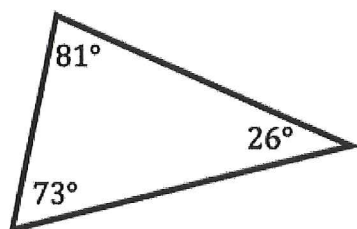


Key

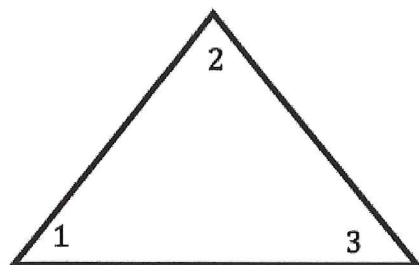
TRIANGLE SUM THEOREM NOTES

The Triangle Sum Theorem is really, really easy to explain. If you add all the interior (inside) angles of any triangle they always add to 180° . Why? Why do they ask for your phone number when you buy batteries at Radio Shack? I don't know; they just do.... It goes like this....



$$81^\circ + 26^\circ + 73^\circ = 180^\circ$$

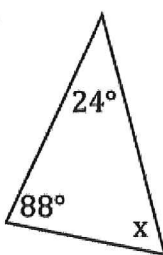
And like this...



$$m\angle 1 + m\angle 2 + m\angle 3 = 180^\circ$$

For each, find the measure of the missing angle.

1.



Triangle Sum Theorem

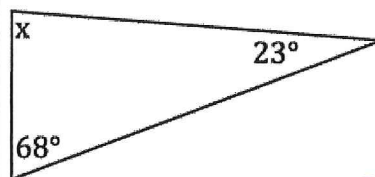
$$24^\circ + 88^\circ + x = 180^\circ$$

$$112^\circ + x = 180^\circ$$

$$-112^\circ \quad -112^\circ$$

$$x = 68^\circ$$

2.

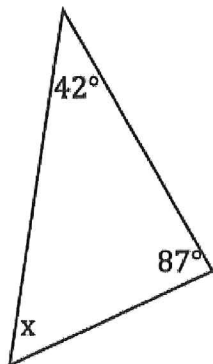


$$x + 23 + 68 = 180$$

$$x + 91 = 180$$

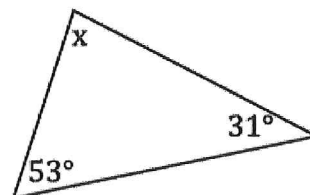
$$x = 89^\circ$$

3.



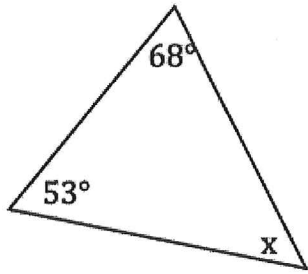
$$x = 51^\circ$$

4.



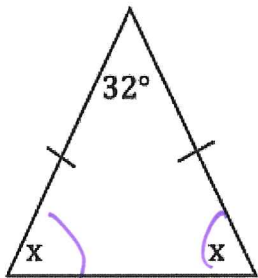
$$x = 96^\circ$$

5.



$$x = 59^\circ$$

7.

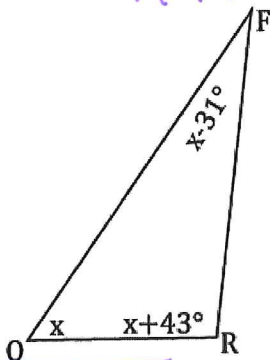


$$180 = 32 + 2x$$

$$148 = 2x$$

$$x = 74^\circ$$

9.



$$x + x - 31 + x + 43 = 180$$

$$3x + 12 = 180$$

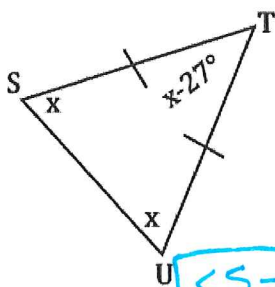
$$-12 \quad -12$$

$$3x = 168$$

$$x = 56$$

$$\begin{aligned} \angle O &= 56^\circ \\ \angle R &= 99^\circ \\ \angle F &= 25^\circ \end{aligned}$$

11.



$$x + x + x - 27 = 180$$

$$3x - 27 = 180$$

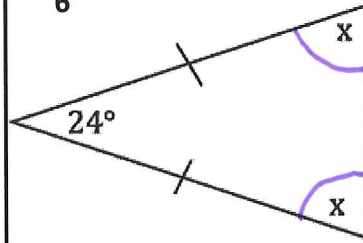
$$3x = 207$$

$$x = 69$$

$$\angle S = 69^\circ \quad \angle U = 69^\circ$$

$$\angle T = 42^\circ$$

6.



Base angles of isosceles triangles are \cong

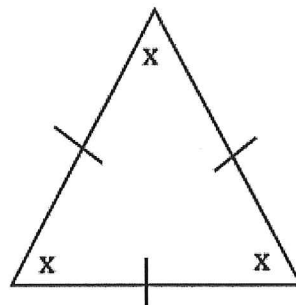
$$180 = 24 + x + x$$

$$180 = 24 + 2x$$

$$156 = 2x$$

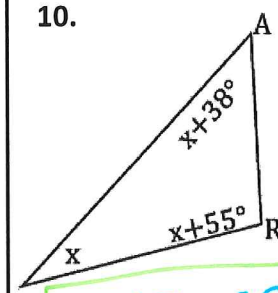
$$x = 78^\circ$$

8.



all \angle s of equilateral Δ are \cong and equal to 60°

10.



$$x + x + 38 + x + 55 = 180$$

$$3x + 93 = 180$$

$$3x = 87$$

$$x = 29$$

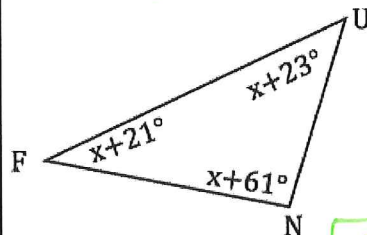
$$\begin{aligned} \angle E &= 29^\circ \\ \angle R &= 84^\circ \\ \angle A &= 67^\circ \end{aligned}$$

12. $x + 21 + x + 23 + x + 61 = 180$

$$3x + 105 = 180$$

$$3x = 75$$

$$x = 25$$



$$\begin{aligned} \angle F &= 46^\circ \\ \angle U &= 48^\circ \\ \angle N &= 86^\circ \end{aligned}$$