EXTRA QUESTIONS

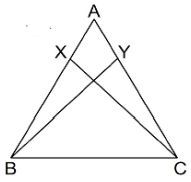
ASSERTION AND REASON

1. Assertion (A): In ΔABC, BC = AB and ∠B = 80°. Then ∠A = 50°

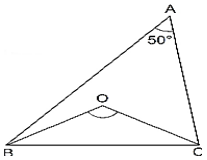
Reason (R): In a triangle, angles opposite to two equal sides are equal

a) Both Assertion and Reason are correct and Reason is the correct explanation for Assertion
b) Both Assertion and Reason are correct and Reason is not the correct explanation for Assertion.
c) Assertion is true but the reason is false.
d) Assertion is false and reason is true.

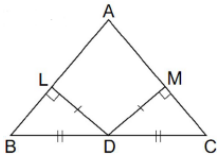
2. Assertion (A): In ΔABC, ∠C = ∠A, BC = 4 cm and AC = 5 cm, Then AB = 4 cm
Reason (R): In a triangle, angles opposite to two equal sides are equal
3. Assertion (A): In a ΔABC, If AB = AC and ∠B = 70°, ∠A= 40.
Reason (R): Sum of angle of triangle is 179°.
4. Assertion (A): Equilateral means equal side
Reason (R): All equilateral triangles are not isosceles.
5. Assertion (A): Equiangular means equal angles.
Reason (R): All isosceles triangles are equiangular.
6. Assertion (A): In the adjoining figure, X and Y are respectively two points on equal sides AB and AC of ΔABC such that AX = AY then CX = BY.



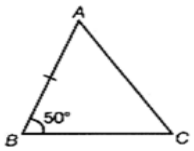
Reason (R): If two sides and the included angle of one triangle are equal to two sides and the included angle of the other triangle, then the two triangles are congruent
7. Assertion (A): In the given figure, BO and CO are the bisectors of ∠B and ∠C respectively. If ∠A =50° then ∠BOC= 115°.



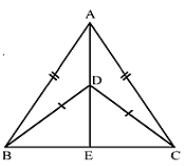
Reason (R): The sum of all the interior angles of a triangle is 180°.
8**.** Assertion (A): Two angles measures a - 60° and 123° - 2a. If each one is opposite to equal sides of an isosceles triangle, then the value of a is 61°.
Reason (R): Sides opposite to equal angles of a triangle are equal.
9. Assertion (A): In ΔABC, ∠C = ∠A, BC = 4 cm and AC = 5 cm. Then, AB = 4 cm
Reason (R): In a triangle, angles opposite to two equal sides are equal.
10. Assertion (A): In ΔABC, BC = AB and ∠B = 80°. Then, ∠A = 50°
Reason (R): In a triangle, angles opposite to two equal sides are equal.
11. Assertion (A): In ΔABC, D is the midpoint of BC. If DL ⊥ AB and DM ⊥ AC such that DL = DM, then BL= CM



Reason (R): If two angles and the included side of one triangle are equal to two angles
12. Assertion (A): Angles opposite to equal sides of a triangle are not equal.
Reason (R): Sides opposite to equal angles of a triangle are equal.
13. Assertion (A): In ΔABC, AB = AC and ∠B = 50°, then ∠C is 50°.
Reason (R): Angles opposite to equal sides of a triangle are equal.



14. Assertion (A): ΔABC and ΔDBC are two isosceles triangles on the same base BC and vertices A and D are on the same side of BC. If AD is extended to intersect BC at E, then ΔABD ≅ ΔACD



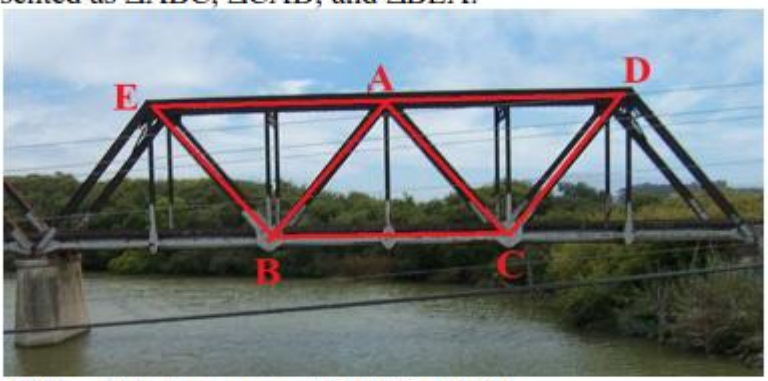
Reason: If in two right triangles, hypotenuse and one side of a triangle are equal to the hypotenuse and one side of other triangle, then the two triangles are congruent.
15. Assertion : In triangles ABC and PQR, ∠A = ∠P, ∠C = ∠R and AC = PR. The two triangles are congruent by ASA congruence.

Reason: If two angles and the included side of one triangle are equal to two angles and the included side of the other triangle, then the two triangles are congruent.

CASE STUDY

CS-1

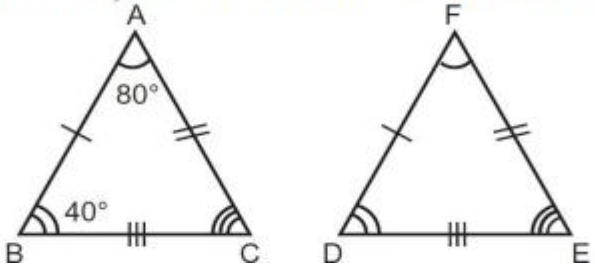
Truss bridges are formed with a structure of connected elements that form triangular structures to make up the bridge. Trusses are the triangles that connect to the top and bottom cord and two end posts. You can see that there are some triangular shapes are shown in the picture given alongside and these are represented as ΔABC, ΔCAD, and ΔBEA.



(a) If AB = CD and AD = CB, then prove ΔABC ≅ ΔCDA

(b) If AB = 7.5 m, AC = 4.5 m and BC = 5 m. Find the perimeter of ΔACD, if ΔABC ≅ ΔCDA by SSS congruence rule.

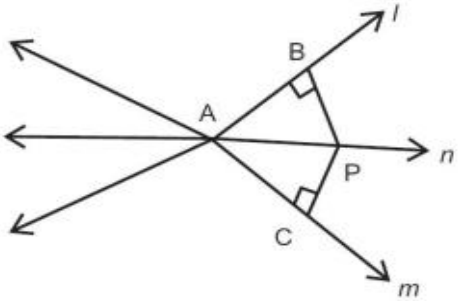
(c) If ΔABC ≅ ΔFDE, AB = 5 cm, ∠B = 40° and ∠A = 80°. Then find the length of DF and ∠E.



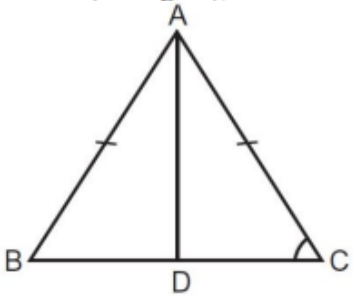
CS-2

To check the understanding of the students of the class about IX the triangles, the Mathematics teacher write some questions on the blackboard and ask the students to read them carefully and answer the following question.

(a) In figure, P is a point equidistant from the lines l and m intersecting at point A, then find ∠BAP.

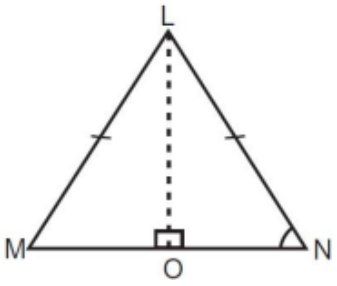


(b) In ΔABC, if AB = AC and BD = DC (see figure), then find ∠ADC.



OR

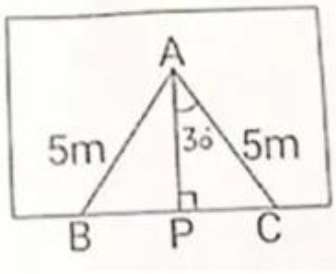
(b) ΔLMN is an isosceles triangle, where LM = LN and LO, is an angle bisector of ∠MLN, Prove that point 'O' is the mid-point of side MN.



CS-3

In a forest, a big tree got broken due to heavy rain and wind. Due to this rain the big branches AB and AC with lengths 5m fell down on the ground. Branch AC makes an angle of 30^0 with the main tree AP. The distance of Point B from P is 4m. You can observe that ΔABP is congruent to ΔACP.

$\leftrightarrow$



(i) Show that ΔACP and ΔABP are congruent?

(ii) Find the value of $\angle ACP$?

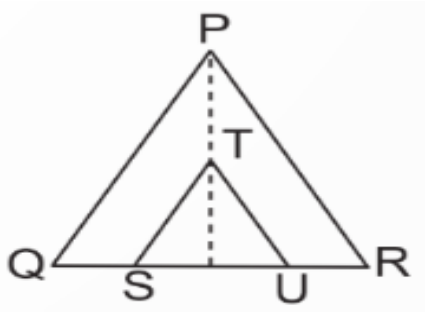
OR

What is the total height of the tree?

(iii) Find the value of $\angle BAP$.

CS-4

Red Pyramid (or North Pyramid) is the largest pyramid in cairo Egypt's capital. It is a rusty red pyramid made up of red limestones. The height of the pyramid is 105 m and its base is 220 m. It is also believed that it was Egyptians first successfully attempt at constructing a smooth side pyramid. It can be seen that two triangles ΔPQR and ΔSTU have been marked in the images of pyramid, such that ST II PQ and TU II PR and ∠P = ∠T.



On the basis of the above information, solve the following questions.

Q1. Which of the following is not a criteria for congruency?

a. SSS b. SSA c. ASA d. RHS

Q 2. If ∠TSU = 40° and TS = TU, then ∠STU is:

a. 100° b. 110° c. 120° d. 130°

Q 3. If ∠QPR = 50° and QP = PR, then ∠PQR is:

a. 65° b. 70° c. 75° d. 80°

Q4. If hypotenuse and one side of one triangle are equal to the hypotenuse and one side of the other triangle then the two triangles are congruent by criteria.

a. SSS b. RHS c. SAS d. ASA

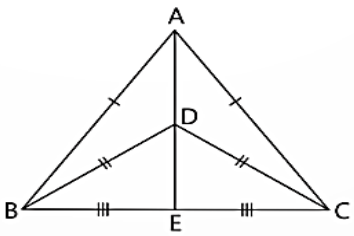
Q5. Area of two congruent figures is:

a. equal b. not equal c. (a) or (b) d. can not say anything

CS-5

Sunil is a farmer who is having a triangular plot. As the land is limited with him, so he decided to divide his land in four parts so that he can use multiple cropping method in which fields are growing with different seads. The field is divided as shown below.

In this figure, ΔABC and ΔDBC are two isosceles triangles on the same base BC and vertices A and D are on the same side of BC. Line AD is extended to BC, which intersect at point E.



On the basis of the above information, solve the following questions.

Q 1. If Sunil decides to grow crop in ΔABD, then which of the other triangle is of exact shape and size?

a. $\Delta ABD \cong \Delta ACD$ b. $\Delta ABD \cong \Delta BDE$
c. $\Delta ABD \cong \Delta ACE$ d. $\Delta ACD \cong \Delta AEB$

Q 2. In ΔBDC, if $\angle B + \angle D + \angle C = 180°$, $\angle D = 70°$, then $\angle B$ is equal to:

a. 70° b. 60° c. 55° d. 80°

Q 3. If Sunil decides to grow multiple crop in ΔBDE, then which of the other triangle is of exact shape and size?

a. $\Delta BDE \cong \Delta CDE$ b. $\Delta BDE \cong \Delta CED$
c. $\Delta BED \cong \Delta CDE$ d. $\Delta CED \cong \Delta EBD$

Q 4. Which of the following pair is congruent?

a. ΔABE and ΔADC b. ΔABE and ΔACE
c. ΔAEC and ΔADB d. ΔABE and ΔABD

Q 5. Two circles with same radii but different centres, then they are:

a. not always congruent
b. always congruent
c. congruent in some special cases
d. congruent when areas are different