2}$ hours

∴ A car travels 1 Km in $\frac{3}{2 \times 90}$ hour

A car travels 30 Km in $\frac{3 \times \overset{1}{\cancel{30}}}{2 \times \cancel{90}_{3}}$ hour = $\frac{1}{2}$ hour = 30 minutes

(b) The distance travelled by car in $\frac{3}{2}$ hours = 90 Km

The distance travelled by car in 1 hour = $\frac{90}{3/2} = \frac{\overset{30}{\cancel{90}} \times 2}{\cancel{3}} = 30 \times 2$

= 60 Km

P.T.O

The distance Travelled by car in 2 hours = $\frac{90 \times 2}{3}$ x 2 Km

$= \frac{\overset{30}{\cancel{90} \times 2}}{\cancel{3}_1} \times 2\,Km = 30 \times 2 \times 2\,Km = 30 \times 4\,Km = 120\,Km$

Q=11 Do your self.

Q=12 Raja purchases 10 pens for Rs 150 and Manish buys 7 pens for Rs 84. Who gets the pens cheaper?

Solution Raja purchases 10 pens for Rs 150

So, The cost of 1 pen = Rs $\frac{150}{10}$ = Rs 15

Manish buys 7 pens for Rs 84

So, The cost of 1 pen = Rs $\frac{84}{7_1}$ 12 = Rs 12

Clearly, Manish gets pens cheaper than Raja.

Q=13 Rana made 42 runs in 6 overs and Anup made 63 runs in 7 overs. Who made more runs per over?

Solution:- Rana made 42 runs in 6 overs.

Runs per over = $\frac{42^7}{6_1}$ runs = 7 runs

Anup made 63 runs in 7 overs

Runs per over = $\frac{63^9}{7_1}$ runs = 9 runs.

Clearly Anup made more runs per over than Rana.

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[NOTE:- SHARPEN YOUR UNDERSTANDING ON BOOK Page No. 211]

CHAPTER :- PRACTICAL GEOMETRY 14

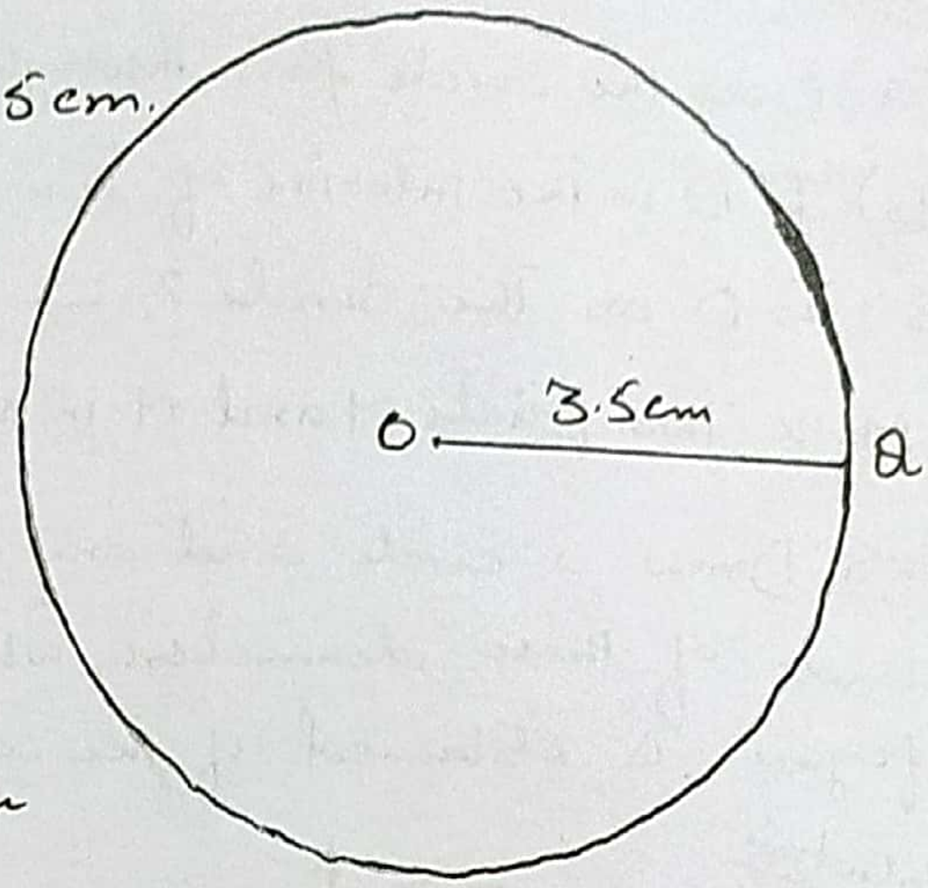
CLASS :- 6TH MATH :- B TERM :- 2ND

Exercise 14.1

Q=1 Draw a circle of radius 3.5cm.

Soluh:-

figure →

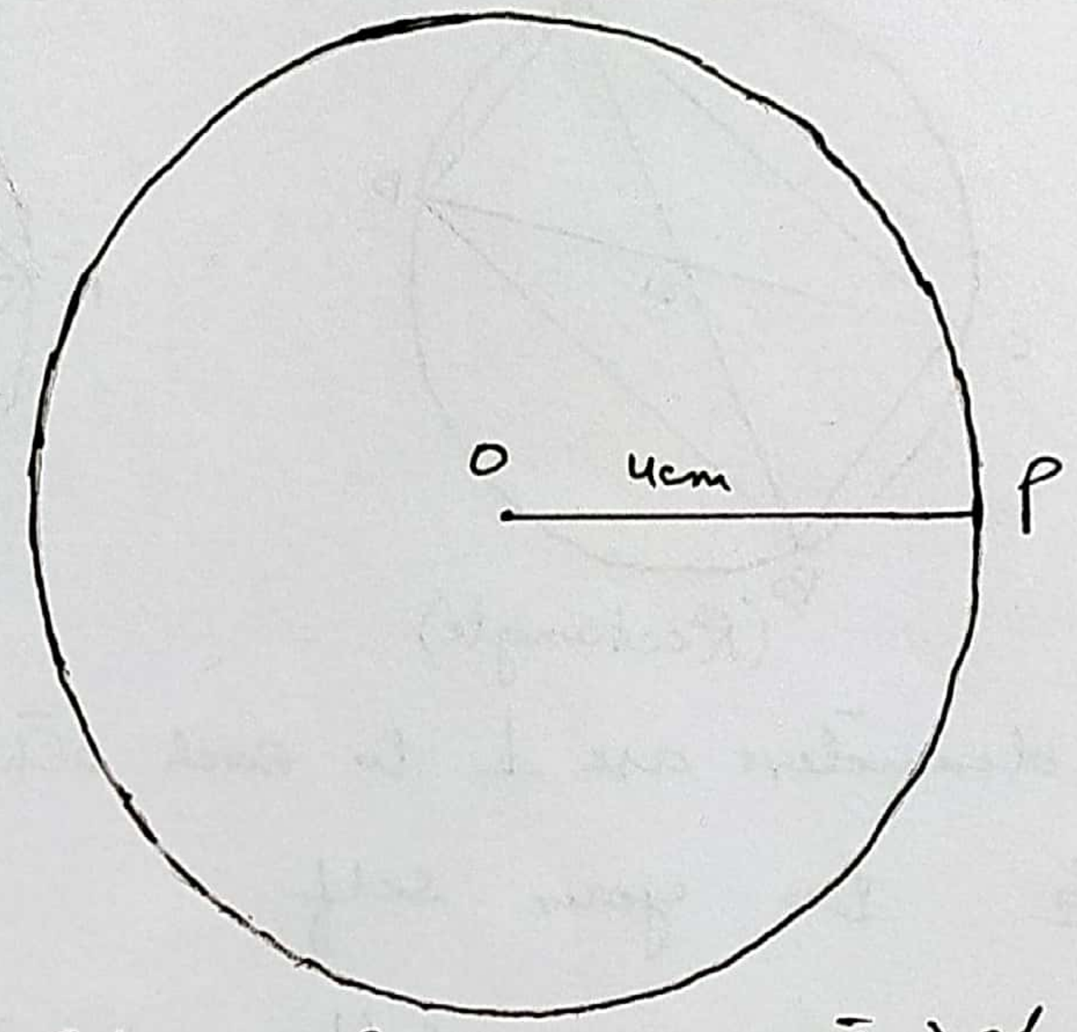


Q=2 Draw a circle of diameter 8cm.

Soluh:- radius = $\frac{\text{diameter}}{2} = \frac{8\text{cm}}{2} = 4\text{cm}$

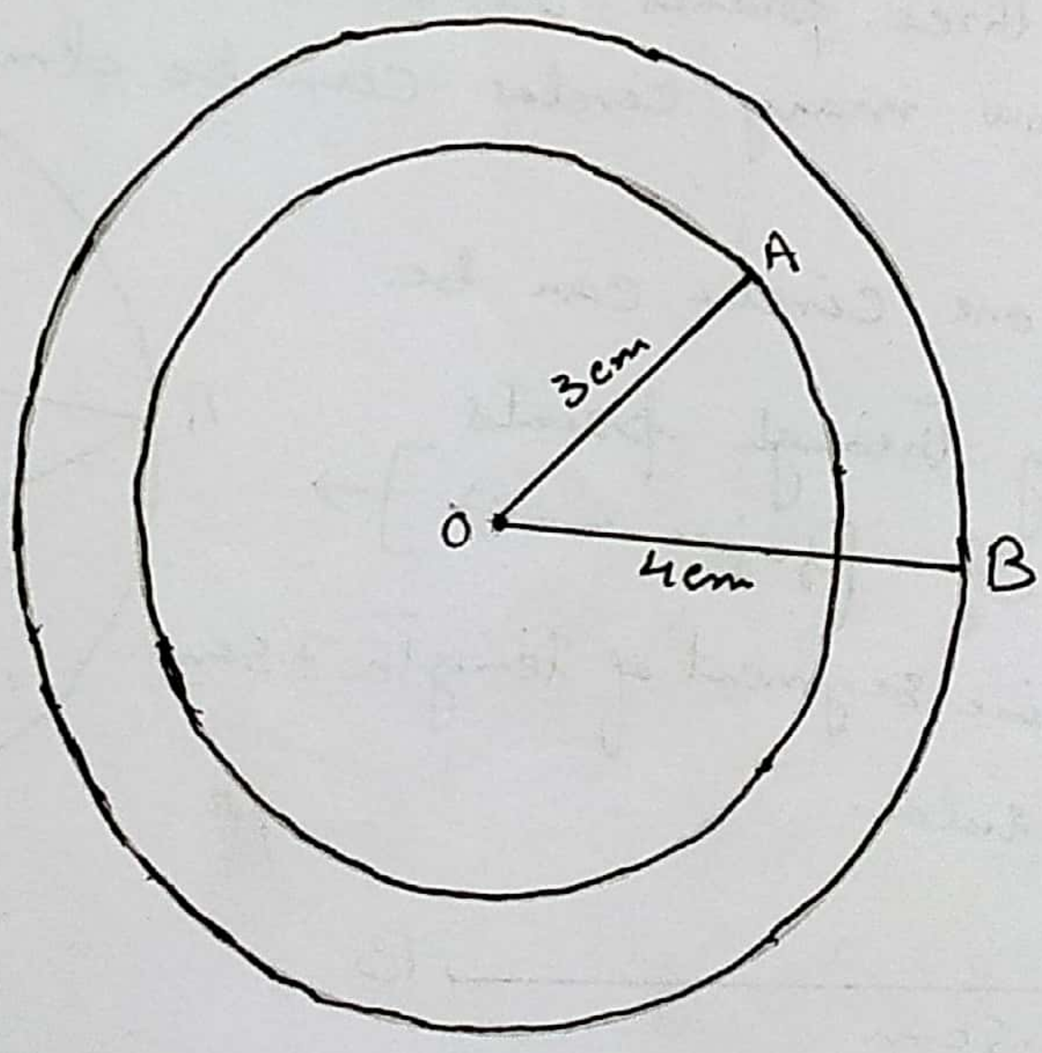
radius = 4cm

figure →



Q=3 Draw Two Concentric circles (circle with the same center) of radii 3cm and 4cm.

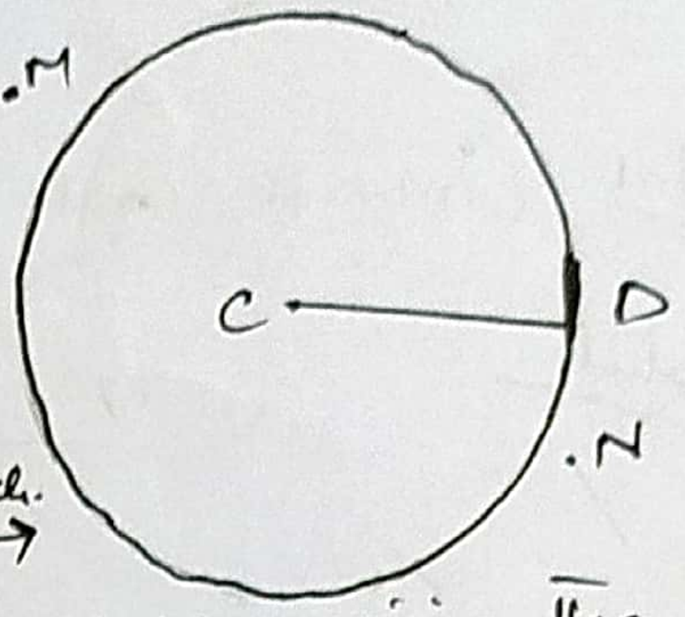
Soluh:-



P.T.O

Q=4 Mark Two points C and D on a sheet of paper. with C as center and radius CD, Construct a circle.

Solution figure →



(a) Does the circle pass through D? → yes

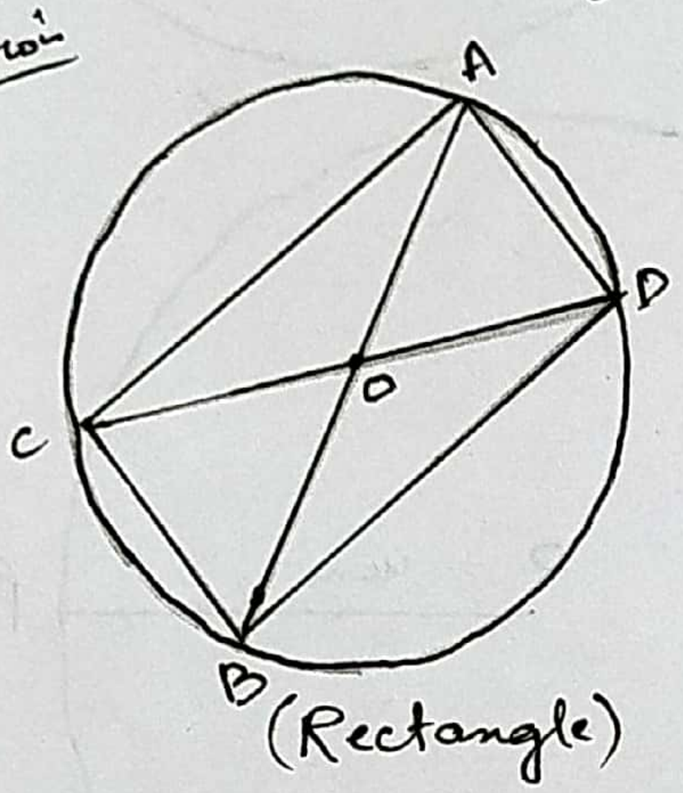
(b) Is D in the interior of the circle? → yes

(c) Is D on the circle? → Yes

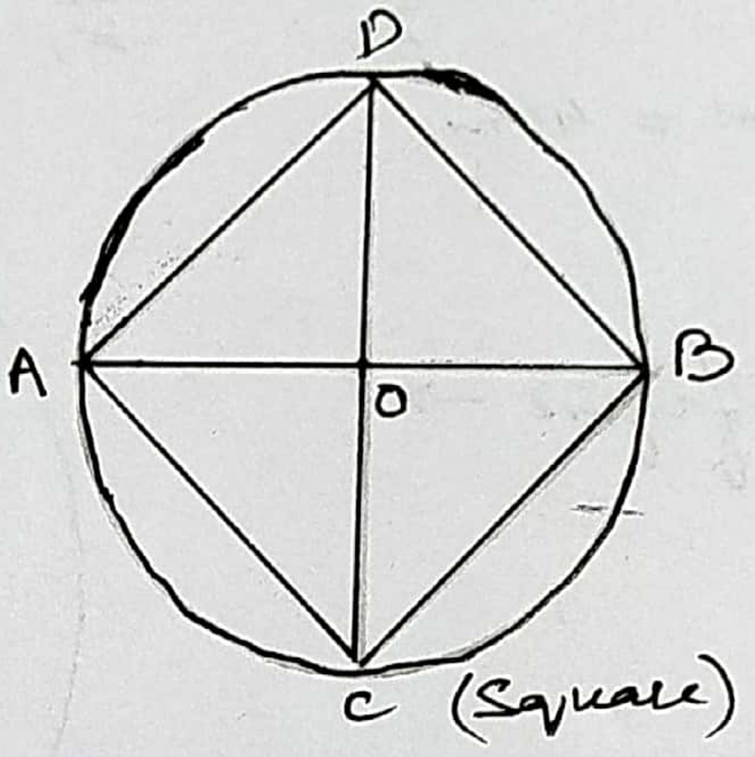
Mark Two points M and N in the exterior of the circle. →

Q=5 Draw a circle and any of its diameters. If you join the ends of these diameters, what the figure is obtained. what figure is obtained if the diameters are ⊥ to each other?

Solution



(Rectangle)



(Square)

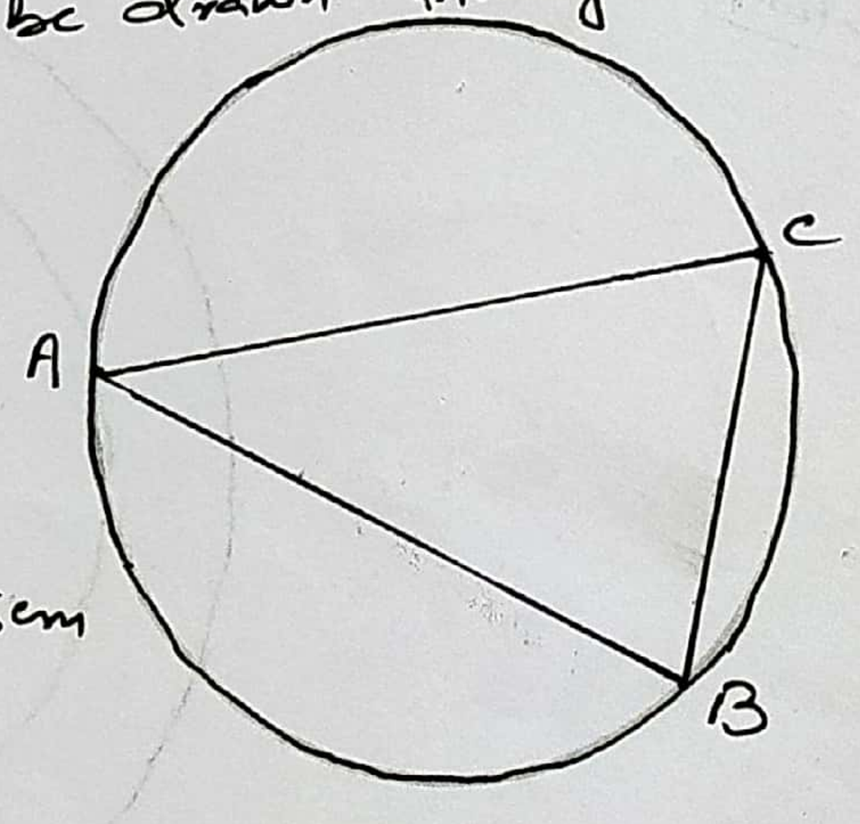
If diameters are ⊥ to each other than a Square is obtained.

Q=6 Do your self

Q=7 Do your self.

Q=8 Given three points A, B and C which are not on the same line, how many circles can be drawn through these points?.

Solution Only one circle can be drawn passing through points A, B and C. [figure →] →



Q=9 Draw a line segment of length 7.5cm using a ruler.

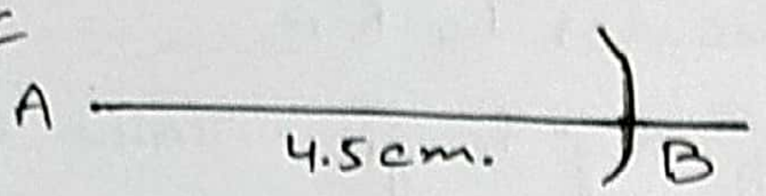
Solution

A ——————— B

7.5cm

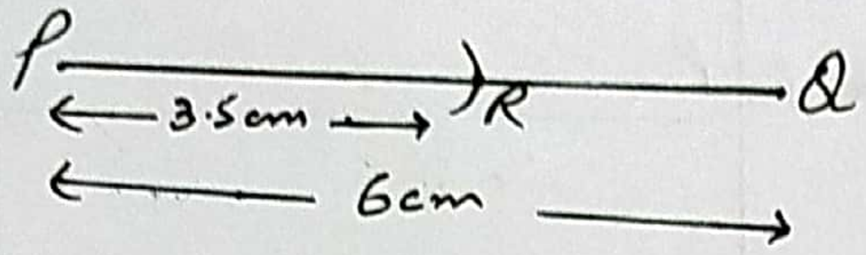
Q=10 Draw a line segment of length 4.5 cm, using a ruler and compass.

Solution



Q=11 Construct a line segment PQ of length 6 cm. From this cut off PR of length 3.5 cm. Measure RQ.

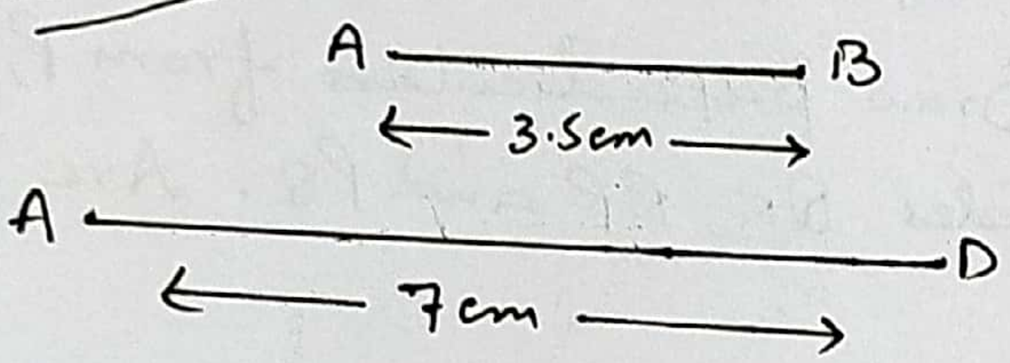
Solution



$RQ = PQ - PR \Rightarrow 6cm - 3.5cm \Rightarrow RQ = 2.5\ cm$

Q=12 Draw a line segment AB of length 3.5 cm. Construct a line segment whose length is equal to 2AB.

Solution



$AD = 2 \times AB \Rightarrow AD = 2 \times 3.5cm \Rightarrow AD = 7\ cm$

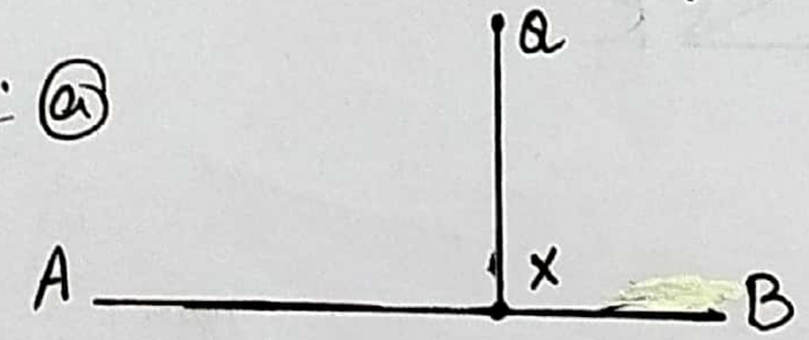
~o~o~

Exercise 14.2

Q=1 Draw a line segment AB of any length. Mark a point X on it. Through X, draw a $\perp$ to AB, using

(a) a ruler and a set square

Sol. (a)

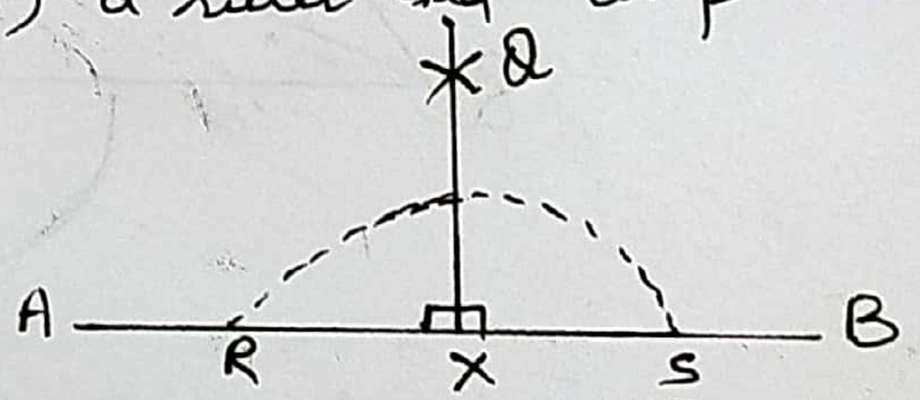


i) Place the ruler and draw a line segment of any length

ii) Mark a point X on it.

iii) Place the set square on AB (right angle corner on X) and draw a $\perp$ $\overline{QX}$ to $\overline{AB}$.

(b) a ruler and compasses



i) Draw a line segment $\overline{AB}$. Mark a point X.

ii) Draw an arc with center X and with suitable radius cutting $\overline{AB}$ at R and S

iii) With R as center and radius more than $\frac{1}{2}$ RS, we draw an arc.

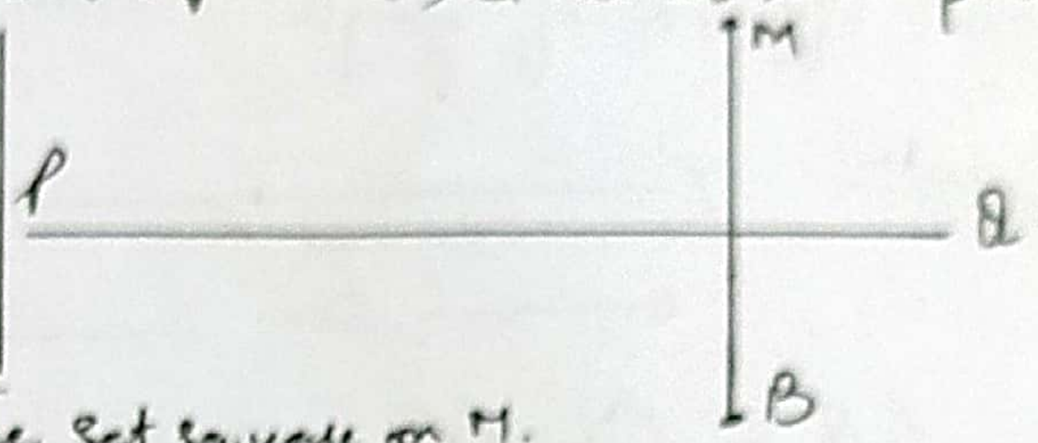
P.T.O

(b) iv) with S as center and same radius, we draw another arc cutting the previous arc at Q.

v) Join Q and X. $\overline{QX}$ is perpendicular to $\overline{RB}$.

Q=2 Draw a line segment PQ of any length. Take any point M not lying on $\overline{PQ}$. Through M, draw a perpendicular to $\overline{PQ}$. Using (a) a ruler and a set square (b) a ruler & compass

(a) Solution figure →



i) Draw a line segment PQ of any length.

ii) Take a point M outside AB.

iii) Place the right angle corner of the set square on M. and draw $\overline{MB} \perp$ to $\overline{PQ}$.

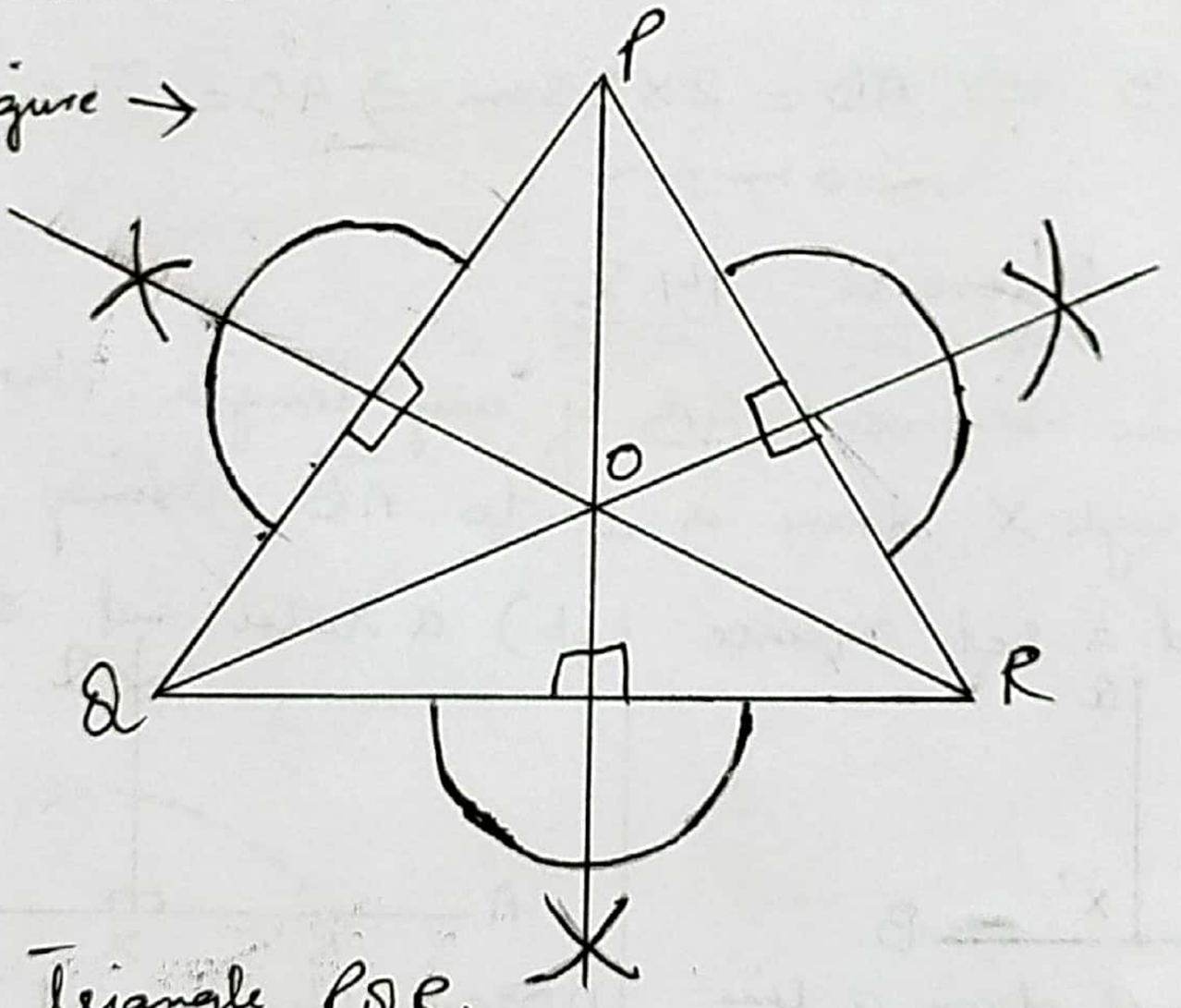
(b) Do your self.

Q=3 Do your self

Q=4 Do your self.

Q=5 Draw any triangle PQR. Draw perpendiculars from P, Q and R respectively on the sides QR, RP and PQ. Are these perpendiculars concurrent.

Solution figure →



i) Draw a triangle PQR.

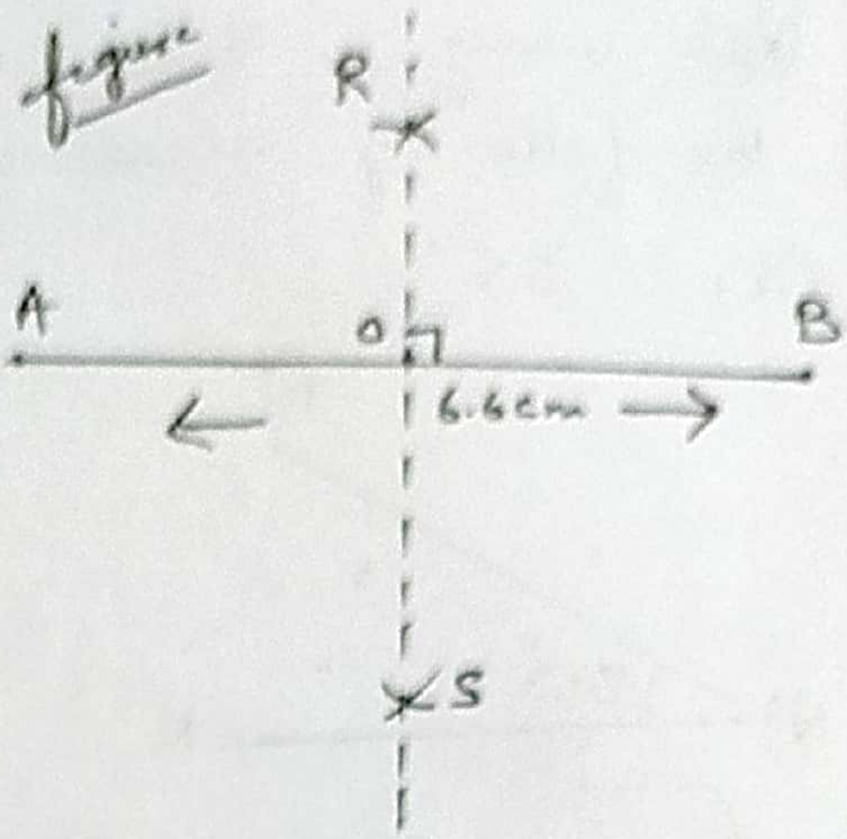
ii) Draw perpendiculars from P, Q and R on sides QR, RP and PQ. respectively.

iii) All the perpendiculars intersect each other at the same point O, so they are concurrent.

Q=6 Draw a line segment 6.6 cm and construct its ⊥ bisector.

Solution: i) Draw a line segment AB = 6.6cm.
ii) With A and B as centers draw arcs of same radius (more than half AB) on both sides of AB intersecting each other at R and S.
iii) Join R and S
iv) RS is ⊥ bisector of AB.

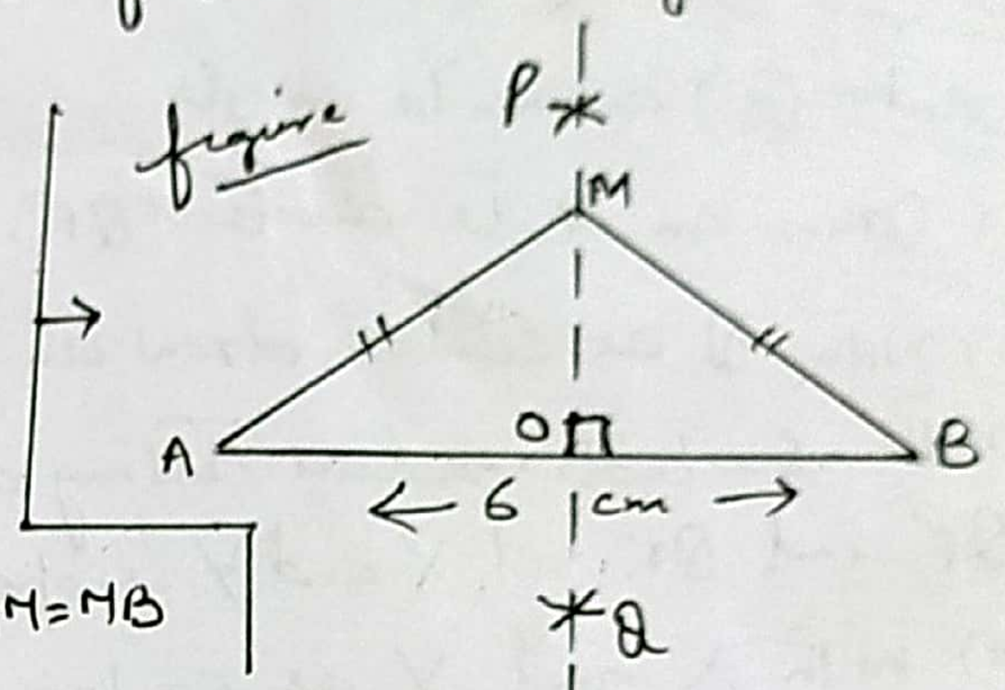
figure



Q=7 Draw a line segment AB of length 6cm. Construct the ⊥ bisector $\overline{PQ}$ of $\overline{AB}$. Take a point M on PQ. Join AM and BM. Measure $\overline{AM}$ and $\overline{BM}$. Find if these are of the same length.

Solution: i) Draw a line segment AB = 6cm
ii) Draw its ⊥ bisector PQ.
iii) Take a point M on the ⊥ bisector
iv) Join AM and MB.
v) Measure AM and MB. clearly AM = MB

figure

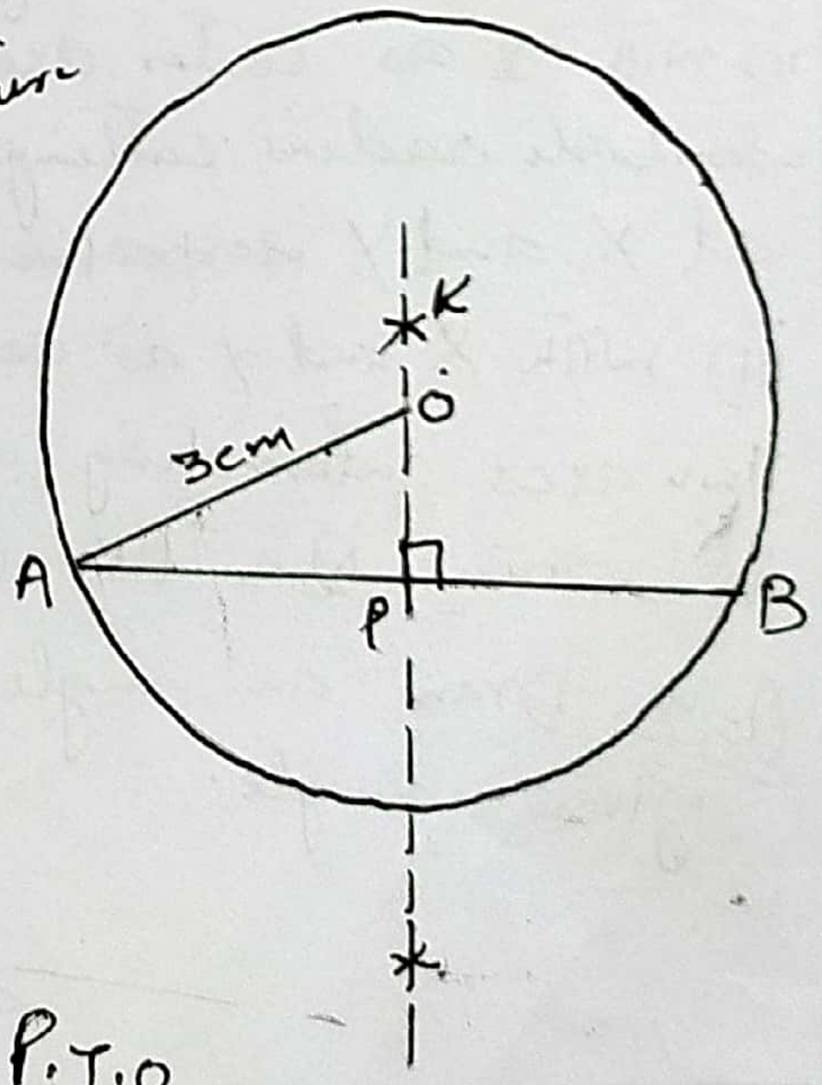


Q=8 [Do your self] [Same as Question no. 7]

Q=9 Draw a circle with center O and radius 3cm. Draw any chord AB. Construct the perpendicular bisector of $\overline{AB}$ and examine if it passes through O.

Solution: i) Draw a circle of radius 3cm.
ii) Draw any chord $\overline{AB}$.
iii) Draw a ⊥ bisector of $\overline{AB}$.
Yes the ⊥ bisector of $\overline{AB}$ passes through O.

figure



Q=10 Do your self

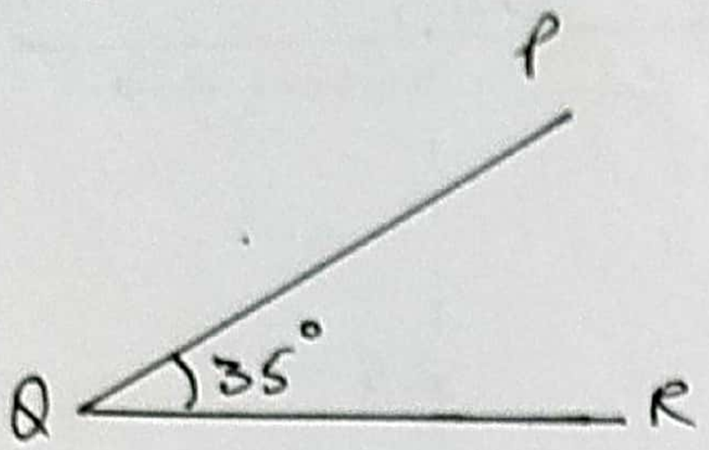
~o~

P.T.O

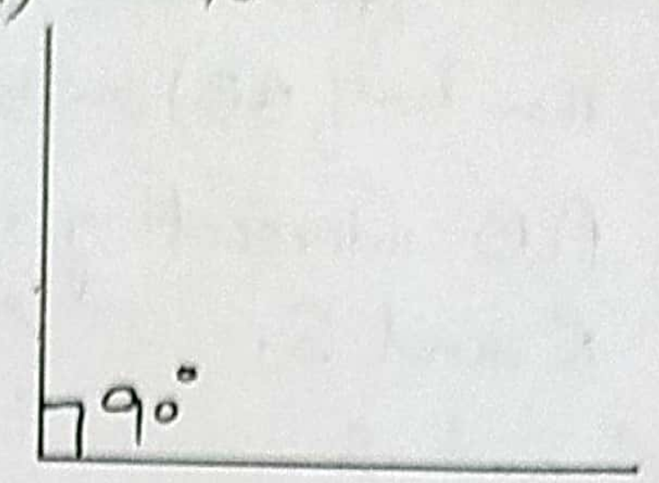
Exercise 14.3

Q=1 Using a ruler and a protractor, construct angles of the following measures.

(a) 35°



(d) 90°



(Extra parts do your self)

Q=2 Do your self.

Q=3 Draw the bisector of (a) an acute angle (b) an obtuse angle.

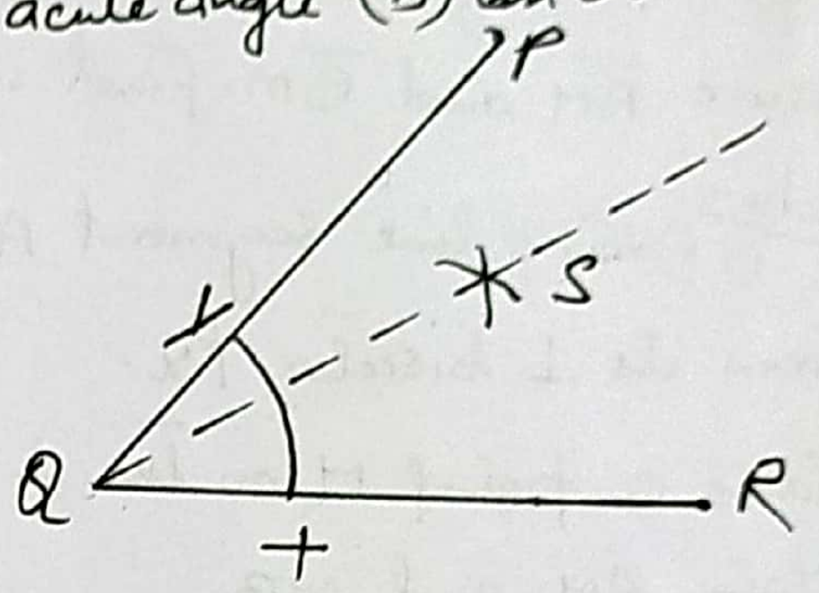
Solution (a) an acute angle

i) Draw an acute angle PQR.

ii) With Q as center draw an arc with suitable radius cutting arm QP and QR at X and Y respectively.

iii) With X and Y as centers and radius more than half XY, draw two arcs intersecting at S

iv) Join Q and S. QS is the bisector of the angle PQR



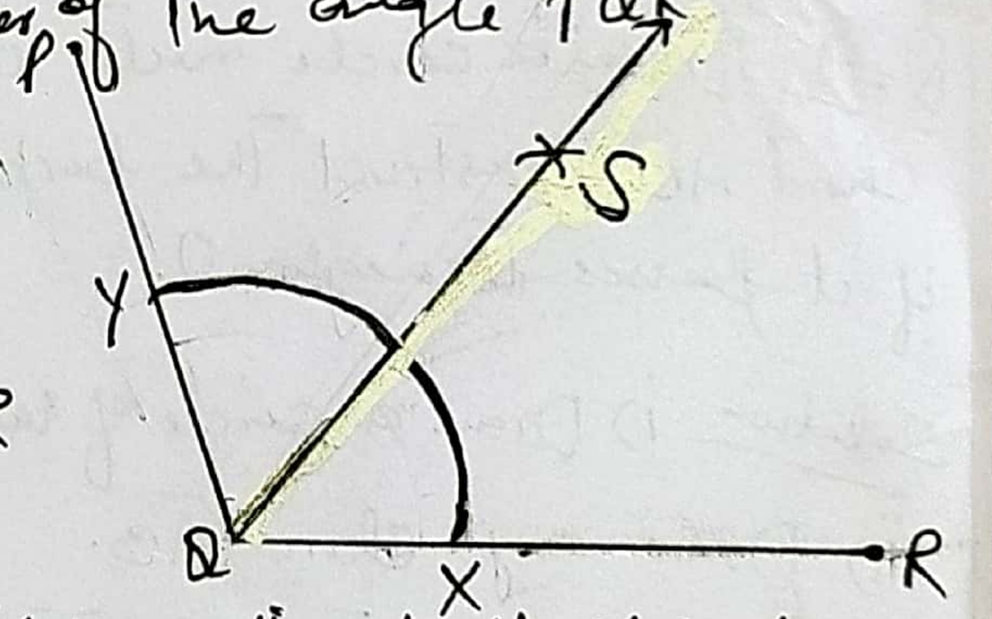
(b) an obtuse angle.

i) Draw an obtuse angle PQR

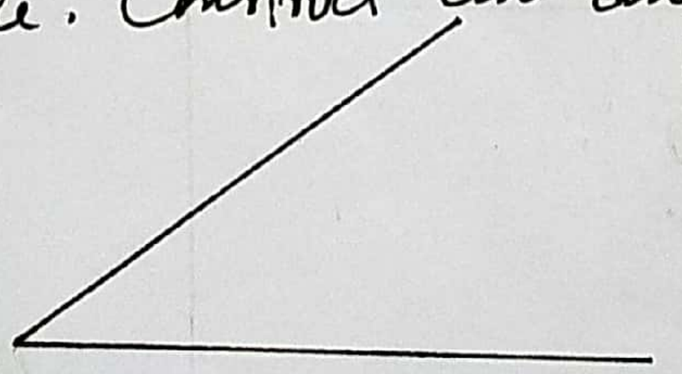
ii) With Q as center draw an arc with suitable radius cutting arm QP and QR at X and Y respectively.

iii) With X and Y as centers and radius more than half XY, draw two arcs intersecting at S.

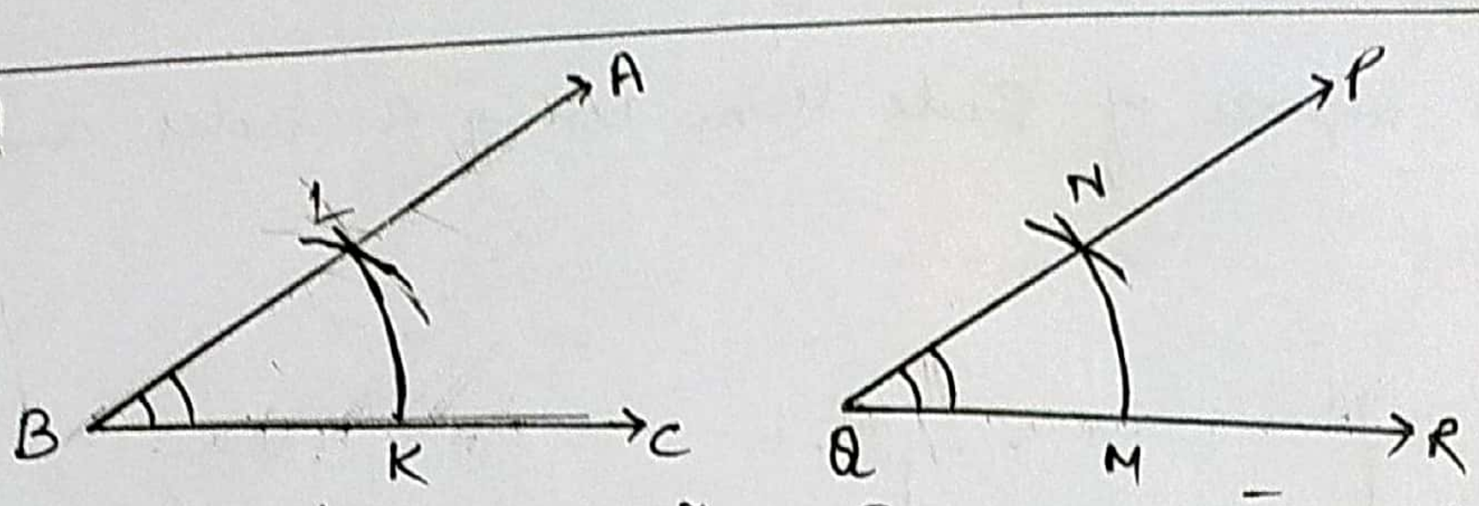
iv) Join Q and S. QS is the bisector of angle PQR.



Q=4 Draw an angle. Construct an angle equal to the given angle.



Solution 4



i) Draw an angle ABC. (ii) With B as center, draw an arc cutting both the arms AB and BC at L and K respectively.
iii) Draw another line QR. (iv) with Q as center, draw an arc with same radius as in step (ii) cutting PQ at M.
v) With M as center and radius equal to LK, draw another arc cutting the previous arc at N.
(vi) Join Q & N and extend it to a suitable point P.

$\angle ABC = \angle PQR$.

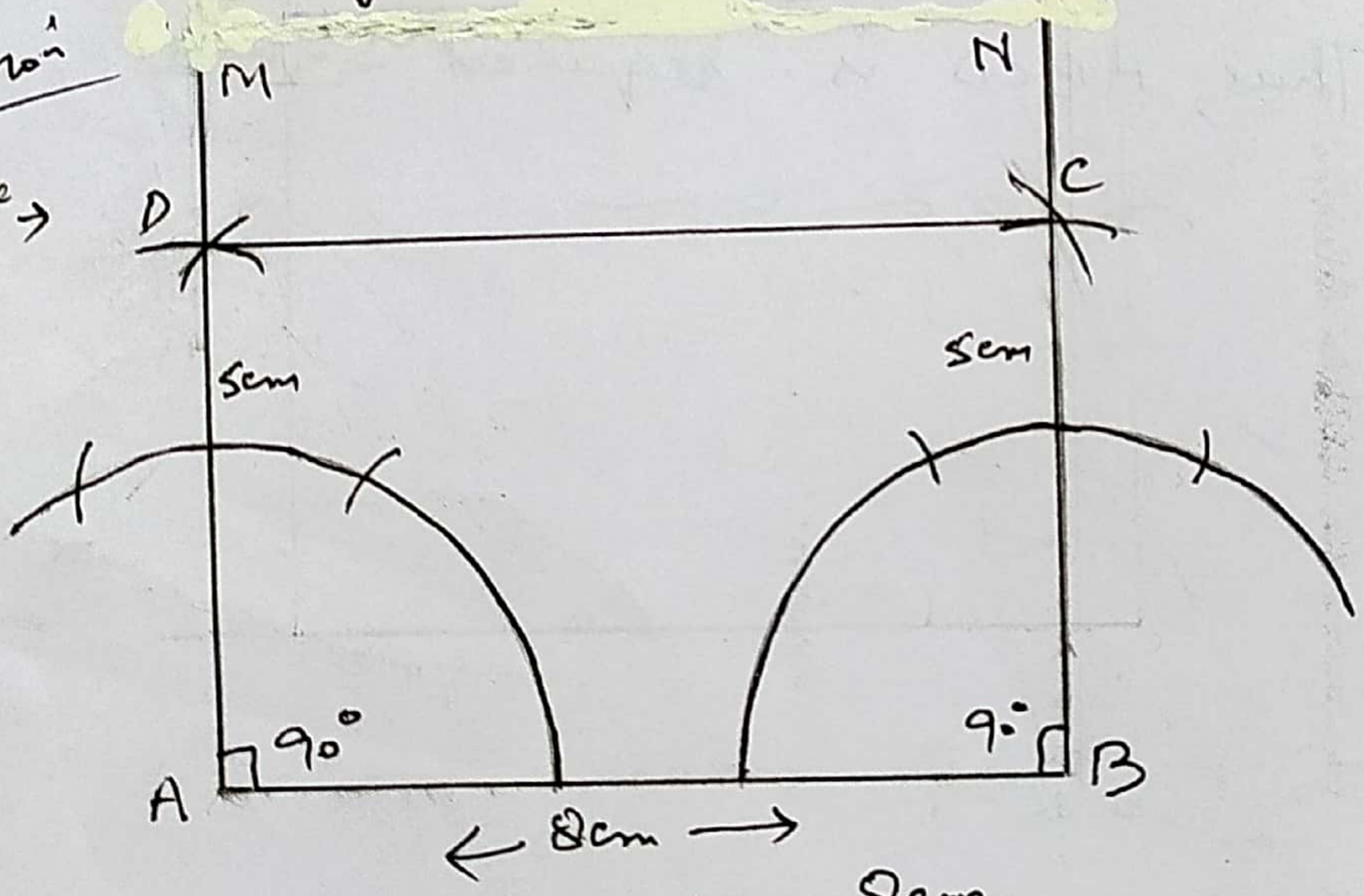
Q=5 Do your self.

Q=6 Do your self → [same as Question Number 4]

Q=7 Do your self. Q=8 Do your self.

Q=9 construct a rectangle whose adjacent sides are 8cm, and 5cm. Using a ruler and compass.

Solution



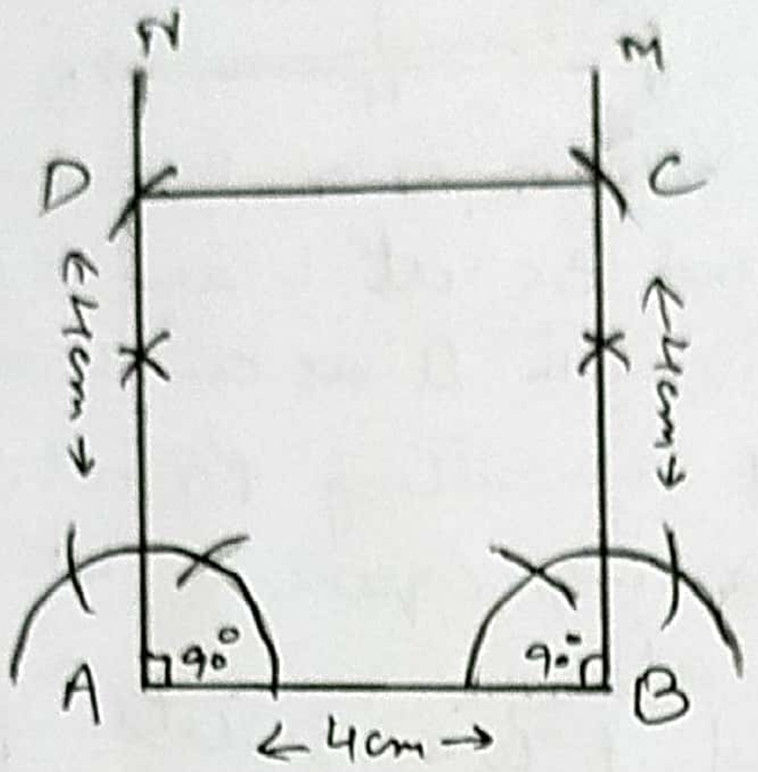
i) Draw a line segment AB = 8cm.
ii) Construct two angles MAB and NBA of 90° each at point A & B.
iii) cut AD from MA and CB from NB equal to 5cm each.
iv) Join C and D. Thus ABCD is a required rectangle.

P.T.O

Q.10 Draw a Square of Side 4cm Using a ruler and compass.

Solution

Figure →



i) Draw a line segment AB = 4cm.

ii) Draw two angles NAB and MBA of 90° each at point A and B.

iii) cut AD from NA and CB from MB equal to 4cm each.

iv) Join C and D.

Thus, ABCD is required Square.

—o—o—.