IX | Test - 11 (TRIANGLES)

1) Three statements are given below:

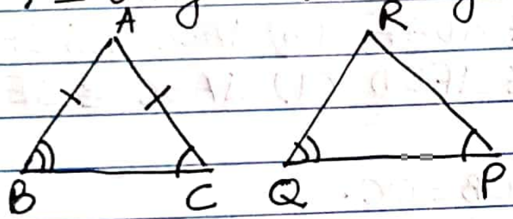
I In a ΔABC in which $AB = AC$, the altitude AD bisects BC.

II If the altitudes AD, BE and CF of ΔABC are equal, then ΔABC is equilateral.

III If D is the mid-point of the hypotenuse AC of a right ΔABC, then $BD = AC$.

Which is true?

(a) I only (b) II only (c) I and II (d) II and III

2) 

In ΔABC and ΔPQR, it is given that $AB = AC$, $\angle C = \angle P$ and $\angle B = \angle Q$. Then, the two triangles are

(a) isosceles but not congruent

(b) isosceles and congruent

(c) congruent but not isosceles

(d) neither congruent nor isosceles.

3) Which one is true?

(a) a triangle can have two right angles

(b) a triangle can have two obtuse angles

(c) a triangle can have two acute angles

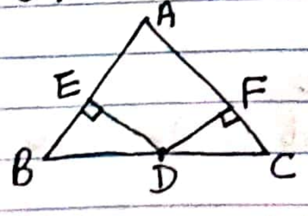
(d) an exterior angle of a triangle is less than either of the interior opposite angles.

4) In ΔABC and ΔDEF, it is given that $\angle B = \angle E$ and $\angle C = \angle F$. In order that $\Delta ABC \cong \Delta DEF$, we must have

(a) $AB = DF$ (b) $AC = DE$ (c) $BC = EF$ (d) $\angle A = \angle D$

5) In ΔABC and ΔDEF, it is given that $AB = DE$ and $BC = EF$. In order that $\Delta ABC \cong \Delta DEF$, we must have

(a) $\angle A = \angle D$ (b) $\angle B = \angle E$ (c) $\angle C = \angle F$ (d) none of these.

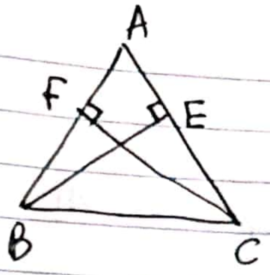
6) 

D is the midpoint of BC, $DE \perp AB$ and $DF \perp AC$ such that $DE = DF$. Then, which of the following is true?

(a) $AB = AC$ (b) $AC = BC$ (c) $AB = BC$ (d) none of these

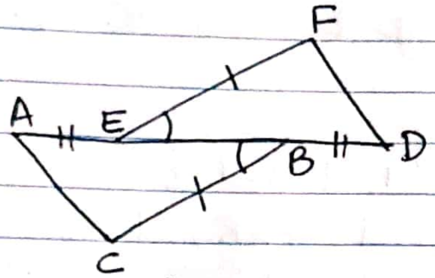
7) If the altitudes from two vertices of a Δ to the opposite sides are equal, then the triangle is

(a) equilateral (b) isosceles (c) scalene (d) right-angled

8) 

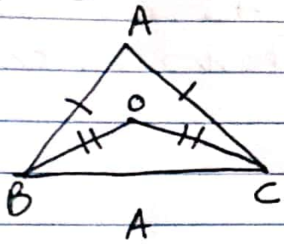
$BE \perp CA$ and $CF \perp BA$ such that $BE = CF$. Then, which of the following is true ?

(a) $\triangle ABE \cong \triangle ACF$ (b) $\triangle ABE \cong \triangle AFC$
(c) $\triangle ABE \cong \triangle CAF$ (d) $\triangle ABE \cong \triangle FAC$

9) 

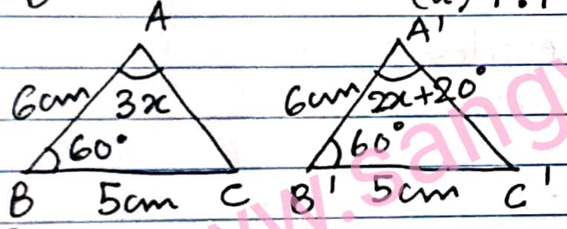
$AE = DB$, $CB = EF$ and $\angle ABC = \angle FED$. Then which of the following is true ?

(a) $\triangle ABC \cong \triangle DEF$ (b) $\triangle ABC \cong \triangle EFD$
(c) $\triangle ABC \cong \triangle FED$ (d) $\triangle ABC \cong \triangle EDF$

10) 

$AB = AC$ and $OB = OC$. Then $\angle ABO : \angle ACO = ?$

(a) 1:1 (b) 2:1 (c) 1:2 (d) none of these

11) 

$\angle A = 3x$; $\angle A' = 2x + 20°$
$\angle B = 60°$; $\angle B' = 60°$
$AB = A'B' = 6cm$

Then $\angle B'A'C' =$ (a) 50° (b) 60° (c) 70° (d) 80°

12) If $\triangle ABC \cong \triangle LKM$, then side of $\triangle LKM$ equal to side AC of $\triangle ABC$ is
(a) LK (b) KM (c) LM (d) none of these

13) In $\triangle ABC$ and $\triangle PQR$, if $\angle A = \angle R$, $\angle B = \angle P$ and $AB = RP$, then which one of the following congruence conditions applies :
(a) SAS (b) ASA (c) SSS (d) RHS

14) If $\triangle PQR \cong \triangle EFD$, then $ED =$
(a) PR (b) QR (c) PQ (d) none of these.

15) If $\triangle PQR \cong \triangle EFD$, then $\angle E =$
(a) $\angle Q$ (b) $\angle R$ (c) $\angle P$ (d) none of these

16) In a $\triangle ABC$, if $AB = AC$ and BC is produced to D such that $\angle ACD = 100°$, then $\angle A =$
(a) 40° (b) 80° (c) 20° (d) 60°

17) In an isosceles $\triangle$, if the vertex angle is twice the sum of the base angles, then the measure

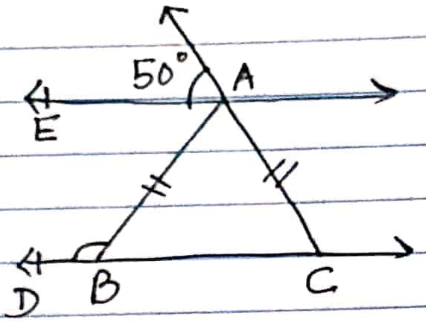
of vertex angle of the Δ is

(a) 100° (b) 120° (c) 110° (d) 130°

18) Which of the following is not a criterion for congruence of triangles?

(a) SAS (b) SSA (c) ASA (d) SSS

19)

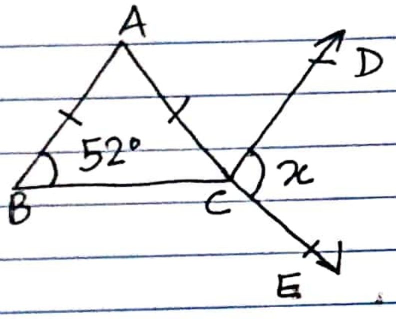


$AE \parallel DC$, $AB = AC$.

$\angle ABD =$

(a) 130° (b) 110° (c) 120° (d) 70°

20)

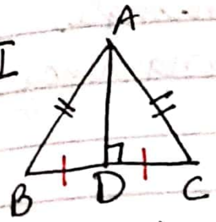


ΔABC is an isosceles Δ whose side AC is produced to E and through C, $CD \parallel AB$, find the value of x

(a) 52° (b) 156° (c) 76° (d) 104°

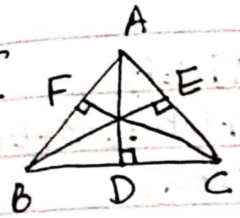
IX Test – 11 (TRIANGLES – MCQs – answers)

1) I



For an isosceles $\triangle ABC$, the altitude AD is the perpendicular bisector of BC.

II



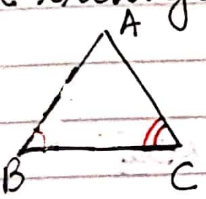
In an equilateral $\triangle ABC$, altitudes are equal in lengths.
i.e., $AD = BE = CF$.

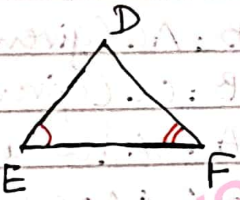
I and II (c)

2) isosceles but not congruent (a)

3) a triangle can have two acute angles (c)

4)

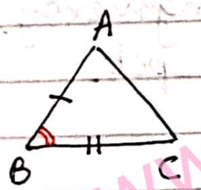


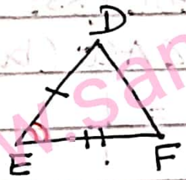


$BC = EF$ (c)

$\triangle ABC \cong \triangle DEF$ (ASA congruency)

5)

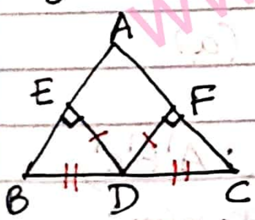




$\angle B = \angle E$ (b)

$\triangle ABC \cong \triangle DEF$ (SAS congruency)

6)



$\triangle DEB \cong \triangle DFC$ (RHS congruency)

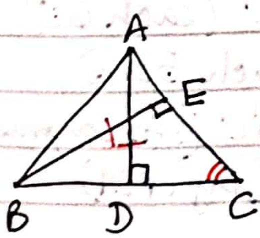
Thus, $\angle EBD = \angle FCD$ (by CPCT)

$\Rightarrow \angle B = \angle C$

$\Rightarrow AC = AB$ [sides opposite to equal angles]

(a)

7)



In $\triangle ADC$ and $\triangle BEC$,

$AD = BE$ (given)

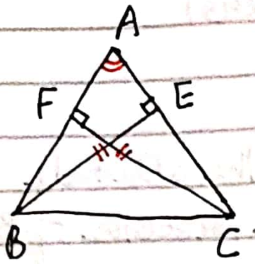
$\angle ADC = \angle BEC$ (each $90°$)

$\angle ACD = \angle BCE$ (common angle)

$\therefore \triangle ADC \cong \triangle BEC$ (AAS congruency)

Thus, $AC = BC$ (by CPCT)

$\Rightarrow \triangle ABC$ is an isosceles $\triangle$ (b)

8) 

In $\triangle ABE$ and $\triangle ACF$,

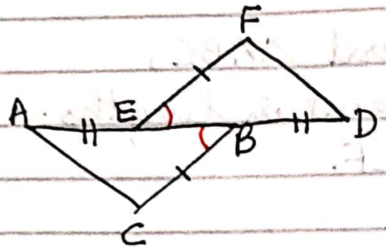
$BE = CF$ (given)

$\angle BEA = \angle CFA$ (each $90°$)

$\angle BAE = \angle CAF$ (common angle)

$\therefore \triangle ABE \cong \triangle ACF$ (AAS congruency)

(a)

9) 

In $\triangle ABC$ and $\triangle DEF$,

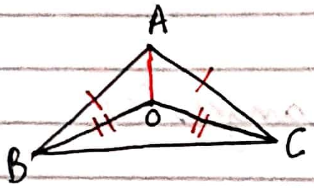
$AB = DE$ ($AE + EB = DB + EB$)

$\angle ABC = \angle DEF$ (given)

$BC = EF$ (given)

$\therefore \triangle ABC \cong \triangle DEF$ (SAS congruency)

(a)

10) 

In $\triangle AOB$ and $\triangle AOC$,

$AB = AC$ (given)

$OB = OC$ (given)

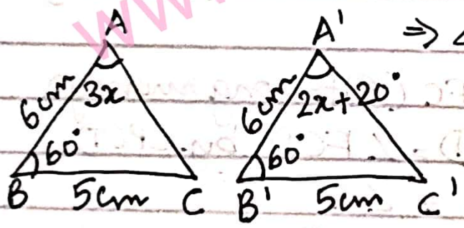
$OA = OA$ (common side)

$\therefore \triangle AOB \cong \triangle AOC$ (SSS congruency)

Thus $\angle ABO = \angle ACO$ (by cpct)

$\Rightarrow \dfrac{\angle ABO}{\angle ACO} = \dfrac{1}{1}$

$\Rightarrow \angle ABO : \angle ACO = 1:1$ (a)

11) 

In $\triangle ABC$ and $\triangle A'B'C'$,

$AB = A'B'$ (each 6cm)

$\angle ABC = \angle A'B'C'$ (each $60°$)

$BC = B'C'$ (each 5cm)

$\therefore \triangle ABC \cong \triangle A'B'C'$ (SAS congruency)

Thus $\angle BAC = \angle B'A'C'$ (by CPCT)

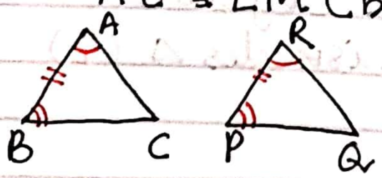
$\Rightarrow 3x = 2x + 20°$

$\Rightarrow x = 20°$

$\therefore \angle B'A'C' = 2x + 20° = 40° + 20° = \underline{\underline{60°}}$ (b)

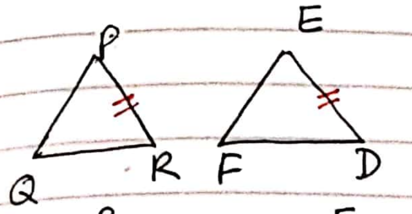
12) $\triangle ABC \cong \triangle LKM$, then

$AC = LM$ (by CPCT) (c)

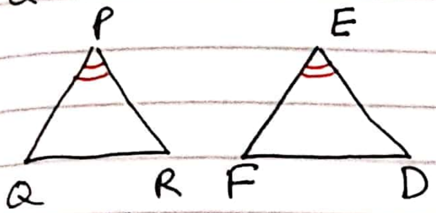
13) 

$\triangle ABC \cong \triangle RPQ$ (ASA congruency)

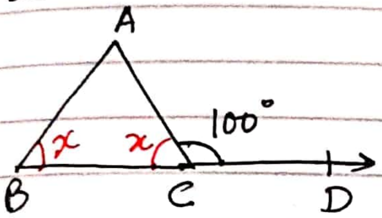
(b)

14) 

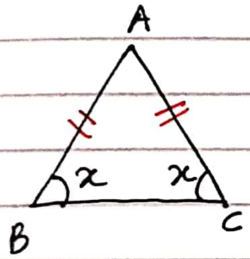
$\Delta PQR \cong \Delta EFD$, then
$\underline{PR} = ED$ (by CPCT) (a)

15) 

$\Delta PQR \cong \Delta EFD$,
then $\underline{\angle P} = \angle E$ (by cpct) (c)

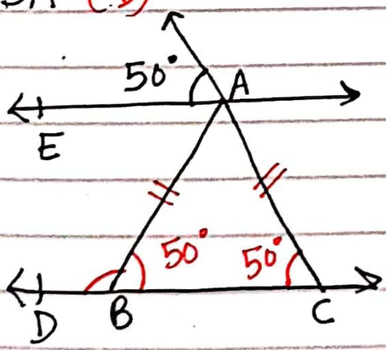
16) 

$x = 180° - 100°$ (linear pair)
$= 80°$
$\angle A = 180° - (x + x)$ [angle sum property]
$= 180° - 2x$
$= 180° - 160°$
$= \underline{\underline{20°}}$ (c)

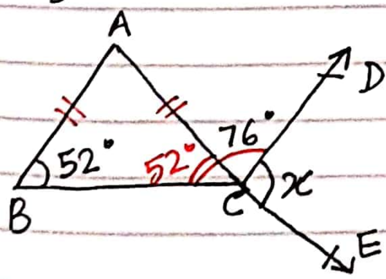
17) 

$\angle A = 2(x + x) = 2 \times 2x = 4x$
Then, $4x + x + x = 180°$ (angle sum property)
$\Rightarrow 6x = 180°$
$x = 30°$
$\therefore \angle A = 4x = 4 \times 30° = 120°$ (b)

18) SSA (b)

19) 

$\angle ACB = 50°$ (corresponding angles)
$\angle ACB = \angle ABC = 50°$ [$\because AB = AC$]
$\therefore \angle ABD = 180° - 50°$ (linear pair)
$= \underline{\underline{130°}}$ (a)

20) 

Since $AB \parallel DC$, $\angle ABC + \angle DCB = 180°$
(co-interior angles)
$\Rightarrow \angle DCB = 180° - 52° = 128°$
$\angle ACD = 128° - 52° = 76°$
$x + 76° = 180°$ (linear pair)
$x = 180° - 76°$
$= 104°$ (d)