

Date: \_\_\_\_\_

**Sum, Base Angles, & Exterior Angles**

---

or angles in a triangle is  $180^\circ$ .

$\therefore = \boxed{180^\circ}$

---

asures for the following:

$$45 + 90 = 180$$

$$- 135 = 180$$

$$\underline{- 135 \quad - 135}$$

$$= 45^\circ$$

$x = 45^\circ$

---

asures for the following:

$$5x + 2x - 30 + 3x + 10 = 180$$

$$10x - 20 = 180$$

$$\underline{+ 20 \quad + 20}$$

$$\frac{10x}{10} = \frac{200}{10}$$

$x = 20$

$$5(20) \quad 2$$

$$100^\circ \quad 1$$

Check: 100

---

asures for the following:

$$x + x = 180$$

$$3x = 180$$

$$\underline{3 \quad 3}$$

$x = 60$

---

asures for the following:

$$x + 2x + 3x = 180$$

$$6x = 180$$

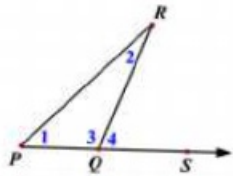
$$\underline{6 \quad 6}$$

$x = 30$

---

**Theorem**

Measure of an exterior angle of a triangle is equal to the sum of the measures of its remote interior angles.



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

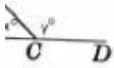
e:

Sum

$$\begin{aligned} 80 + 40 + x &= 180 \\ 120 + x &= 180 \\ -120 & \quad -120 \\ \hline x &= 60 \end{aligned}$$

Ext. Ang. Thm

$$\begin{aligned} 80 + 40 &= y \\ 120 &= y \end{aligned}$$

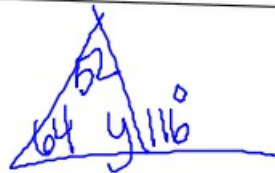


$$x = 60$$

e:

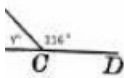
Ext. Ang. Thm

$$\begin{aligned} x + 64 &= 116 \\ -64 & \quad -64 \\ \hline x &= 52 \end{aligned}$$



$$64 + 52 + y = 180$$

$$116 + y = 180$$



$$x = 52$$

e:

missing angle measures for the following:

$$\begin{aligned} 3x - 10 &= 25 + x + 15 \\ 3x - 10 &= x + 40 \\ -x & \quad -x \\ \hline 2x - 10 &= 40 \\ +10 & \quad +10 \\ \hline 2x &= 50 \\ \frac{2x}{2} &= \frac{50}{2} \\ x &= 25 \end{aligned}$$

$$y = 64$$

$$x = 25$$

angle measures for the following:



$$153 = x - 4 + 2x + 10$$

$$\begin{aligned} 153 &= 3x + 6 \\ -6 & \quad -6 \\ \hline 147 &= 3x \end{aligned}$$

$$\frac{147}{3} = \frac{3x}{3}$$

$$x = 49$$

ngle

Thm: If 2 sides in a triangle are congruent, then the opposite them are congruent.

Thm Converse: If 2 angles in a triangle are congruent, then the sides opposite them are congruent.

---

**Corollaries**

angle is equilateral, it is equiangular.

angle is equiangular, it is equilateral.

---

$$\begin{array}{r} 7 = 2x + 25 \\ -25 \quad -25 \\ \hline \end{array}$$

$$\frac{-18}{2} = \frac{2x}{2}$$

$$\textcircled{-9 = x}$$

---

missing angle measures

If all  $\angle$ s =  $y$ , then all sides are =

$x = 6$  and  $y = 6$

---

Find the measure of all angles in the triangle.

$$\begin{array}{r} 5x = 60 \\ \frac{5x}{5} = \frac{60}{5} \end{array}$$

$$\textcircled{x = 12}$$