NCERT Solutions for 7th Class Maths: Chapter 10-Practical Geometry

NCERT Solutions for 7th Class Maths: Chapter 10-Practical Geometry

Class 7: Maths Chapter 10 solutions. Complete Class 7 Maths Chapter 10 Notes.

NCERT Solutions for 7th Class Maths: Chapter 10-Practical Geometry

NCERT 7th Maths Chapter 10, class 7 Maths Chapter 10 solutions

1. Draw a line, say AB, take a point C outside it. Through C, draw a line parallel to AB using ruler and compasses only.

Answer

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To construct: A line, parallel to given line by using ruler and compasses.

Steps of construction:

(a) Draw a line-segment AB and take a point C outside AB.

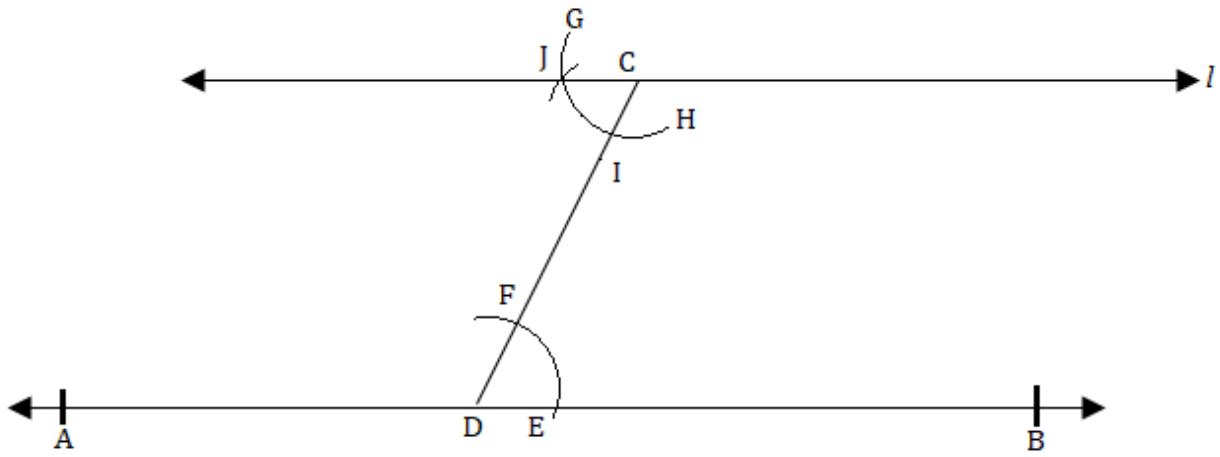
(b) Take any point D on AB and join C to D.

(c) With D as centre and take convenient radius, draw an arc cutting AB at E and CD at F.

(d) With C as centre and same radius as in step 3, draw an arc GH cutting CD at I.

(e) With the same arc EF, draw the equal arc cutting GH at J.

(f) Join JC to draw a line l. This the required line.



2. Draw a line l. Draw a perpendicular to l at any point on l. On this perpendicular choose a point X, 4 cm away from l. Through X, draw a line m parallel to l.

Answer

To construct: A line parallel to given line when perpendicular line is also given.

Steps of construction:

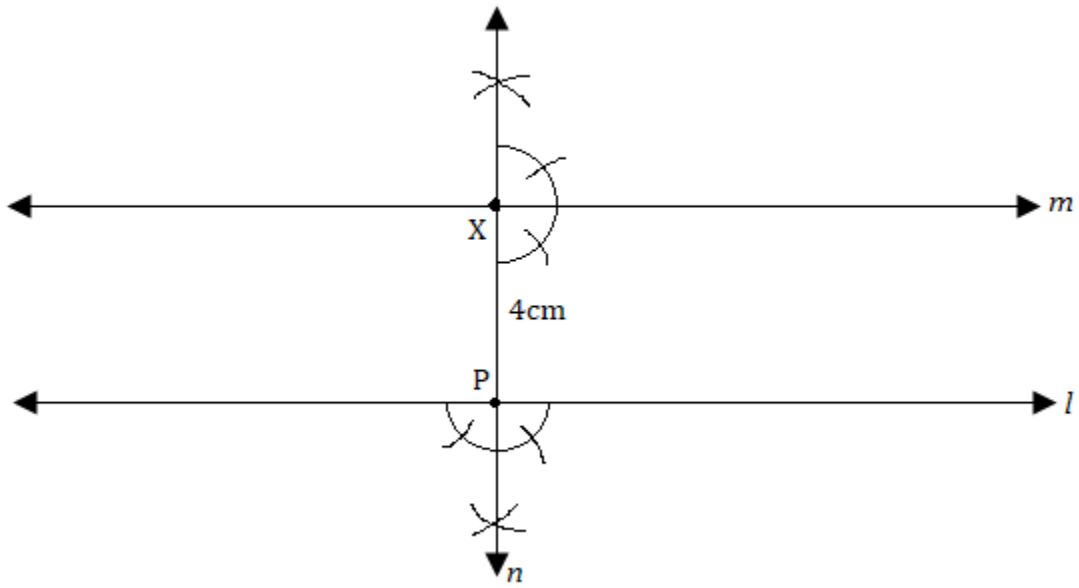
(a) Draw a line l and take a point P on it.

(b) At point P, draw a perpendicular line n.

(c) Take PX = 4 cm on line n.

(d) At point X, again draw a perpendicular line m.

Given figure is the required construction.



3. Let l be a line and P be a point not on l. Through P, draw a line m parallel to l. Now join P to any point Q on l. Choose any other point R on m. Through R, draw a line parallel to PQ. Let this meet l at S. What shape do the two sets of parallel lines enclose?

Answer

To construct: A pair of parallel lines intersecting other part of parallel lines.

Steps of construction:

(a) Draw a line l and take a point P outside of l .

(b) Take point Q on line l and join PQ.

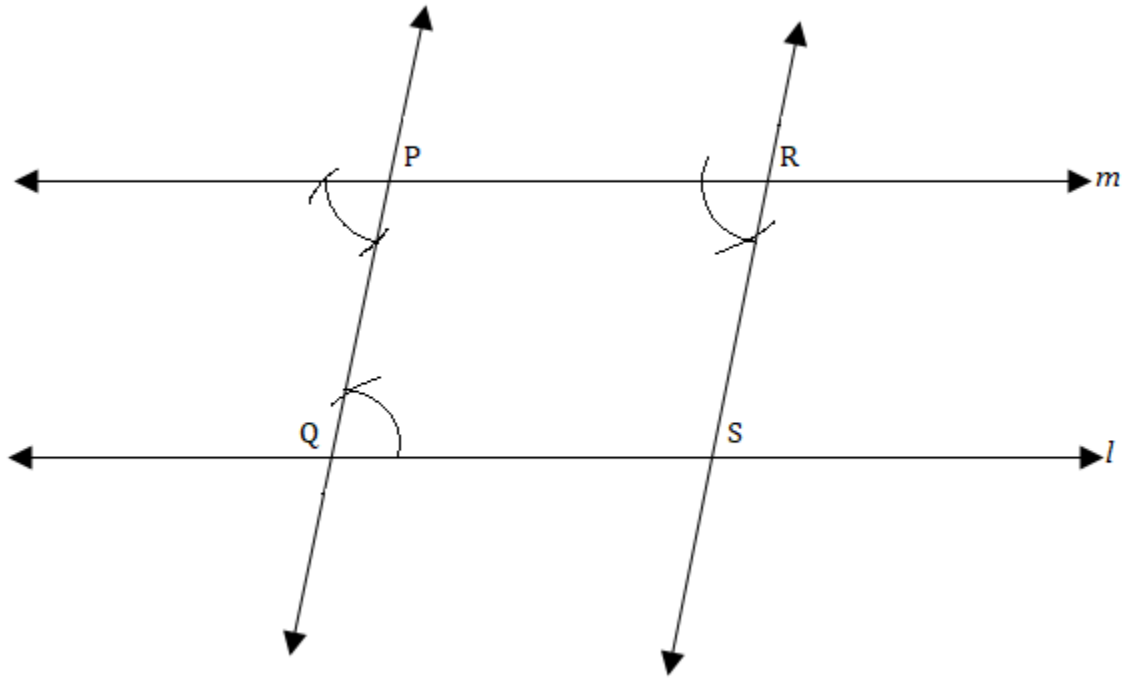
(c) Make equal angle at point P such that ∠Q = ∠P.

(d) Extend line at P to get line m.

(e) Similarly, take a point R online m, at point R, draw angles such that ∠P = ∠R.

(f) Extended line at R which intersects at S online l. Draw line RS.

Thus, we get parallelogram PQRS.



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Exercise 10.2

1. Construct ΔXYZ in which XY = 4.5 cm, YZ = 5 cm and ZX = 6 cm.

Answer

To construct: ΔXYZ, where XY = 4.5 cm, YZ = 5 cm and ZX = 6 cm.

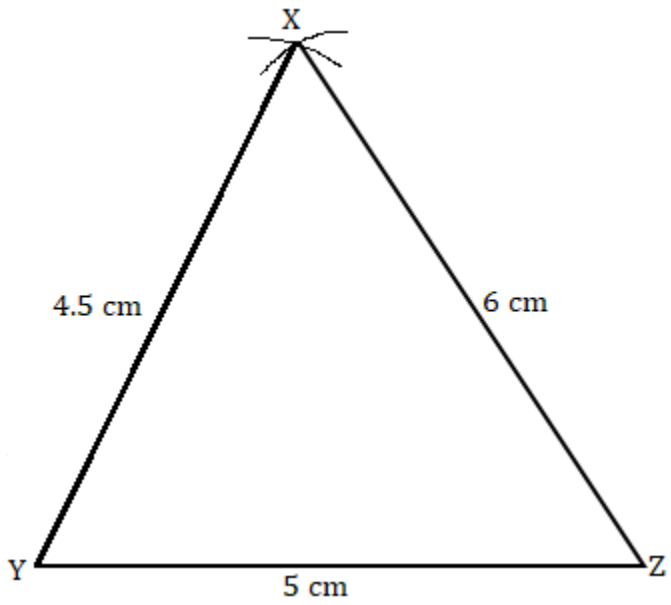
Steps of construction:

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

(b) Taking Z as centre and radius 6 cm, draw an arc.

(c) Similarly, taking Y as centre and radius 4.5 cm, draw another arc which intersects first arc at point X.

(d) Join XY and XZ. It is the required ΔXYZ.



2. Construct an equilateral triangle of side 5.5 cm.

Answer

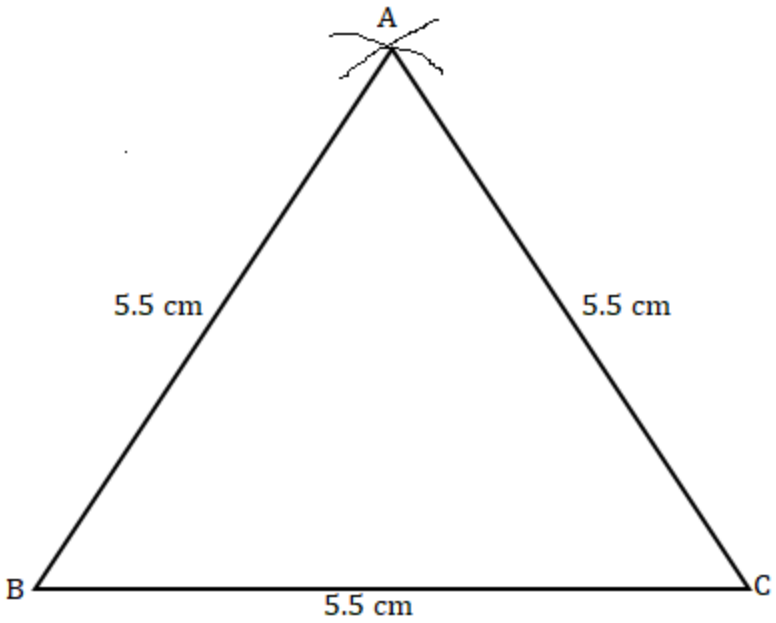
To construct: A ΔABC where AB = BC = CA = 5.5 cm

Steps of construction:

(a) Draw a line segment BC = 5.5 cm

(b) Taking points B and C as centers and radius 5.5 cm, draw arcs which intersect at point A.

(c) Join AB and AC. It is the required ΔABC.



3. Draw ΔPQR with PQ = 4 cm, QR = 3.5 cm and PR = 4 cm. What type of triangle is this?

Answer

To construction: ΔPQR, in which PQ = 4 cm, QR = 3.5 cm and PR = 4 cm.

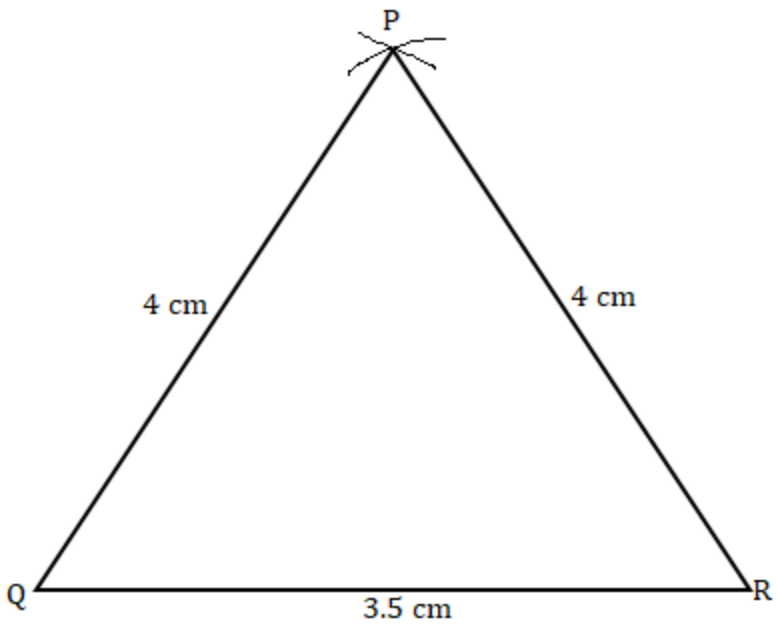
Steps of construction:

(a) Draw a line segment QR = 3.5 cm.

(b) Taking Q as centre and radius 4 cm, draw an arc.

(c) Similarly, taking R as centre and radius 4 cm, draw an another arc which intersects first arc at P.

(d) Join PQ and PR. It is the required isosceles ΔPQR.



4. Construct ΔABC such that AB = 2.5 cm, BC = 6 cm and AC = 6.5 cm. Measure ∠B.

Answer

To construct: ΔABC in which AB = 2.5 cm, BC = 6 cm and AC = 6.5 cm.

Steps of construction:

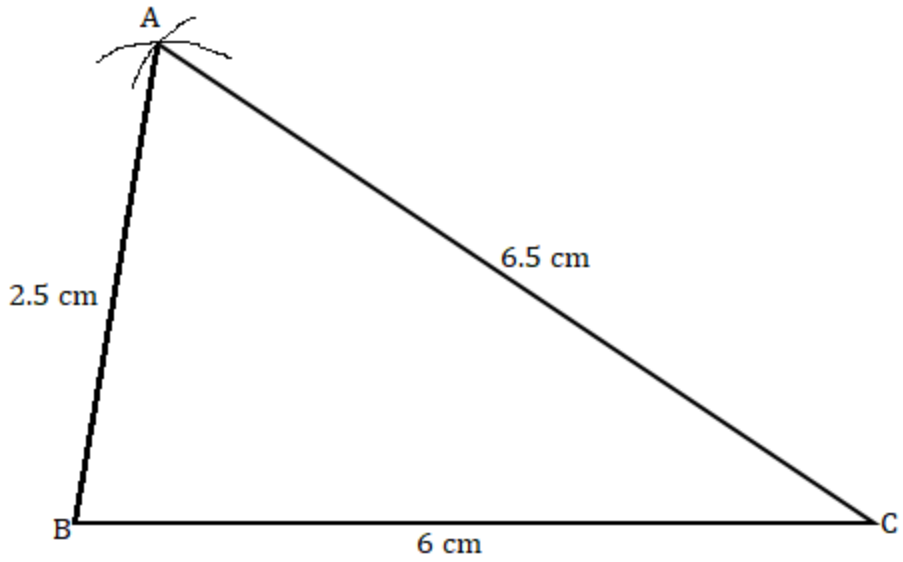
(a) Draw a line segment BC = 6 cm.

(b) Taking B as centre and radius 2.5 cm, draw an arc.

(c) Similarly, taking C as centre and radius 6.5 cm, draw another arc which intersects first arc at point A.

(d) Join AB and AC.

(e) Measure angle B with the help of protractor. It is the required ΔABC where ∠B = 80°.



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Exercise 10.3

1. Construct ΔDEF such that DE = 5 cm, DF = 3 cm and ∠EDF = 90°.

Answer

To construct: ΔDEF where DE = 5 cm, DF = 3 cm and m ∠EDF = 90°.

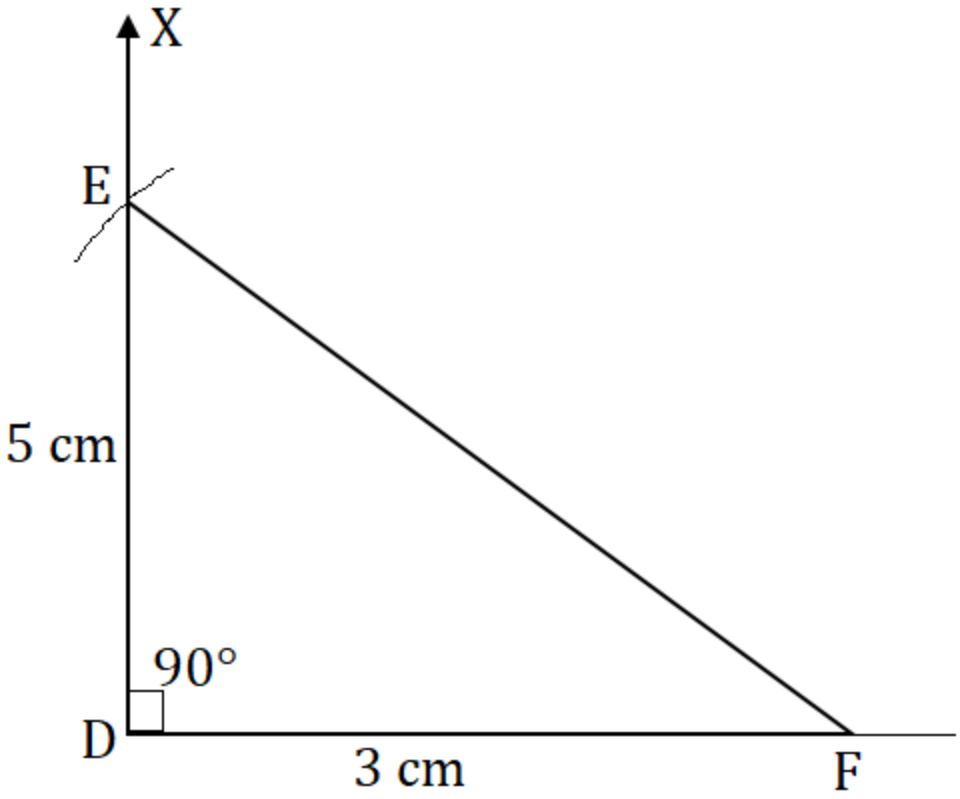
Steps of construction:

(a) Draw a line segment DF = 3 cm.

(b) At point D, draw an angle of 90o with the help of compass i.e., ∠XDF = 90°.

(c) Taking D as centre, draw an arc of radius 5 cm, which cuts DX at the point E.

(d) Join EF. It is the required right angled triangle DEF.



2. Construct an isosceles triangle in which the lengths of each of its equal sides is 6.5 cm and the angle between them is 110°.

Answer

To construct: An isosceles triangle PQR where PQ = RQ = 6.5 cm and ∠Q = 110°

Steps of construction:

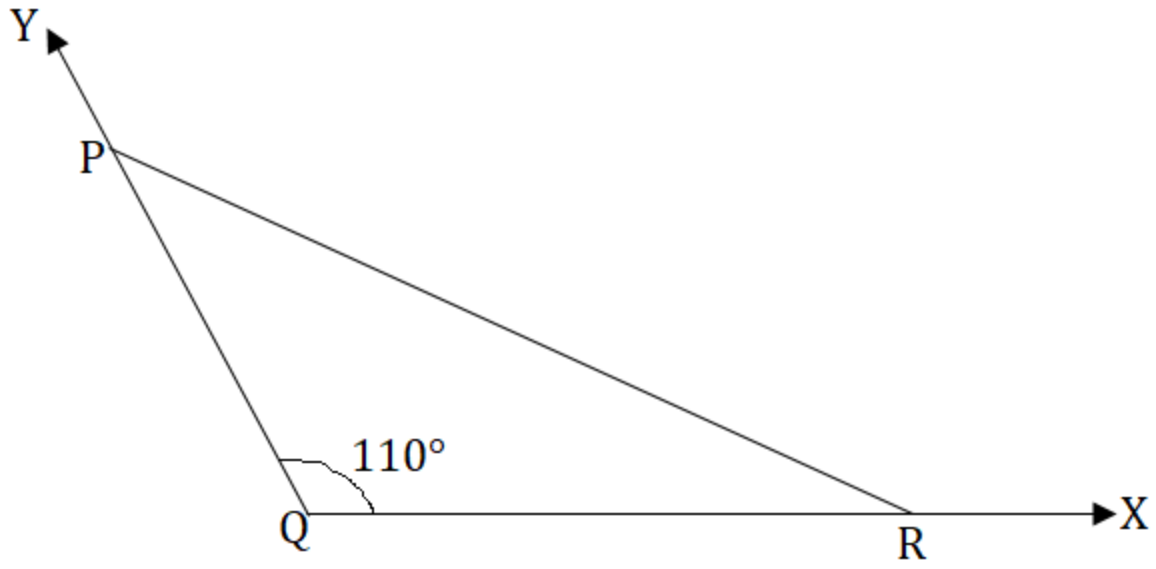
(a) Draw a line segment QR = 6.5 cm.

(b) At point Q, draw an angle of 110° with the help of protractor, i.e., ∠YQR = 110°

(c) Taking Q as centre, draw an arc with radius 6.5 cm, which cuts QY at point P.

(d) Join PR

Given figure is the required isosceles triangle PQR.



3. Construct ΔABC with BC = 7.5 cm, AC = 5 cm and m ∠C = 60° .

Answer

To construct: ΔABC where BC = 7.5 cm, AC = 5 cm and m ∠C = 60°.

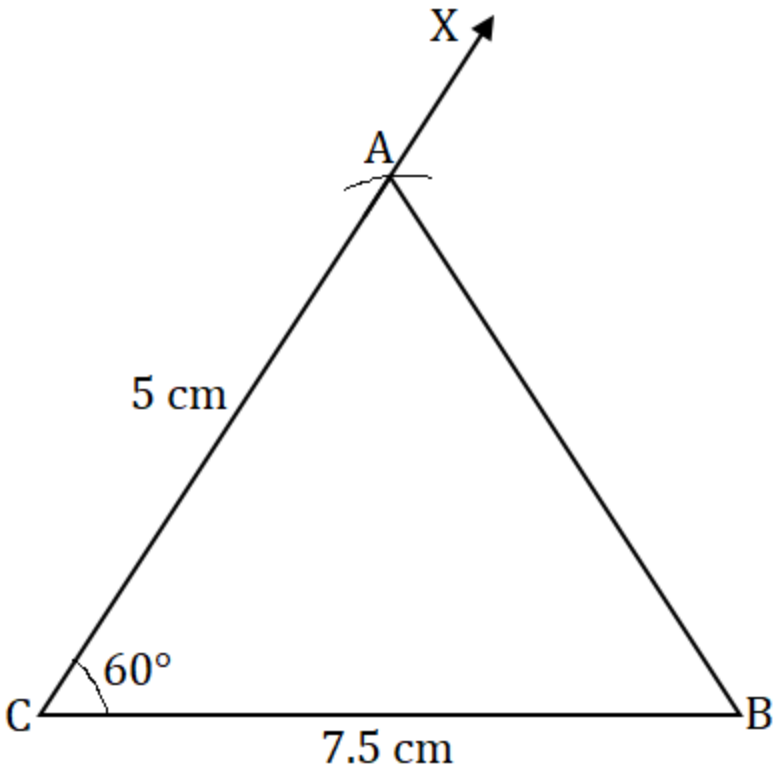
Steps of construction:

(a) Draw a line segment BC = 7.5 cm.

(b) At point C, draw an angle of 60 with the help of protractor, i.e., ∠XCB = 60° .

(c) Taking C as centre and radius 5 cm, draw an arc, which cuts XC at the point A.

(d) Join AB It is the required triangle ABC.



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Exercise 10.4

1. Construct ΔABC, given m∠A = 60°, m∠B = 30° and AB = 5,8 cm.

Answer

To construct: ΔABC, given m∠A = 60°, m∠B = 30° and AB = 5,8 cm.

Steps of construction:

(a) Draw a line segment AB = 5.8 cm.

(b) At point A, draw an angle Z YAB = 60°= with the help of a compass.

(c) At point B, draw Z XBA = 30° with the help of a compass.

(d) AY and BX intersect at the point C.

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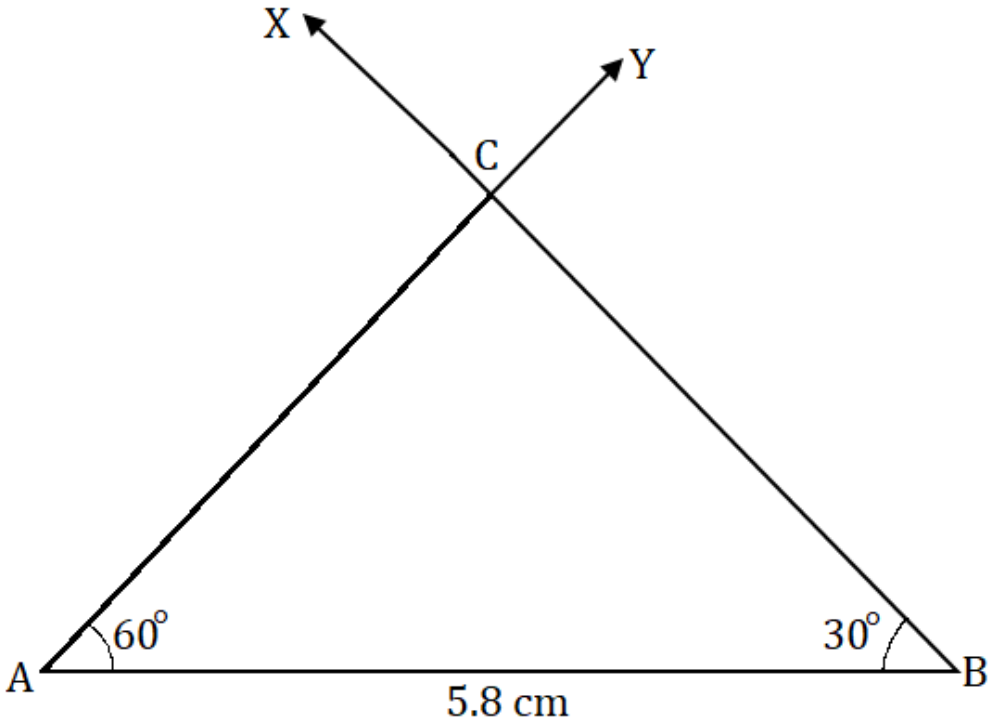
Given figure is the required triangle ABC.



2. Construct Δ PQR if PQ = 5 cm, m∠PQR = 105° and m∠.QRP = 40°.

Answer

Given:

m∠ PQR = 105° and m∠ QRP = 40°

We know that sum of angles of a triangle is 180°.

∴ m∠PQR + m∠QRP + m∠ QPR = 180°

⇒ 105° + 40° + m∠QPR= 180°

⇒ 145° + m∠QPR= 180°

⇒ m∠QPR= 180° - 145°

⇒ m∠QPR = 35°

To construct: ΔPQR where m∠P = 35°, m∠Q = 105° and PQ = 5 cm.

Steps of construction:

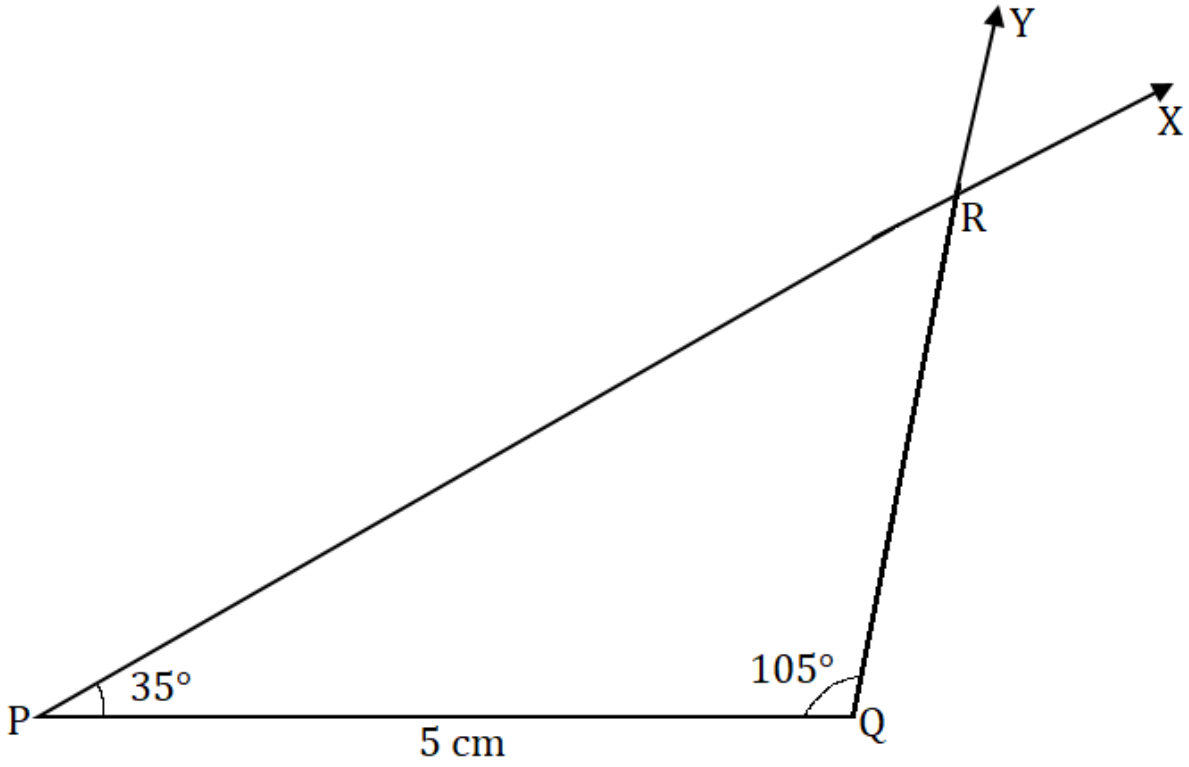
(a) Draw a line segment PQ = 5 cm,

(b) At point P, draw ∠ XPQ = 35° with the help of protractor.

(c) At point Q, draw ∠ YQP = 105° with the help of protractor.

(d) XP and YQ intersect at point R.

It is the required triangle PQR.



3. Examine whether you can construct ΔDEF such that EF = 7.2 cm, m∠ E= 110° and m∠F= 80°. Justify your answer.

Answer

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Given: In ΔDEF, m∠E = 110° and m∠T = 80°

Using angle sum property of triangle

∠D + ∠E + ∠F = 180°

⇒∠D + 110°+ 80° = 180°

⇒ ∠D + 190° = 180°

⇒ ∠D = 180° - 190° = -10°

Which is not possible.

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Exercise 10.5

1. A right angled triangle PQR where m∠Q = 9ff, QR= 8 cm and PQ = 10 cm.

Answer

To construct: Construct the right angled Δ PQR, where m∠Q = 90", QR = 8 cm and PR = 10 cm.

Steps of construction:

(a) Draw a line segment QR = 8 cm,

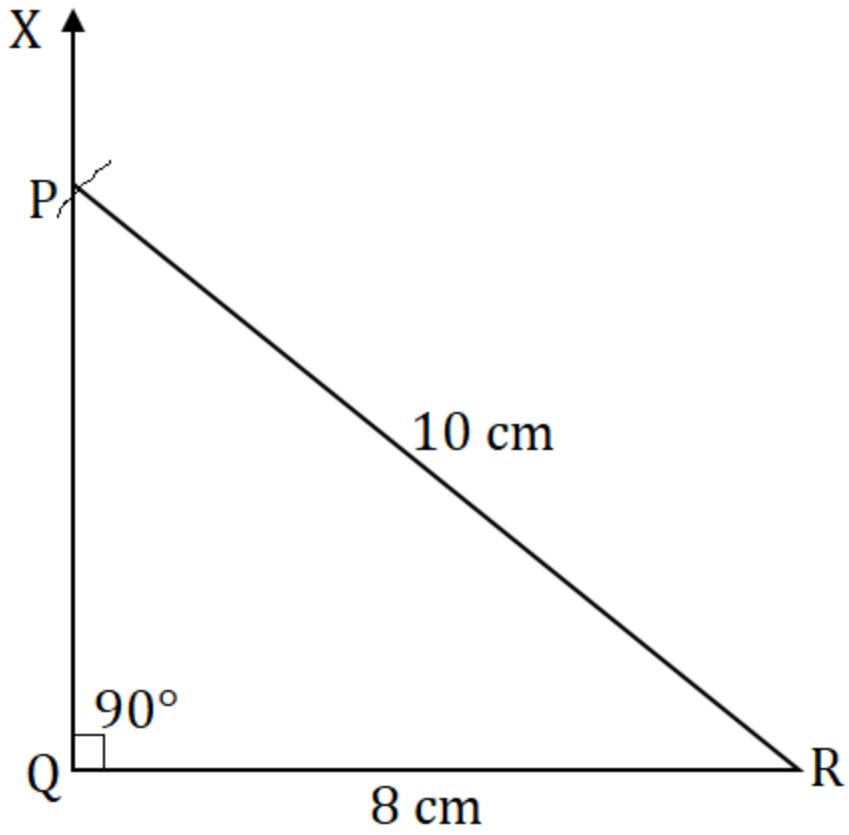
(b) At point Q, draw QX ⊥ QR,

(c) Taking R as centre, draw an arc of radius 10 cm.

(d) This arc cuts QX at point P.

(e) foin PQ.

Given figure is the required right-angled triangle PQR,



2. Construct a right-angled triangle whose hypotenuse is 6 cm long and one the legs is 4 cm long.

Answer

To construct: A right-angled triangle DEF where DF = 6 cm and EF = 4 cm.

Steps of construction:

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

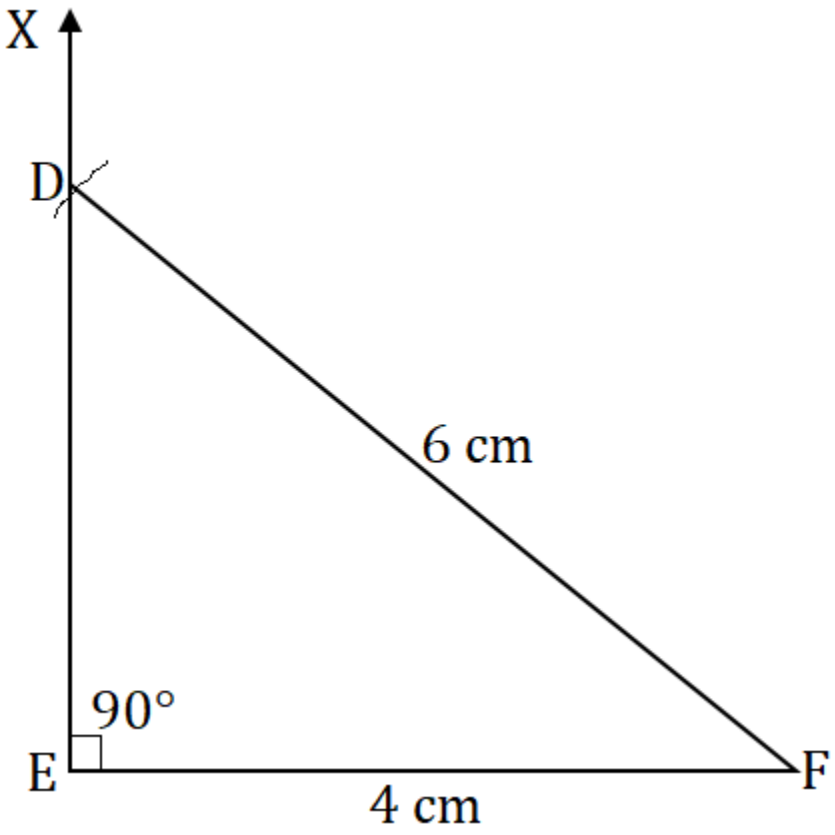
(b) At point Q, draw EX ⊥ EF.

(c) Taking F as centre and radius 6 cm, draw an arc. (Hypotenuse)

(d) This arc cuts the EX at point D.

(e) Join DF.

It is the required right-angled triangle DEF.



3. Construct an isosceles right angled triangle ABC, where m∠ACB = 90° and AC = 6 cm.

Answer

To construct: An isosceles right angled triangle ABC where m∠ C = 90% AC = BC = 6 cm.

Steps of construction:

(a) Draw a line segment AC = 6 cm.

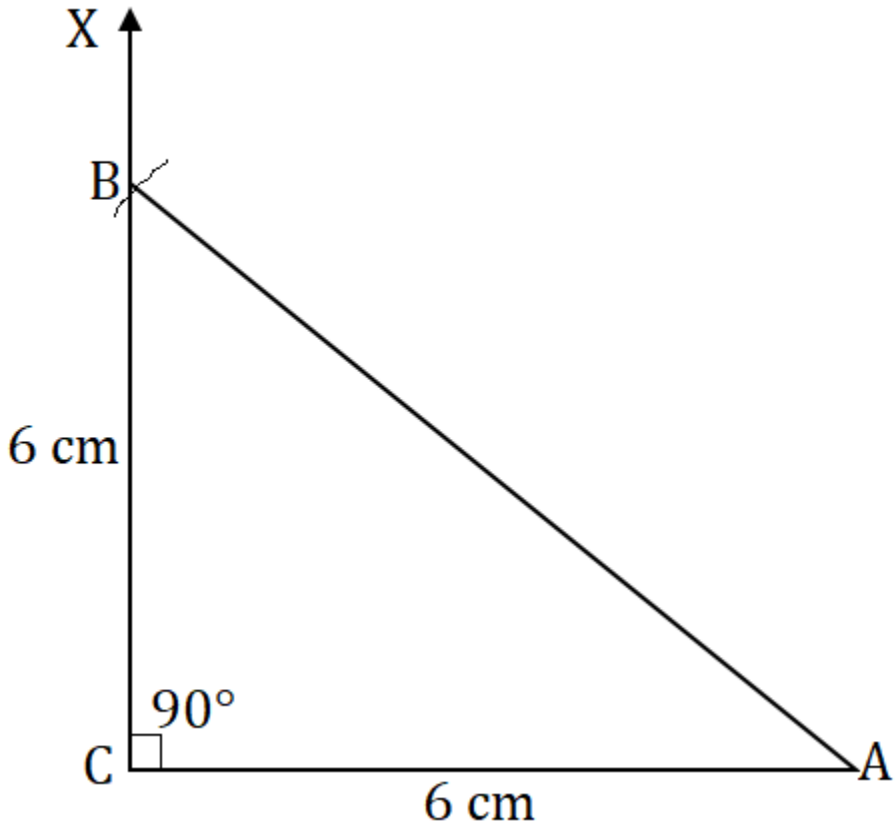
(b) At point C, draw XC ⊥ CA.

(c) Taking C as centre and radius 6 cm, draw an arc.

(d) This arc cuts CX at point B.

(e) Join BA.

It is the required isosceles right-angled triangle ABC.



Chapterwise NCERT Solutions for Class 7 Maths :

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