पुणा International School
Shree Swaminarayan Gurukul, Zundal

CLASS-8

SUBJECT-MATHS

SAMPLE COPY

LESSON-4 (PRACTICAL GEOMETRY)

➢ SUMMARY

➢ INTRODUCTION

➢ CONSTRUCTING A QUADRILATERAL

➢ WHEN TWO DIAGONALS AND THREE SIDES ARE GIVEN

➢ WHEN THREE SIDES AND TWO INCLUDED ANGLES ARE GIVEN

EXERCISE -4.1

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

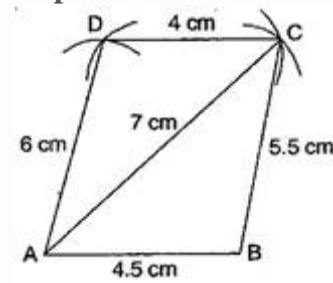**(iv)** Rhombus BEST

BE = 4.5 cm, ET = 6 cm

Ans.
(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 an 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.
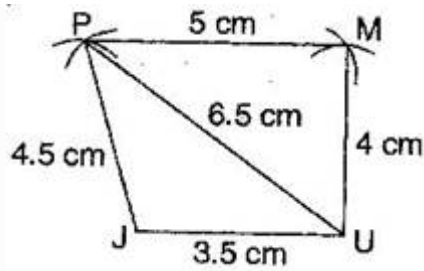
(f) Join AD and CD.

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:

(a) Draw JU = 3.5 cm.

(b) 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.

(c) Join PJ and PU.

(d) Draw arc of radius 5 cm and 4 cm taking P and U as centres respectively, which intersect at M.
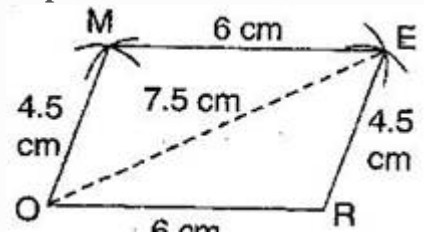
(e) Join Mp and MU.

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:


(a) Draw OR = 6 cm.

(b) Draw arcs of radius 7.5 cm and radius 4.5 cm taking O and R as centres respectively, which intersect at E.

(c) Join OE and RE.

(d) Draw an arc of 6 cm radius taking E as centre.

(e) Draw another arc of 4.5 cm radius taking O as centre, which intersects at M.

(f) Join OM and EM.

It is required parallelogram MORE.

(iv) Given: BE = 4.5 cm, ET = 6 cm

To construct: A rhombus BEST.
Steps of construction:
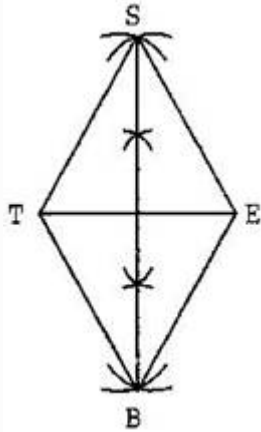
(a) Draw TE = 6 cm and bisect it into two equal parts.

(b) Draw up and down perpendiculars to TE.

(c) Draw two arcs of 4.5 cm taking E and T as centres, which intersect at S.

(d) Again draw two arcs of 4.5 cm taking E and T as centres, which intersects at B.

(e) Join TS, ES, BT and EB.

It is the required rhombus BEST.

EXERCISE-4.2

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
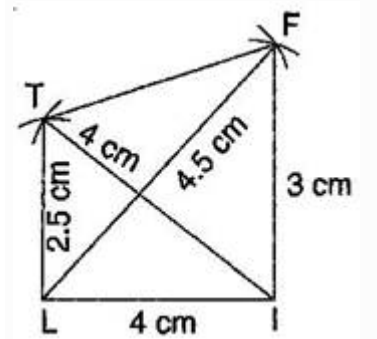**OL = 7.5 cm, GL = 6 cm, GD = 6 cm, LD = 5 cm, OD = 10 cm**
(iii) Rhombus BEND
BN = 5.6 cm, DE = 6.5 cm
Ans

(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.

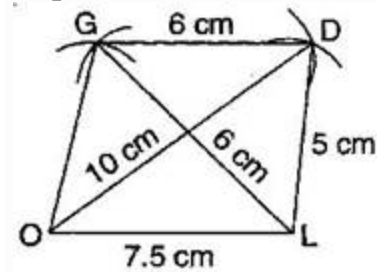(e) Draw another arc of radius 2.5 cm taking L as centre and 4 cm taking I as centre which intersect at T.

(f) Join TF, Tl and TI.

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:

(a) Draw a line segment OL = 7.5 cm

(b) 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.

(c) Join LD and OD.

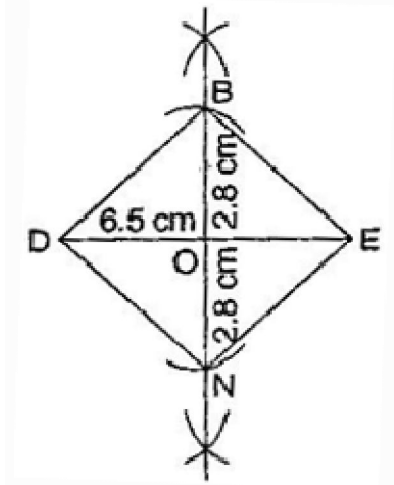(d) Draw an arc of radius 6 cm from D and draw another arc of radius 6 cm taking L as centre, which intersects at G.

(e) 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:

(a) Draw DE = 6.5 cm.

(b) Draw perpendicular bisector of line segment DE.

(c) Draw two arcs of radius 2.8 cm from intersection point O, which intersects the line KN at B and N.

(d) Join BE, BD as well as ND and NE.

It is the required rhombus BEND.

EXERCISE-4.3

(i) Quadrilateral MORE
MO = 6 cm, OR = 4.5 cm,
$\angle M = 60°$, $\angle O = 105°$, $\angle R = 105°$
(ii) Quadrilateral PLAN

PL = 4 cm, LA = 6.5 cm,

$\angle P = 90°, \angle A = 110°, \angle N = 85°$

(iii) Parallelogram HEAR

HE = 5 cm, EA = 6 cm, $\angle R = 85°$

(iv) Rectangle OKAY

OK = 7 cm, KA = 5 cm

Ans. (i) Given: MO = 6 cm, OR = 4.5 cm,

$\angle M = 60°, \angle O = 105°, \angle R = 105°$

To construct: A quadrilateral MORE.

Steps of construction:
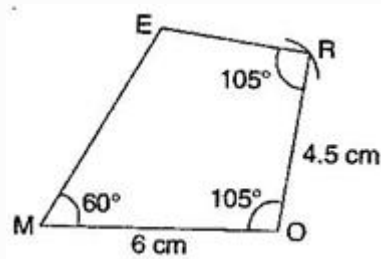
(a) Draw a line segment MO = 6 cm.

(b) Construct $\angle R = 105°$ and taking radius 4.5 cm, draw an arc taking O as centre, which intersects at R.

(c) Also construct an angle $105°$ at R and produce the side RE.

(d) Construct another angle of $60°$ at point M and produce the side ME. Both sides ME and RE intersect at E.
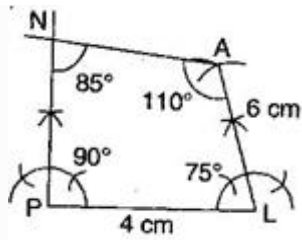
It is the required quadrilateral MORE.

(ii) Given: PL = 4 cm, LA = 6.5 cm,

$\angle P = 90°, \angle A = 110°, \angle N = 85°$

To construct: A quadrilateral PLAN.

To find: $\angle L = \dfrac{360° - (90° + 85° + 110°)}{}$

$= 360° - 285° = 75°$

Steps of construction:

(a) Draw a line segment PL = 4 cm.

(b) Construct angle of $90°$ at P and produce the side PN.

(c) Construct angle of $75°$ at L and with L as centre, draw an arc of radius 6 cm, which intersects at A.

(d) Construct $\angle A = 110°$ at A and produce the side AN which intersects PN at N.

It is the required quadrilateral PLAN.

 (iii) Given: HE = 5 cm, EA = 6 cm,

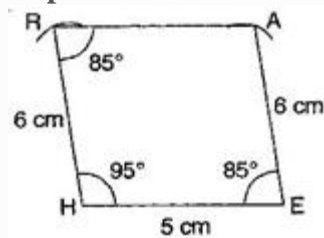$\angle R = 85°$

To construct: A parallelogram HEAR.
To find: $\angle H = 180° - 85° = 95°$
[$\because$ Sum of adjacent angle of $\parallel$gm is $180°$]
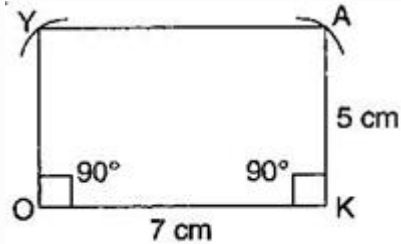
Steps of construction:

(a) Draw a line segment HE = 5 cm.

(b) Construct $\angle H = 95°$ and draw an arc of radius 6 cm with centre H. It intersects AR at R.

(c) Join RH.

(d) Draw $\angle R = \angle E = 85°$ and draw an arc of radius 6 cm with E as a centre which intersects RA at A.

(e) Join RA

It is the required parallelogram HEAR.

(iv) Given: OK = 7 cm, KA = 5 cm
To construct: A rectangle OKAY.

Steps of construction:

(a) Draw a line segment OK = 7 cm.

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

(c) Draw two arcs of radius 5 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

1. Construct the following quadrilaterals:

(i) Quadrilateral DEAR

DE = 4 cm, EA = 5 cm, AR = 4.5 cm,
$\angle E = 60°, \angle A = 90°$

(ii) Quadrilateral TRUE
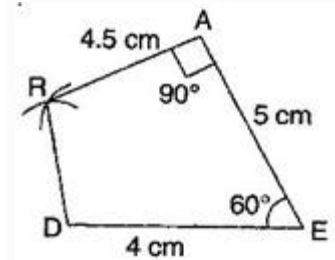**TR = 3.5 cm, RU = 3 cm, UE = 4 cm,**
$\angle R = 75°, \angle U = 120°$

Ans.
(i) Given: DE = 4 cm, EA = 5 cm,

AR = 4.5 cm, $\angle E = 60°$, $\angle A = 90°$

**To construct**: A quadrilateral DEAR.

Steps of construction:

(a) Draw a line segment DE = 4 cm.

(b) At point E, construct an angle of $60°$.

(c) Taking radius 5 cm, draw an arc from point E which intersects at A.

(d) Construct $\angle A = 90°$, draw an arc of radius 4.5 cm with centre A which intersect at R.

(e) Join RD.

It is the required quadrilateral DEAR.

(ii) Given: TR = 3.5 cm, RU = 3 cm,

UE = 4 cm, $\angle R = 75°$, $\angle U = 120°$

To construct: A quadrilateral TRUE

Steps of construction:
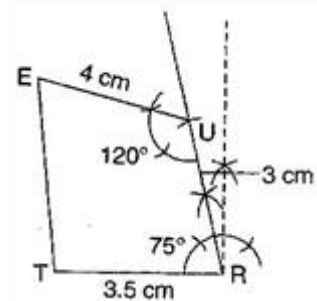
(a) Draw a line segment TR = 3.5 cm.

(b) Construct an angle $75°$ at R and draw an arc of radius 3 cm with R as centre, which intersects at U.

(c) Construct an angle of $120°$ at U and produce the side UE.

(d) Draw an arc of radius 4 cm with U as centre.

(e) Join UE and TE.

It is the required quadrilateral TRUE.

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