RS Aggarwal Solutions for Class 6 Maths Chapter 14–Constructions (Using Ruler and a Pairs of Compasses)

Class 6 - Chapter 14 Constructions (Using Ruler and a Pairs of Compasses)

For any clarifications or questions you can write to **info@indcareer.com**

Postal Address

IndCareer.com, 52, Shilpa Nagar, Somalwada Nagpur - 440015
Maharashtra, India

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RS Aggarwal Solutions for Class 6 Maths Chapter 14–Constructions (Using Ruler and a Pairs of Compasses)

Class 6: Maths Chapter 14 solutions. Complete Class 6 Maths Chapter 14 Notes.

RS Aggarwal Solutions for Class 6 Maths Chapter 14–Constructions (Using Ruler and a Pairs of Compasses)

RS Aggarwal 6th Maths Chapter 14, Class 6 Maths Chapter 14 solutions

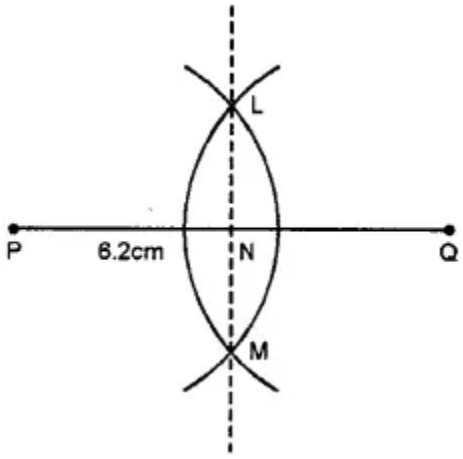
Ex 14A Solutions

Question 1.

Solution:

Steps of construction :

(i) Draw a line segment PQ = 6.2 cm



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(ii) With centre P and Q and radius more than half of PQ, draw arcs on each side intersecting each other at L and M.

(iii) Join LM intersecting PQ at N.

Then, LM is the perpendicular bisector of PQ.

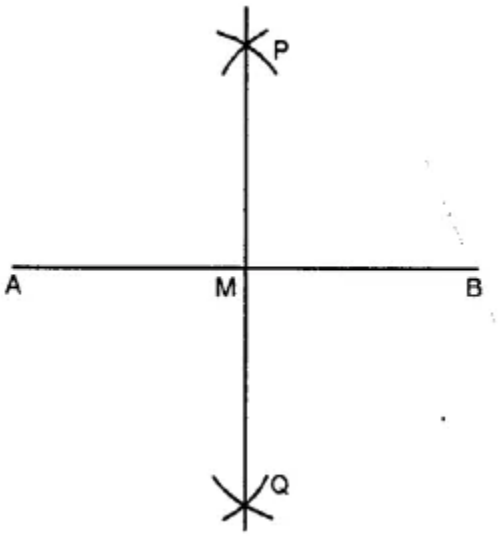
Question 2.

Solution:

Steps of Construction :

1. Draw a line segment AB = 5.6 cm.

2. With A as centre and radius more than half AB, draw arcs, one one each side of AB.



3. With B as centre and same radius as before, draw arcs, cutting the previous arcs at P and Q respectively.

4. Join P and Q, meeting AB at M. Then PQ is the required perpendicular bisector of AB.

Verification : Measure ∠AMP. We see that ∠AMP = 90°. So, PQ is the perpendicular bisector of AB.

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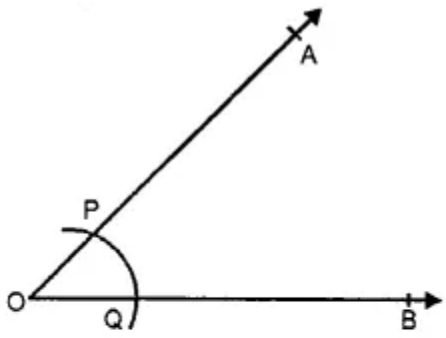
Question 3.

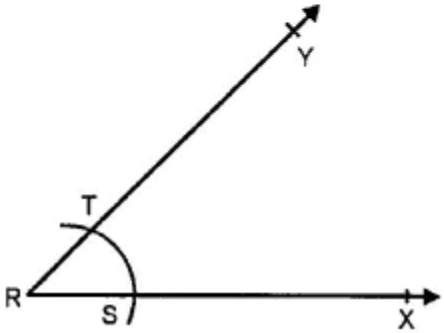
Solution:

Steps of Contruction :

1. Draw a ray RX.

2. With O as centre and any radius draw an arc cutting OA and OB at P and Q respectively.





3. With R as centre and same radius draw an arc cutting RX at S.

4. With S as centre and radius PQ cut the arc through S at T.

5. Join RT and produce it to Y. Then ∠XRY is the required angle equal to ∠AOB.

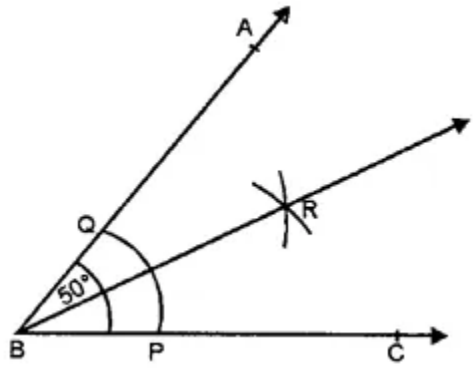
Verification: Measuring angle AOB and ∠XRY, we observe that ∠XRY = ∠AOB.

Question 4.

Solution:

Steps of constructions :

(i) Draw an angle ABC = 50° with the help of a protractor.



(ii) With centre B and C and a suitable radius, draw an arc meeting AB at Q and BC at P.

(iii) With centres P and Q and with a suitable radius draw two arcs intersecting each other at R inside the angle ABC.

(iv) JoinRB.

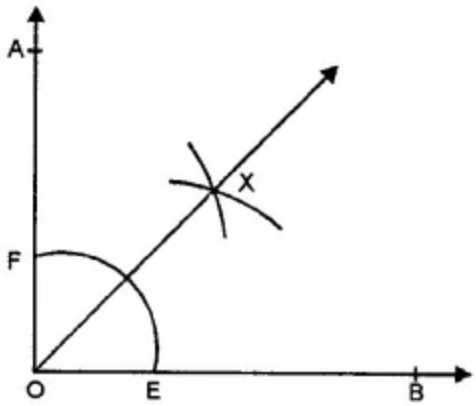
Then ray BR is the bisector of ∠ABC.

Question 5.

Solution:

Steps of construction :

(i) Draw an angle AOB = 85° with the help of the protractor.



(ii) With centre O, draw an arc with a suitable radius meeting OB at E and OA at F.

(iii) With centre E and F and with a suitable radius draw arcs intersecting each other at X inside the angle AOB.

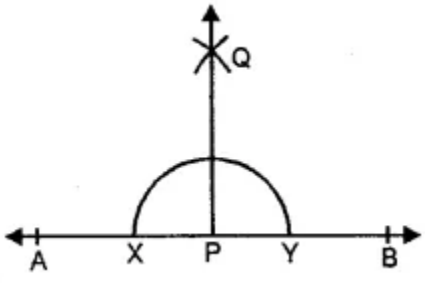
Then ray OX is the bisector of ∠AOB.

Question 6.

Solution:

Steps of Construction :

(1) Draw the given line AB and take a point P on it.



(2) With P as centre and any suitable radius draw a semi-circle to cut the line AB at X and Y.

(3) With centre X and radius more than XP draw an arc.

(4) With centre Y and same radius draw another arc to cut the previous arc at

(5) Join PQ. Then, PQ is the required line passing through P and perpendicular to AB.

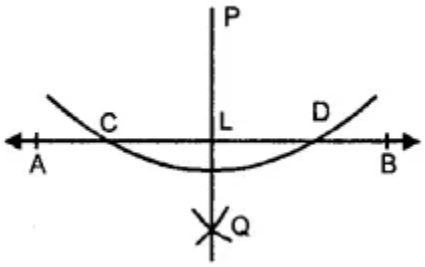
Verification : Measure ∠APQ, we see that ∠APQ = 90°

Question 7.

Solution:

Steps of Construction :

(1) Draw the given line AB and take a point P outside it.



(2) With P as centre and suitable radius, draw an arc intersecting AB at C and D.

(3) With C as centre and radius more than half CD, draw an arc.

(4) With D as centre and same radius, draw another arc to cut the previous arc at Q.

(5) Join PQ, meeting AB at L. Then PL is the required line passing through P and perpendicular to AB.

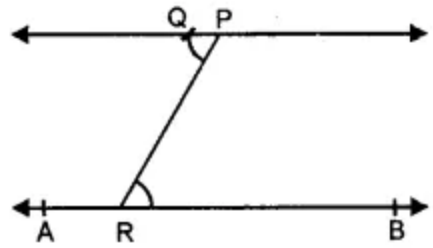
Verification : Measure ∠PLB. We see that ∠PLB = 90°.

Question 8.

Solution:

Steps of Construction :

1. Draw a given line AB and take a point P outside it.



2. Take a point R on AB

3. Join PR.

4. Draw ∠RPQ such that ∠RPQ = ∠PRB as shown in the figure.

5. Produce PQ on both sides to form a line. Then, PQ is the required line passing through P and parallel to AB.

Verification: Since ∠RPQ = ∠PRB and these are alternate interior angles, it follows that PQ || AB.

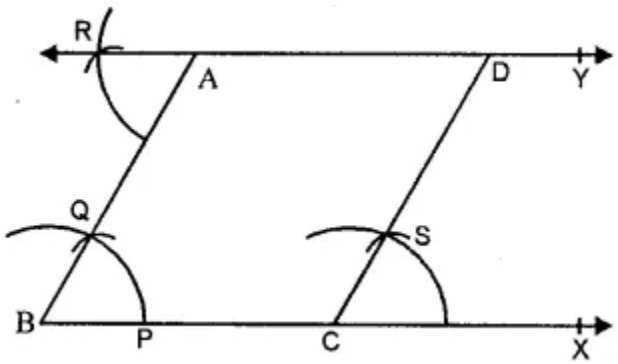
Question 9.

Solution:

Steps of Construction :

1. Draw a ray BX and cut of BC = 5 cm.

2. With B as centre and suitable radius draw an arc above BX and cutting it at P.



3. With P as centre and the same radius as before draw another arc to cut the previous arc at Q.

4. Join PQ and produce it to the point A such that. AB = 4.5 cm. Then ∠ABC = 60° is the required angle.

5. Draw ∆RAB such that ∆RAB = ∆ABC.

6. Produce RA on both sides to form a line. Then, RY is the line parallel to BC and passing through A.

7. Now, draw ∆SCX = ∆ABC at the point C.

8. Produce CS to intersect the line RY at D.Then CD is the required line through C and parallel to AB.

9. Measure AB and CD. We see that AD = 5 cm. and CD = 4.5 cm.

Verification. Since ∠RAB = ∠ABC and these are alternate angles, it follows that RY || BC.

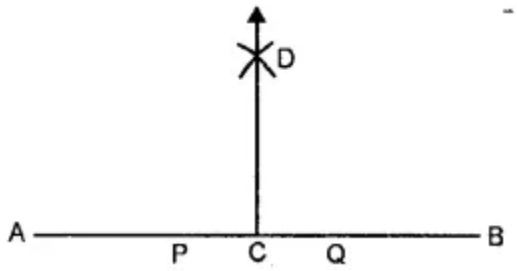
Also ∠SCX = ∠ABC and these are corresponding angles, it follows that CD || AB.

Question 10.

Solution:

Steps of Construction :

1. With the help of a ruler, draw a line segment AB = 6 cm. and off AC = 2.5 cm such that the point C is on AB.



2. With C as centre and any suitable radius draw a semi-circle to cut AB at P and

3. With P as centre and any radius more than PC draw an arc.

4. With Q as centre and same radius draw another arc to cut the previous arc at D.

5. Join CD. Then CD is the required line perpendicular to AB.

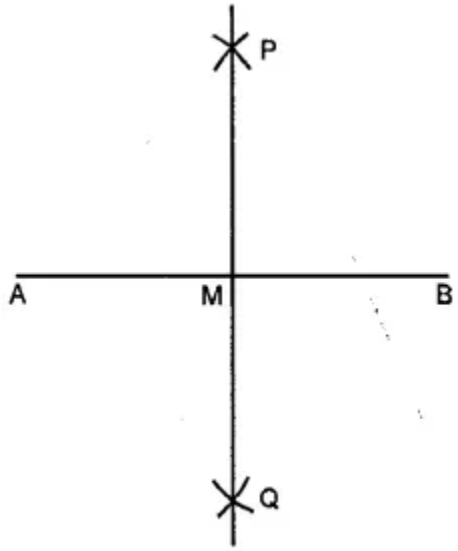
Verification : Measure ∠ACD. We see that ∠ACD = 90°.

Question 11.

Solution:

Steps of Construction :

1. With the help of ruler, draw a line segment AB = 5.6 cm.



2. With A as centre and radius more than half AB, draw arcs, one on each side of AB.

3. With B as centre and the same radius as before draw arcs, cutting the previous arcs at P and Q respectively.

4. Join PQ, meeting AB at M. Then, PQ is the required right bisector of AB.

Verification : On measuring AM and BM and ∠AMP, we see that AM = BM and ∠AMP = 90°.

So, PQ is the right bisector of AB.

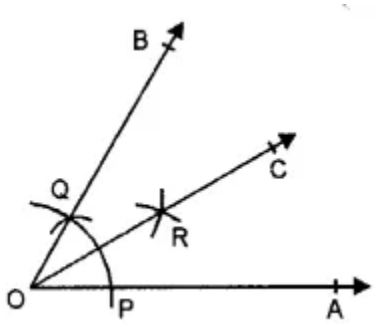
Question 12.

Solution:

Steps of Construction :

1. With the help of a ruler, draw a ray OA.

2. With O as centre and suitable radius draw an arc to cut OA at P.



3. With P as centre and the same radius, draw another are to cut the previous arc at Q.

4. Join OQ and produce it to any point B, then ∠AOB = 60° is the required angle.

5. With P as centre and radius more than half PQ, draw an arc.

6. With Q as centre and the same radius, draw another arc to cut the previous arc at R.

7. Join OR and produce it to the point C. Then OC is the required bisector of ∠AOB.

Verification : Measure ∠AOC and ∠BOC. We see that ∠AOC = ∠BOC. So, OC is the bisector of ∠AOB.

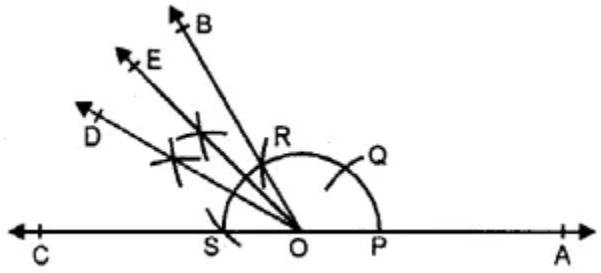
Question 13.

Solution:

Steps of construction :

1. Draw a ray OA with the help of a ruler.

2. With O as centre and suitable radius draw an arc above OA to cut it at P.



3. With P as centre and same radius, cut the arc at Q and again with Q as centre and same radius cut the arc at R. With R as centre and same radius, again cut the arc at S.

4. Join OR and produce it to B and join OS and produce it to C.

5. Draw the bisector OD of ∠BOC.

6. Draw the bisector OE of ∠BOD. Then, ∠AOE = 135° is the required angle.

Ex 14B Solutions

Question 1.

Solution:

(1) 60°

Steps of construction :

(i) Draw a ray OA.

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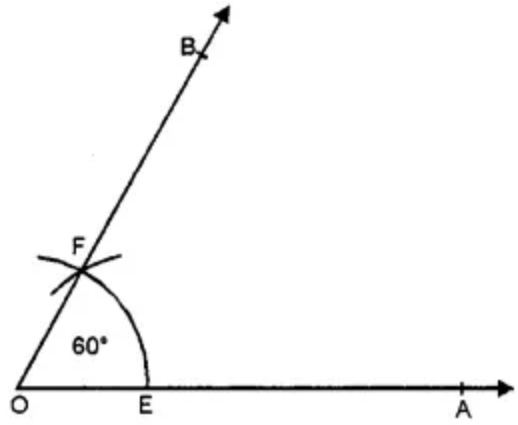


(ii) With centre O and with a suitable radius drawn an arc meeting OA at E.

(iii) With centre E and with same radius, draw another arc cutting the first arc at F.

(iv) Join OF and produce it to B Then ∠AOB = 60°

(2) 120°

Steps of construction :

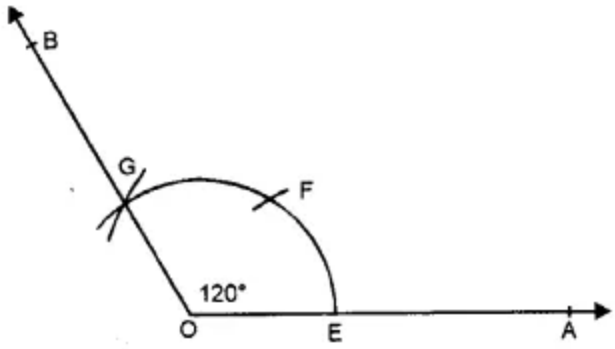
(i) Draw a ray OA

(ii) With centre O and with a suitable radius draw an arc meeting OA at E

(iii) With centre E and with the same radius cut off the first arc firstly at F and then at G i.e. EF = FG.

(iv) Join OG and produce it to B.

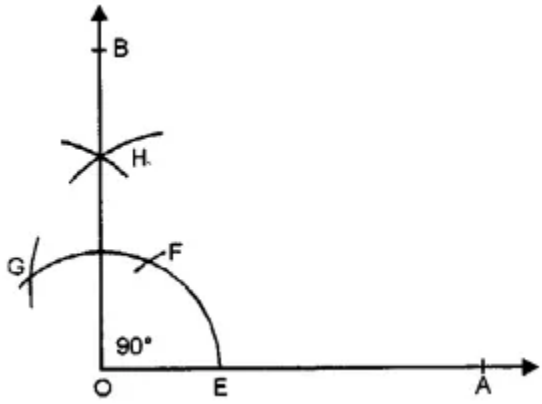
Then, ∠AOB = 120°



(3) 90°

Steps of construction :

(i) Draw a ray OA



(ii) With centre O and a suitable radius draw an arc meeting OA at E.

(iii) With centre E and A with same radius cut off the arc first at F and then from F with same radius cut off arc at G.

(iv) With centres F and G with a suitable radius, draw two arcs intersecting each other at H.

(v) Join OH and produce it to B.

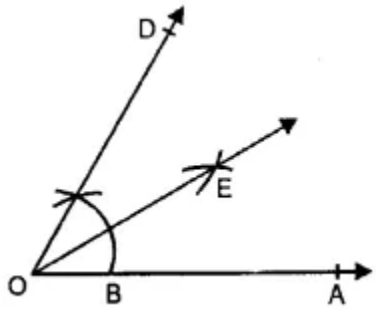
Then, ∠AOB = 90°.

Question 2.

Solution:

Steps of Construction :

(i) Draw a ray OA.



(ii) With O as centre and any suitable radius draw an arc above OA, cutting it at a point B.

(iii) With B as centre and same radius as before draw another arc to cut the previous arc at C.

(iv) Join OC and produce it to D. Then ∠AOD = 60° is the required angle. To bisect the angle ∠AOD, with B as centre and radius more than half BC draw an arc. With C as centre and the same radius draw another are cutting the previous arc at E. Join OE and produce it. Then, OE is the required bisector of ∠AOD.

Question 3.

Solution:

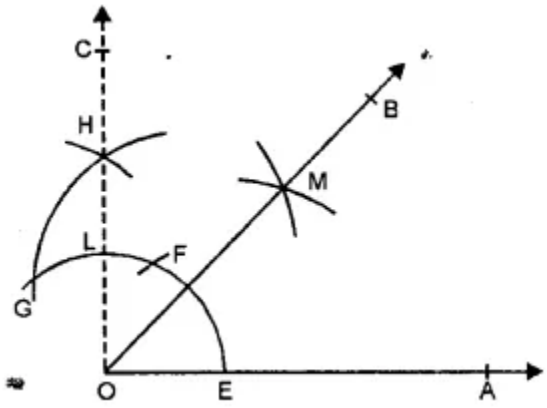
Steps of constructions :

(i) Draw a ray OA.

(ii) With centre O and a suitable radius draw an arc meeting OA at E.

(iii) With centre E and with same radius, cut the first arc firstly at F and then from F with same radius cut act at G.

(iv) With centres F and G, with suitable radius, draw arcs intersecting each other at H.



(v) Join OH intersecting the first arc at L and produce it to C.

(vi) With centre E and L and with suitable radius draw arcs intersecting each other at M.

(vii) Join OM and produce it to B.

Then ∠AOB = 45°

Question 4.

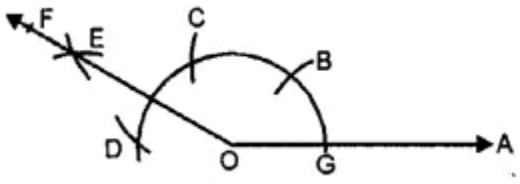
Solution:

(i) Steps of Construction :

1. Draw a ray OA.

2. With O as centre and any suitable radius draw an arc cutting OA at G.

3. With G as centre and same radius cut the arc at B and then B as centre and same radius cut the arc at C. Again, with C as centre and same radius cut the arc at D.



4. With C as centre and radius more than half CD draw an arc.

5. With D as centre and same radius draw another arc to cut the previous arc at E.

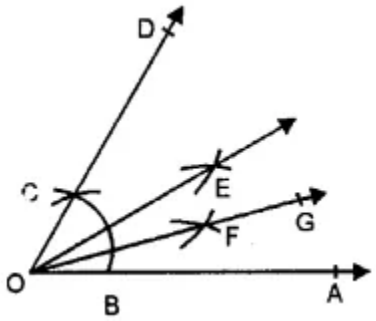
6. Join OE and produce it to F.

Then ∠AOF = 150°

(ii) Steps of Construction :

1. Draw a ray OA.

2. With O as centre and any suitable radius draw an arc above OA, cutting it at B.



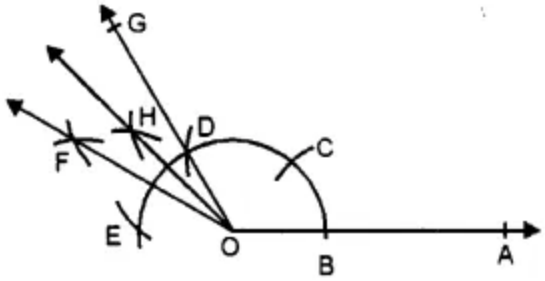
3. With B as centre and same radius as before draw another arc to cut the previous arc at C. Join OC and produce it to D.

4. Draw the bisector OE of ∠AQD. Then ∠AOE = 30°.

5. Draw the bisector OF of ∠AOE. Then ∠AOF = 15° is the required angle.

(iii) Steps of Construction :

1. Draw a ray OA.



2. With O as centre and any suitable radius draw an arc above OA, cutting it at B.

3. With B as centre and same radius as before draw another arc to cut the previous arc at C. With C as centre and same radius draw the arc to cut it at D. Again with D as centre and same radius cut the arc at E.

4. Join OD and produce it to G. Then ∠AOG = 120°.

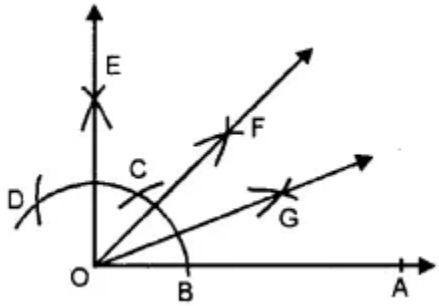
5. With D as centre and radius more than half DE draw an arc.

6. With E as centre and same radius draw another arc to cut the previous arc at F. Join OF.

7. Draw the bisector OH of ∠GOF. Then ∠AOH = 135° is the required angle.

(iv) Steps of Construction :

1. Draw a ray OA.



2. With O as centre and any suitable radius draw an arc above OA, cutting it at B.

3. With B as centre and same radius cut the previous arc at C and then with C as centre and same radius cut the arc at D.

4. With C as centre and radius more than half CD draw an arc.

5. With D as centre and same radius draw another arc to cut the previous arc at E.

6. Join OE. Then ∠AOE = 90°.

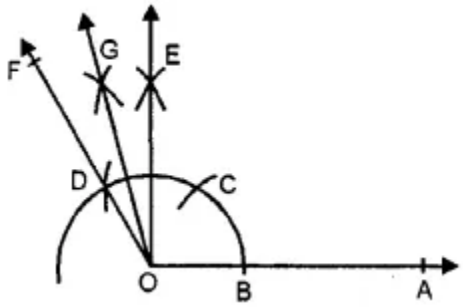
7. Draw the bisector OF of ∠AOE.

8. Draw the bisector OG of ∠AOF.

Then ∠AOG = 2212 ° is the required angle.

(v) Steps of Construction :

1. Draw a ray OA.



2. With O as centre and any suitable radius draw an arc cutting OA at B.

3. With B as centre and same radius cut the previous arc at C and then with C as centre and same radius cut the arc at D.

4. With C as centre and radius more than half CD draw an arc

5. With D as centre and same radius draw another arc to cut the previous arc at E.

6. Join OE. Also join OD and produce it to F.

7. Draw the bisector OG of ∠EOF Thus, ∠AOG = 105° is the required angle.

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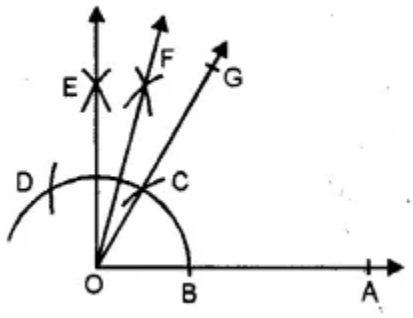
(vi) Steps of Construction :

1. Draw a ray OA.



2. With O as centre and any suitable radius draw an arc cutting OA at B.

3. With B as centre and same radius* cut the previous arc at C and then with C as centre cut the arc at D.

4. With C as centre and radius more than half CD draw an arc.

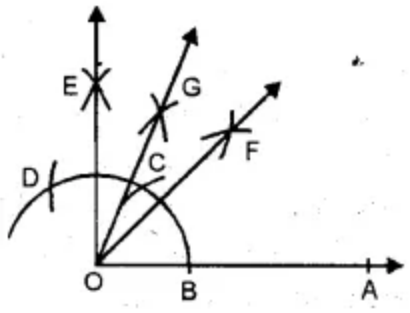
5. With D as centre and same radius draw another arc to cut the previous arc at E.

6. Join OE. Also join OC and produce it to G.

7. Draw the bisector OF of ∠EOG. Then, ∠AOF = 75° is the required angle.

(vii) Steps of Construction :

1. Draw a ray OA.



2. With O as centre and any suitable radius draw an arc above OA to cut it B.

With B as centre and same radius cut the previous arc at C and then with C as centre and same radius cut the arc at D.

4. With C as centre and radius more than half CD draw an arc.

5. With D as centre and same radius draw another arc to cut the previous arc at E.

6. Join OE. Then ∠AOE = 90°.

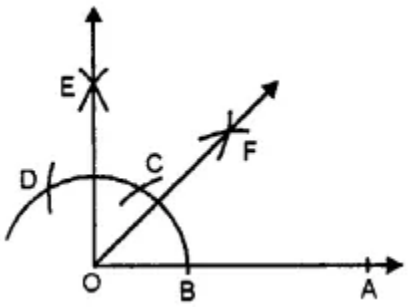
7. Draw the bisector OF of ∠AOE.

8. Draw the bisector OG of ∠EOF.

Then ∠AOG = 6712 ° is the required angle.

(viii) Steps of Construction :

1. Draw a ray OA.



2. With O as centre and any su itable radius draw an arc above OA to cut it at B.

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3. With B as centre and same radius cut the previous arc at C and then with C as centre and same radius cut the arc at D.

4. With C as centre and radius more than half CD, draw an arc.

5. With D as centre and same radius draw another arc to cut the previous arc at E.

6. Join OE. Then ∠AOE = 90°.

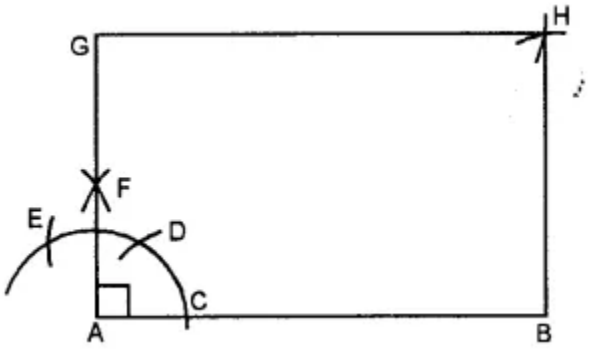
7. Draw the bisector OF of angle ∠AOE. Then, ∠AOF = 45° is the required angle.

Question 5.

Solution:

Steps of Construction :

1. Draw a line-segment AB = 5 cm with the help of a rular.



2. With Aas centre and suitable radius draw an arc cutting AB at C.

3. With C as centre and same radius cut the previous arc at D and then with D as centre and same radius cut the arc at E

4. With D as centre and radius more than half DE draw an arc.

5. With E as centre and same radius draw another arc to cut the previous arc at F.

6. Join AF and produce it to G such that AG = 3.5 cm. Then ∠BAG = 90°.

7. With G as centre and radius equal to AB draw an arc. With B as centre and radius equal to AG draw another arc to cut the previous arc at H.

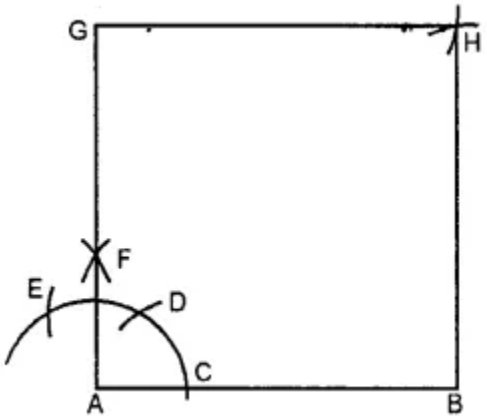
8. Join GH and BH. Then, AB HG is the required rectangle.

Question 6.

Solution:

Steps of Construction :

1. With the help of a ruler draw a line segment AB = 5 cm.



2. With A as centre and any suitable radius draw an arc cutting AB at C.

3. With C as centre and same radius cut the previous arc at D and then with D as centre and same radius cut the arc at E.

4. With D as centre and radius more than half DE draw an arc.

5. With E as centre and same radius draw another arc to cut the previous arc at F.

6. Join AF and produce it to G such that AG = 5 cm.

7. With G as centre and radius equal to AB draw an arc. With B as centre and same radius draw another arc to cut the previous arc at H.

8. Join GH and BH. Then, AB HG is the required square.

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- Chapter 6–Simplification
- Chapter 7–Decimals
- Chapter 8–Algebraic Expressions
- Chapter 9–Linear Equations in One Variable
- Chapter 10–Ratio, Proportion and Unitary Method
- Chapter 11–Line Segment, Ray and Line
- Chapter 12–Parallel Lines
- Chapter 13–Angles and Their Measurement
- Chapter 14–Constructions (Using Ruler and a Pairs of Compasses)
- Chapter 15–Polygons
- Chapter 16–Triangles
- Chapter 17–Quadrilaterals
- Chapter 18–Circles
- Chapter 19–Three-Dimensional Shapes
- Chapter 20–Two-Dimensional Reflection Symmetry (Linear Symmetry)
- Chapter 21–Concept of Perimeter and Area
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He was born on January 2, 1946 in a village of Delhi. He graduated from Kirori Mal College, University of Delhi. After completing his M.Sc. in Mathematics in 1969, he joined N.A.S. College, Meerut, as a lecturer. In 1976, he was awarded a fellowship for 3 years and joined the University of Delhi for his Ph.D. Thereafter, he was promoted as a reader in N.A.S. College, Meerut. In 1999, he joined M.M.H. College, Ghaziabad, as a reader and took voluntary retirement in 2003. He has authored more than 75 titles ranging from Nursery to M. Sc. He has also written books for competitive examinations right from the clerical grade to the I.A.S. level.

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Postal Address

IndCareer.com

52, Shilpa Nagar,

Somalwada

Nagpur - 440015

Maharashtra, India

WhatsApp: +91 9561 204 888

Website: https://www.indcareer.com