Triangles Formative Assignments

Subjective Questions

1. Let ABC and PQR are two triangles.

Which cases the triangles will be congruent? Write down the congruence equation

a) AB =PQ , BC=QR and AC=PR

b) BC=QR , $\angle B = \angle Q$, $\angle C = \angle R$

c) AB=PQ, BC=QR, $\angle C = \angle P$
d) AB=PQ, BC=QR, $\angle B = \angle Q$
e) AB=PQ ,$\angle A = \angle P, \angle C = \angle R$
f) AB =PQ , BC=QR
g) ∠B=∠Q ,∠C=∠R
h) $\angle A = \angle P$,∠B=∠Q ,∠C=∠R
i) AB=PR , $\angle A = \angle P, \angle B = \angle R$

Solution

a) The three sides are equal to corresponding three sides. From SSS congruence, ABC is congruent to PQR

$$ABC \cong PQR$$

b) Two angles and included side are equal, so from ASA congruence, ABC is congruent to PQR

$$ABC \cong PQR$$

c) Two sides are equal but the angle is not the included, So ABC is not congruent to PQR

d) Two sides are equal and included angle is equal so from SAS congruence, ABC is congruent to PQR

$$ABC \cong PQR$$

e) Two angles and included side are equal, so from ASA congruence, ABC is congruent to PQR

$$ABC \cong PQR$$

f) Just two sides are equal; So ABC is not congruent to PQR

g) Just two angles are equal, there is no information about side, and So ABC is not congruent to PQR

h) All the angles are equal. This does not satisfy any congruence theorem, So ABC is not congruent to PQR

i) Two sides are equal and included angle is equal so from SAS congruence, ABC is congruent to PRQ

$$ABC \cong PRQ$$

True or False statement

2) **True or False statement**
a) We cannot construct a triangle of side 9, 5, 4 cm
b) In a Right angle triangle, hyponotuse is the longest side
c) Centroid is the point of intersection of the median of the triangles
d) A triangle can have two obtuse angles
e) Orthocenter is the point of intersection of altitudes
f) If $ABC \cong PQR$ then AC=PQ

g) If a triangle ABC such that AB > BC, Then $\angle C > \angle A$

h) Midpoint of the hypotenuse of right angled triangle is circumcenter

Solution

a) True
b) True
c) True
d) False
e) True
f) False
g) True
h) True

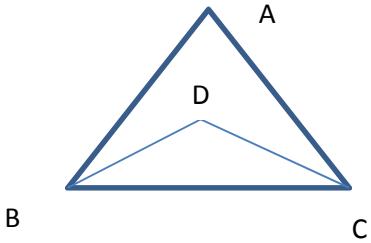
Multiple choice Questions

4) In a triangle ABC,$\angle A = 60\ \angle B = 40$, which side is the longest

a) AB
b) BC
c) AC

Solution (a)
As $\angle C = 80$ is the highest angle

5. In triangle ABC , AB=AC and D is the point inside triangle such that BD=DC as shown in figure



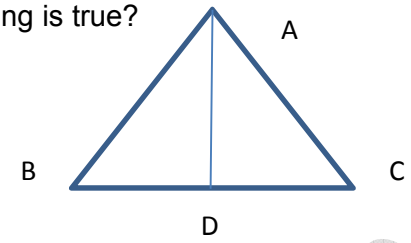
Which of the following is true?
a) $\Delta ABD \cong \Delta ACD$
b) $\angle ABD = \angle ACD$
c) $\angle DAC = \angle DAB$
d) All the above

Solution
In triangle ABD and ACD
AD=AC
BD=DC
AD is common
So $\Delta ABD \cong \Delta ACD$
So all the above are true

6) An exterior angle of the triangle is 110^0 , one of the opposite interior angle is 50^0.
What are the other two angles
a) 60^0,70^0
b) 55^0,55^0
c) 70^0,50^0
d) None of the above

Solution (a)
Sum of the opposite two interior angle =Exterior angle
50+x=110 => x=60
Now 60+50+z=180
z=70

7) AD is the median of the triangle . Which of the following is true?

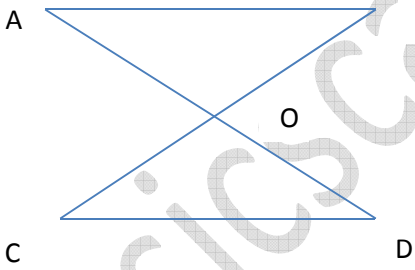


a) AB+BC+AC > 2AD
b) AB +BC > AC
c) AB+BC+AC> AD
d) None of these

Solution a and b
In triangle ADB
AB +BD > AD
In triangle ADC
AC+DC > AD
Adding both
AB+AC +BD+DC> 2AD
Now BD+DC=BC
So
AB +AC+BC > 2AD

Also in triangle ABC
AB+BC > AC

8)



In the above figure AB || CD ,O is the midpoint BC. Which of the following is true?

a) $\Delta AOB \cong \Delta DOC$
b) O is the midpoint of AD
c) AB=CD
d) All the above

Solution (d)
In $\Delta AOB \; and \; \Delta DOC$
$\angle OAB = \angle ODC$
$\angle OBA = \angle OCD$
OB and OC
So from AAS congruence ,we have
$\Delta AOB \cong \Delta DOC$
Now from CPCT ,we have
AB=CD

OA=OD

9) In an isosceles triangle ΔABC with AB = AC. D is midpoint on BC.
Which of the following is true?

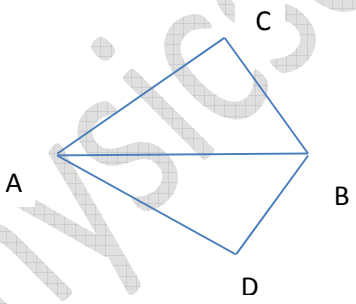
a) Orthocenter lies on line AD
b) AD is the perpendicular bisector BC
c) Centroid lies on the line AD
d) AD is the bisector of angle A

Solution (a) (b) (c) (d)

10) PQR is a right angle triangle in with $P=90^0$ and PQ=PR . What is the value of Q and R
a) $45^0,45^0$
b) $30^0,60^0$
c) 20,60

Solution (a)
P=90
Since PQ=PR
$\angle Q = \angle R$
So $Q=R=45^0$

11)



In the above quadrilateral ACBD, we have AC=AD and AB bisect the $\angle A$
Which of the following is true?

a) $\Delta ABC \cong \Delta ABD$
b) BC=BD
c) $\angle C = \angle D$
d) None of the above

Solution (a) ,(b) ,(c)
In triangle ABC and ABD ,we have

AC=AD
$\angle CAB = \angle BAD$
AB=AB
By SAS ,we have
$\Delta ABC \cong \Delta ABD$
Now we have BC=BD and $\angle C = \angle D$

Match the column

Point of intersection of altitude	Circumcenter
Point of intersection of Median	In center
Point of intersection of angle bisector	Orthocenter
Point of intersection of perpendicular bisector of sides	Centroid