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Email: info@askiitians.com
Tel: 1800-2000-838

Class: VII
Subject: Math's
Topic: Congru of triangle
No. of Questions: 20

Q1. If two angle are_____, their measure are same.

Sol. Congruent

Q2. The sum of an exterior angle of a triangle and its adjacent interior angle is _____

Sol. Right angles

Q3. In an Isosceles triangle base angle opposite to the equal sides are _____.

Sol. Equal

Q4. The side opposite to the right angle is called the _____ of the right-angles triangle.

Sol. Hypotenuse

Q5. Given below are measurements of some parts of two triangles. Examine whether the two triangles are congruent or not, by using SAS congruence rule. If the triangles are congruent, write them in symbolic form.

In Δ**ABC,** BC = 6 cm, AC = 4 cm, $\angle B = 35^o$ and in Δ**DEF,** DF $= 4$ cm, EF $= 6$ cm, $\angle E = 35^o$.

Sol. Here, BC $=$ EF, AC $=$ DF and $\angle B = \angle E$.

But $\angle B$ is not the included angle between the sides AC and BC. Similarly, $\angle E$ is not the included angle between the sides EF and DF. So, SAS congruence rule cannot be applied and we cannot conclude that the two triangles are congruent.

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Q6. According to Pythagoras property, in a right-angled triangle, the square on the _____ = sum of the squares on the legs.

a. Right angle
b. Altitude
c. Hypotenuse
d. None of these

Sol. C (Fact)

Q7. You want to show that $\Delta ART \cong \Delta PEN$, if you have to use SSS criterion, then you need to show AR =

a. PN
b. EN
c. $\angle P$
d. PE

Sol. A

Q8. Complete the following statements:

a. Tow line segments are congruent if _____.
b. Among two congruent angles, one has a measure of 70^o; the measure of the other angle is _____.
c. When we write $\angle A = \angle B$, we actually mean _____.

Sol.

a. They have the same length
b. 70^o
c. $m\angle A = m\angle B$

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Q9. Give any two real-life example for congruent shapes.

Sol.

a. Sheet of same letter pad
b. Biscuits in the same packet

Q10. If triangle DEF ≅ triangleBCA, write the part (s) of triangle BCA that correspond to

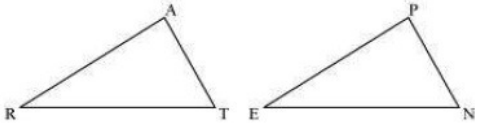
a. $\angle E$
b. $\overline{EF}$
c. $\angle F$
d. $\overline{DF}$

Sol.

a. $\angle C$
b. $\overline{CA}$
c. $\angle A$
d. $\overline{BA}$

Q11. You want to show that $\triangle ART \cong \triangle PEN$,

(a) If you have to use SSS criterion, then you need to show
(i) AR =
(ii) RT =
(iii) AT =
(b) If it is given that $\angle T = \angle N$ and you are to use SAS criterion, you need to have
(i) RT = and (ii) PN =
(c) If it is given that AT = PN and you are to use ASA criterion, you need to have
(i) ? (ii) ?



Sol. (a)

(i) AR = PE
(ii) RT = EN
(iii) AT = PN

(b)

(i) RT = EN

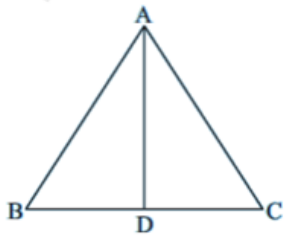
(ii) PN = AT

(C)

(i) ∠ATR = ∠PNE

(ii) ∠RAT =∠EPN

Q12. In the following figure, AB = AC and D is the mid-point of BC, Is ΔADB ≅ ΔADC? Give reasons.



Sol. Yes, ΔADB ≅ADC (By SSS congruence criterion)

Q13. Which congruence criterion do you use in the following?

Given: EB = DB, AE = BC, ∠A = ∠C = 90°. So, ΔABE≅ ΔCDB

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

Sol. A

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Q14. ΔABC and ΔPQR are congruent under the correspondence:

ABC↔RQP

Write the parts of ΔABC that correspond to

(i) $\overline{PQ}$
(ii) ∠Q
(iii) $\overline{RP}$

Sol. For better understanding of the correspondence, let us use a diagram (Fig. 7.7).

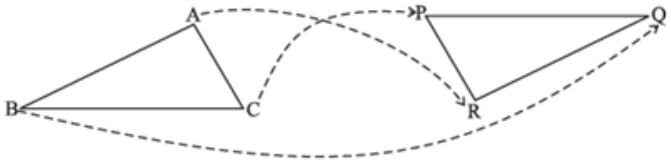


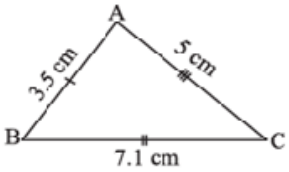
Fig 7.7

The correspondence is ABC ↔ RQP. This means

So, (i) $\overline{PQ} \leftrightarrow \overline{CB}$ (ii) ∠Q ↔ ∠B and (iii) $\overline{RP} \leftrightarrow \overline{AC}$

Q15. In triangles ABC and PQR, AB = 3.5 cm, BC = 7.1 cm, AC = 5 cm, PQ = 7.1 cm, QR = 5 cm and PR = 3.5 cm. Examine whether the two triangles are congruent or not.

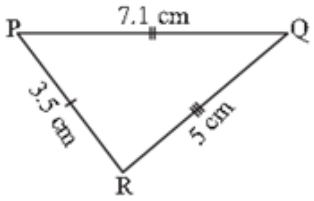
If yes, write the congruence relation in symbolic form.



Sol. Here, AB = PR (= 3.5 cm),

BC = PQ (= 7.1 cm)

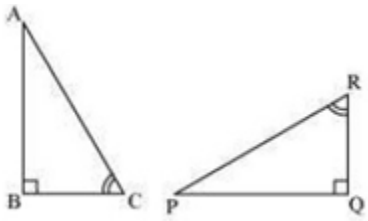
And AC = QR (= 5 cm)



This shows that three sides of one triangle are equal to the three sides of the other triangle. So, by SSS congruence rule, the two triangles are congruent. From the above three equality relations, it can be easily seen that A ↔ R, B ↔ P and C ↔ Q.

So, we have $\Delta ABC \cong \Delta RPQ$

Q16. If △ ABC and △ PQR are to be congruent, name one additional pair of corresponding parts. What criterion did you use?

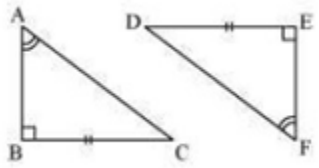


Sol. BC = QR

△ABC ≅ △PQR (ASA criterion)

Q17. Explain, why

△ABC ≅ △FED



Sol. Give that, ∠ABC = ∠FED (1)

∠BAC = ∠EFD (2)

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The two angles of ∆ ABC are equal to the respective angles of ∆FED. Also, the sum of all interior angles of a triangle is 180°. Therefore, third angle of both triangles will also be equal in measure.

∠BCA = ∠EDF (3)

So ASA congruency can be applied to prove the above statement

Q18. In Fig 7.23, AB = AC and AD is the bisector of ∠BAC.

a. State three pairs of equal parts in triangle ADb and ADC.
b. Is ΔADB ≅ΔADC? Give reasons.
c. Is ∠B = ∠c Give reasons.

Fig 7.22

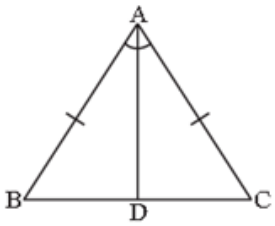

Fig 7.23

Sol.

a. The three pairs of equal parts are as follows:
AB = AC (Give)
∠BAD = ∠CAD (AD bisects ∠BAC) and AD = AD (common)
b. Yes, ΔADB≅ΔADC (By SAS Congruence rule)
c. ∠B = ∠C (Corresponding parts of congruent triangles)

Q19. In Fig. 7.26, cm you use ASA congruence rule and conclude that ΔAOC≅BOD?

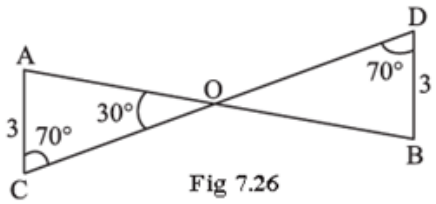

Fig 7.26

Sol. In the two triangles AOC and BOD, ∠C = ∠D (each 70°)

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Also, $\angle AOC = \angle BOD = 30^o$ (vertically opposite angles)

So, $\angle A$ of $\Delta AOC = 180^o - (70^o + 30^o) = 80^o$

(using angle sum property of a triangle)

Similarly, $\angle B$ of $\Delta BOD = 180^o - (70^o + 30^o) = 80^o$

Thus, we have $\angle A = \angle B$, $AC = BD$ and $\angle C = \angle D$

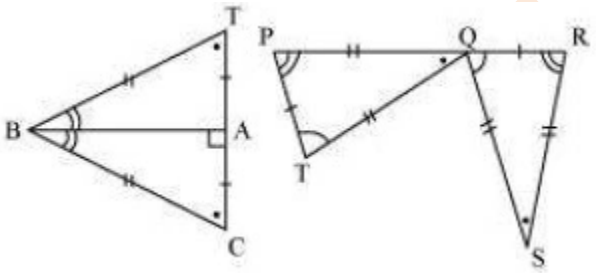
Now, side AC is between $\angle A$ and $\angle C$ and side BD is between $\angle B$ and $\angle D$.

So, by ASA congruence rule, $\Delta AOC \cong \Delta BOD$.

Q20. Complete the congruence statement:

$\triangle BCA \cong ?$

$\triangle QRS \cong ?$



Sol. Give that, $BC = BT$

$AT = CA$

BA is common.

Therefore, $\triangle BCA \cong \triangle BTA$

Similarly, $PQ = RS$

$TQ = QS$

$PT = RQ$

Therefore, $\triangle QRS \cong \triangle TPQ$