

NCERT Solutions for Class 7 Maths Chapter 7: NCERT Solutions for Class 7 Maths Chapter 7, Congruence of Triangles, are available here. Students can practice online or download these solutions to work on various types of questions from this chapter and score well in exams. Congruence refers to the relationship between two objects being identical in shape and size.

Chapter 7 – Congruence of Triangles includes 2 exercises. These NCERT Solutions for Class 7th Maths Chapter 7 were prepared by subject experts without any errors. Let's take a look at some of the concepts covered in this chapter.

NCERT Solutions for Class 7 Maths Chapter 7 PDF

Below is the PDF link to NCERT Solutions for Class 7 Maths Chapter 7. Accessing this PDF will provide comprehensive solutions to help understand the concepts covered in the chapter.

By referring to these NCERT Solutions for Class 7 Maths Chapter 7 students can enhance their mathematical skills and strengthen their grasp of triangles.

[NCERT Solutions for Class 7 Maths Chapter 7 PDF](#)

NCERT Solutions for Class 7 Maths Chapter 7 Congruence of Triangles

Exercise 7.1 Page: 137

1. Complete the following statements:

(a) Two line segments are congruent if _____.

Solution:-

Two line segments are congruent if **they have the same length.**

(b) Among two congruent angles, one has a measure of 70° ; the measure of the other angle is _____.

Solution:-

Among two congruent angles, one has a measure of 70° ; the measure of the other angle is **70° .**

If two angles have the same measure, they are congruent. Also, if two angles are congruent, their measure is the same.

(c) When we write $\angle A = \angle B$, we actually mean _____.

Solution:-

When we write $\angle A = \angle B$, we actually mean $m \angle A = m \angle B$.

2. Give any two real-life examples of congruent shapes.

Solution:-

The two real-life examples of congruent shapes are as follows:

- (i) Fan feathers of the same brand
- (ii) Size of chocolate in the same brand
- (iii) Size of pens in the same brand

3. If $\triangle ABC \cong \triangle FED$ under the correspondence $ABC \leftrightarrow FED$, write all the corresponding congruent parts of the triangles.

Solution:-

Two triangles are congruent if pairs of corresponding sides and corresponding angles are equal.

All the corresponding congruent parts of the triangles are,

$$\angle A \leftrightarrow \angle F, \angle B \leftrightarrow \angle E, \angle C \leftrightarrow \angle D$$

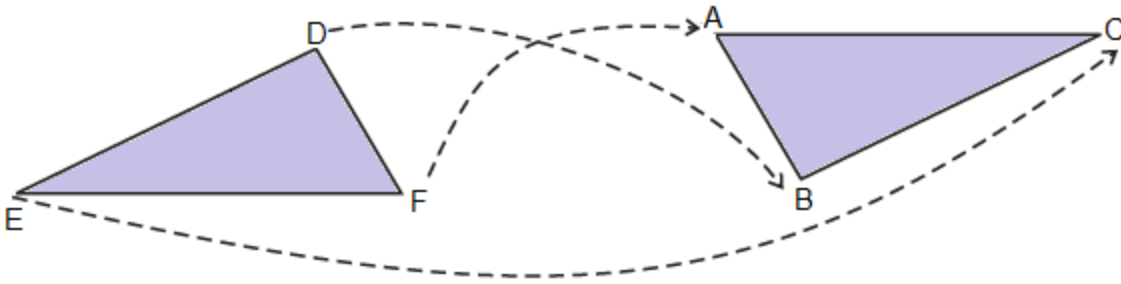
Correspondence between sides:

$$\begin{aligned}\overline{AB} &\leftrightarrow \overline{FE} \\ \overline{BC} &\leftrightarrow \overline{ED} \\ \overline{CA} &\leftrightarrow \overline{DF}\end{aligned}$$

4. If $\triangle DEF \cong \triangle BCA$, write the part(s) of $\triangle BCA$ that correspond to

(i) $\angle E$ (ii) \overline{EF} (iii) $\angle F$ (iv) \overline{DF}

Solution:-



From the above figure, we can say that,

The part(s) of $\triangle ABC$ that correspond to,

(i) $\angle E \leftrightarrow \angle C$

(ii)
 $\overline{EF} \leftrightarrow \overline{CA}$

(iii) $\angle F \leftrightarrow \angle A$

(iv)
 $\overline{DF} \leftrightarrow \overline{BA}$

Exercise 7.2 Page: 149

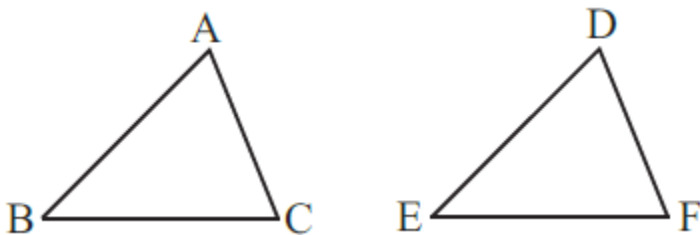
1. Which congruence criterion do you use in the following?

(a) Given: $AC = DF$

$AB = DE$

$BC = EF$

So, $\triangle ABC \cong \triangle DEF$



Solution:-

By SSS congruence property: Two triangles are congruent if the three sides of one triangle are respectively equal to the three sides of the other triangle.

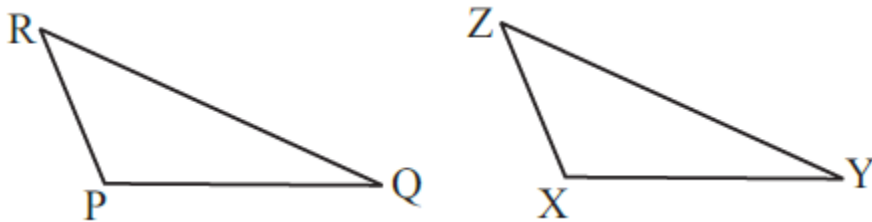
$$\triangle ABC \cong \triangle DEF$$

(b) Given: $ZX = RP$

$$RQ = ZY$$

$$\angle PRQ = \angle XZY$$

So, $\triangle PQR \cong \triangle XYZ$



Solution:-

By SAS congruence property: Two triangles are congruent if the two sides and the included angle of one are respectively equal to the two sides and the included angle of the other.

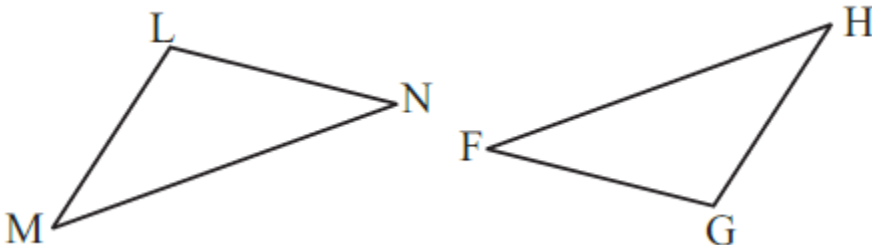
$$\triangle ACB \cong \triangle DEF$$

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

$$\angle NML = \angle GFH$$

$$\angle ML = \angle FG$$

So, $\triangle LMN \cong \triangle GFH$



Solution:-

By ASA congruence property: Two triangles are congruent if the two angles and the included side of one are respectively equal to the two angles and the included side of the other.

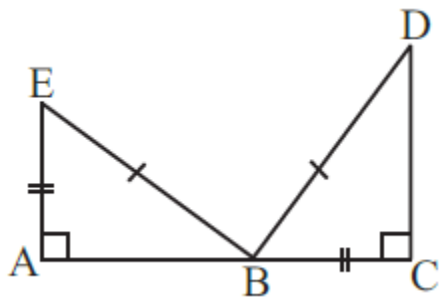
$$\triangle LMN \cong \triangle GFH$$

(d) Given: $EB = DB$

$$AE = BC$$

$$\angle A = \angle C = 90^\circ$$

So, $\triangle ABE \cong \triangle ACD$



Solution:-

By RHS congruence property: Two right triangles are congruent if the hypotenuse and one side of the first triangle are respectively equal to the hypotenuse and one side of the second.

$$\triangle ABE \cong \triangle DCB$$

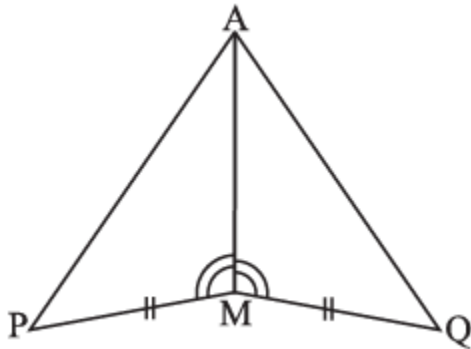
2. You have to show that $\triangle AMP \cong \triangle AMQ$.

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) $\triangle AMP \cong \triangle AMQ$ (iv) ...



Solution:-

Steps

Reasons

(i) $PM = QM$ (i) From the given figure

(ii) $\angle PMA = \angle QMA$ (ii) From the given figure

(iii) $AM = AM$ (iii) Common side for both triangles

(iv) $\triangle AMP \cong \triangle AMQ$ (iv) By SAS congruence property: Two triangles are congruent if the two sides and the included angle of one are respectively equal to the two sides and the included angle of the other.

3. In $\triangle ABC$, $\angle A = 30^\circ$, $\angle B = 40^\circ$ and $\angle C = 110^\circ$

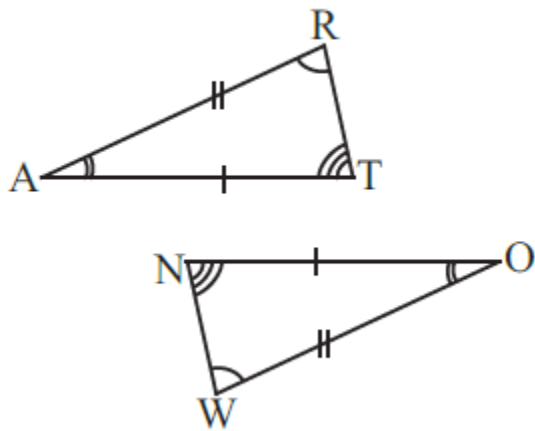
In $\triangle PQR$, $\angle P = 30^\circ$, $\angle Q = 40^\circ$ and $\angle R = 110^\circ$

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

Solution:-

No, because the 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.

4. In the figure, the two triangles are congruent. The corresponding parts are marked. Can we write $\triangle RAT \cong ?$



Solution:-

From the given figure,

We may observe that,

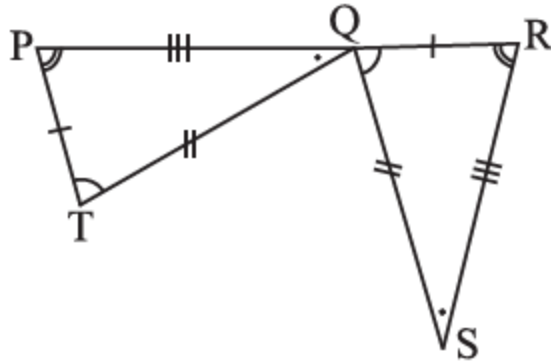
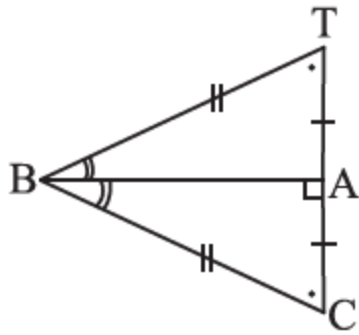
$$\angle TRA = \angle ONW$$

$$\angle TAR = \angle NOW$$

$$\angle ATR = \angle ONW$$

Hence, $\triangle RAT \cong \triangle WON$

5. Complete the congruence statement:



$$\Delta BCA \cong \Delta QRS \cong$$

Solution:-

First, consider the ΔBCA and ΔBTA

From the figure, it is given that,

$$BT = BC$$

Then,

BA is the common side for the ΔBCA and ΔBTA

Hence, $\Delta BCA \cong \Delta BTA$

Similarly,

Consider the ΔQRS and ΔTPQ

From the figure, it is given that

$$PT = QR$$

$$TQ = QS$$

$$PQ = RS$$

Hence, $\Delta QRS \cong \Delta TPQ$

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

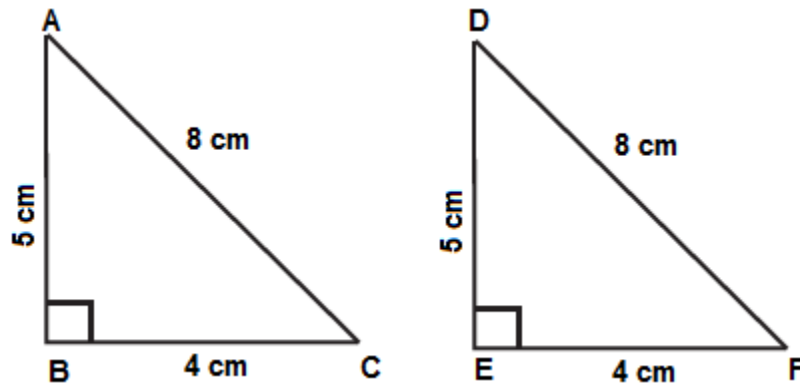
(i) The triangles are congruent

(ii) The triangles are not congruent

What can you say about their perimeters?

Solution:-

(i)

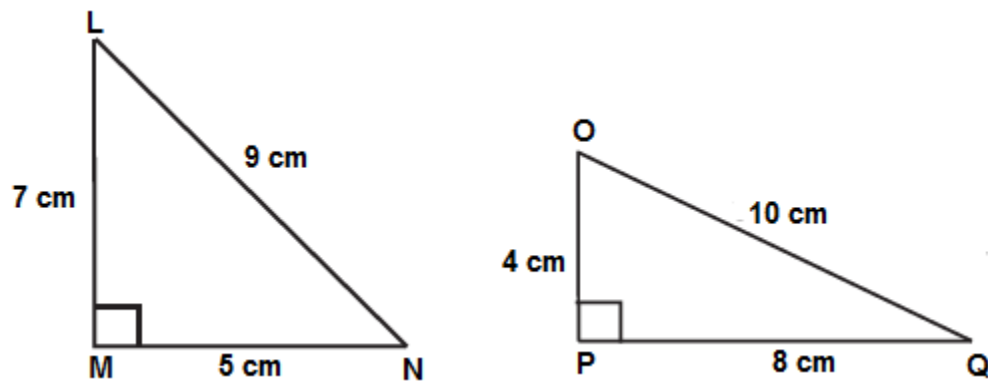


In the above figure, $\triangle ABC$ and $\triangle DEF$ have equal areas.

And also, $\triangle ABC \cong \triangle DEF$

So, we can say that the perimeters of $\triangle ABC$ and $\triangle DEF$ are equal.

(ii)



In the above figure, $\triangle LMN$ and $\triangle OPQ$

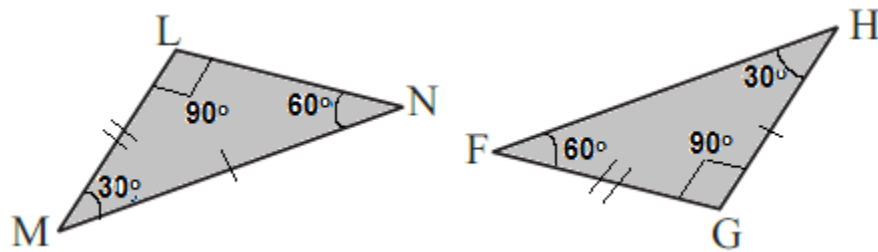
$\triangle LMN$ is not congruent to $\triangle OPQ$

So, we can also say that their perimeters are not the same.

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

Solution:-

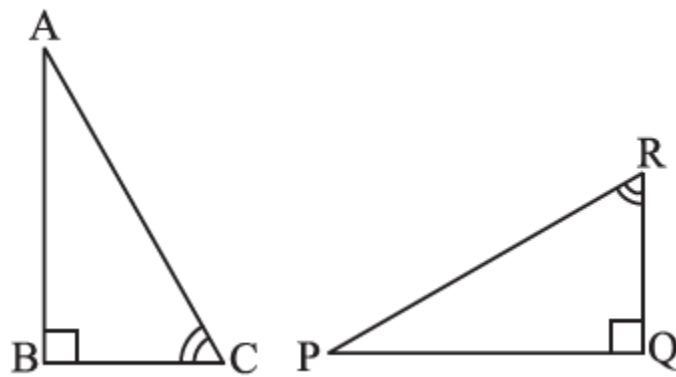
Let us draw triangles LMN and FGH.



In the above figure, all angles of two triangles are equal. But, out of the three sides, only two sides are equal.

Hence, $\triangle LMN$ is not congruent to $\triangle FGH$.

8. If $\triangle ABC$ and $\triangle PQR$ are to be congruent, name one additional pair of corresponding parts. What criterion did you use?



Solution:-

By observing the given figure, we can say that

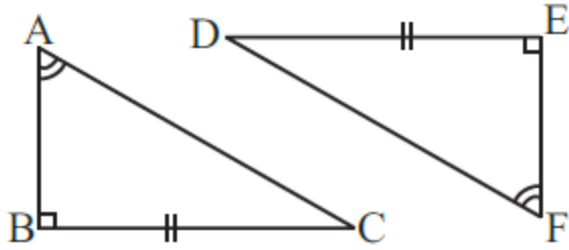
$$\angle ABC = \angle PQR$$

$$\angle BCA = \angle PRQ$$

The other additional pair of corresponding parts is $BC = QR$

$$\therefore \triangle ABC \cong \triangle PQR$$

9. Explain, why $\triangle ABC \cong \triangle FED$



Solution:-

From the figure, it is given that,

$$\angle ABC = \angle DEF = 90^\circ$$

$$\angle BAC = \angle DFE$$

$$BC = DE$$

By ASA congruence property, two triangles are congruent if the two angles and the included side of one are respectively equal to the two angles and the included side of the other.

$$\triangle ABC \cong \triangle FED$$