

Name: Key

Date:

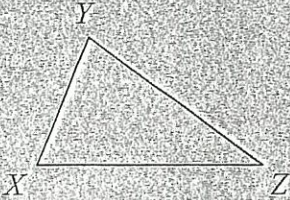
Topic:

Class:

Main Ideas/Questions

Notes/Examples

Triangles



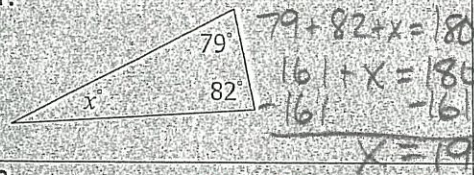
- A **triangle** is a polygon with 3 sides and 3 angles.
- On the triangle to the left, the **sides** are XY, YZ, and XZ; the **angles** are $\angle X$, $\angle Y$, and $\angle Z$.
- The Triangle Sum Theorem states that the sum of the measures of the three angles is always 180° .

Therefore, $\angle X + \angle Y + \angle Z = 180^\circ$

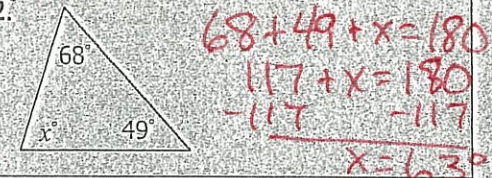
Examples

Directions: Find each missing measure.

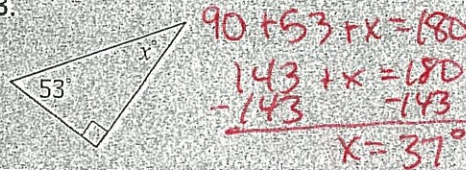
1.



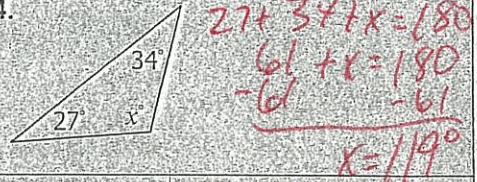
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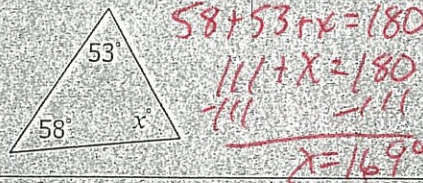
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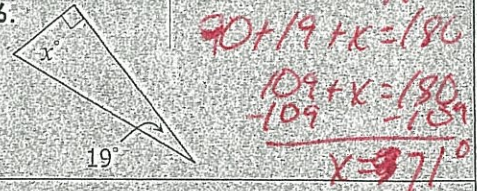
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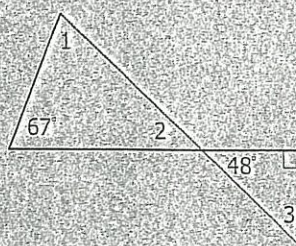
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6.



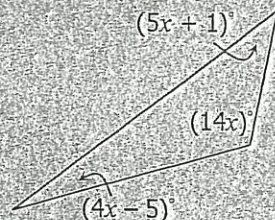
7.



$$\begin{array}{r} 48 + 90 + \angle 3 = 180 \\ 138 + \angle 3 = 180 \\ -138 \quad -138 \\ \hline \angle 3 = 42 \end{array}$$

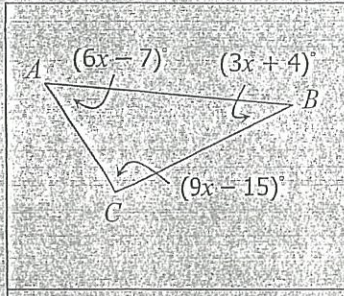
$$\begin{array}{r} m\angle 1 = 65^\circ \\ m\angle 2 = 49^\circ \\ m\angle 3 = 42^\circ \end{array}$$

$$\begin{array}{r} 67 + 48 + \angle 1 = 180 \\ 115 + \angle 1 = 180 \\ -115 \quad -115 \\ \hline \angle 1 = 65^\circ \end{array}$$

8. Find the value of x .

$$\begin{array}{r} 5x + 1 + 14x + 4x - 5 = 180 \\ 23x - 4 = 180 \\ +4 \quad +4 \\ \hline 23x = 184 \\ \underline{23} \quad \underline{8} \\ x = 8 \end{array}$$

$$C) 9(11) - 15 = 99 - 15 = 84$$



9. Find the value of x , then find each angle measure.

$$6x - 7 + 3x + 4 + 9x - 15 = 180$$

$$18x - 18 = 180$$

$$\begin{array}{r} +18 \quad +18 \\ \hline 18x = 198 \\ x = 11 \end{array}$$

A) $6(11) - 7 = 66 - 7 = 59$
 B) $3(11) + 4 = 33 + 4 = 37$

$$m\angle A = 59^\circ$$

$$m\angle B = 37^\circ$$

$$m\angle C = 84^\circ$$

Types of Triangles

CLASSIFYING BY ANGLES

All Acute Angles	One Obtuse Angle	One Right Angle
Acute Triangle	Obtuse Triangle	Right Triangle

CLASSIFYING BY SIDES

No Congruent Sides	Two Congruent Sides	All Sides Congruent
Scalene Triangle	Isosceles	Equilateral

Examples

Directions: Classify each triangle by its angles and sides.

10. **Isosceles Right**

11. **Acute Equilateral**

12. **Obtuse Scalene**

13. **Acute Isosceles**

14. **Obtuse Isosceles**

15. **Right Scalene**

16. In $\triangle JKL$, $m\angle J = (5x - 3)^\circ$, $m\angle K = (11x + 13)^\circ$, and $m\angle L = (9x - 5)^\circ$. Find the measure of each angle, then classify $\triangle JKL$ by its angles.

$$5x - 3 + 11x + 13 + 9x - 5 = 180$$

$$25x + 5 = 180$$

$$\begin{array}{r} -5 \quad -5 \\ \hline 25x = 175 \\ x = 7 \end{array}$$

J) $5(7) - 3 = 35 - 3 = 32^\circ$
 K) $11(7) + 13 = 77 + 13 = 90^\circ$
 L) $9(7) - 5 = 63 - 5 = 58^\circ$

Right Scalene