LESSON MAKER PRO

Triangle Match Test

Name the congruence test and match vertices in order.

HIGH SCHOOL · GDA.GM.E.25.b

GDA.GM.E.25.b "Verify that two triangles are congruent if (but not only if) the following groups of corresponding parts are congruent: angle-side-angle (ASA), side-angle-side (SAS), side-side-side (SSS), and angle-angle-side (AAS)."

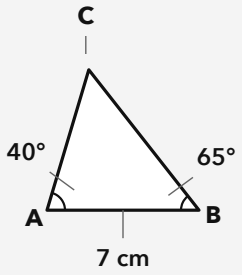
NAME _____ DATE _____

WHICH PARTS MATCH?

SSS uses three sides. SAS uses two sides and the angle between them. ASA uses two angles and the side between them, while AAS uses two angles and a side not between them. Any one of these tests proves that two triangles are congruent.

WORKED EXAMPLE

Triangle DEF has DE = 7 cm, ∠D = 40°, and ∠E = 65°. Does it match the triangle shown? Name the test.



1. ∠A matches ∠D, and ∠B matches ∠E.
2. AB matches DE and lies between those angles.
3. Use ASA.

Answer: Yes. △ABC ≅ △DEF by ASA.

PRACTICE 4 problems

1 For △GHI and △JKL: GH = JK = 8, HI = KL = 12, and ∠H = ∠K = 50°. Name the test and write the congruence statement.

ANSWER _____

2 For △MNO and △PQR: MN = PQ = 6, NO = QR = 9, and MO = PR = 11. Name the test and write the congruence statement.

ANSWER _____

3 For △STU and △VWX: ∠S = ∠V = 35°, ∠T = ∠W = 75°, and SU = VX = 13. Name the test and write the congruence statement.

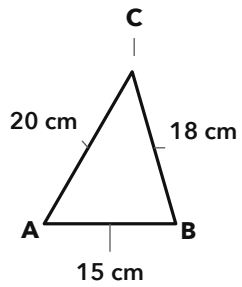
ANSWER _____

4 For △YZA and △BCD: ∠Y = ∠B = 48°, ∠Z = ∠C = 62°, and YZ = BC = 14. Name the test and write the congruence statement.

ANSWER _____

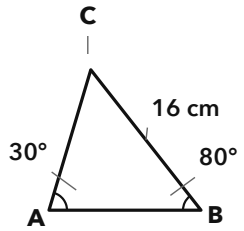
APPLY IT Show your work

1 A concert crew needs a replacement for the triangular banner frame shown. Frame DEF has DE = 15 cm, EF = 18 cm, and DF = 20 cm. Is its triangle congruent to the one shown? Name the test.



ANSWER _____

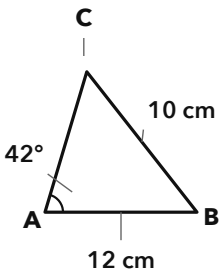
2 A maker cuts a second triangular bike-rack support, DEF, to match the one shown. The new support has ∠D = 30°, ∠E = 80°, and EF = 16 cm. Are the triangles congruent? Name the test.



ANSWER _____

CHALLENGE One step up

Triangle DEF has DE = 12 cm, EF = 10 cm, and ∠D = 42°. Must it be congruent to the triangle shown? Explain.



WORK SPACE AND ANSWER

ANSWER KEY

Triangle Match Test

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	For △GHI and △JKL: GH = JK = 8, HI = KL = 12, and ∠H = ∠K = 50°. Name the test and write the congruence statement.	**SAS; △GHI ≅ △JKL.**
2	For △MNO and △PQR: MN = PQ = 6, NO = QR = 9, and MO = PR = 11. Name the test and write the congruence statement.	**SSS; △MNO ≅ △PQR.**
3	For △STU and △VWX: ∠S = ∠V = 35°, ∠T = ∠W = 75°, and SU = VX = 13. Name the test and write the congruence statement.	**AAS; △STU ≅ △VWX.**
4	For △YZA and △BCD: ∠Y = ∠B = 48°, ∠Z = ∠C = 62°, and YZ = BC = 14. Name the test and write the congruence statement.	**ASA; △YZA ≅ △BCD.**

PART 2 · APPLY IT

1. **Yes. △ABC ≅ △DEF by SSS.** All three pairs of corresponding sides match.
2. **Yes. △ABC ≅ △DEF by AAS.** Two corresponding angles and a corresponding nonincluded side match.

CHALLENGE

No. The matching parts form SSA, which does not guarantee congruence. With these measurements, two different triangle shapes are possible.

Accept equivalent congruence statements with corresponding vertices in the same order. In the challenge, accept an explanation that SSA does not guarantee congruence.