

ANSWER MAZE



CHOOSING A TRIANGLE CONGRUENCE CRITERION

Which Criterion, or None?

One page · 10–15 minutes · nothing to prepare

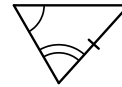
FREE

4



Not proved. Only two pairs have marks. → go to 3
SSS. The middle side is in both triangles. → go to 7
Count the pairs. Then check the segment down the middle.

7



AAS. The tick touches the corner with no arc. → go to 2
ASA. The tick joins the two corners with arcs. → go to 6
Put a finger on each corner with arcs. Then trace the ticked side.

1. **Hand out page 3**, one per student. Nothing else is needed.
2. **Say this once:** *“Start at box 4. Count the marked pairs. Then look for a side in both triangles, or two lines that cross. Write every box number in the row at the bottom as you go.”*
3. **Check a sheet quickly.** A student with no mistakes writes **4 7 2 5 1 8**: six boxes, then out.

Student sheet	page 3, one per student. It shows SSS, SAS, ASA, AAS, HL and the two pairs with no mark as small drawings.
Answers	page 4.

Every wrong answer comes from one of two mistakes. The first mistake is missing a pair that has no mark. A side that lies in both triangles is equal to itself. Where two segments cross, the two facing angles are vertical angles, and they are equal. A student who counts only the marks answers “Not proved” too early. These wrong answers send the student to box 3.

The second mistake is misreading where a part sits: ASA taken for AAS, two sides and an angle at the end (SSA) taken for SAS, or HL taken for SSA. One box lists its three facts in words. Read in order, they look like side, angle, side, but the angle is not between the two sides. These wrong answers send the student to box 6. Boxes 3 and 6 ask the same kind of question again, and both of their answers lead back to the route.

The row at the bottom is the check. A clean run is six numbers. Each wrong answer adds at least one more. Guessing does not get a student out: every simple guessing rule, such as always taking the first answer, goes wrong within the first four boxes.



This is the free lesson this activity came from. The worksheet, the full answers and the lesson plan are on it, at three levels of difficulty.
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Answer Maze

Start at box 4 · Which criterion, or none?

Name _____

Period _____

Date _____



SSS Three pairs of sides.



SAS The angle is between the two sides.



ASA The side is between the two angles.



AAS The side is not between the two angles.



HL A right angle, the long side, and one more side.



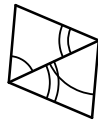
Free side A side in both triangles counts as a pair.



Free angles Where two lines cross, the two facing angles count as a pair.

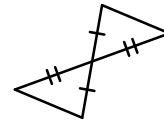
Some pairs have no mark. We call them free pairs. A side that is in **both** triangles is equal to itself. Where two segments cross, the two **facing** angles are equal. Count these pairs too. Each box shows two triangles, or three rows about two triangles. In the rows, A goes with D, B with E, and C with F. **What proves the triangles congruent?** Choose an answer, and go to the box it names.

1



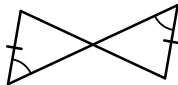
Not proved. No side has a tick. → go to 3
ASA. The shared side joins the arcs. → go to 8
Trace the segment that is part of both triangles. Name its ends.

2



Not proved. No angle has an arc. → go to 3
SAS. The crossing gives a pair. → go to 5
Look at the point where the two segments cross.

3



AAS. The crossing gives a second angle. → go to 7
Not proved. Only one angle has arcs. → go to 4
Count the arcs. Then look at the middle point.

4



Not proved. Only two pairs have marks. → go to 3
SSS. The middle side is in both triangles. → go to 7
Count the pairs. Then check the segment down the middle.

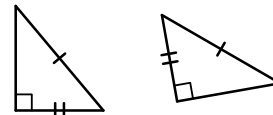
5

In $\triangle ABC$ and $\triangle DEF$:

$AB \cong DE$ $\angle A \cong \angle D$ $BC \cong EF$

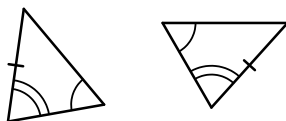
Not proved. $\angle A$ is not between AB and BC . → go to 1
SAS. The angle is written between the sides. → go to 6
Find the letter the two sides share. Then read the letter of the angle.

6



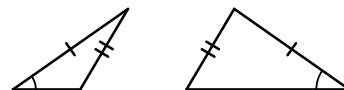
Not proved. The angle is not in the middle. → go to 7
HL. Right angles, long sides, and one more. → go to 2
Find the small square. Then find the side across from it.

7



AAS. The tick touches the corner with no arc. → go to 2
ASA. The tick joins the two corners with arcs. → go to 6
Put a finger on each corner with arcs. Then trace the ticked side.

8



Not proved. The ticks do not meet at the arc. → you are out
SAS. Two sides and an angle have marks. → go to 6
For each triangle, find the corner where the two ticked sides meet.

Write each box number as you reach it:

--	--	--	--	--	--	--	--	--



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The route, in order. Boxes 3 and 6 are not on it. A student reaches them only by a wrong answer. They are the last two rows of the table.

4 → 7 → 2 → 5 → 1 → 8 → out

	Box	Right answer, and why	Wrong answer, and why a student picks it
1	Box 4	SSS. The middle side is in both triangles. Two pairs of sides are marked. The side down the middle is a side of both triangles, so it is the third pair of sides.	“Not proved. Only two pairs have marks.” goes to box 3. A student who counts only the marks picks this.
2	Box 7	AAS. The tick touches the corner with no arc. The arcs are at two corners. The ticked side runs from one of them to the third corner, so it is not between the two angles.	“ASA. The tick joins the two corners with arcs.” goes to box 6. A student who does not check both ends of the ticked side picks this.
3	Box 2	SAS. The crossing gives a pair. The two segments cross. The two facing angles there are vertical angles, so they are equal, and each sits between the two ticked sides of its triangle.	“Not proved. No angle has an arc.” goes to box 3. A student who looks only for arcs picks this.
4	Box 5	Not proved. $\angle A$ is not between AB and BC. Sides AB and BC meet at B. The angle given is at A, so it is not between them. That is SSA, which proves nothing. The order of the rows does not matter.	“SAS. The angle is written between the sides.” goes to box 6. A student who reads the rule from the order of the rows picks this.
5	Box 1	ASA. The shared side joins the arcs. Two pairs of angles are marked. The segment down the middle is a side of both triangles, and it joins the two marked corners.	“Not proved. No side has a tick.” goes to box 3. A student who looks only for ticks picks this.
6	Box 8	Not proved. The ticks do not meet at the arc. The two ticked sides meet at a corner with no arc. The angle is not between them (SSA), and the two triangles are not the same.	“SAS. Two sides and an angle have marks.” goes to box 6. A student who takes any two sides and an angle as SAS picks this.
	Box 3	AAS. The crossing gives a second angle. One pair of angles has arcs. The facing angles at the crossing are a second pair. The ticked side does not join those two corners, so it is AAS.	“Not proved. Only one angle has arcs.” goes to box 4. A student who still misses the angles at the crossing picks this.
	Box 6	HL. Right angles, long sides, and one more. Both triangles have a right angle. The long sides (across from the right angles) are marked, and so is one more pair of sides. That is HL.	“Not proved. The angle is not in the middle.” goes to box 7. A student who still sees only two sides and an angle at the end (SSA), and forgets the right angle, picks this.

How to check any box. Count the marked pairs. Then add a side that lies in both triangles, and the facing angles where two segments cross. With three pairs, look at where they sit. An angle between two sides is SAS. A side between two angles is ASA; a side that is not between them is AAS. Two sides and an angle at the end prove nothing, unless the angle is a right angle and one side is the long side (HL).

A student can find the last four boxes of the route by following the arrows backward from “you are out.” So ask a student with a clean row to explain one box.