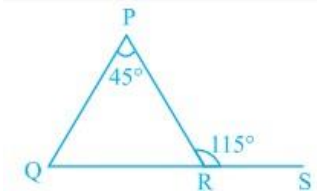
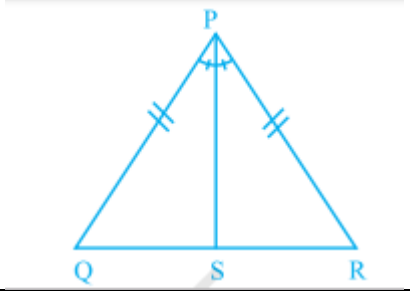
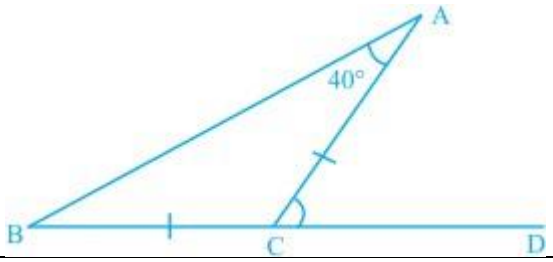
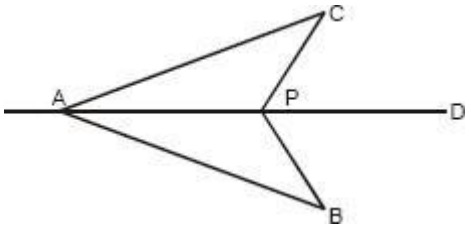
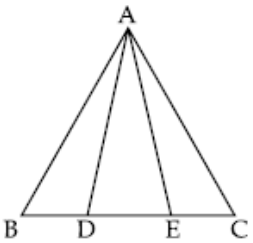
OAKRIDGE INTERNATIONAL SCHOOL
HYDERABAD, GACHIBOWLI
A NORD ANGLIA EDUCATION SCHOOL

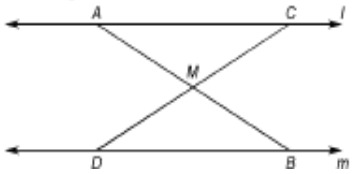
GRADE: IX CBSE **TOPIC: Triangles**
SUBJECT: MATHEMATICS

I. MCQ's

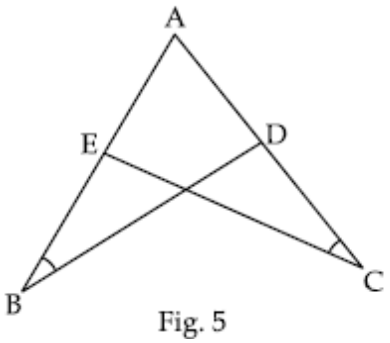
1	Which of the following is not a criterion for congruence of triangles? (A) SAS (B) ASA (C) SSA (D) SSS	**(C)**
2	If AB = QR, BC = PR and CA = PQ, then (A) $\Delta ABC \cong \Delta PQR$ (B) $\Delta CBA \cong \Delta PRQ$ (C) $\Delta BAC \cong \Delta RPQ$ (D) $\Delta PQR \cong \Delta BCA$	**(B)**
3	In ΔABC, AB = AC and $\angle B = 50°$. Then $\angle C$ is equal to (A) 40° (B) 50° (C) 80° (D) 130°	**(B)**
4	In ΔABC, BC = AB and $\angle B = 80°$. Then $\angle A$ is equal to (A) 80° (B) 40° (C) 50° (D) 100°	**(C)**
5	In ΔPQR, $\angle R = \angle P$ and QR = 4 cm and PR = 5 cm. Then the length of PQ is (A) 4 cm (B) 5 cm (C) 2 cm (D) 2.5 cm	**(A)**
6	It is given that $\Delta ABC \cong \Delta FDE$ and AB = 5 cm, $\angle B = 40°$ and $\angle A = 80°$. Then which of the following is true? (A) DF = 5 cm, $\angle F = 60°$ (B) DF = 5 cm, $\angle E = 60°$ (C) DE = 5 cm, $\angle E = 60°$ (D) DE = 5 cm, $\angle D = 40°$	**(B)**
7	In triangles ABC and PQR, AB = AC, $\angle C = \angle P$ and $\angle B = \angle Q$. The two triangles are (A) isosceles but not congruent (B) isosceles and congruent (C) congruent but not isosceles (D) neither congruent nor isosceles	**(A)**
8	In triangles ABC and DEF, AB = FD and $\angle A = \angle D$. The two triangles will be congruent by SAS axiom if (A) BC = EF (B) AC = DE (C) AC = EF (D) BC = DE	**(B)**
9	Side QR of a ΔPQR has been produced to the point S. If $\angle PRS = 115°$ and $\angle P = 45°$, then $\angle Q$ is equal to,  (a) 70° (b) 105° (c) 51° (d) 80°	**(a)**

10	In an equilateral triangle ABC, if AD is an altitude then $4AD^2$ is equal to (a) $2BD^2$ (b) BC^2 (c) $3AB^2$ (d) $2DC^2$	**(c)**
11	PS is the bisector of ∠P and PQ = PR. Then ΔPRS and ΔPQS are congruent by the criterion (a) AAA (b) SAS (c) ASA (d) both (b) and (c)  	**(b)**
12	3 times the measure of an angle is 14 less than the measure of its complement. What is the measure of the angle? (a) 19° (b) 57° (c) 71° (d) 76°	**(a)**
13	Two angles are congruent and complementary. What is the measure of each angle? **(a) 180^0 (b) 90^0 (c) 45^0 (d) 360^0**	**(c)**
14	The measure of the supplement of an angle is 12 more than twice the measure of the angle. What is the measure of the angle? (a)124 (b). 48 (c) 56 (d) 24	**(a)**
15	**In triangle ABC, if BC = 3 and AC = 4, then what is the length of segment CD?** (a) 3 (b). 15/4 (c) 5 (d). 16/3	**(d)**
16	**In triangle ABC, angle A=90°, angle B=30°, BC=8cm. Find the length of side AB and AC?** **(a) 4, 6.93 (b) 5, 5.964 (c) 7, 4.675 (d) 8, 3.876**	**(a)**
17	In Δ ABC is an isosceles triangle and ∠ B = 65^o , find x. (a) 60^o (b) 70^o (c) 50^o (d) none of these	**(d)**
18	In a triangle, one angle is of 90°. Then (i) The other two angles are of 45° each (ii) In remaining two angles, one angle is 90° and other is 45° (iii) Remaining two angles are complementary In the given option(s) which is true? (a) (i) only (b) (ii) only (c) (iii) only (d) (i) and (ii)	**(a)**

19	If in an isosceles triangle, each of the base angles is 40°, then the triangle is (a) Right-angled triangle (b) Acute angled triangle (c) Obtuse angled triangle (d) Isosceles right-angled triangle	**(c)**
20	In Fig., BC = CA and ∠A = 40. Then, ∠ACD is equal to (a) 40° (b) 80° (c) 120° (d) 60° 	**(b)**
II. Solve as directed		
1	Prove that angles opposite to equal sides of an isosceles triangle are equal.	
2	In the given figure, AD is bisector of ∠BAC and ∠CPD = ∠BPD. Prove that ΔCAP ≅ ΔBAP. 	
3	In ΔABC, BD and CE are two altitudes such that BD = CE. Prove that ΔABC is isosceles.	
4	In the fig. 10, D and E are points on the base BC of a ΔABC such that AD = AE and ∠BAD = ∠CAE. Prove that AB = AC.  Fig. 10	
5	**The exterior angles, obtained on producing the base of a triangle both way are 104^0 and 136^0 . Find all the angles of the triangle.**	**∠AC B= 76^0, ∠BAC**

		= $60^{0,}$ ∠AB C= 44^{0}
6	In the figure, *l* ïï *m* and M is the mid-point of AB. Prove that M is also the mid-point of CD. 	

III. Solve the following

1	In a triangle ABC, E and F respectively are mid-points of equal sides AB and AC of ΔABC. Show that BF = CE.	
2	AD is an altitude of an isosceles ΔABC in which AB = AC. Show that AD bisects BC.	
3	AD is an altitude of an isosceles triangle ABC in which AB = AC. Show that AD is also the median of the triangle.	
4	In fig. 5, If ∠ABD = ∠ACE and AB = AC. Prove that ΔABD ≅ ΔACE.  Fig. 5	

5 In figure 6, ΔLMN is an isosceles triangle with LM=LN, and LP bisects ∠NLQ, Prove that LP||MN.

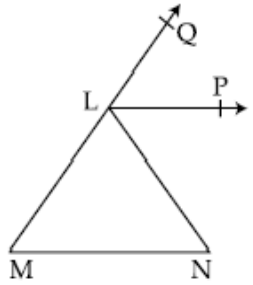


Figure 6

6 In the fig. 9, the sides AB and AC of ΔABC are produced to points E and D respectively. If bisectors BO and CO of ∠CBE and ∠BCD respectively meet at point O, then prove that $\angle BOC = 90° - \frac{1}{2}\angle BAC$.

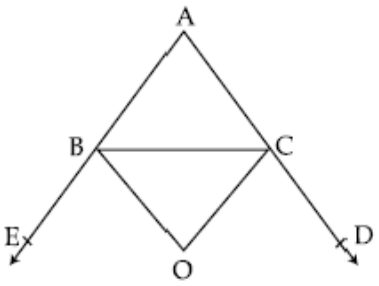
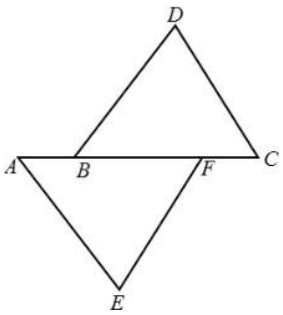
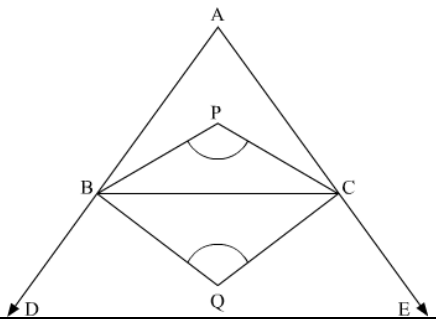


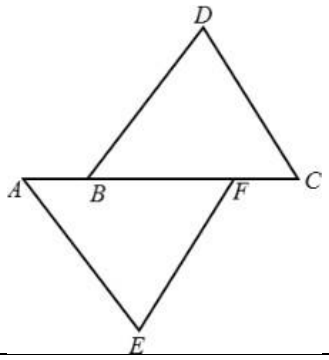
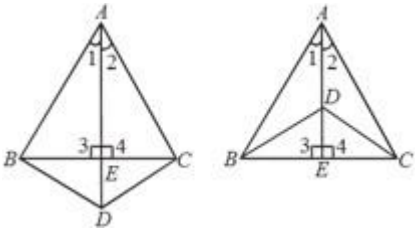
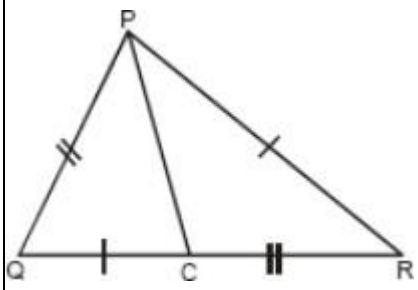
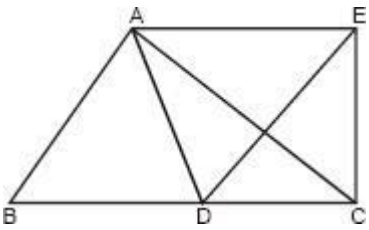
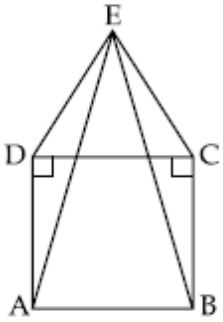
Fig. 9

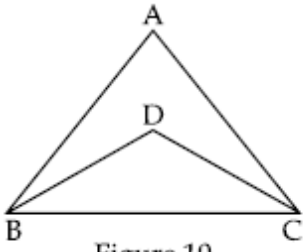
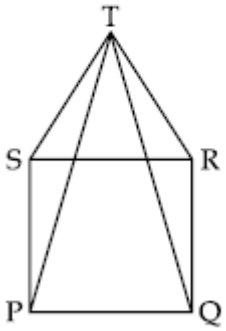
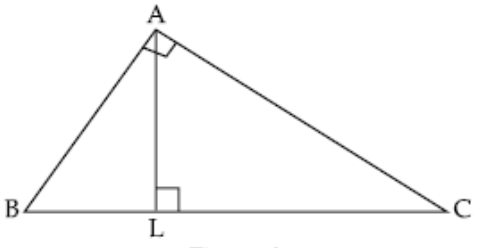
7 In Fig. it is given that AB = CF, EF = BD and ∠AFE = ∠DBC. Prove that ΔAFE ΔCBD.



8 **In a ΔABC, the internal bisectors of ∠B and ∠C meet at P and the external bisectors od ∠B and ∠C meet at Q. Prove that ∠BPC + ∠BQC = 180^0.**



9	In Fig. it is given that AB = CF, EF = BD and ∠AFE = ∠DBC. Prove that ΔAFE ΔCBD.  	
10	If two isosceles triangles have a common base, the line joining their vertices bisects them at right angles.  	
11	In the given figure, triangles PQC and PRC are such that QC = PR and PQ = CR. Prove that ∠PCQ = ∠CPR.  	
12	In the given figure, AB = AD, AC = AE and ∠BAD = ∠EAC, then prove that BC = DE.  	
13	In Figure 11, ABCD is a square and ΔDEC is an equilateral triangle. Prove that : (i) $\Delta ADE \cong \Delta BCE$ (ii) $AE = BE$ (iii) $\angle DAE = 15°$  Figure 11	

14	In figure 10, if AB = AC and DB = DC then prove that $\angle ABD = \angle ACD$.  Figure 10	
15	In figure 11, PQRS is a square and SRT is an equilateral triangle. Prove that : (i) $\angle PST = \angle QRT$ (ii) $PT = QT$ (iii) $\angle QTR = 15°$  Figure 11	
16	In figure 9, ABC is a triangle with $\angle BAC = 90°$ and $AL \perp BC$. Prove that $\angle CAL = \angle ABC$.  Figure 9	

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