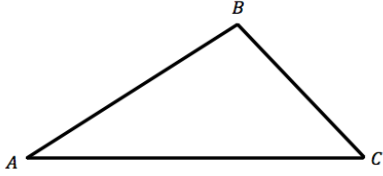
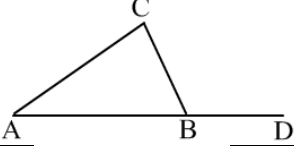
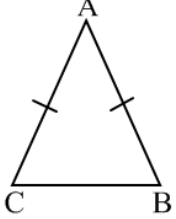
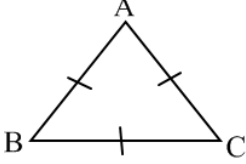
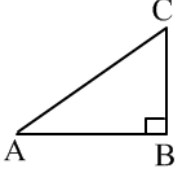
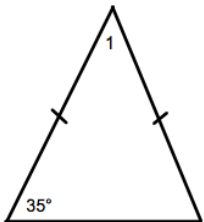


**Geometry CC 1.3 Angles in a triangle**

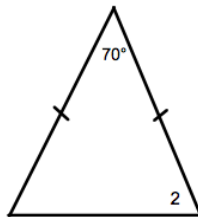
Name	Diagram	Fact/Discovery
Sum of the interior angles of a triangle is $180^\circ$		$m\angle A + m\angle B + m\angle C = 180^\circ$
Exterior angle of a triangle equals the sum of the two remote interior angles.		$m\angle CBD = m\angle A + m\angle C$
Isosceles Triangle Base angles of an isosceles triangle are congruent. Angles opposite the congruent sides of a triangle are congruent. Sides opposite congruent angles of a triangle are congruent.		Vertex angle: $\angle A$ Base angles: $\angle C$ and $\angle B$ $\overline{AC} \cong \overline{BC}$ $\angle C \cong \angle B$
Equilateral Triangle		$\overline{AB} \cong \overline{AC} \cong \overline{BC}$ Equiangular: $m\angle A = m\angle B = m\angle C = 60^\circ$
The acute angles of a right triangle are complementary.		$m\angle A + m\angle C = 90^\circ$

In each figure, determine the measure of the unknown angles. State reason(s) for your calculations.

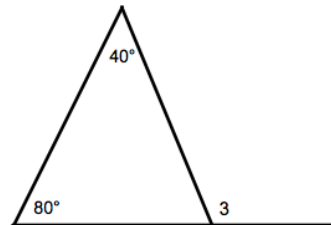
1.



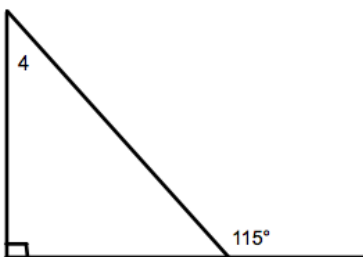
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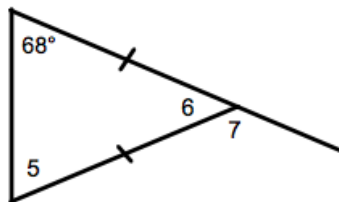
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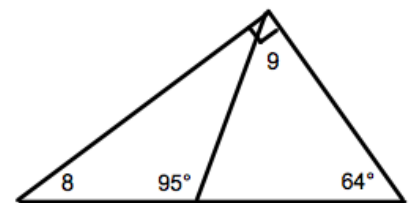
4.



5.



6.



Questions 7-10. Draw a diagram for each BEFORE attempting to solve.

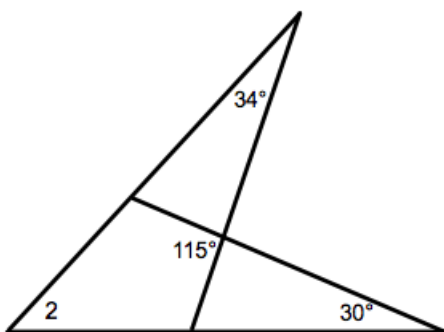
7. In  $\triangle ABC$ , the measure of angle  $B$  is three times as large as angle  $A$ . An exterior angle at  $C$  measures  $140^\circ$ . Find the measure of angle  $A$ .

8. In  $\triangle CAT$ , side  $\overline{CT}$  is extended through  $T$  to  $S$ . If  $\angle CAT = x + 40$ ,  $\angle ACT = 4x - 5$ , and  $\angle ATS = 6x + 20$ , find  $x$ .

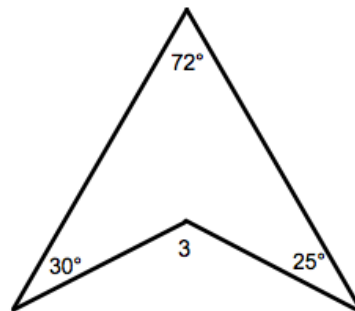
9. In isosceles triangle  $ABC$ , the vertex angle  $C$  is 20 more than twice the base angles. Find the measure of all the angles of this triangle.

10. In  $\triangle DEF$ ,  $\angle D$  is a right angle and  $\angle F$  is 12 degrees less than twice the measure of  $\angle E$ . Find  $m\angle F$ .

11. Find the measure of angle 2.



12. Find the measure of angle 3.



(hint: draw an auxiliary line)

13. Find  $x$ .

