MATHS

BOOKS - HT Olympiad Previous Year Paper

CONSTRUCTIONS

Mathematical Reasoning

1. For which of the following conditions the construction of a triangle is NOT possible?

    A. If two sides and one angle is given.

B. If two sides and included angle between them is given.

C. If three sides are given.

D. If two angles and side between them is given.

Answer: A

2. The construction of a $\triangle LMN$ in which LM = 8 cm, $\angle L = 45°$ is possible when $(MN + LN)$ is ____

A. 6cm

B. 7cm

C. 9cm

D. 5cm

Answer: C

> ▶ **Watch Video Solution**

3. Which of the following angles CANNOT be constructed

by using ruler and compass only?

A. $30°$

B. $45°$

C. $70°$

D. $90°$

Answer: C

4. The construction of a ΔPQR in which QR = 7 cm and $\angle Q = 50°$ is NOT possible when (PQ – PR) is equal to____

    A. 4cm

    B. 6cm

    C. 9cm

    D. 3cm

Answer: C

5. Which of the following options is INCORRECT?

A. An angle of $52.5°$ can be constructed.

B. A triangle ABC can be constructed in which AB = 5

cm, $\angle A = 45°$ and $BC + AC = 5cm.$

C. A triangle ABC can be constructed in which BC = 6

cm, $\angle C = 30°$ and $AC - AB = 4cm.$

D. A triangle ABC can be constructed in which

$\angle B = 60°, \angle C = 45°$ and $AB + BC + AC = 12cm$

.

Answer: B

▶ Watch Video Solution

1. Following are the steps of construction of a $\triangle ABC$ in which AB = 6 cm, $\angle A = 45°$ and $AC - BC = 4cm$. Arrange them and select the CORRECT option.

(i) Draw AB = 6 cm

(ii) Join BC to obtain the required triangle ABC

(iii)Draw $\angle BAX = 60°$

(iv) From ray AX, cut offline segment AD = AC - BC = 4 cm

(V) Join BD

(vi) Draw the perpendicular bisector of BD which cuts AX at C.

A. $(i) \rightarrow (iii) \rightarrow (iv) \rightarrow (v) \rightarrow (vi) \rightarrow (ii)$

B. $(iii) \to (i) \to (vi) \to (iv) \to (ii) \to (v)$

C. $(iii) \to (i) \to (ii) \to (v) \to (iv) \to (vi)$

D. $(iii) \to (ii) \to (iv) \to (i) \to (vi) \to (v)$

Answer: A

2. State 'T' for true and 'F' for false and select the correct option.

(i) A triangle whose sides measures 8 cm, 4 cm and 12 cm can be possible.

(ii) It is possible to construct an angle of $57.5°$ using ruler and compass only.

(iii) It is possible to construct a ΔXYZ in which $\angle X = 60°$, $\angle Y = 100°$ and $\angle Z = 20°$.

A.

i	ii	iii
T	F	T

B.

i	ii	iii
F	F	T

C.

i	ii	iii
F	T	T

D.

i	ii	iii
T	T	F

Answer: B

▶ **Watch Video Solution**

3. Let ABC be a triangle in which BC = 5 cm, $\angle B = 60°$ and $AC + AB = 7.5$ cm. Given below are the steps of constructing the triangle ABC. Which of the

following steps is INCORRECT?

Step 1 : Draw a line segment BC of length 5 cm.

Step II : Draw an $\angle XBC = 60°$ at point B of line segment BC.

Step III : Cut off PB = 3.5 cm on the ray BX

Step IV : Join PC.

Step V : Draw $\perp$ bisector of BC which intersect ray BX at A. Join AC.

Step VI : ABC is the required triangle.

A. Step II only

B. Step III only

C. Step II and V

D. Step III and V

Answer: D

4. Following are the steps of construction of a rectangle ABCD whose adjacent sides are of lengths 5 cm and 3.5 cm. Arrange them and select the CORRECT option.

(P) Draw a line segment BC of length 5 cm.

(Q) With A as centre, draw an arc of radius 5 cm.

(R) Draw an $\angle XBC = 90°$ at point B of line segment BC

(S) Cut a line segment AB = 3.5 cm on $\overline{BX}$

(T) With C as centre, draw an arc of radius 3.5 cm which intersects the arc at D.

(U) Join AD and CD.

A. $(P) \rightarrow (S) \rightarrow (Q) \rightarrow (R) \rightarrow (U) \rightarrow (T)$

B. $(P) \rightarrow (R) \rightarrow (S) \rightarrow (Q) \rightarrow (T) \rightarrow (U)$

C. $(P) \rightarrow (S) \rightarrow (R) \rightarrow (Q) \rightarrow (T) \rightarrow (U)$

D. $(P) \rightarrow (Q) \rightarrow (R) \rightarrow (S) \rightarrow (U) \rightarrow (T)$

Answer: B

▶ **Watch Video Solution**

---

5. Step I & Step V are in correct order while constructing an equilateral triangle one of whose altitudes measures 5 cm. Which of the following options is CORRECT while arranging the remaining steps in CORRECT order?

Step 1: Draw a line XY.

(i) From $\angle P$, set off PA = 5 cm, cutting PQ at A.

(ii) From P, draw $PQ \perp XY$.

(iii) Mark any point P on XY.

Step V: Construct $\angle PAB = 30°$ and $\angle PAC = 30°$, meeting XY at B and C respectively.

A. $(i) \rightarrow (ii) \rightarrow (iii)$

B. $(iii) \rightarrow (ii) \rightarrow (i)$

C. $(ii) \rightarrow (i) \rightarrow (iii)$

D. $(iii) \rightarrow (i) \rightarrow (ii)$

Answer: B

▶ Watch Video Solution