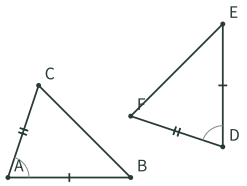
Congruence: correspondence, SSS and SAS — Teacher answers

Year 8, upper volume • text pp. 13–18 • foundation lessons 7–9

Use the worked model and guided attempt selectively, then the eight core questions. Keep further practice and extensions optional. Ask for a reason and an original-equation or expansion check.

Worked example 1

AB=DE, AC=DF and ∠BAC=∠EDF. Prove △ABC≅△DEF, explaining why SAS applies.



Geometry diagram; not drawn to scale except for construction tasks.

Reference answer

△ABC≅△DEF by SAS, with A↔D, B↔E and C↔F.

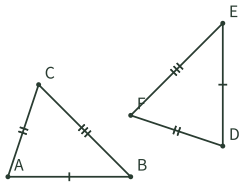
1. AB=DE and AC=DF are given. Their included angles are ∠BAC and ∠EDF.
2. The given ∠BAC=∠EDF supplies the included-angle condition.
3. Thus △ABC≅△DEF by SAS, with the stated vertex order.

- Use only given or independently proved facts.
- Keep the vertex order consistent. Other complete justified proofs are accepted.

Guided attempt 2

The marked side pairs are equal. Complete an SSS proof in the order A↔D, B↔E, C↔F.

1. AB=___, AC=___, BC=___.
2. Therefore △ABC≅△___ by ___.



Geometry diagram; not drawn to scale except for construction tasks.

Reference answer

△ABC≅△DEF by SSS, with A↔D, B↔E and C↔F.

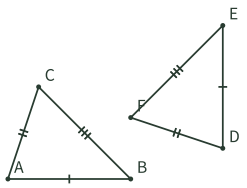
1. AB=DE, AC=DF and BC=EF are the three given pairs of corresponding sides.
2. Therefore △ABC≅△DEF by SSS, with A↔D, B↔E and C↔F.

- Use only given or independently proved facts.
- Keep the vertex order consistent. Other complete justified proofs are accepted.

Prerequisite 3

Given △ABC≅△DEF, which side corresponds to BC?

A. DF
B. AB
C. EF
D. DE



Geometry diagram; not drawn to scale except for construction tasks.

Reference answer

EF

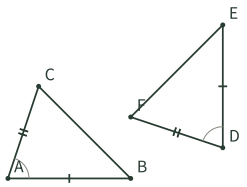
1. The order gives B↔E and C↔F.
2. Thus side BC corresponds to EF.

- Choose the statement justified by the stated conditions and explain why.

Prerequisite 4

Which angle is between AB and AC?

A. ∠ABC
B. ∠ACB
C. Every angle is included.
D. ∠BAC



Geometry diagram; not drawn to scale except for construction tasks.

Reference answer

∠BAC

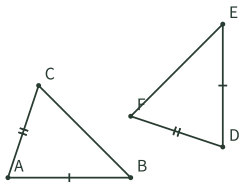
1. The shared endpoint of AB and AC is A.
2. The included angle therefore has A in the middle: ∠BAC.

- Choose the statement justified by the stated conditions and explain why.

Independent practice 5

AB=DE and AC=DF. Which additional equality completes an SSS test?

A. BC=EF
B. ∠A=∠D
C. AB=AB
D. BC=DE



Geometry diagram; not drawn to scale except for construction tasks.

Reference answer

BC=EF

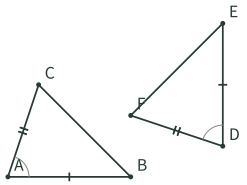
1. SSS needs all three corresponding side pairs.
2. The remaining pair is BC and EF.

- Choose the statement justified by the stated conditions and explain why.

Independent practice 6

AB=DE, AC=DF and ∠BAC=∠EDF. Which criterion uses exactly these facts directly?

A. SSA
B. SAS
C. SSS
D. AAA



Geometry diagram; not drawn to scale except for construction tasks.

Reference answer

SAS

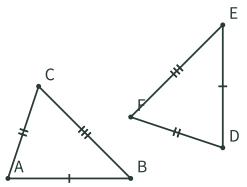
1. AB=DE and AC=DF are given. Their included angles are ∠BAC and ∠EDF.
2. The given ∠BAC=∠EDF supplies the included-angle condition.
3. Thus △ABC≅△DEF by SAS, with the stated vertex order.

- Choose the statement justified by the stated conditions and explain why.

Independent practice 7

Given △ABC≅△DEF, which angle corresponds to ∠ACB?

A. ∠EDF
B. ∠ABC
C. ∠DFE
D. ∠DEF



Geometry diagram; not drawn to scale except for construction tasks.

Reference answer

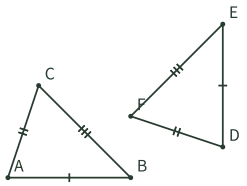
∠DFE

1. A↔D, C↔F and B↔E.
2. The vertex C becomes F, so ∠ACB corresponds to ∠DFE.

- Choose the statement justified by the stated conditions and explain why.

Independent practice 8

Use only the three marked equal side pairs to prove the rotated triangles congruent. Write the vertex order.



Geometry diagram; not drawn to scale except for construction tasks.

Reference answer

△ABC≅△DEF by SSS, with A↔D, B↔E and C↔F.

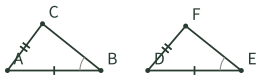
1. AB=DE, AC=DF and BC=EF are the three given pairs of corresponding sides.
2. Therefore △ABC≅△DEF by SSS, with A↔D, B↔E and C↔F.

- Use only given or independently proved facts.
- Keep the vertex order consistent. Other complete justified proofs are accepted.

Exit question 9

AB=DE, AC=DF and ∠ABC=∠DEF. Is this automatically SAS?

A. No: the given angle is not between the two given sides.
B. Yes: any equal angle works.
C. Yes: two sides always determine a triangle.
D. It is SSS.



Geometry diagram; not drawn to scale except for construction tasks.

Reference answer

No: the given angle is not between the two given sides.

1. AB and AC meet at A, not B.
2. The equal angle at B is a non-included angle; the supplied pair provides an SSA counterexample.

- Choose the statement justified by the stated conditions and explain why.

Exit question 10

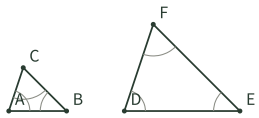
The three corresponding angles are equal. Must the triangles have equal side lengths?

A. Yes, if they are rotated.

B. No: one triangle may be an enlargement of the other.

C. Yes, by AAA congruence.

D. Only the drawing colour matters.



Geometry diagram; not drawn to scale except for construction tasks.

Reference answer

No: one triangle may be an enlargement of the other.

1. Equal angles preserve shape but do not fix scale.
2. Here the second triangle has twice every side length, so it is not congruent.

- Choose the statement justified by the stated conditions and explain why.

Further practice 11

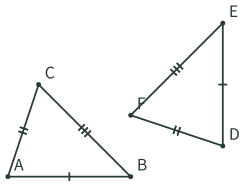
The marked correspondence is A↔D, B↔E, C↔F. Which congruence statement respects it?

A. △ABC≅△EDF

B. △ABC≅△FED

C. △ABC≅△DEF

D. △ABC≅△DFE



Geometry diagram; not drawn to scale except for construction tasks.

Reference answer

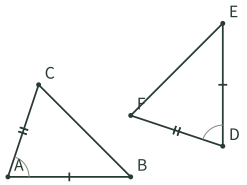
△ABC≅△DEF

1. Replace A,B,C in sequence by D,E,F.
2. Write △ABC≅△DEF; the order carries mathematical information.

- Choose the statement justified by the stated conditions and explain why.

Further practice 12

Fill in why the marked angle is included, then give the SAS conclusion.



Geometry diagram; not drawn to scale except for construction tasks.

Reference answer

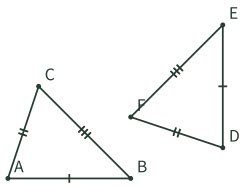
△ABC≅△DEF by SAS, with A↔D, B↔E and C↔F.

1. AB=DE and AC=DF are given. Their included angles are ∠BAC and ∠EDF.
2. The given ∠BAC=∠EDF supplies the included-angle condition.
3. Thus △ABC≅△DEF by SAS, with the stated vertex order.

- Use only given or independently proved facts.
- Keep the vertex order consistent. Other complete justified proofs are accepted.

Further practice 13

Write three side equalities and one congruence conclusion for the diagram.



Geometry diagram; not drawn to scale except for construction tasks.

Reference answer

△ABC≅△DEF by SSS, with A↔D, B↔E and C↔F.

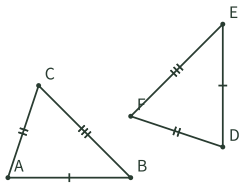
1. AB=DE, AC=DF and BC=EF are the three given pairs of corresponding sides.
2. Therefore △ABC≅△DEF by SSS, with A↔D, B↔E and C↔F.

- Use only given or independently proved facts.
- Keep the vertex order consistent. Other complete justified proofs are accepted.

Further practice 14

After proving △ABC≅△DEF, which equality follows from corresponding sides?

A. BC=DF
B. AC=DF
C. AC=DE
D. AB=EF



Geometry diagram; not drawn to scale except for construction tasks.

Reference answer

AC=DF

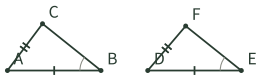
1. Use A↔D and C↔F.
2. The corresponding side to AC is DF.

- Choose the statement justified by the stated conditions and explain why.

Extension 15

The two triangles meet the marked SSA facts but have different third sides. What does this show about SSA?

A. SAS is therefore invalid.
B. The vertex order can be ignored.
C. SSA alone does not guarantee congruence.
D. All SSA triangles fail to exist.



Geometry diagram; not drawn to scale except for construction tasks.

Reference answer

SSA alone does not guarantee congruence.

1. The two supplied coordinate constructions have AB=DE and AC=DF and equal angles at B and E.
2. Their BC and EF lengths differ, so one counterexample disproves the proposed general guarantee.

- Choose the statement justified by the stated conditions and explain why.

Extension 16

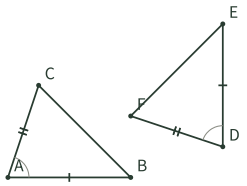
Explain why replacing ∠ABC=∠DEF by ∠BAC=∠EDF repairs this two-side proof.

A. It adds a third side.

B. It changes SAS into AAA.

C. It only makes the picture prettier.

D. It supplies the angle between the two given side pairs, completing SAS.



Geometry diagram; not drawn to scale except for construction tasks.

Reference answer

It supplies the angle between the two given side pairs, completing SAS.

1. AB=DE and AC=DF are given. Their included angles are ∠BAC and ∠EDF.
2. The given ∠BAC=∠EDF supplies the included-angle condition.
3. Thus △ABC≅△DEF by SAS, with the stated vertex order.

- Choose the statement justified by the stated conditions and explain why.