NCERT SOLUTIONS FOR CLASS 7 MATHEMATICS | CONGRUENCE OF TRIANGLES | Exercise 7.2

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

a) Given: AC = DF

AB = DE

BC = EF

So, $\Delta ABC \cong \Delta DEF$

b) Given: ZX=RP

RQ = ZY

∠ PRQ = ∠XZY

So, $\Delta PQR \cong \Delta XYZ$

c) Given: $\angle MLN = \angle FGH$

$\angle NML = \angle GFH$

ML = FG

So, $\Delta LMN \cong \Delta GFH$

d) Given: EB = DB

AE = BC

$\angle A = \angle C = 90°$

So, $\Delta ABE \cong \Delta CDB$

Answer:

a) Given three sides are equal.

So we can use SSS congruence criterion.

b) Given two sides and one angle are equal.

So we can use SAS congruence criterion.

c) Given two angles and one side are equal.

So we can use ASA congruence criterion.

d) Given two sides are equal and angles are right angles.

So we can use RHS congruence criterion.

2. You want to show that $\Delta ART \cong \Delta PEN$,

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)?

Answer:

a) i) PE

ii) EN

iii) PN

b)i) EN

ii) AT

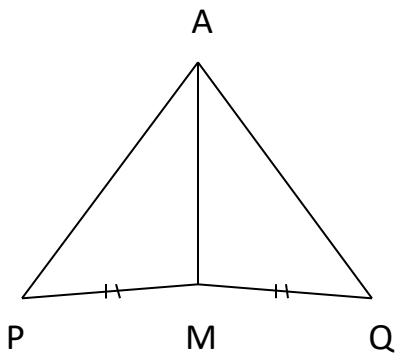
c) $i)\ \angle RAT = \angle EPN$

ii) $\angle ATR = \angle PNE$

3. You have to show that$\Delta AMP \cong \Delta AMQ$.

In the following proof, supply the missing reasons.

Steps	Reasons
i) PM = QM	i) ----------
ii) $\angle PMA = \angle QMA$	ii) ----------
iii) AM = AM	iii) ----------
iv) $\Delta AMP \cong \Delta AMQ$	iv) ----------



Answer:

i) Given

ii) Given

iii) Common

iv) SAS Congruence criterion.

4. In $\Delta ABC, \angle A$ = 30°, $\angle B = 40°$ and $\angle C = 110°$

In$\Delta PQR, \angle P = 30°$, $\angle Q$ = 40° and $\angle R = 110°$

A student says that $\Delta ABC \cong \Delta PQR$ by AAA congruence criterion. Is he justified? Why or why not?

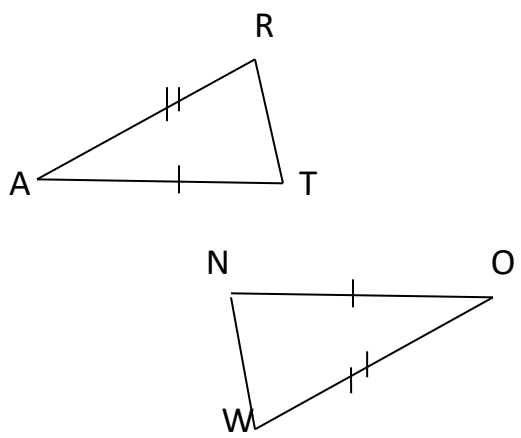
Answer:

No.

There is no such thing as AAA Congruence of two triangles.

Two triangles with equal corresponding angles need not be congruent. In such a correspondence, one of them can be an enlarged copy of the other.

5. In the figure, the two triangles are congruent. The corresponding parts are marked. We can write $\Delta RAT \cong$?



Answer:

Here the corresponding parts are

RA ↔WO

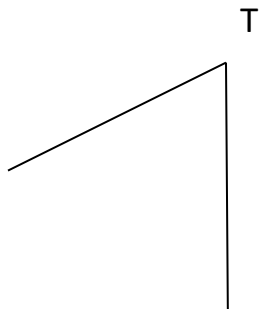
AT ↔ ON

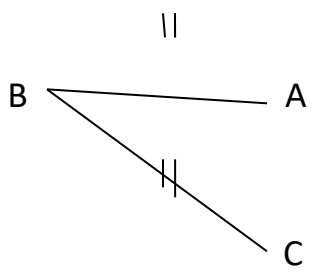
RT ↔WN

Therefore, $\Delta RAT \cong \Delta WON$.

6. Complete the congruence statement:

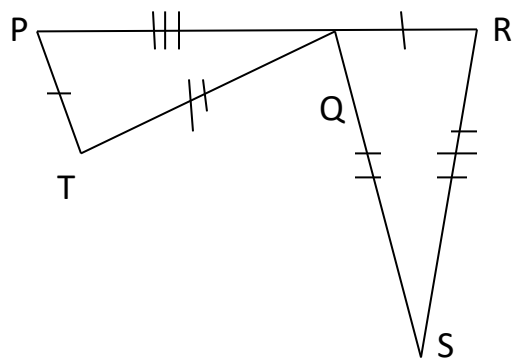
i)





$\Delta BCA \cong$?

ii)



$\Delta QRS \cong$?

Answer:

i) $\Delta BCA \cong \Delta BTA$

Here the corresponding parts are B↔ $B, A \leftrightarrow A, T \leftrightarrow C$

$ii)$ $\Delta QRS \cong \Delta TPQ$

Here the corresponding parts are P↔R, T↔ Q, Q↔ S

7. In a squared sheet, draw two triangles of equal areas such that

i) the triangles are congruent.

ii) the triangles are not congruent.

What can you say about their perimeters?

Answer:

i) When two triangles have equal areas and if they are congruent, then their perimeters are also same because the lengths of the sides of two triangles are equal. (by SSS congruence rule)

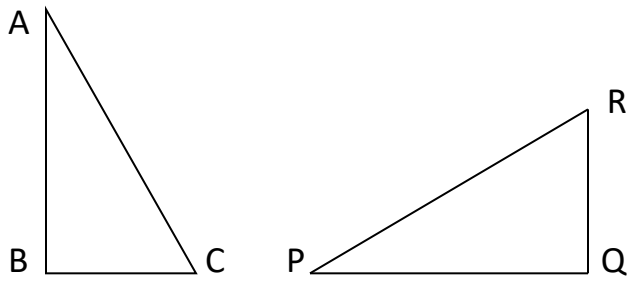
ii) When two triangles have equal areas and if they are not congruent, then their perimeters are not same because the lengths of the sides of two triangles are not equal.

8. Draw a rough sketch of two triangles such that they have five pairs of congruent parts but still the triangles are not congruent.

Answer:

Try yourself.

9. If ΔABC and ΔPQR are to be congruent, name one additional pair of corresponding parts. What criterion did you use?



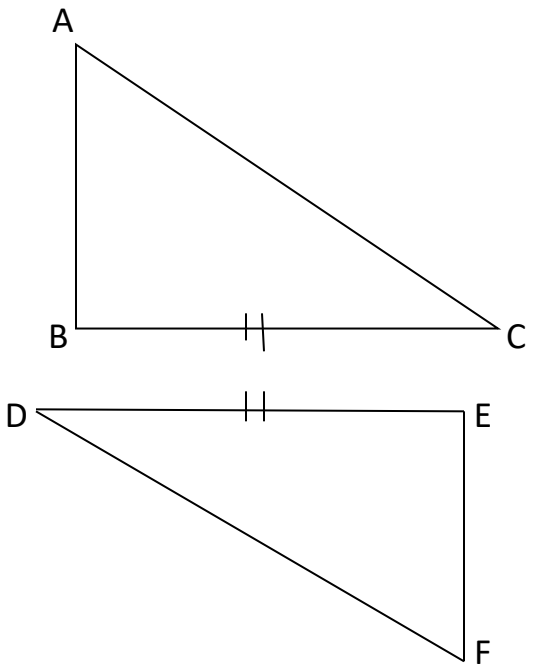
Answer:

BC = QR, by ASA Congruence criterion.

(Given two angles are equal)

10. Explain, why

$\Delta ABC \cong \Delta FED$.



Answer:

Given $\angle A = \angle F$

BC = ED

$\angle B$ = $\angle E$

In ΔABC and ΔFED,

$\angle B = \angle E$ = 90°

Therefore, $\Delta ABC \cong \Delta FED$, by RHS congruence rule.
