

Geometry - Congruent Triangles and Rigid Motions - Test Answer Key

Common Core G-CO.B.7, G-CO.B.8 · maths-pdf.fr/en/

Use this answer key and scoring guide for the congruent triangles test. Each solution shows the full work, and the scoring note tells how the points are split between method and final answer. Partial credit is listed so that grading stays consistent from one paper to the next.

Geometry · Common Core State Standards: **G-CO.B.7, G-CO.B.8**

Question 1 - Corresponding parts [2 pts]

$$3x + 4 = 5x - 20$$

$$24 = 2x$$

$$x = 12$$

$$m\angle D = 5(12) - 20 = 40^\circ$$

$$\mathbf{x = 12, m\angle D = 40^\circ}$$

Scoring: 1 point for the equation, 1 point for x and the angle.

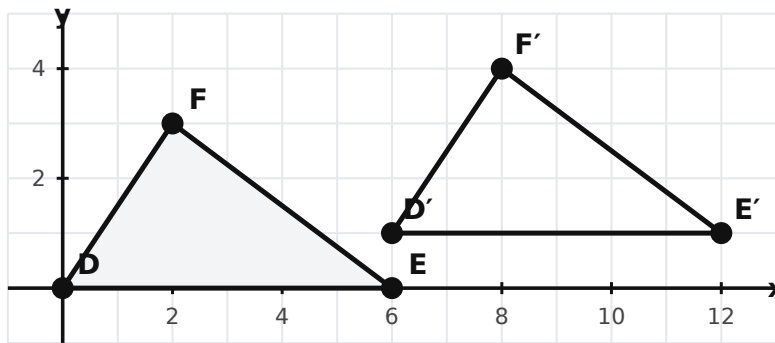
Question 2 - Which test? [3 pts]

- a. SSS
- b. SAS (the angle A is between AB and AC)
- c. Not enough: this is SSA, which does not prove congruence

(a) SSS; (b) SAS; (c) cannot be proved

Scoring: 1 point per part.

Question 3 - Congruence by coordinates [2 pts]



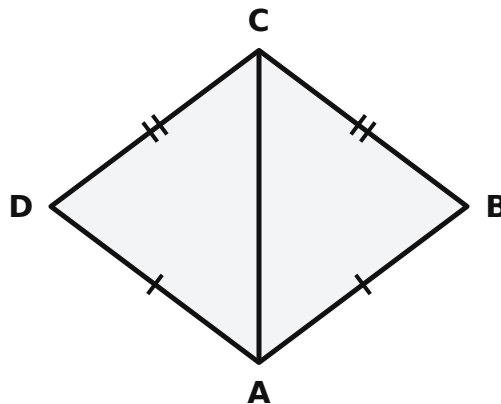
$E(12, 1)$ and $F(8, 4)$.

The rule is (x, y) maps to $(x+6, y+1)$, so $E(12, 1)$ and $F(8, 4)$.

A translation is a rigid motion, so it preserves distances and angles, and DEF is congruent to ABC .

Scoring: 1 point for E and F , 1 point for the explanation.

Question 4 - Proof with a shared side [3 pts]



The diagonal makes two congruent triangles.

1. $AB = AD$ and $CB = CD$ (given).
2. $AC = AC$ (reflexive property, shared side).
3. Triangle ABC is congruent to triangle ADC (SSS).
4. $\angle B = \angle D$ (CPCTC).

Scoring: 1 point for the shared side, 1 point for naming SSS, 1 point for CPCTC.

Question 5 - Hypotenuse-leg [2 pts]

Hypotenuse and a leg match, so they are congruent by HL.

Other leg: $\sqrt{17^2 - 8^2} = \sqrt{225} = 15$. Area: $\frac{1}{2} \cdot 8 \cdot 15 = 60$.

HL; area 60 each

Scoring: 1 point for HL, 1 point for the area.

Question 6 - SSA counterexample [2 pts]

The side of length 5 can meet the base at two places, forming an acute-angled and an obtuse-angled triangle with the same given parts.

Because two different triangles fit the information, SSA is not a congruence test.

Scoring: 1 point for naming SSA, 1 point for the two-triangle explanation.

Question 7 - Third angle [2 pts]

$m\angle C = 180^\circ - 40^\circ - 75^\circ = 65^\circ$, so $\angle C$ and $\angle F$ are both 65° .

AB is opposite C and DE is opposite F, so the congruent side is not between the angles: AAS.

Yes, by AAS

Scoring: 1 point for the third angle, 1 point for AAS.

Question 8 - Surveying [2 pts]

Both triangles have angles 52° and 61° with the 24 yard side between them.

By ASA the triangles are congruent, so by CPCTC the matching distances to the rock are equal.

Yes, by ASA

Scoring: 1 point for ASA, 1 point for the conclusion.

Question 9 - Perimeter [2 pts]

$$2n+1=3n-4$$

$$n=5$$

PQ = 11, so the sides are 11, 14 and 9.

$$11+14+9=34$$

n = 5, perimeter 34

Scoring: 1 point for n, 1 point for the perimeter.

Total
20 points