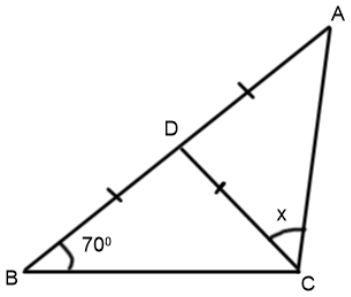
INDIAN SCHOOL AL WADI AL KABIR

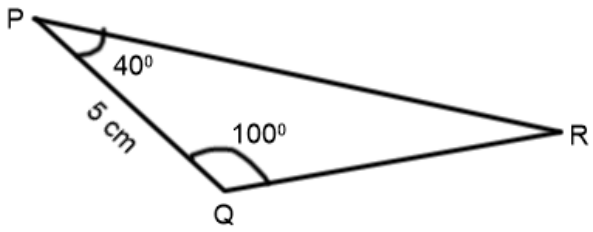
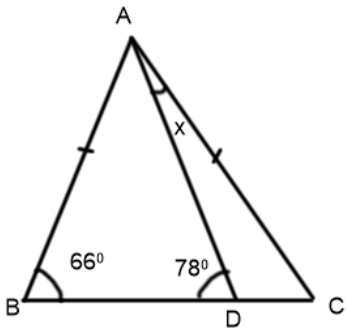
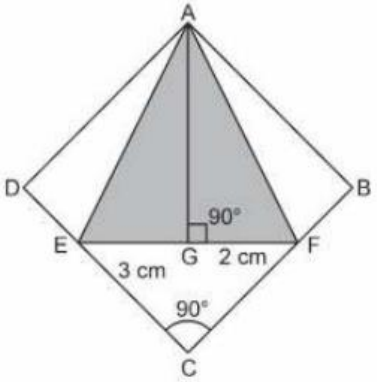
Class IX, Mathematics

Worksheet- Triangles

SECTION A

Section A consists of 12 Questions of 1 Mark each.

1.	If $\triangle ABC \cong \triangle PQR$ and $\triangle ABC$ is not congruent to $\triangle RPQ$, then which of the following is not true?							
	A	BC = PQ	**B**	AC = PR	**C**	QR = BC	**D**	AB = PQ
2.	If AB = QR, BC = PR and CA = PQ, then:							
	A	$\triangle ABC \cong \triangle PQR$	**B**	$\triangle CBA \cong \triangle PRQ$	**C**	$\triangle BAC \cong \triangle RPQ$	**D**	$\triangle PQR \cong \triangle BCA$
3.	The measure of x in the given figure is: 							
	A	36°	**B**	68°	**C**	20°	**D**	80°
4.	Given two right angled triangle ABC and PRQ, such that $\angle A = 30°, \angle Q = 30°$ and AC = QP, then:							
	A	$\triangle ABC \cong \triangle QRP$	**B**	$\triangle ABC \cong \triangle PQR$	**C**	$\triangle ABC \cong \triangle PRQ$	**D**	$\triangle ABC \cong \triangle RQP$
5.	If the altitudes from two vertices of a triangle to the opposite sides are equal, then the triangle is:							
	A	Equilateral	**B**	Scalene	**C**	Right angled	**D**	Isosceles

6.	In the below figure, PQR is a triangle in which $\angle P = 40°, \angle Q = 100°$ and PQ = 5 cm. The length of QR is:  						
	A	10 cm	**B**	8 cm	**C**	5 cm	**D**	4 cm
7.	In the given figure, the value of x is:  						
	A	12°	**B**	16°	**C**	18°	**D**	10°
8.	Which of the following is not a criterion for congruence of triangles?						
	A	SAS	**B**	SSA	**C**	ASA	**D**	SSS
9.	In the given figure, $\Delta AFB \cong \Delta AFG, \Delta ADE \cong AGE$ and $\angle EAF = 45°$. Then the measure of $\angle DAB$ is ? **(COMPETENCY BASED)**  						
	A	120º	**B**	60º	**C**	135º	**D**	90º

ASSERTION AND REASONING

DIRECTION: In the question number 10 and 11, a statement of assertion (A) is followed by statement of Reason (R). Choose the correct option:

(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

(b) Both assertion (A) and reason (R) are true and reason (R) is not the correct explanation of assertion (A).

(c) Assertion (A) is true but reason (R) is false.

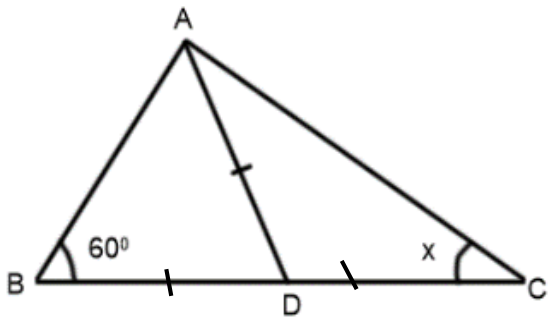
(d) Assertion (A) is false but reason (R) is true.

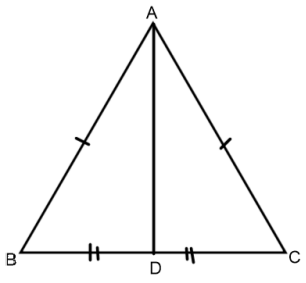
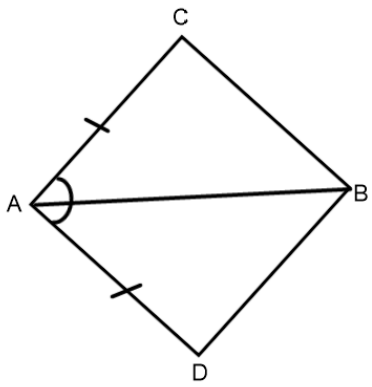
10.	**Assertion:** In ΔABC, BC = AB and ∠B = 80°. Then, ∠A = 50° **Reason:** In a triangle, sides opposite to two equal angles are equal.
11.	**Assertion:** In right triangles ABC and DEF, if hypotenuse AB=EF and side AC=ED, then $\Delta ABC \cong \Delta EFD$. **Reason:** Two triangles are congruent if two sides and one angle of a triangle is equal to two sides and an angle of another triangle.

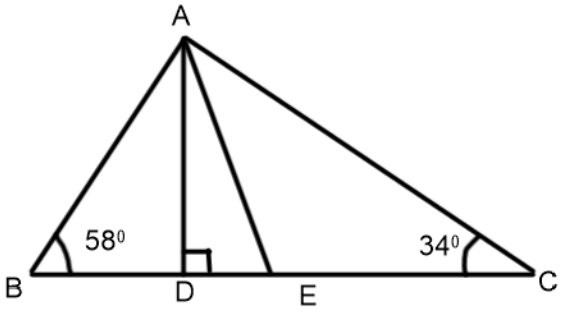
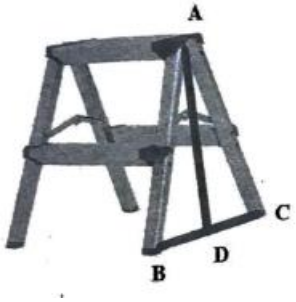
SECTION B

Questions of 2 marks each

12. In the below figure, AD = BD = DC and $\angle ABD = 60°$, find x.



13.	In the figure below, if $\mathrm{AB} = \mathrm{AC}$ and $\mathrm{BD} = \mathrm{DC}$, then find $\angle \mathrm{ADB}$. 
14.	In the given quadrilateral ACBD, $\mathrm{AC} = \mathrm{AD}$ and AB bisects $\angle \mathrm{A}$. Show that $\Delta \mathrm{ABC} \cong \Delta \mathrm{ABD}$. What can you say about BC and BD? 
15.	In two right triangles, one side and an acute angle of one triangle are equal to one side and the corresponding acute angle of the other triangle. Prove that the two triangles are congruent using ASA congruence criterion.
	Section C **Questions of 3 marks each**
16.	$\triangle ABC$ and $\triangle DEF$ are such that AC = 3cm, BC = 6.5cm, $\angle \mathrm{C} = 80°$, DE = 3cm, DF= 6.5cm and $\angle \mathrm{D} = 80°$. Check whether the given triangles are congruent or not.

17.	In given figure AD $\perp$ BC, AE is the angle bisector of $\angle$BAC. Find $\angle$DAE. 
18.	ABC is a triangle with $\angle B = 2\angle C$. D is a point on BC such that AD bisects $\angle BAC$ and AD = CD. Prove that $\angle BAC = 72°$. **(COMPETENCY BASED QUESTION)**
	Question of 5 marks
19.	State and prove ASA Congruence Rule.
	Case study-based (4 marks)
20.	An aluminium ladder manufacturing company manufactures foldable step ladder shown in the figure. The lengths of two legs AB and AC are both equal to 110 cm and the angle between the two legs is $30°$.  On the basis of above information answer the following questions. (I) Find the measure of $\angle ABC$. **OR** AD bisects side BC of the isosceles triangle ABC. Show that AD is the perpendicular to BC.

	(II) In two triangles ABC and DEF, $\angle A = \angle D, AB = DE$ and $AC = DF$, then these two triangles are congruent by which congruence rule? State the congruence rule. **OR** Show that the angles of an equilateral triangle are $60°$ each.

Answers

Answers

1	**A**	**2**	**B**	**3**	**C**	**4**	**A**
5	**D**	**6**	**C**	**7**	**A**	**8**	**B**
9	**D**						
10	**b)**	**11**	**c)**	**12**	$\mathbf{x = 30°}$	**13**	$\mathbf{\angle ADB = 90°}$
17	$\mathbf{\angle DAE = 12°}$.	**20**	(I) $\mathbf{\angle ABC = 75°}$ (II) SAS congruence rule.				