

# Mathematics

(Chapter – 4) (Practical Geometry)  
(Class – VIII)

## Exercise 4.1

### Question 1:

Construct the following quadrilaterals:

- (i) Quadrilateral ABCD  
AB = 4.5 cm, BC = 5.5 cm, CD = 4 cm, AD = 6 cm, AC = 7 cm
- (ii) Quadrilateral JUMP  
JU = 3.5 cm, UM = 4 cm, MP = 5 cm, PJ = 4.5 cm, PU = 6.5 cm
- (iii) Parallelogram MORE  
OR = 6 cm, RE = 4.5 cm, EO = 7.5 cm
- (iv) Rhombus BEST  
BE = 4.5 cm, ET = 6 cm

### Answer 1:

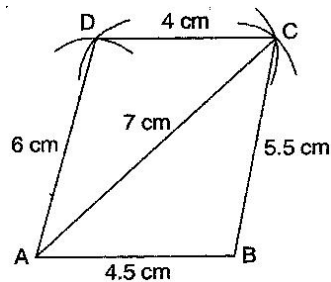
- (i) **Given:** AB = 4.5 cm, BC = 5.5 cm, CD = 4 cm, AD = 6 cm, AC = 7 cm

**To construct:** A quadrilateral ABCD

**Steps of construction:**

- (a) Draw AB = 4.5 cm.
- (b) Draw an arc taking radius 5.5 cm from point B.
- (c) Taking radius 7 cm, draw another arc from point A which intersects the first arc at point C.
- (d) Join BC and AC.
- (e) Draw an arc of radius 6 cm from point A and draw another arc of radius 4 cm from point C which intersects at D.
- (f) Join AD and CD.

It is required quadrilateral ABCD.



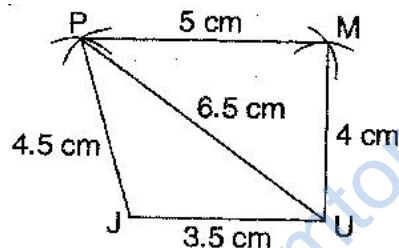
(ii) **Given:**  $JU = 3.5$  cm,  $UM = 4$  cm,  $MP = 5$  cm,  $PJ = 4.5$  cm,  $PU = 6.5$  cm

**To construct:** A quadrilateral JUMP

**Steps of construction:**

- Draw  $JU = 3.5$  cm.
- Draw an arc of radius 4.5 cm taking centre J and then draw another arc of radius 6.5 cm taking U as centre. Both arcs intersect at P.
- Join PJ and PU.
- Draw arc of radius 5 cm and 4 cm taking P and U as centres respectively, which intersect at M.
- Join MP and MU.

It is required quadrilateral JUMP.



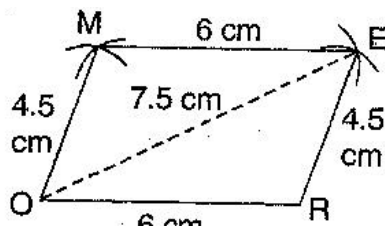
(iii) **Given:**  $OR = 6$  cm,  $RE = 4.5$  cm,  $EO = 7.5$  cm

**To construct:** A parallelogram MORE.

**Steps of construction:**

- Draw  $OR = 6$  cm.
- Draw arcs of radius 7.5 cm and radius 4.5 cm taking O and R as centres respectively, which intersect at E.
- Join OE and RE.
- Draw an arc of 6 cm radius taking E as centre.
- Draw another arc of 4.5 cm radius taking O as centre, which intersects at M.
- Join OM and EM.

It is required parallelogram MORE.

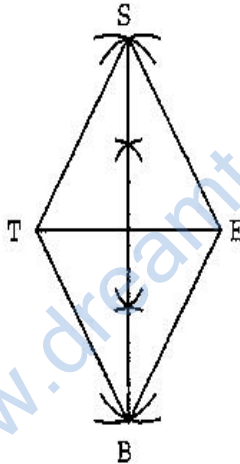


(iv) **Given:**  $BE = 4.5 \text{ cm}$ ,  $ET = 6 \text{ cm}$

**To construct:** A rhombus BEST.

**Steps of construction:**

- (a) Draw  $TE = 6 \text{ cm}$  and bisect it into two equal parts.
  - (b) Draw up and down perpendiculars to  $TE$ .
  - (c) Draw two arcs of  $4.5 \text{ cm}$  taking  $E$  and  $T$  as centres, which intersect at  $S$ .
  - (d) Again draw two arcs of  $4.5 \text{ cm}$  taking  $E$  and  $T$  as centres, which intersect at  $B$ .
  - (e) Join  $TS$ ,  $ES$ ,  $BT$  and  $EB$ .
- It is the required rhombus BEST.



## Exercise 4.2

### Question 1:

Construct the following quadrilaterals:

- (i) Quadrilateral LIFT  
LI = 4 cm, IF = 3 cm, TL = 2.5 cm, LF = 4.5 cm, IT = 4 cm
- (ii) Quadrilateral GOLD  
OL = 7.5 cm, GL = 6 cm, GD = 6 cm, LD = 5 cm, OD = 10 cm
- (iii) Rhombus BEND  
BN = 5.6 cm, DE = 6.5 cm

### Answer 1:

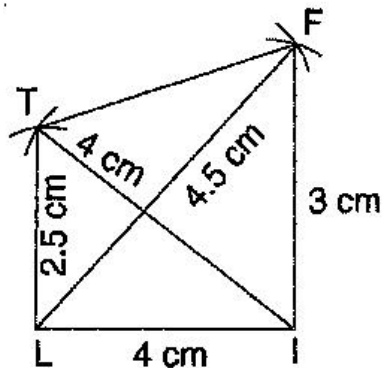
- (i) **Given:** LI = 4 cm, IF = 3 cm, TL = 2.5 cm, LF = 4.5 cm, IT = 4 cm

**To construct:** A quadrilateral LIFT

**Steps of construction:**

- (a) Draw a line segment LI = 4 cm.
- (b) Taking radius 4.5 cm, draw an arc taking L as centre.
- (c) Draw an arc of 3 cm taking I as centre which intersects the first arc at F.
- (d) Join FI and FL.
- (e) Draw another arc of radius 2.5 cm taking L as centre and 4 cm taking I as centre which intersect at T.
- (f) Join TF, TI and TL.

It is the required quadrilateral LIFT.



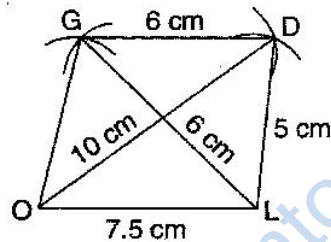
(ii) **Given:**  $OL = 7.5$  cm,  $GL = 6$  cm,  $GD = 6$  cm,  $LD = 5$  cm,  $OD = 10$  cm

**To construct:** A quadrilateral GOLD

**Steps of construction:**

- Draw a line segment  $OL = 7.5$  cm
- Draw an arc of radius 5 cm taking L as centre and another arc of radius 10 cm taking O as centre which intersect the first arc point at D.
- Join LD and OD.
- Draw an arc of radius 6 cm from D and draw another arc of radius 6 cm taking L as centre, which intersects at G.
- Join GD and GO.

It is the required quadrilateral GOLD.



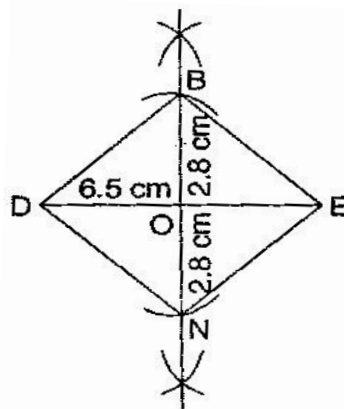
(iii) **Given:**  $BN = 5.6$  cm,  $DE = 6.5$  cm

**To construct:** A rhombus BEND.

**Steps of construction:**

- Draw  $DE = 6.5$  cm.
- Draw perpendicular bisector of line segment DE.
- Draw two arcs of radius 2.8 cm from intersection point O, which intersects the line KN at B and N.
- Join BE, BD as well as ND and NE.

It is the required rhombus BEND.



## Exercise 4.3

### Question 1:

Construct the following quadrilaterals:

- (i) Quadrilateral MORE  
 $MO = 6 \text{ cm}$ ,  $OR = 4.5 \text{ cm}$ ,  $\angle M = 60^\circ$ ,  $\angle O = 105^\circ$ ,  $\angle R = 105^\circ$
- (ii) Quadrilateral PLAN  
 $PL = 4 \text{ cm}$ ,  $LA = 6.5 \text{ cm}$ ,  $\angle P = 90^\circ$ ,  $\angle A = 110^\circ$ ,  $\angle N = 85^\circ$
- (iii) Parallelogram HEAR  
 $HE = 5 \text{ cm}$ ,  $EA = 6 \text{ cm}$ ,  $\angle R = 85^\circ$
- (iv) Rectangle OKAY  
 $OK = 7 \text{ cm}$ ,  $KA = 5 \text{ cm}$

### Answer 1:

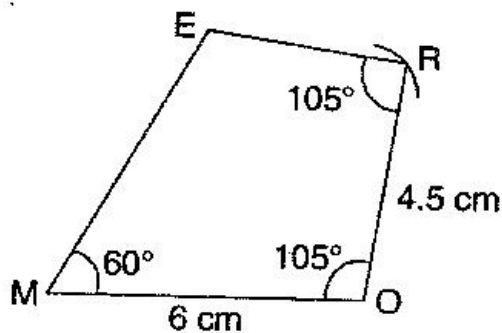
- (i) **Given:**  $MO = 6 \text{ cm}$ ,  $OR = 4.5 \text{ cm}$ ,  $\angle M = 60^\circ$ ,  $\angle O = 105^\circ$ ,  $\angle R = 105^\circ$

**To construct:** A quadrilateral MORE.

**Steps of construction:**

- (a) Draw a line segment  $MO = 6 \text{ cm}$ .
- (b) Construct  $\angle R = 105^\circ$  and taking radius  $4.5 \text{ cm}$ , draw an arc taking  $O$  as centre, which intersects at  $R$ .
- (c) Also construct an angle  $105^\circ$  at  $R$  and produce the side  $RE$ .
- (d) Construct another angle of  $60^\circ$  at point  $M$  and produce the side  $ME$ .  
Both sides  $ME$  and  $RE$  intersect at  $E$ .

It is the required quadrilateral MORE.



(ii) **Given:**  $PL = 4 \text{ cm}$ ,  $LA = 6.5 \text{ cm}$ ,  $\angle P = 90^\circ$ ,  $\angle A = 110^\circ$ ,  $\angle N = 85^\circ$

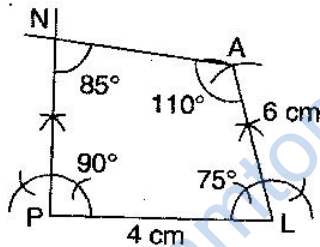
**To construct:** A quadrilateral PLAN.

**To find:**  $\angle L = 360^\circ - (90^\circ + 85^\circ + 110^\circ) = 360^\circ - 285^\circ = 75^\circ$

**Steps of construction:**

- Draw a line segment  $PL = 4 \text{ cm}$ .
- Construct angle of  $90^\circ$  at P and produce the side PN.
- Construct angle of  $75^\circ$  at L and with L as centre, draw an arc of radius 6 cm, which intersects at A.
- Construct  $\angle A = 110^\circ$  at A and produce the side AN which intersects PN at N.

It is the required quadrilateral PLAN.



(iii) **Given:**  $HE = 5 \text{ cm}$ ,  $EA = 6 \text{ cm}$ ,  $\angle R = 85^\circ$

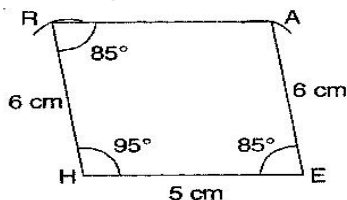
**To construct:** A parallelogram HEAR.

**To find:**  $\angle H = 180^\circ - 85^\circ = 95^\circ$  [ $\because$  Sum of adjacent angle of  $\parallel^{\text{gm}}$  is  $180^\circ$ ]

**Steps of construction:**

- Draw a line segment  $HE = 5 \text{ cm}$ .
- Construct  $\angle H = 95^\circ$  and draw an arc of radius 6 cm with centre H. It intersects AR at R.
- Join RH.
- Draw  $\angle R = \angle E = 85^\circ$  and draw an arc of radius 6 cm with E as a centre which intersects RA at A.
- Join RA

It is the required parallelogram HEAR.



(iv) **Given:**  $OK = 7 \text{ cm}$ ,  $KA = 5 \text{ cm}$

**To construct:** A rectangle OKAY.

**Steps of construction:**

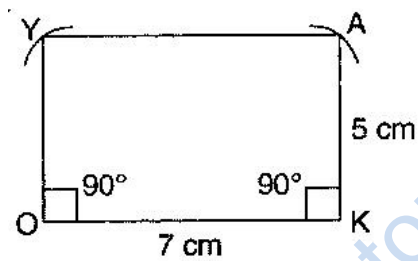
(a) Draw a line segment  $OK = 7 \text{ cm}$ .

(b) Construct angle  $90^\circ$  at both points O and K and produce these sides.

(c) Draw two arcs of radius  $5 \text{ cm}$  from points O and K respectively. These arcs intersect at Y and A.

(d) Join YA.

It is the required rectangle OKAY.





## Exercise 4.4

### Question 1:

Construct the following quadrilaterals:

- (i) Quadrilateral DEAR  
 $DE = 4 \text{ cm}$ ,  $EA = 5 \text{ cm}$ ,  $AR = 4.5 \text{ cm}$ ,  $\angle E = 60^\circ$ ,  $\angle A = 90^\circ$
- (ii) Quadrilateral TRUE  
 $TR = 3.5 \text{ cm}$ ,  $RU = 3 \text{ cm}$ ,  $UE = 4 \text{ cm}$ ,  $\angle R = 75^\circ$ ,  $\angle U = 120^\circ$

### Answer 1:

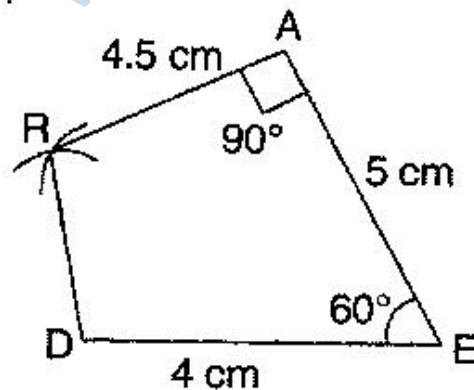
- (i) **Given:**  $DE = 4 \text{ cm}$ ,  $EA = 5 \text{ cm}$ ,  $AR = 4.5 \text{ cm}$ ,  $\angle E = 60^\circ$ ,  $\angle A = 90^\circ$

**To construct:** A quadrilateral DEAR.

**Steps of construction:**

- Draw a line segment  $DE = 4 \text{ cm}$ .
- At point E, construct an angle of  $60^\circ$ .
- Taking radius  $5 \text{ cm}$ , draw an arc from point E which intersects at A.
- Construct  $\angle A = 90^\circ$ , draw an arc of radius  $4.5 \text{ cm}$  with centre A which intersect at R.
- Join RD.

It is the required quadrilateral DEAR.



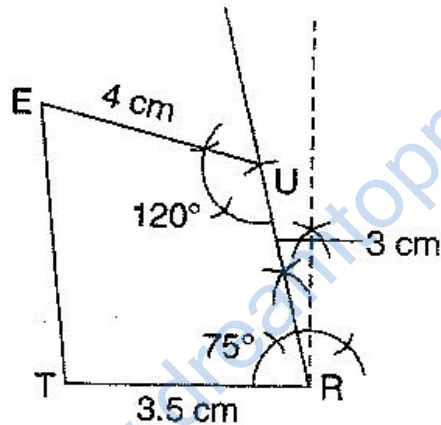
(ii) **Given:**  $TR = 3.5 \text{ cm}$ ,  $RU = 3 \text{ cm}$ ,  $UE = 4 \text{ cm}$ ,  $\angle R = 75^\circ$ ,  $\angle U = 120^\circ$

**To construct:** A quadrilateral TRUE

**Steps of construction:**

- (a) Draw a line segment  $TR = 3.5 \text{ cm}$ .
- (b) Construct an angle  $75^\circ$  at R and draw an arc of radius  $3 \text{ cm}$  with R as centre, which intersects at U.
- (c) Construct an angle of  $120^\circ$  at U and produce the side UE.
- (d) Draw an arc of radius  $4 \text{ cm}$  with U as centre.
- (e) Join UE and TE.

It is the required quadrilateral TRUE.



## Exercise 4.5

### Question 1:

Draw the following:

The square READ with  $RE = 5.1$  cm.

### Answer 1:

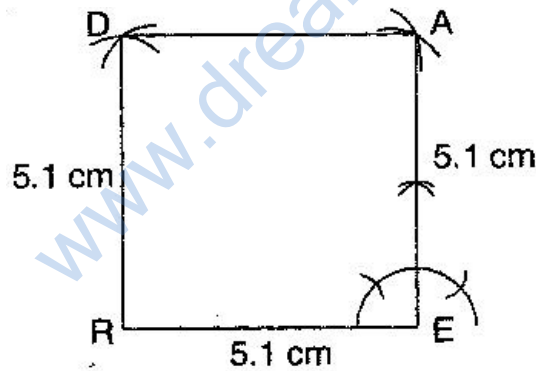
**Given:**  $RE = 5.1$  cm.

**To construct:** A square READ.

**Steps of construction:**

- (i) Draw  $RE = 5.1$  cm.
- (ii) At point E, construct an angle of  $90^\circ$  and draw an arc of radius 5.1 cm, which intersects at point A.
- (iii) At point R, draw an arc of radius 5.1 cm at point A, draw another arc of radius 5.1 cm which intersects the first arc at point D.
- (iv) Join AD and RD.

It is the required square READ,



### Question 2:

Draw the following:

A rhombus whose diagonals are 5.2 cm and 6.4 cm.

### Answer 2:

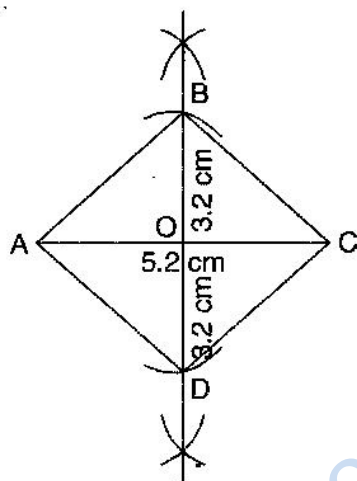
**Given:** Diagonals of a rhombus  $AC = 5.2$  cm and  $BD = 6.4$  cm.

**To construct:** A rhombus ABCD.

**Steps of construction:**

- (a) Draw  $AC = 5.2$  cm and draw perpendicular bisectors on AC.
- (b) Since, diagonals bisect at mid-point O, therefore get half of 6.4 cm, i.e., 3.2 cm.

- (c) Draw two arcs on both sides of AC of radius 3.2 cm from intersection point O, which intersects at B and D.  
 (d) Join AB, BC, CD and DA.  
 It is required rhombus ABCD.



**Question 3:**

Draw the following:  
 A rectangle with adjacent sides of length 5 cm and 4 cm.

**Answer 3:**

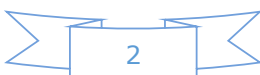
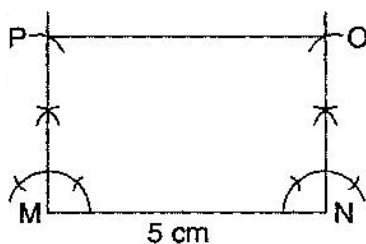
**Given:**  $MN = 5\text{ cm}$  and  $MP = 4\text{ cm}$ .

**To construct:** A rectangle MNOP

**Steps of construction:**

- Draw a segment  $MN = 5\text{ cm}$ .
- At points M and N, draw perpendiculars of lengths 4 cm and produce them.
- Taking centres M and N, draw two arcs of 4 cm each, which intersect P and Q respectively.
- Join side PO.

It is required rectangle MNOP.



#### Question 4:

Draw the following:

A parallelogram OKAY where  $OK = 5.5$  cm and  $KA = 4.2$  cm.

#### Answer 4:

Given:  $OK = 5.5$  cm and  $KA = 4.2$  cm.

To construct: A parallelogram OKAY.

Steps of construction:

- Draw a line segment  $OK = 5.5$  cm.
- Draw an angle of  $90^\circ$  at K and draw an arc of radius  $KA = 4.2$  cm, which intersects at point A.
- Draw another arc of radius  $AY = 5.5$  cm and at point O, draw another arc of radius  $4.2$  cm which intersect at Y.
- Join AY and OY.

It is the required parallelogram OKAY.

