Name_____ Date_____

4.5 – Isosceles and Equilateral Triangles

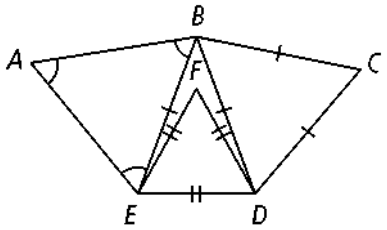
Complete each statement. Explain briefly why it is true.

1) $\angle DBC \cong$ _____ $\cong \angle CDB$

2) $\angle BED \cong$ _____

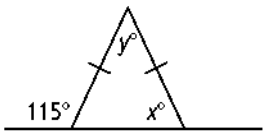
3) $\angle FED \cong$ _____ $\cong \angle DFE$

4) $\overline{AB} \cong$ _____ $\cong \overline{BE}$



Find the value of x and y.

5)



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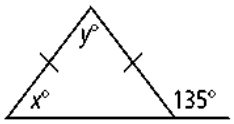

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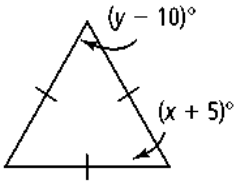

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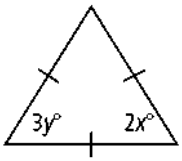

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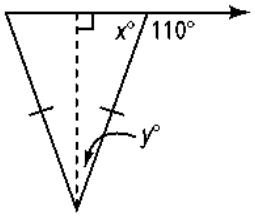

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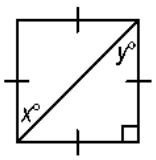

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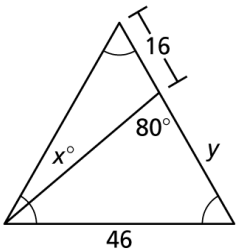

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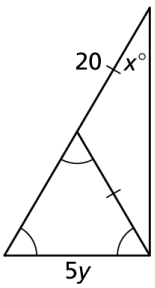

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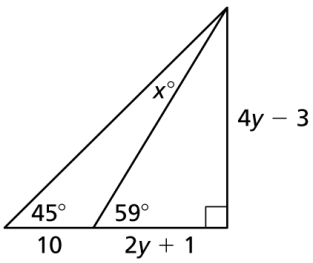

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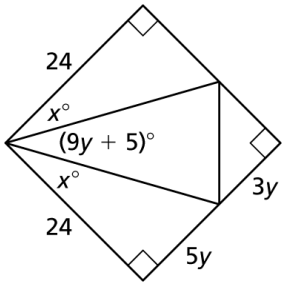
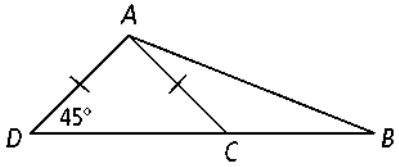
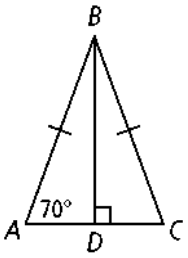


Use the properties of isosceles and equilateral triangles to find the measure of the indicated angle.

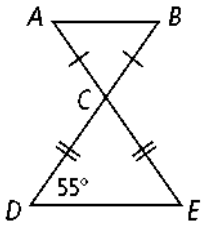
15) $m\angle ACB =$_____



16) $m\angle DBC =$_____



17) $m\angle ABC =$_____



18) An exterior angle of an isosceles triangle has the measure 130. Find two possible sets of measures for the angles of the triangle.

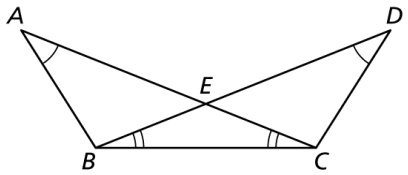
19) The measure of one angle of a triangle is 30°. Of the two remaining angles, the larger angle is four times the size of the smaller angle. Is the triangle isosceles? Explain.

20) Are isosceles triangles always acute triangles? Explain your reasoning.

21) The lengths of the sides of a triangle are $3t$, $5t - 12$, and $t + 20$. Find the values of t that make the triangle isosceles. Explain your reasoning.

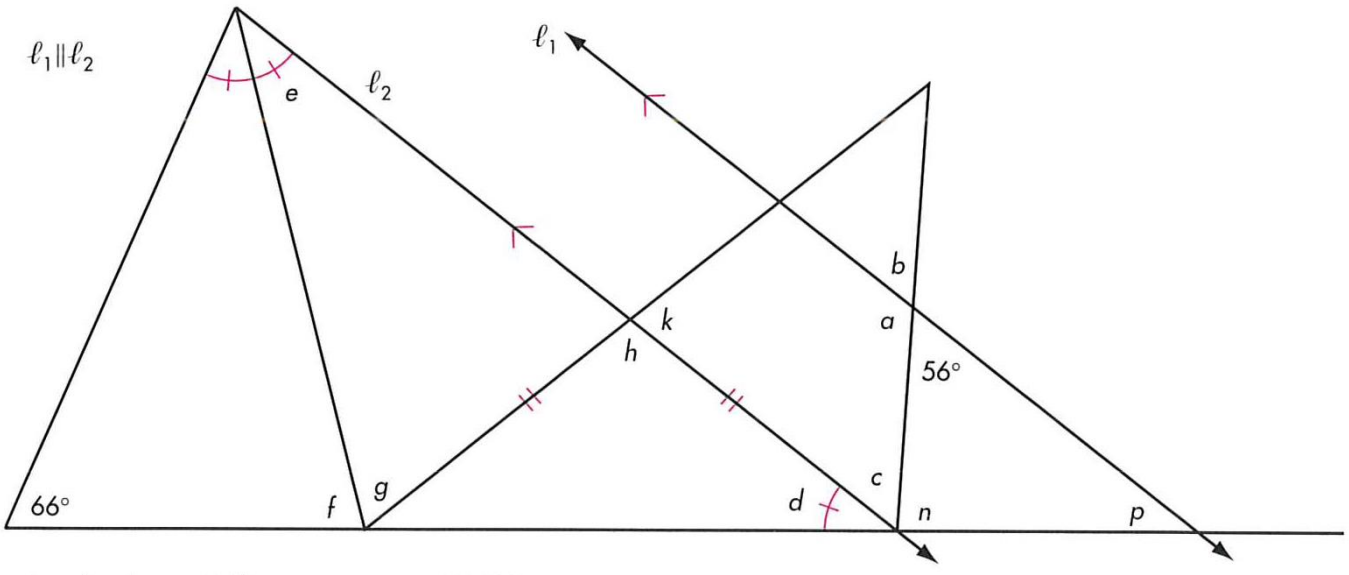
22) Given: $\angle BAE \cong \angle CDE$
$\angle EBC \cong \angle ECB$

Prove: $\overline{AB} \cong \overline{DC}$



Statement	Reasons

23) Calculate each lettered angle below.



a = _____ d = _____ g = _____ n = _____

b = _____ e = _____ h = _____ p = _____

c = _____ f = _____ k = _____