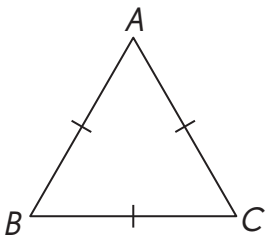
Name: _____ Date: _____

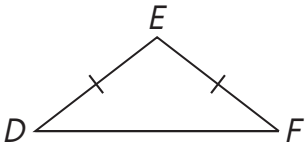
CHAPTER 13

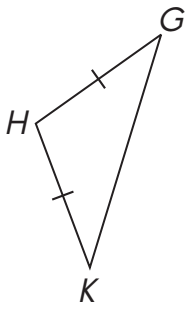
# Properties of Triangles and Four-Sided Figures

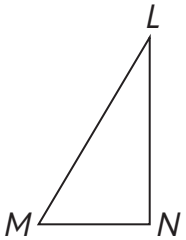
## Lesson 13.1 Classifying Triangles

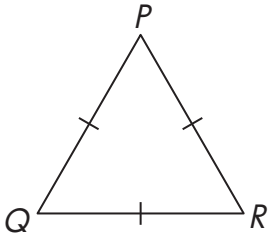
**1.** Classify the following triangles by sides as a scalene triangle, an isosceles triangle, or an equilateral triangle.

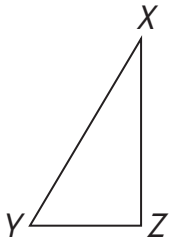


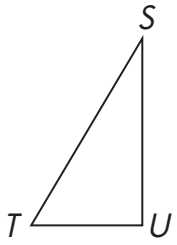



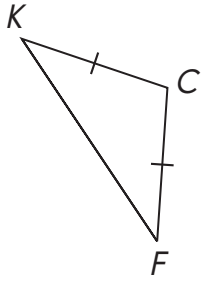



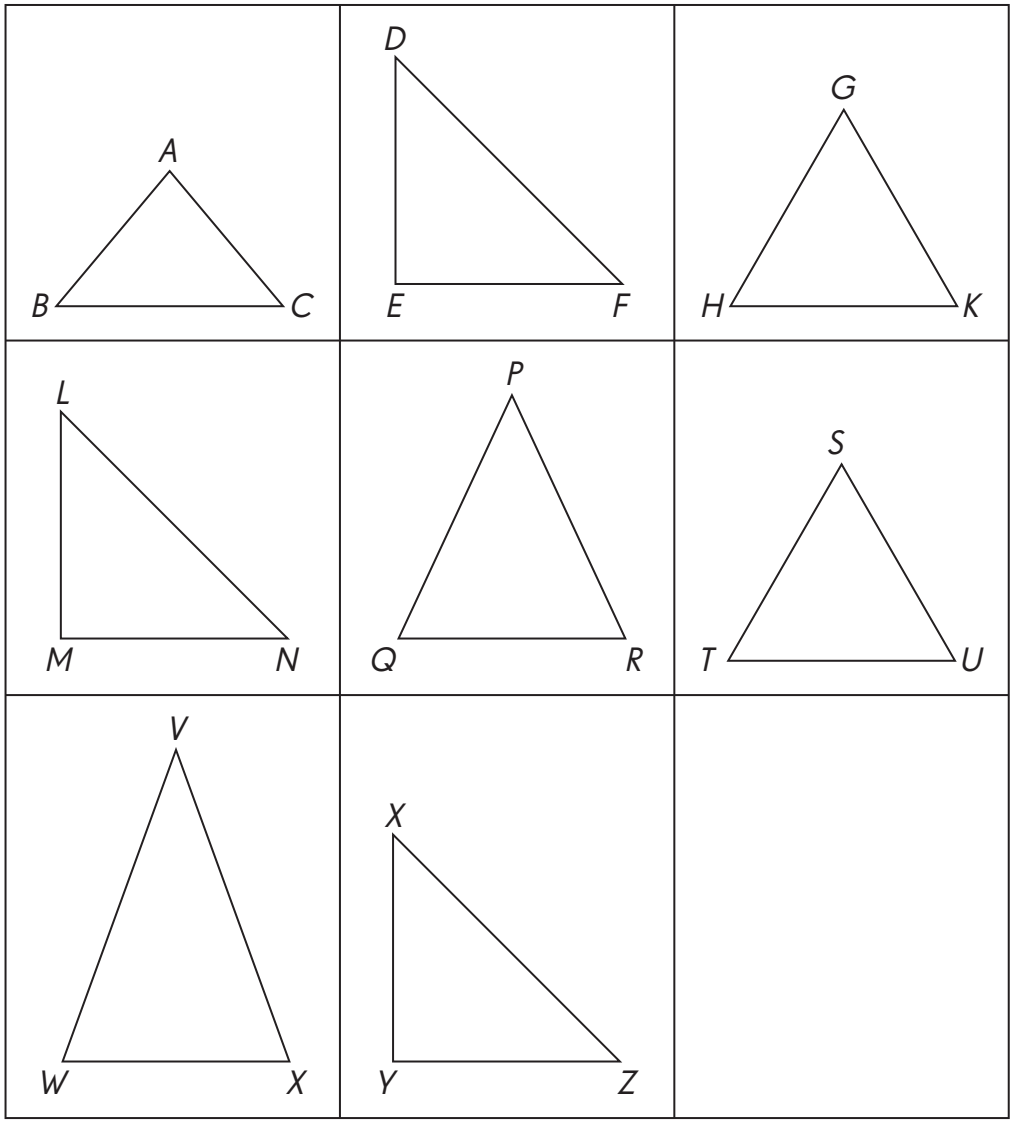




| Scalene Triangles | Equilateral Triangles | Isosceles Triangles |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

**Name:** _____ **Date:** _____

**2.** Classify the following triangles by angles as a right triangle, an isosceles triangle, or an equilateral triangle. Use a protractor to help you classify the triangles.



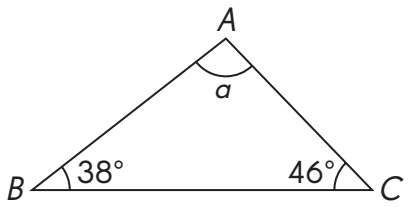

| Right Triangles | Equilateral Triangles | Isosceles Triangles |
|---|---|---|
| | | |
| | | |
| | | |

Name: _____ Date: _____

# Lesson 13.2 Measures of Angles of a Triangle

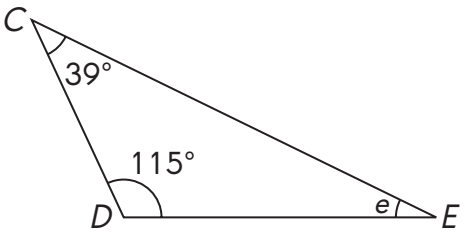
**Find the unknown angle measures. The figures are not drawn to scale.**

**1.**



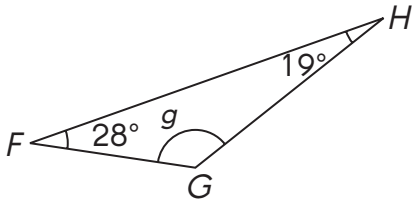

m∠$a$ =

**2.**



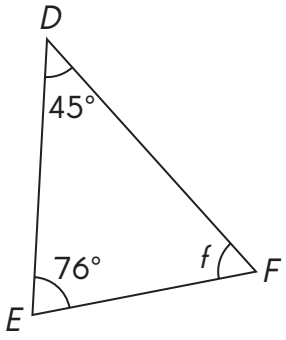

m∠$e$ =

**3.**




m∠$g$ =

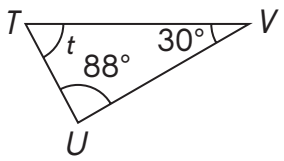
**4.**




m∠$f$ =

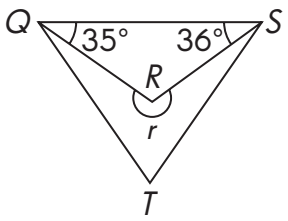
**Name:** _____ **Date:** _____

**5.**



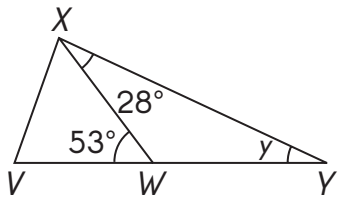

$m\angle t =$

**6.**



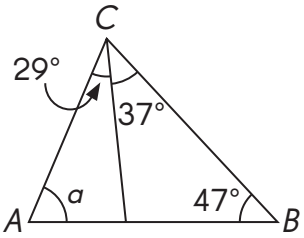

$m\angle r =$

**7.**




$m\angle y =$

**8.**



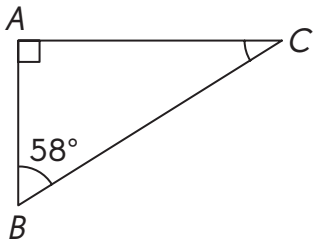

$m\angle a =$

Name: _____ Date: _____

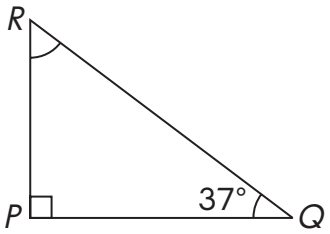
# Lesson 13.3 Right, Isosceles, and Equilateral Triangles

**Find the unknown angle measures in each right triangle. The figures are not drawn to scale.**

**1.** *ABC* is a right triangle.
Find the measure of $\angle ACB$.



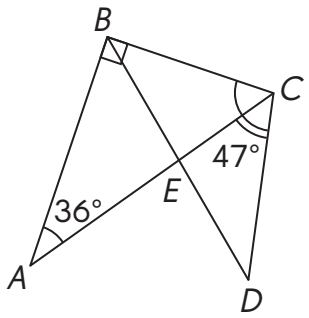

**2.** *PQR* is a right triangle.
Find the measure of $\angle PRQ$.



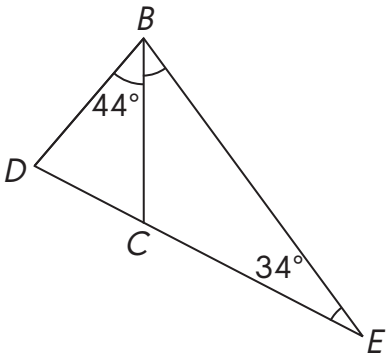
**Name:** _____ **Date:** _____

**Find the unknown angle measures. The figures are not drawn to scale.**

**3.** *ABC* is a right triangle.
Find the measure of $\angle BCD$.



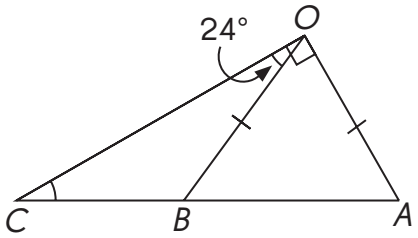

**4.** *EBD* is an isosceles triangle with $ED = EB$, $m\angle BEC = 34°$, and $m\angle CBD = 44°$.
Find the measure of $\angle EBC$.



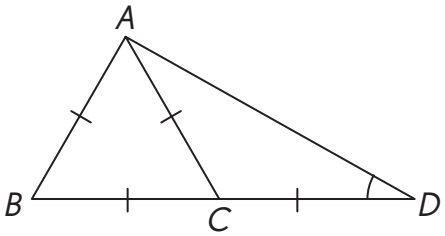
**Name:** _____ **Date:** _____

**Find the unknown angle measures in each figure. The figures are not drawn to scale.**

**5.** *AOB* is an isosceles triangle. $OA = OB$.
*AOC* is a right triangle.
Find the measure of $\angle OCB$

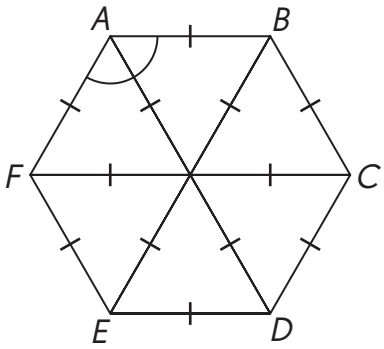



**6.** *ABC* is an equilateral triangle and *ACD* is an isosceles triangle.
Find the measure of $\angle ADC$.

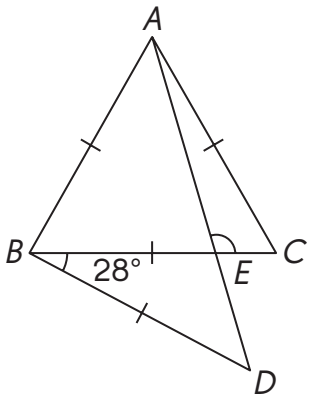


**Name:** _____ **Date:** _____

**7.** *ABCDEF* is a 6-sided figure. All the triangles are equilateral triangles. Find the measure of $\angle FAB$.



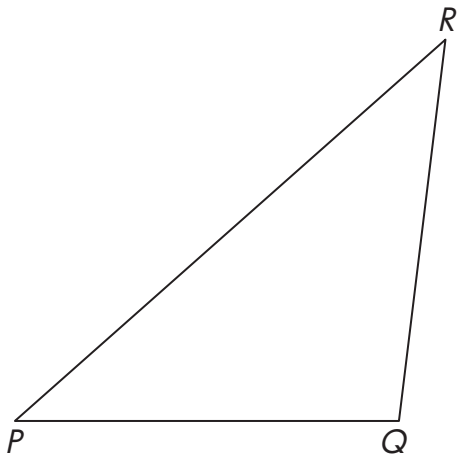

**8.** *ABC* is an equilateral triangle. $BA = BD$. Find the measure of $\angle AEC$.



Name: _____ Date: _____

# Lesson 13.4 Triangle Inequalities

**Complete. Measure the sides of the triangle to the nearest inch.**




**1.** $PQ =$ _____ in. $QR =$ _____ in. $PR =$ _____ in.

**2.** $PQ + QR =$ _____ in.

**3.** $PQ + PR =$ _____ in.

**4.** $PR + QR =$ _____ in.

**Use your answers in Exercises 1 to 4. Fill in the blanks with *Yes* or *No*.**

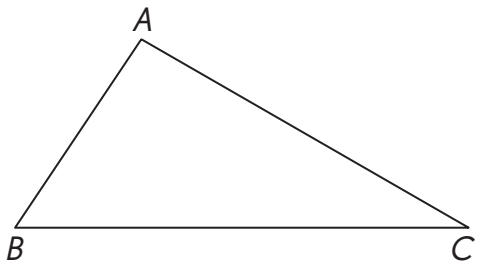
**5.** Is $PQ + QR > PR$? _____

**6.** Is $PQ + PR > QR$? _____

**7.** Is $PR + QR > PQ$? _____

**Name:** _____ **Date:** _____

**Complete. Measure the sides of the triangle to the nearest centimeter.**




**8.** $BC =$ _____ cm $AB =$ _____ cm $AC =$ _____ cm

**9.** $AB + BC =$ _____ cm

**10.** $AB + AC =$ _____ cm

**11.** $BC + AC =$ _____ cm

**Use your answers in Exercises 8 to 11. Write the sides of the triangle to make the inequalities true.**

**12.** $AB + BC >$ _____

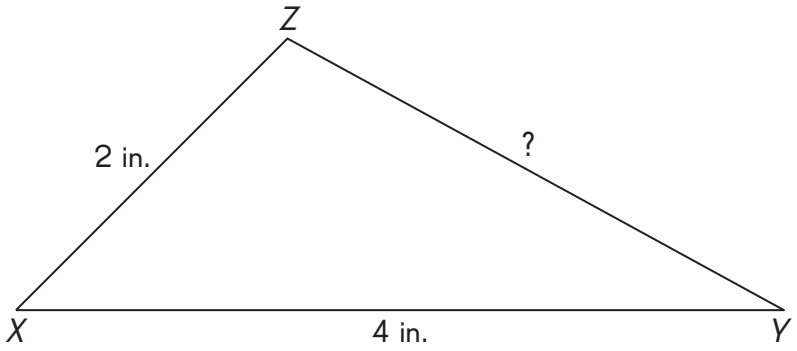
**13.** $AB + AC >$ _____

**14.** $BC + AC >$ _____

**Name:** _____ **Date:** _____

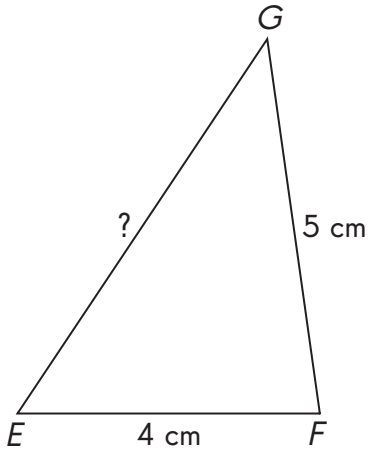
**The lengths of two sides of each triangle are given. Name a possible length for the third side. The given lengths are in whole centimeters or inches.**

**15.**




In triangle *XYZ*, the length of $\overline{ZY}$ is greater than 2 inches. A possible length of $\overline{ZY}$, rounded to the nearest inch, is _____.

**16.**




In triangle *EFG*, the length of $\overline{EG}$ is greater than 4 centimeters.

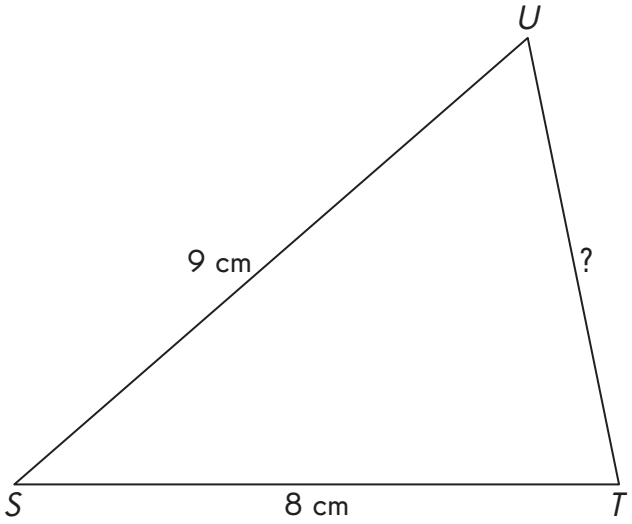
A possible length of $\overline{EG}$, rounded to the nearest centimeter, is

_____.

**Name:** _____ **Date:** _____

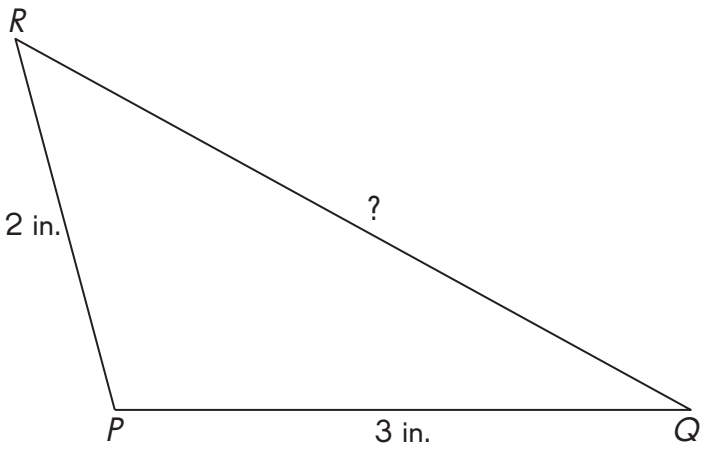
**The lengths of two sides of each triangle are given. Name a possible length for the third side. The given lengths are in whole centimeters or whole inches.**

**17.**




In triangle *STU*, the length of $\overline{UT}$ is less than 10 centimeters. A possible length of $\overline{UT}$, rounded to the nearest centimeter, is _____.

**18.**



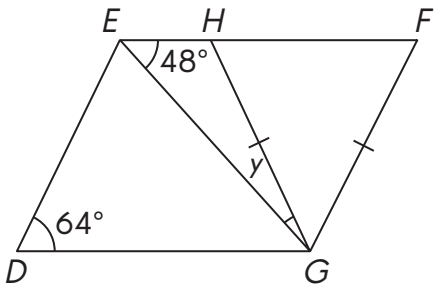

In triangle *PQR*, the length of $\overline{RQ}$ is greater than 3 inches. The possible length of $\overline{RQ}$, rounded to the nearest inch, is _____.

Name: _____ Date: _____

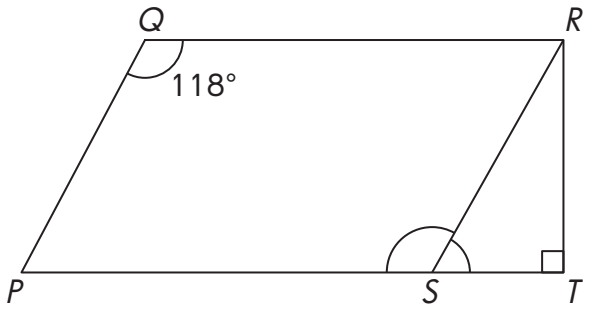
# Lesson 13.5 Parallelogram, Rhombus, and Trapezoid

**Find the unknown angle measures. The figures are not drawn to scale.**

**1.** *DEFG* is a parallelogram and $GF = GH$.
Find the measure of $\angle y$.

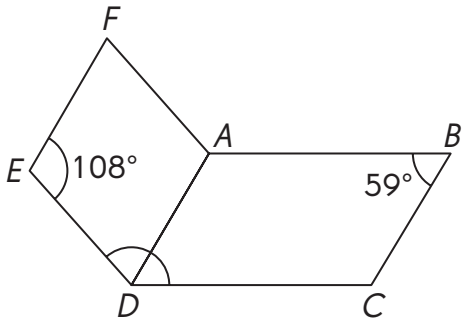



**2.** *PQRS* is a parallelogram and *RST* is a right triangle.
Find the measures of $\angle PSR$ and $\angle RST$.

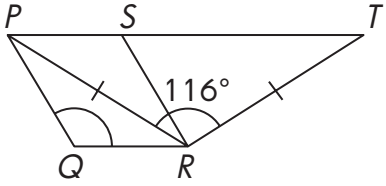


**Name:** _____ **Date:** _____

**3.** *ABCD* and *ADEF* are parallelograms.
Find the measure of $\angle EDC$.

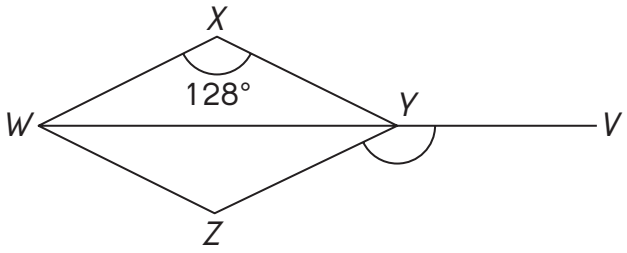



**4.** *PQRS* is a rhombus and $PR = TR$.
Find the measure of $\angle PQR$.

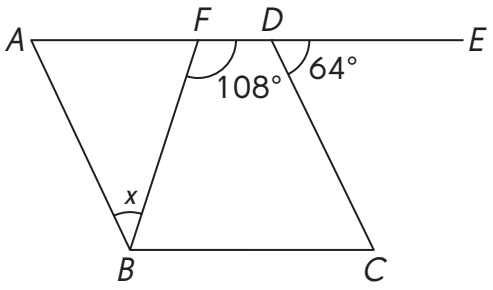


**Name:** _____ **Date:** _____

**5.** $WXYZ$ is a rhombus and $\overline{WV}$ is a line segment.
Find the measure of $\angle VYZ$.

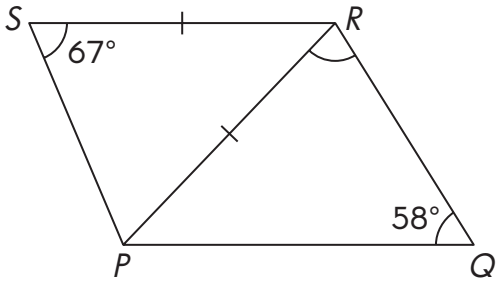



**6.** $ABCD$ is a rhombus. $\overline{AE}$ is a line segment.
Find the measure of $\angle x$.

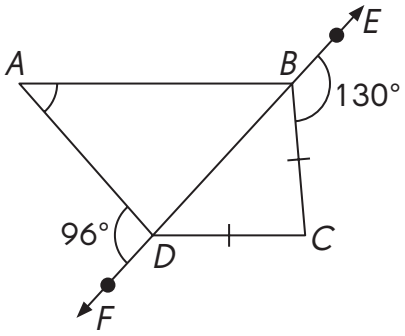


**Name:** _____ **Date:** _____

**7.** $PQRS$ is trapezoid and $\overline{SR} \parallel \overline{PQ}$.
$SR = PR$. Find the measure of $\angle PRQ$.




**8.** $ABCD$ is a trapezoid. $\overline{AB} \parallel \overline{DC}$ and $CB = CD$.
$\overleftrightarrow{FE}$ is a line.
Find the measure of $\angle BAD$.

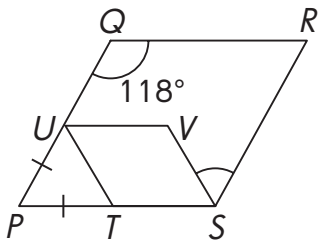


Name: _____ Date: _____

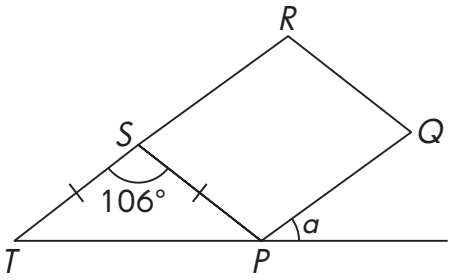
# Put on Your Thinking Cap!

**The figures are not drawn to scale. Find the unknown angle measures.**

**1.** *PQRS* and *STUV* are parallelograms and $PT = PU$.
Find the measure of $\angle RSV$.

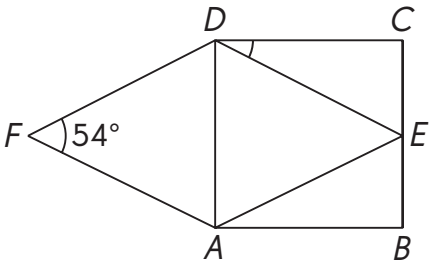



**2.** *PQRS* is a parallelogram and $ST = SP$.
Find the measure of $\angle a$.

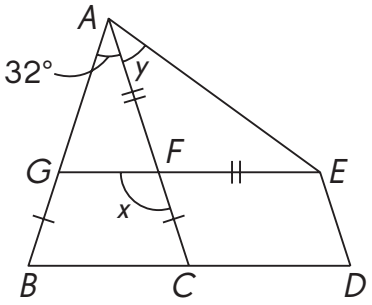


**Name:** _____ **Date:** _____

**3.** *ABCD* is a square and *AEDF* is a rhombus. Find the measure of $\angle CDE$.

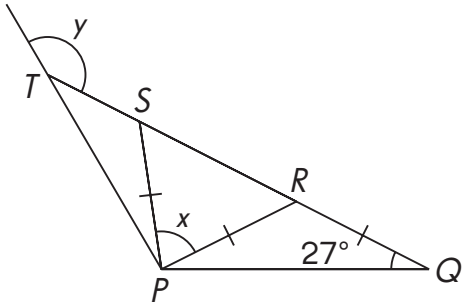



**4.** *BDEG* is a trapezoid and $\overline{GF} \parallel \overline{BC}$. *ABC* and *AEF* are isosceles triangles. Find the measures of $\angle x$ and $\angle y$.

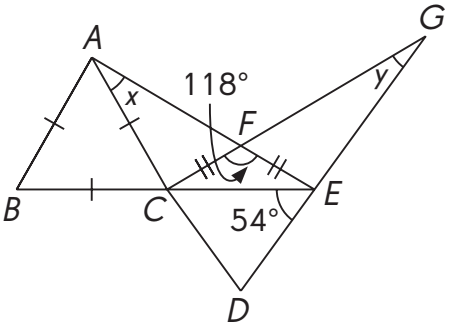


**Name:** _____ **Date:** _____

**5.** In the figure, $PS = PR = RQ$ and the measure of $\angle STP$ is twice the measure of $\angle TPS$. Find the measures of $\angle x$ and $\angle y$.

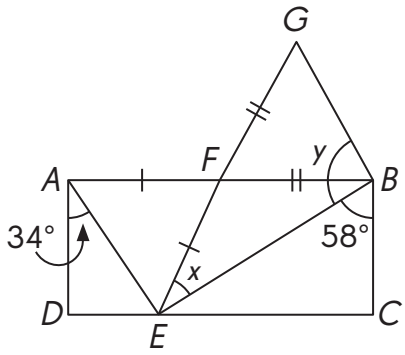



**6.** $ABC$ is an equilateral triangle. $CEF$ is an isosceles triangle, where $FC = FE$, $m\angle CED = 54°$, and $m\angle CFE = 118°$.
Find the measures of $\angle x$ and $\angle y$.



**Name:** _____ **Date:** _____

**7.** *ABCD* is a rectangle. $FA = FE$ and $FB = FG$. Find the measures of $\angle x$ and $\angle y$.




**8.** *ABC* is a right triangle, $\overline{BG}$ is a line segment, and $m\angle ABC = m\angle CDE$. $m\angle ACB = 90°$ and $\overline{AB} \parallel \overline{DE}$. Find the measures of $\angle x$ and $\angle y$.