

6-10: Angle-Angle Triangle Similarity

1. Sample answer: If two triangles have two pairs of angles with the same measure, then the two pairs of angles are congruent and the triangles are similar.
2. Sample answer: She might have said this because if two pairs of angles in two triangles are congruent, then all three are. I would not agree since it only needs to be established that two pairs of angles are congruent.
3. Two isosceles right triangles and two equilateral triangles; Sample answer: Two isosceles right triangles are always similar because they have two 45° angles. Two equilateral triangles are always similar because all of their angle measures are 60° . Two right triangles are not always similar because the other two pairs of angles could have different measures.
4. Yes; Sample answer: The missing angle measure in the first triangle is $180^\circ - 46^\circ - 44^\circ = 90^\circ$. Since the triangles have two congruent angles, they are similar triangles.
5. Yes; Sample answer: Both of the triangles are right triangles and they share a vertex. They are similar under the AA Criterion.
6. Yes, the triangles are similar. $x = 21$.
7. No, the triangles are not similar.
8. $x = 19$;
Sample answer: $(3x - 9) = (2x + 10)$ because they are vertical angles.
 $3x - 2x - 9 = 2x - 2x + 10$;
 $x - 9 + 9 = 10 + 9$; $x = 19$. Since $x = 19$, $\angle RTS$ and $\angle SPN$ are both 38° , so the triangles have two pairs of equal angles.
9. No; Sample answer: Angle J measures 102° so there are not two pairs of equal angles and the triangles are not similar.
10. Yes;
Sample answer: $(4x - 1) = (3x - 14)$ because they are vertical angles. So when $x = 15$, two pairs of angles in each triangle are equal and the triangles are similar.
11. Sample answer: If two pairs of angles are congruent, then the two triangles will be similar using the AA Criterion.
12. Yes; Sample answer: The angles in one triangle are congruent to the angles in the other triangle because the ratios between each pair of angles are the same.
13. A, C, D
14. Yes; Sample answer: $\angle G$ and $\angle Q$ are congruent. If you solve for the unknown angle in $\triangle GHI$, $\angle I$, you find that it is 60° . So, $\angle I$ and $\angle S$ are congruent. With two pairs of congruent angles, the triangles are similar using the AA Criterion.