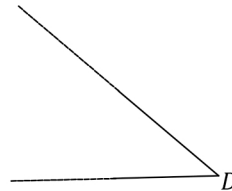
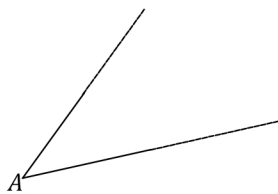


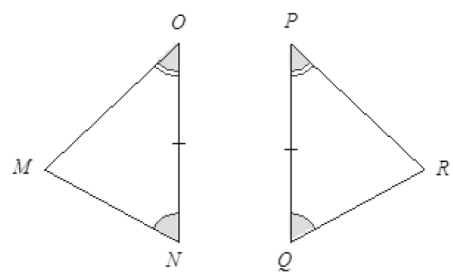
Checking for Identical Triangles

Angles $\angle A$ and $\angle D$ are equal in measure. Draw two triangles around each angle and mark parts appropriately so that the triangles are identical; use angles $\angle A$ and $\angle D$ as part of the chosen condition. Write a correspondence for the triangles.

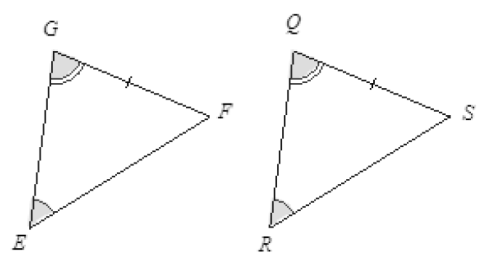


In each of the following four problems, two triangles are given. State whether the triangles are identical, not identical, or not necessarily identical. If possible, give the triangle conditions that explain why the triangles are identical, and write a triangle correspondence that matches the sides and angles. If the triangles are not identical, explain why. If it is not possible to definitively determine whether the triangles are identical, write "the triangles are not necessarily identical," and explain your reasoning.

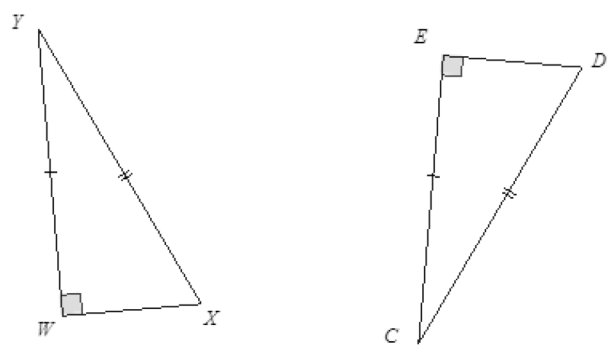
1.



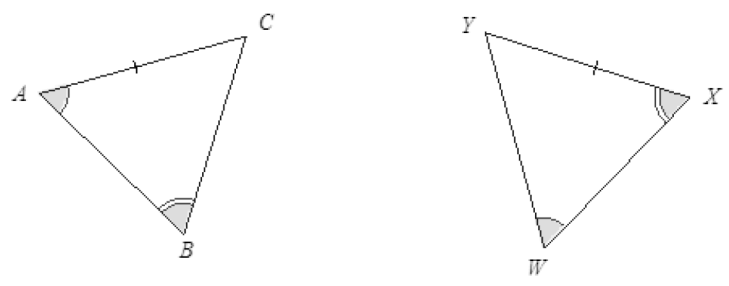
2.



3.



4.



For Problems 5–8, three pieces of information are given for $\triangle ABC$ and $\triangle DEF$. Draw, freehand, the two triangles (do not worry about scale), and mark the given information. If the triangles are identical, give a triangle correspondence that matches equal angles and equal sides. Explain your reasoning.

5. $\angle A = 30^\circ$, $\angle D = 30^\circ$, $\angle B = 60^\circ$

6. $\angle A = 30^\circ$, $\angle D = 30^\circ$, $\angle C = 90^\circ$

7. $\angle A = 30^\circ$, $\angle D = 30^\circ$, $\angle E = 90^\circ$

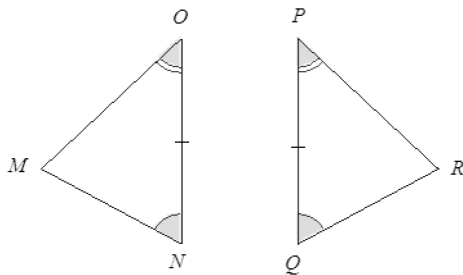
8. $\angle A = 120^\circ$, $\angle D = 120^\circ$, $\angle C = 120^\circ$ (Note that both angles are obtuse.)

Angles \angle and \angle are equal in measure. Draw two triangles around each angle and mark parts appropriately so that the triangles are identical; use angles \angle and \angle as part of the chosen condition. Write a correspondence for the triangles.

Answers will vary; students should select any condition except for the three side condition and show the appropriate correspondence for their condition on the two triangles.

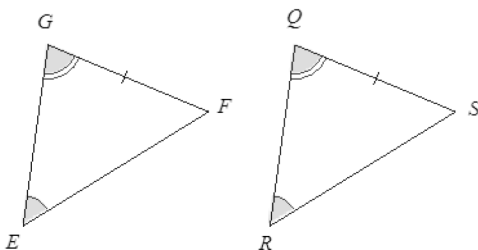
In each of the following four problems, two triangles are given. State whether the triangles are identical, not identical, or not necessarily identical. If possible, give the triangle conditions that explain why the triangles are identical, and write a triangle correspondence that matches the sides and angles. If the triangles are not identical, explain why. If it is not possible to definitively determine whether the triangles are identical, write "the triangles are not necessarily identical," and explain your reasoning.

1.



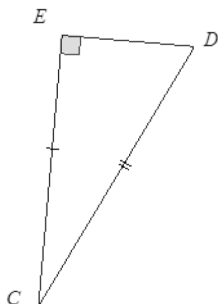
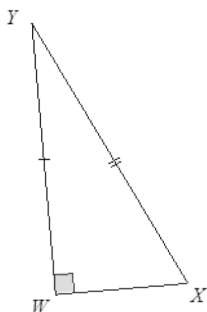
The triangles are identical by the two angles and included side condition. The correspondence matches two equal pairs of angles and one equal pair of included sides. Since both triangles have parts under the condition of the same measurement, the triangles must be identical.

2.



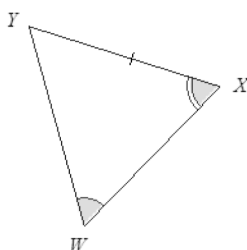
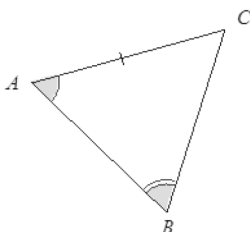
The triangles are identical by the two angles and side opposite a given angle condition. The correspondence matches two equal pairs of angles and one equal pair of sides. Since both triangles have parts under the condition of the same measurement, the triangles must be identical.

3.



The triangles are identical by the two sides and non-included (or greater) angle condition. The correspondence matches two pairs of equal sides and one pair of equal angles. Since both triangles have parts under the condition of the same measurement, the triangles must be identical.

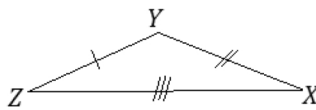
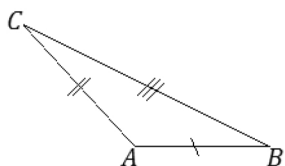
4.



The triangles are not necessary identical by the two angles and side opposite a given angle condition. In $\triangle ABC$, the marked side is adjacent to the angle marked with a single arc mark. In $\triangle YWX$, the marked side is not adjacent to the angle marked with a single arc mark.

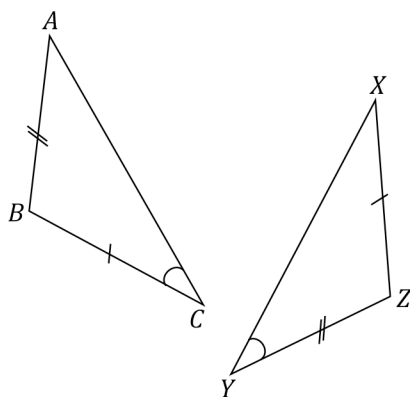
For Problems 5–8, three pieces of information are given for $\triangle ABC$ and $\triangle XYZ$. Draw, freehand, the two triangles (do not worry about scale), and mark the given information. If the triangles are identical, give a triangle correspondence that matches equal angles and equal sides. Explain your reasoning.

5.



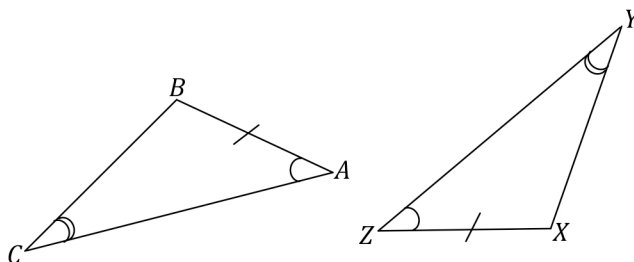
These triangles are identical by the three sides condition. The triangle correspondence $\triangle ABC \cong \triangle XYZ$ matches three pairs of equal sides. Since both triangles have parts under the condition of the same measurement, the triangles must be identical.

6. , ,



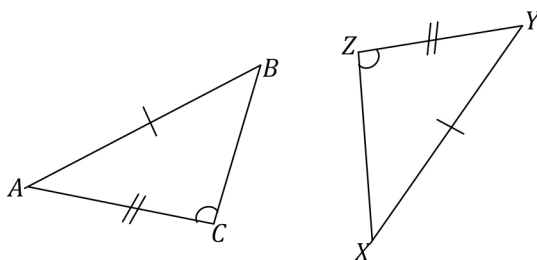
These triangles are not necessarily identical. In $\triangle ABC$, the marked angle is adjacent to BC . In $\triangle XYZ$, the marked angle is not adjacent to the side equal to BC , which is equal to side XZ .

7. , ,



These triangles are identical by the two angles and a side opposite a given angle condition. The triangle correspondence $A \leftrightarrow Y, B \leftrightarrow X, C \leftrightarrow Z$ matches two pairs of equal angles and one pair of equal sides. Since both triangles have parts under the condition of the same measurement, the triangles must be identical.

8. , , (Note that both angles are obtuse.)



The triangles are identical by the two sides and non-included (or greater) angle condition. The correspondence $A \leftrightarrow X, B \leftrightarrow Y, C \leftrightarrow Z$ matches two pairs of equal sides and one pair of equal angles. Since both triangles have parts under the condition of the same measurement, the triangles must be identical.