

Triangle Angle Theorems Worksheet

Use the Triangle Sum Theorem to Answer Questions 1 - 3.

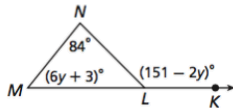
- The measures of the angles of a triangle are represented by $4x$, $x + 40$, and $2x$. Find the value of x .
- The measures of the angles of a triangle are represented by $(3x - 20)$, $(7x + 30)$, and $(2x + 50)$. Find x .
- In $\triangle ABC$, $m\angle B$ is 5° less than $1\frac{1}{2}$ times $m\angle A$. $m\angle C$ is 5° less than $2\frac{1}{2}$ times $m\angle A$. What is $m\angle A$ in degrees?

Use the Exterior Angle Theorem to answer Questions 4 - 8

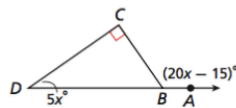
- An exterior angle is drawn at vertex E of $\triangle DEF$. What are its remote interior angles?

Find each angle measure.

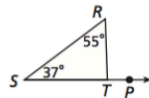
5. $m\angle M$



6. $m\angle ABC$



- A carpenter built a triangular support structure for a roof. Two of the angles of the structure measure 37° and 55° . Find the measure of $\angle RTP$, the angle formed by the roof of the house and the roof of the patio.



- An exterior angle of a triangle measures 117° . Its remote interior angles measure $(2y^2 + 7)^\circ$ and $(61 - y^2)^\circ$. Find the value of y .

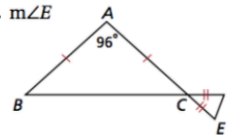
Use the Isosceles Triangle Theorem to Answer Questions 9 - 17.

- Surveying** To find the distance QR across a river, a surveyor locates three points Q , R , and S . $QS = 41$ m, and $m\angle S = 35^\circ$. The measure of exterior $\angle PQS = 70^\circ$. Draw a diagram and explain how you can find QR .

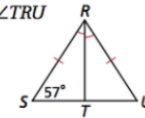
- Vocabulary** Draw isosceles $\triangle JKL$ with $\angle K$ as the vertex angle. Name the legs, base, and base angles of the triangle.

Find each angle measure.

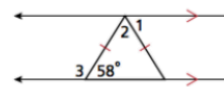
11. $m\angle E$



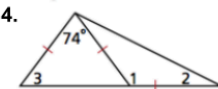
12. $m\angle TRU$



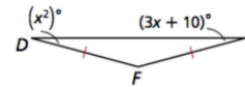
13.



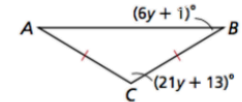
14.



15. $m\angle F$



16. $m\angle A$



- The vertex angle of an isosceles triangle measures $(6x - 9)^\circ$, and one of the base angles measures $(4x)^\circ$. Find x .