Geometry Unit 7 worksheet: AA similarity

Name _____ Date _____ Period _____

1. Each of the eight triangles below is given by two of its angles.

Triangle 1: 40° and 75°. Triangle 2: 65° and 75°. Triangle 3: 40° and 70°. Triangle 4: 70° and 70°.

Triangle 5: 90° and 35°. Triangle 6: 55° and 35°. Triangle 7: 40° and 65°. Triangle 8: 75° and 35°.

Sort the triangles into groups so that any two triangles in the same group are similar and any two in different groups are not. A group may have only one triangle.

2. In $\triangle ABC$, $\angle A = 34°$ and $\angle B = 51°$. In $\triangle RST$, $\angle R = 34°$. Find every measure $\angle S$ could have that makes the two triangles similar. For each one, write a similarity statement.

3. In $\triangle ABC$, point D lies on $\overline{AB}$ and point E lies on $\overline{AC}$, and $\angle AED \cong \angle ABC$. (The segment $\overline{DE}$ is not parallel to $\overline{BC}$.) $AE = 6$, $AD = 8$, $AB = 15$ and $BC = 18$.

(a) Write a similarity statement for $\triangle AED$ and $\triangle ABC$, with the vertices in matching order, and give the two pairs of angles that make it true.

(b) Find AC and EC.

(c) Find DE.

4. In $\triangle ABC$, $\angle A = 48°$ and $\angle B = 72°$. In $\triangle DEF$, $\angle E = 48°$ and $\angle F = 60°$. A student writes $\triangle ABC \sim \triangle DEF$.

(a) Find the missing angles. Is the student's statement right? If not, write a correct similarity statement.

(b) $AB = 7$, $BC = 6$, $CA = 7.7$ and $DE = 14$. Find DF and EF.

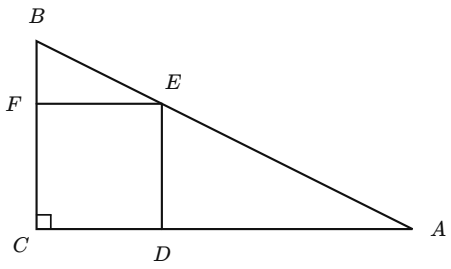
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5. (a) Two isosceles triangles each have a 100° angle. Must they be similar? Explain.

(b) Two isosceles triangles each have a 40° angle. Must they be similar? Explain.

6. Lily has a folding camp stool. Its two straight legs cross at a hinge. The top ends of the legs hold the two edges of the seat, which is level, 33 cm apart. Each leg measures 30 cm from its top end to the hinge and 60 cm from the hinge to its foot on the level floor. How far apart are the two feet?

7. In right triangle ABC, $\angle C = 90^\circ$, $AC = 12$ and $BC = 6$. A square $CDEF$ fits in the corner at C: D lies on $\overline{CA}$, F lies on $\overline{CB}$, and E lies on $\overline{AB}$. Find the side length of the square. (Call it s, and look for a triangle similar to $\triangle ACB$.)



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