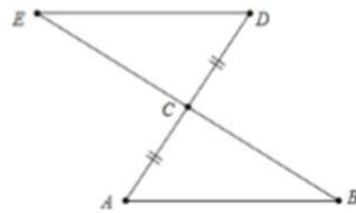


10. In the diagram, $\overline{AC} \cong \overline{DC}$. Which information would provide enough information to prove that $\triangle ABC \cong \triangle DEC$?

- A. $\overline{ED} \cong \overline{BA}$
- B. $\overline{AD} \cong \overline{EB}$
- C. $\overline{ED} \parallel \overline{BA}$
- D. $\overline{AD} \perp \overline{EB}$



11. In the diagram, $\triangle STU$ is an isosceles triangle where \overline{ST} is congruent to \overline{UT} . The paragraph proof shows that $\angle S$ is congruent to $\angle U$.

It is given that \overline{ST} is congruent to \overline{UT} . Draw \overline{TV} such that it bisects $\angle T$. By the definition of an angle bisector, $\angle STV$ is congruent to $\angle UTV$. Also by the Reflexive Property, \overline{TV} is congruent to \overline{TV} . So, $\triangle STV \cong \triangle UTV$ by SAS. Thus, $\angle S$ is congruent to $\angle U$ by ??.

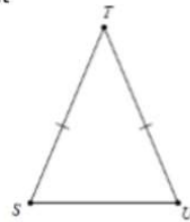


diagram 1

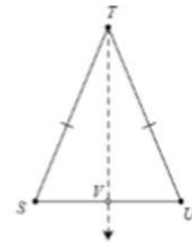


diagram 2

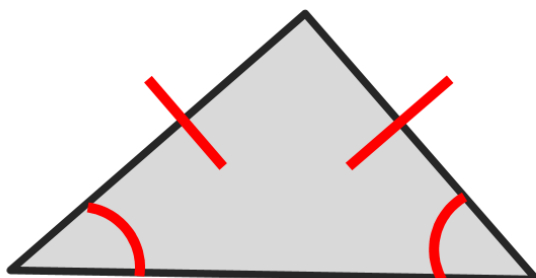
Which step is missing in the proof?

- A. Reflexive Property of Congruence
- B. Angle Congruence Postulate
- C. Definition of right angles
- D. CPCTC

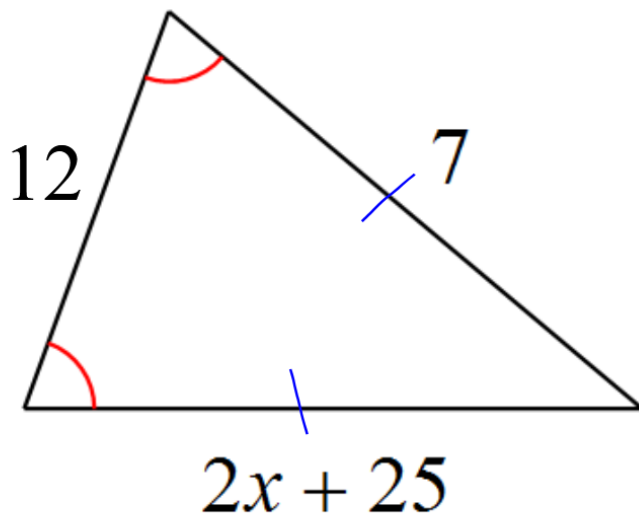
Isosceles Triangles

Base Angles

- If 2 angles in a triangle are congruent, then the sides opposite them are congruent.



Solve for x.



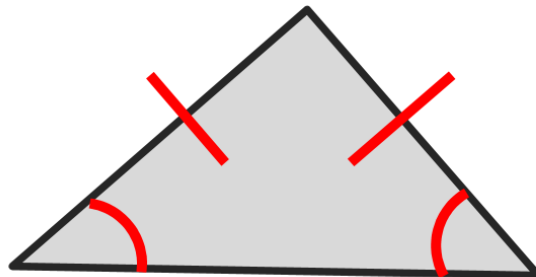
$$2x + 25 = 7$$

$$2x = -18$$

$$x = -9$$

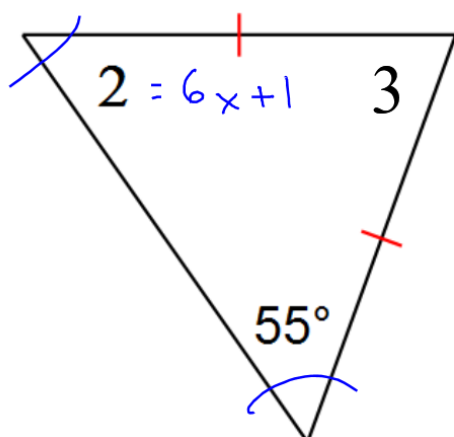
Base Angles Theorem

- If 2 sides in a triangle are congruent, then the angles opposite them are congruent.



Solve for x.

$$m\angle 2 = 6x + 1$$



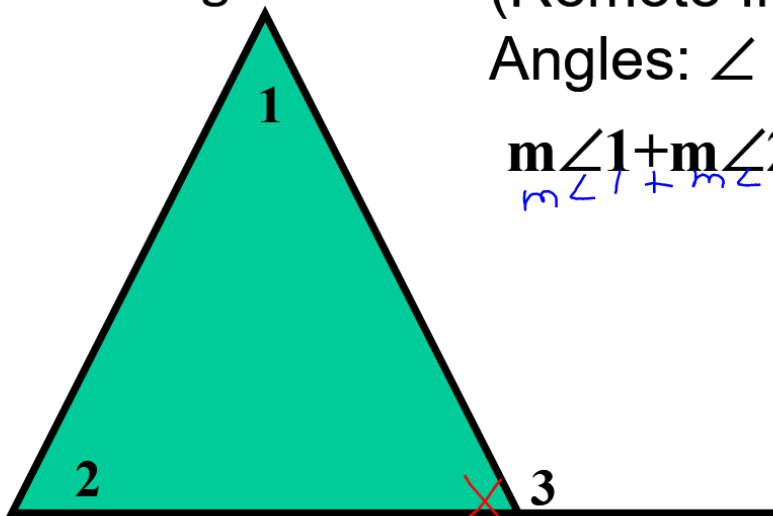
$$6x + 1 = 55$$

$$6x + 1 = 55$$

$$6x = 54$$

$$x = 9$$

The measure of the exterior angle is equal to the sum of two nonadjacent interior angles



Exterior Angles Theorem

$$m\angle 1 + m\angle 2 + x = 180$$

$$m\angle 3 + x = 180$$

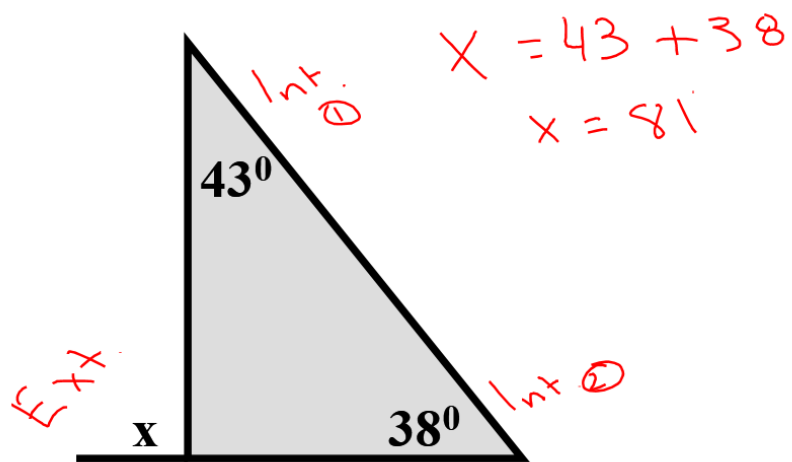
(Remote Interior Angles: $\angle 1$ and $\angle 2$)

$$m\angle 1 + m\angle 2 = m\angle 3$$

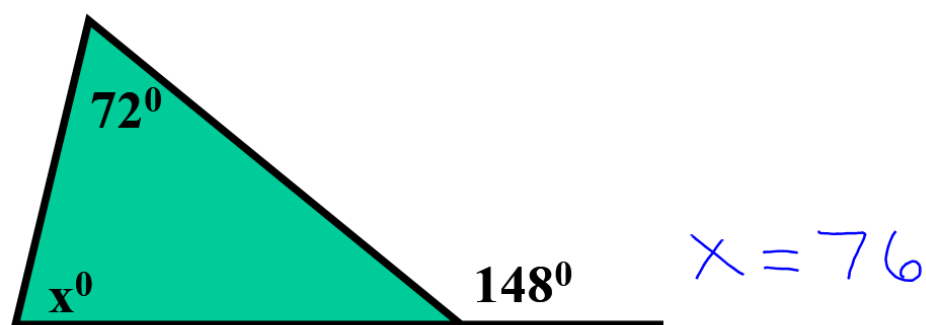
$$m\angle 1 + m\angle 2 + x = m\angle 3 + x$$



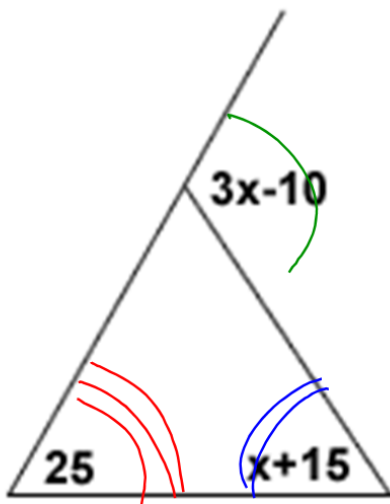
Find the value of x .



Solve for the value of x .



Solve for the value x .



$$\text{Ext. } \angle = \text{Int. } \angle + \text{Int. } \angle$$

$$3x-10 = x+15 + 25$$

$$\begin{array}{r} 3x-10 = x+40 \\ -x \quad \quad -x \\ \hline \end{array}$$

$$\begin{array}{r} 2x-10 = 40 \\ +10 \quad +10 \\ \hline \end{array}$$

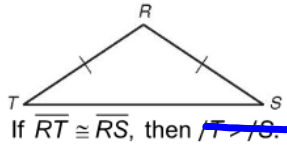
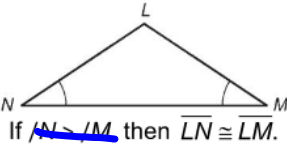
$$\frac{2x}{2} = \frac{50}{2}$$

$$x = 25$$

Name _____ Date _____ Class _____

Notes

Isosceles and Equilateral Triangles

Theorem	Examples
<p>Isosceles Triangle Theorem If two sides of a triangle are congruent, then the angles opposite the sides are congruent.</p>	 <p>If $\overline{RT} \cong \overline{RS}$, then $\angle T \cong \angle S$.</p>
<p>Converse of Isosceles Triangle Theorem If two angles of a triangle are congruent, then the sides opposite those angles are congruent.</p>	 <p>If $\angle N \cong \angle M$, then $\overline{LN} \cong \overline{LM}$.</p>

$\angle T \cong \angle S$

$\angle N \cong \angle M$

You can use these theorems to find angle measures in isosceles triangles.

Find $m\angle E$ in $\triangle DEF$.

$m\angle D = m\angle E$

$5x = (3x + 14)$

$2x = 14$

$x = 7$

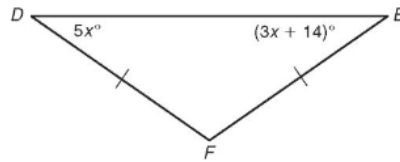
Thus $m\angle E = 3(7) + 14 = 35$.

Isosc. \triangle Thm.

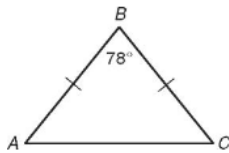
Substitute the given values.

Subtract $3x$ from both sides.

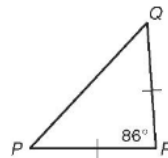
Divide both sides by 2.



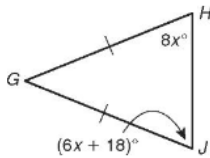
Find each angle measure.



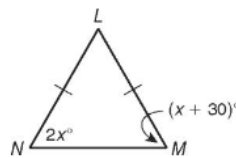
1. $m\angle C = 51^\circ$



2. $m\angle Q = 47^\circ$



3. $m\angle H = 72^\circ$



4. $m\angle M = 60^\circ$

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Notes

Isosceles and Equilateral Triangles *continued*

Equilateral Triangle Corollary

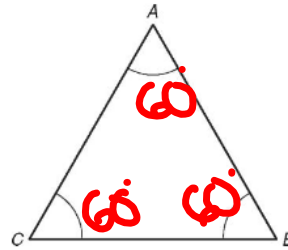
If a triangle is equilateral, then it is equiangular.

(equilateral $\triangle \rightarrow$ equiangular \triangle)

Equiangular Triangle Corollary

If a triangle is equiangular, then it is equilateral.

(equiangular $\triangle \rightarrow$ equilateral \triangle)



If $\angle A \cong \angle B \cong \angle C$, then $\overline{AB} \cong \overline{BC} \cong \overline{CA}$.

$\angle A \cong \angle B \cong \angle C$

You can use these theorems to find values in equilateral triangles.

Find x in $\triangle STV$.

$\triangle STV$ is equiangular.

$(7x + 4)8 = 60^\circ$

$7x = 56$

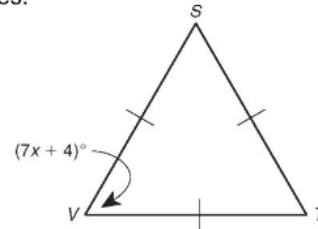
$x = 8$

Equilateral $\triangle \rightarrow$ equiangular \triangle

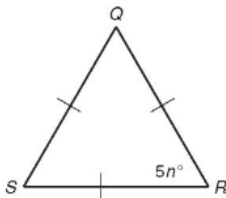
The measure of each \angle of an equiangular \triangle is 60° .

Subtract 4 from both sides.

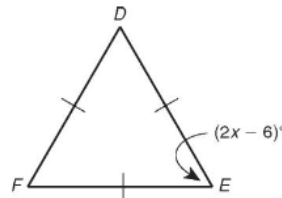
Divide both sides by 7.



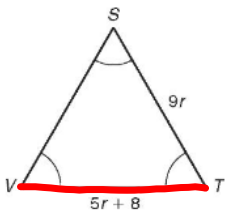
Find each value.



5. $n =$ _____

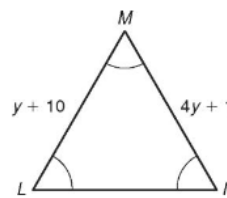


6. $x =$ _____



$9r = 5r + 8$
 $-5r \quad -5r$

 $4r = 8$
 $\frac{4r}{4} = \frac{8}{4}$
 $r = 2$



7. $VT =$ _____

18
 $5(2) + 8$

8. $MN =$ _____

Geometry

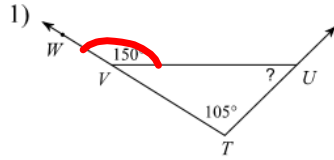
Name _____ ID: 1

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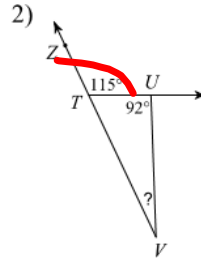
Assignment

Date _____ Period ____

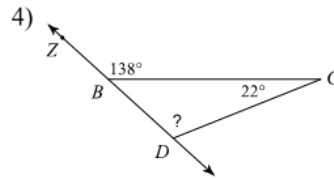
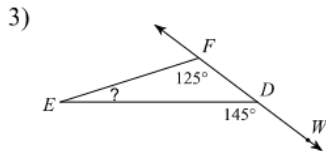
Find the measure of each angle indicated.



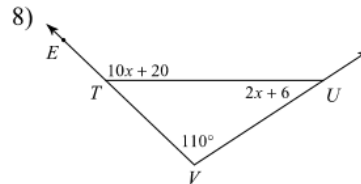
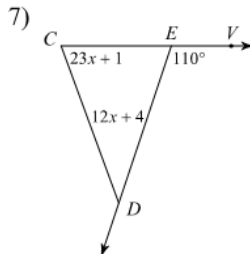
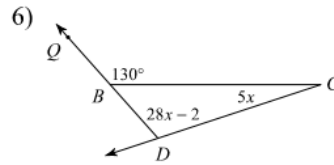
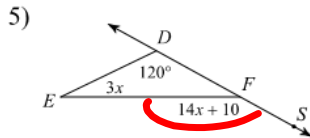
Ext.



Ext.



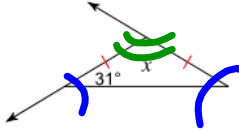
Solve for x.



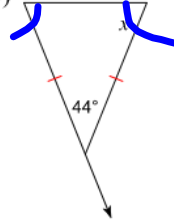
Find the value of x .

Isosceles

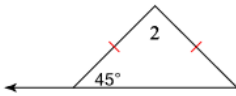
9)



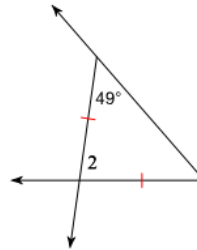
10)



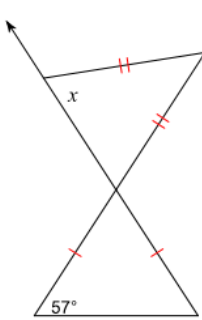
11) $m\angle 2 = x + 96$



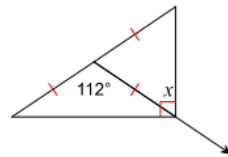
12) $m\angle 2 = 12x + 10$



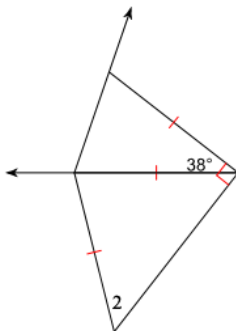
13)



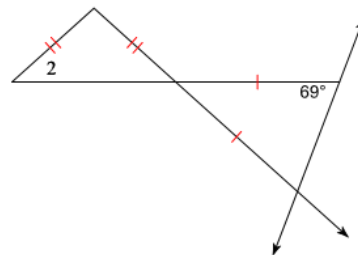
14)



15) $m\angle 2 = x + 59$



16) $m\angle 2 = 5x - 8$



Geometry

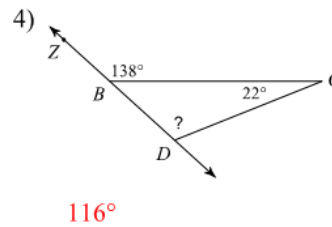
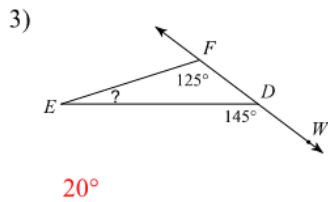
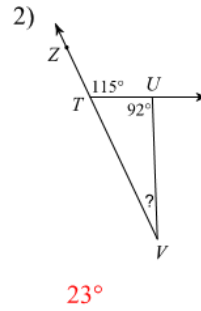
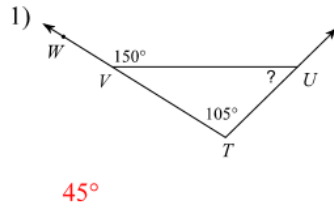
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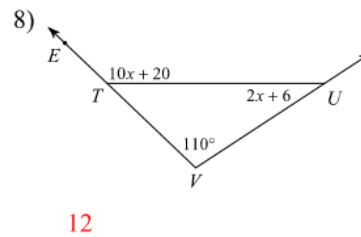
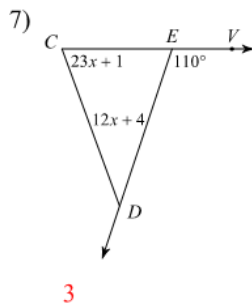
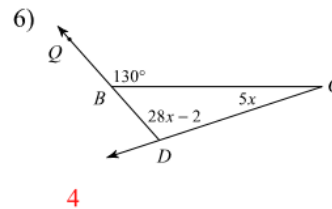
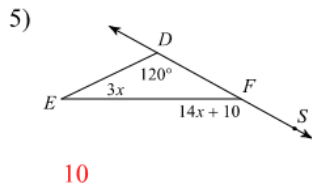
Assignment

Date _____ Period ____

Find the measure of each angle indicated.

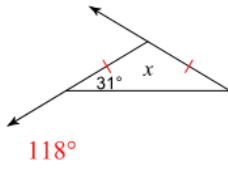


Solve for x.

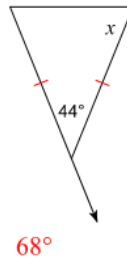


Find the value of x .

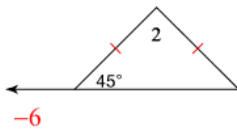
9)



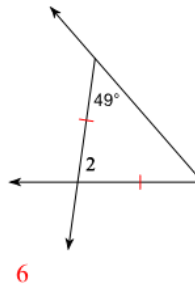
10)



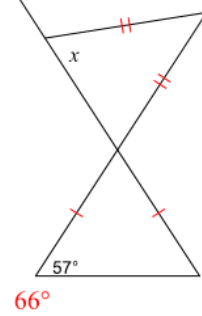
11) $m\angle 2 = x + 96$



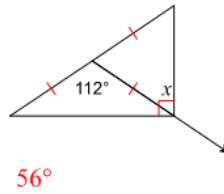
12) $m\angle 2 = 12x + 10$



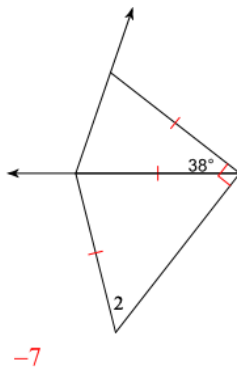
13)



14)



15) $m\angle 2 = x + 59$



16) $m\angle 2 = 5x - 8$

