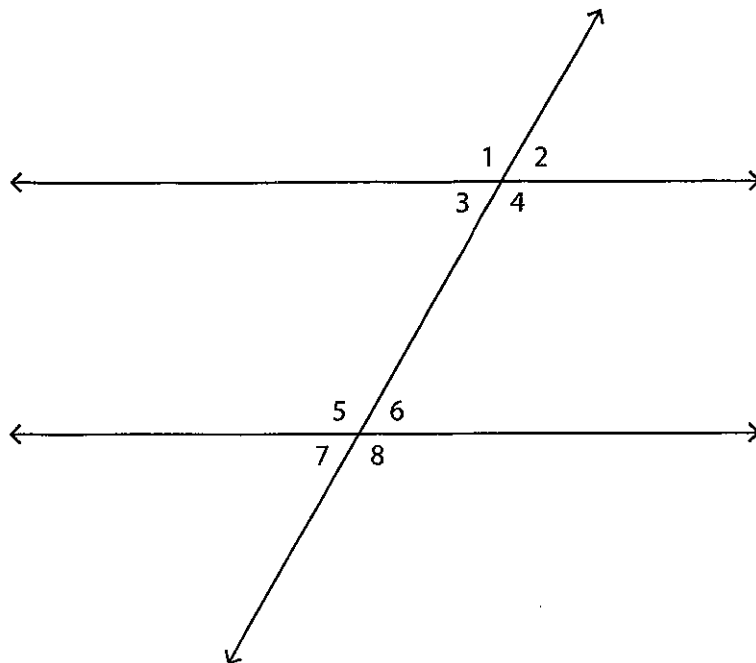


Name: \_\_\_\_\_

Score: \_\_\_\_\_

## Angle Relationship

Write the angle relationship for each pair of angles.

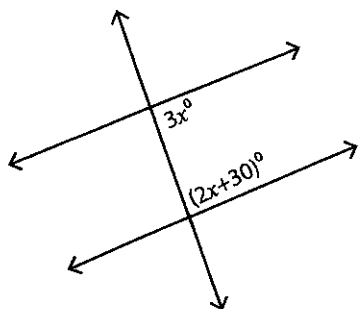


- 1)  $\angle 1$  and  $\angle 8$  are \_\_\_\_\_
- 2)  $\angle 4$  and  $\angle 6$  are \_\_\_\_\_
- 3)  $\angle 3$  and  $\angle 5$  are \_\_\_\_\_
- 4)  $\angle 2$  and  $\angle 7$  are \_\_\_\_\_
- 5)  $\angle 3$  and  $\angle 6$  are \_\_\_\_\_
- 6)  $\angle 1$  and  $\angle 7$  are \_\_\_\_\_
- 7)  $\angle 4$  and  $\angle 5$  are \_\_\_\_\_
- 8)  $\angle 2$  and  $\angle 8$  are \_\_\_\_\_

## Alternate & Same Side Angles

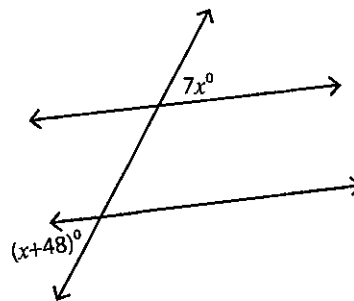
Find the value of  $x$ .

1)



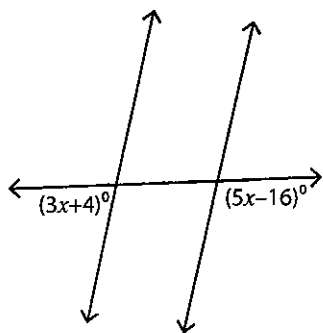
$$x = \underline{\hspace{2cm}}$$

2)



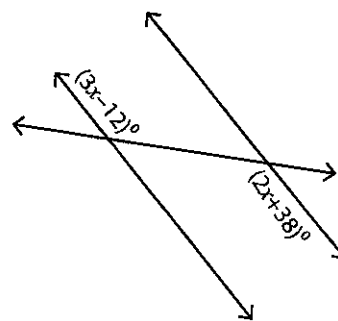
$$x = \underline{\hspace{2cm}}$$

3)



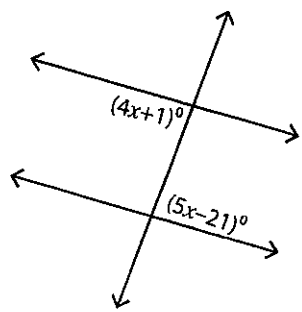
$$x = \underline{\hspace{2cm}}$$

4)



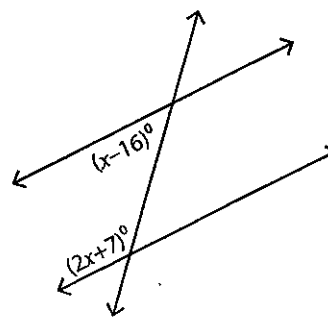
$$x = \underline{\hspace{2cm}}$$

5)



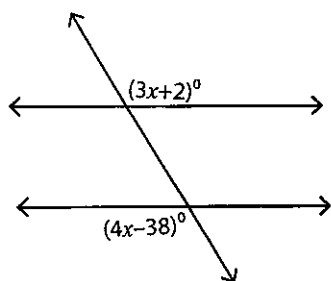
$$x = \underline{\hspace{2cm}}$$

6)



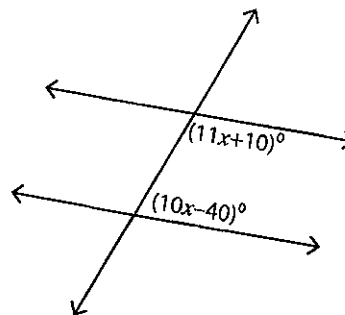
$$x = \underline{\hspace{2cm}}$$

7)



$$x = \underline{\hspace{2cm}}$$

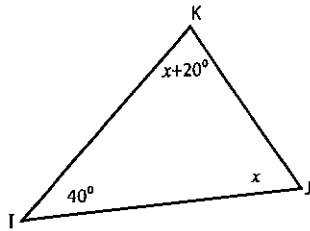
8)



$$x = \underline{\hspace{2cm}}$$

**Triangle - Interior Angle**

Example:



**Sum of the interior angles = 180°**

Sum of the interior angles =  $40^\circ + x + 20^\circ + x$

$180^\circ = 60^\circ + 2x$

$2x = 180^\circ - 60^\circ = 120^\circ$

$x = \frac{120^\circ}{2} = 60^\circ$

$\angle K = x + 20^\circ$

$\angle K = 60^\circ + 20^\circ$

$\angle K = 80^\circ$

$\angle J = 60^\circ$

Find the unknown interior angle for each triangle.

- 1) 

$x =$  \_\_\_\_\_  
 $\angle C =$  \_\_\_\_\_ ;  $\angle D =$  \_\_\_\_\_
- 2) 

$x =$  \_\_\_\_\_  
 $\angle U =$  \_\_\_\_\_ ;  $\angle V =$  \_\_\_\_\_
- 3) 

$x =$  \_\_\_\_\_  
 $\angle S =$  \_\_\_\_\_ ;  $\angle T =$  \_\_\_\_\_
- 4) 

$x =$  \_\_\_\_\_  
 $\angle B =$  \_\_\_\_\_ ;  $\angle C =$  \_\_\_\_\_
- 5) 

$x =$  \_\_\_\_\_  
 $\angle K =$  \_\_\_\_\_ ;  $\angle M =$  \_\_\_\_\_
- 6) 

$x =$  \_\_\_\_\_  
 $\angle A =$  \_\_\_\_\_ ;  $\angle B =$  \_\_\_\_\_
- 7) 

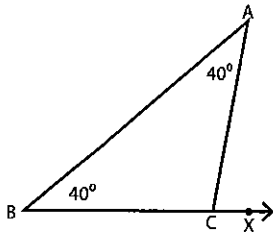
$x =$  \_\_\_\_\_  
 $\angle V =$  \_\_\_\_\_ ;  $\angle W =$  \_\_\_\_\_
- 8) 

$x =$  \_\_\_\_\_  
 $\angle I =$  \_\_\_\_\_ ;  $\angle J =$  \_\_\_\_\_
- 9) 

$x =$  \_\_\_\_\_  
 $\angle Q =$  \_\_\_\_\_ ;  $\angle R =$  \_\_\_\_\_

### Triangle-Exterior Angle

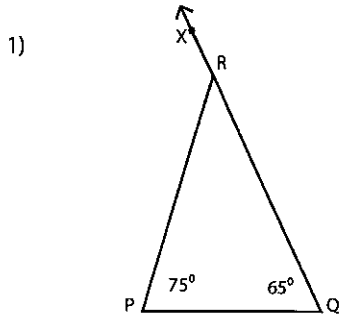
**The measure of an exterior angle of a triangle is equal to sum of the measures of opposite interior angles.**



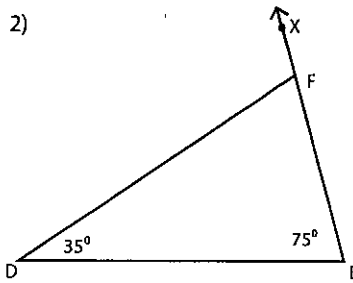
Exterior angle :  $\angle ACX$   
 Opposite interior angles :  $\angle A$  and  $\angle B$

Exterior angle = Sum of opposite interior angles  
 $\angle ACX = \angle A + \angle B$   
 $\angle ACX = 40^\circ + 40^\circ$   
 $\angle ACX = 80^\circ$

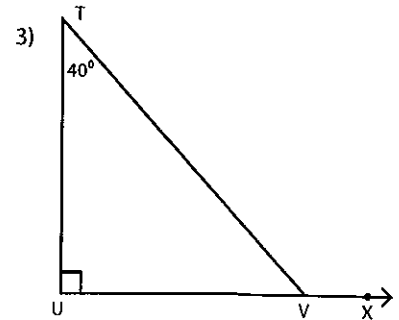
Find the unknown exterior angle for each triangle.



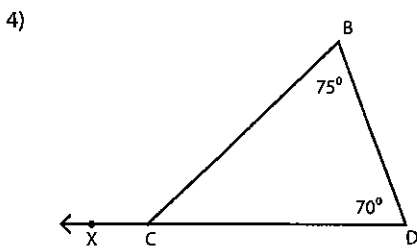
$\angle PRX =$



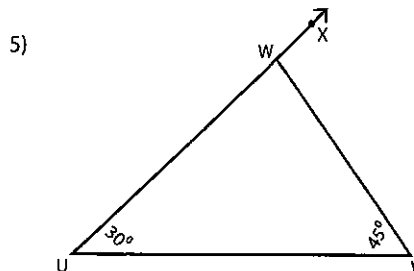
$\angle DFX =$



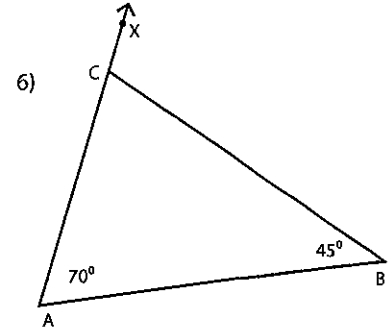
$\angle TVX =$



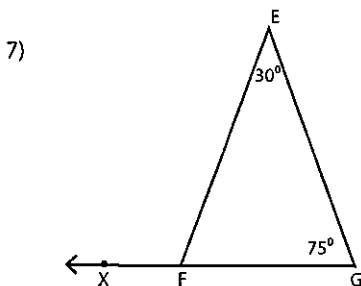
$\angle BCX =$



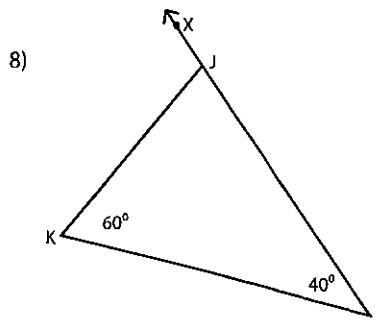
$\angle VWX =$



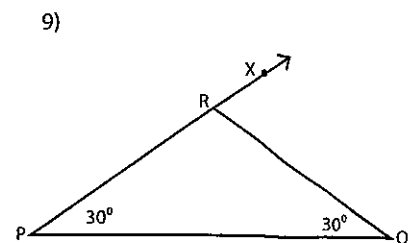
$\angle BCX =$



$\angle EFX =$



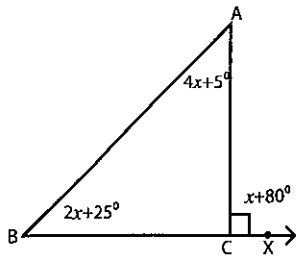
$\angle KJX =$



$\angle QRX =$

**Triangle - Exterior Angle**

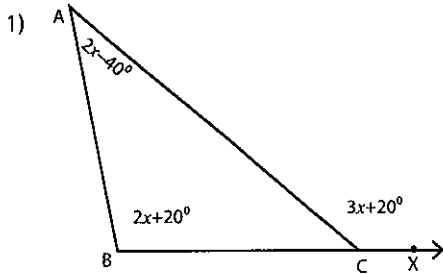
The measure of an exterior angle of a triangle is equal to sum of the measures of opposite interior angles.



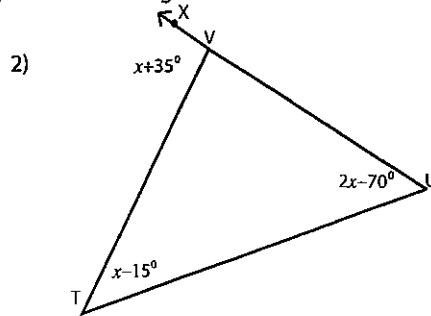
Exterior angle :  $\angle ACX$   
 Opposite interior angles :  $\angle A$  and  $\angle B$   
 Exterior angle = Sum of opposite interior angles

$$\begin{aligned} \angle ACX &= \angle A + \angle B \\ x+80^\circ &= 2x+25^\circ+4x+5^\circ \\ x+80^\circ &= 6x+30^\circ \\ 6x-x &= 80^\circ-30^\circ \\ 5x &= 50^\circ \\ x &= \frac{50^\circ}{5} = 10^\circ, \angle ACX = 10^\circ+80^\circ = 90^\circ \end{aligned}$$

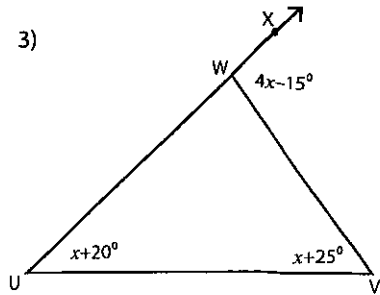
Find the value of  $x$  and unknown exterior angle for each triangle.



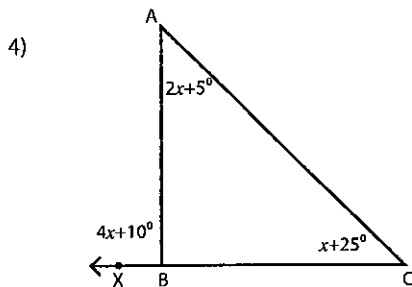
$x = \underline{\hspace{2cm}}$  ;  $\angle ACX = \underline{\hspace{2cm}}$



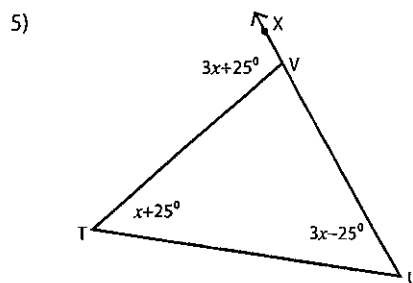
$x = \underline{\hspace{2cm}}$  ;  $\angle TVX = \underline{\hspace{2cm}}$



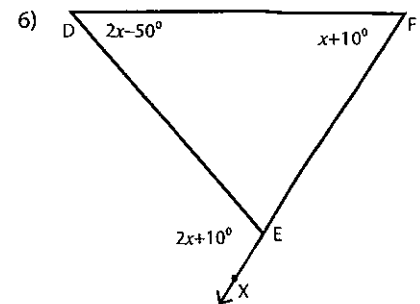
$x = \underline{\hspace{2cm}}$  ;  $\angle VWX = \underline{\hspace{2cm}}$



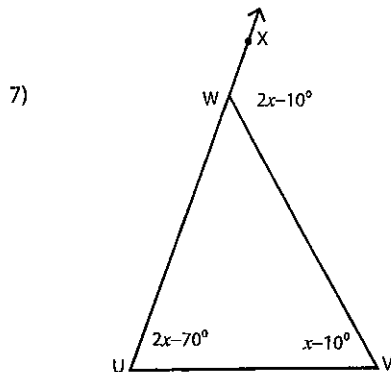
$x = \underline{\hspace{2cm}}$  ;  $\angle ABX = \underline{\hspace{2cm}}$



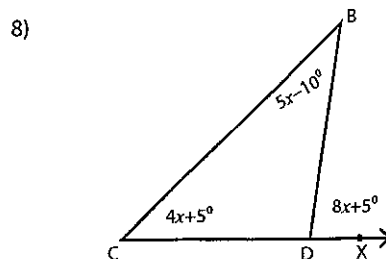
$x = \underline{\hspace{2cm}}$  ;  $\angle TVX = \underline{\hspace{2cm}}$



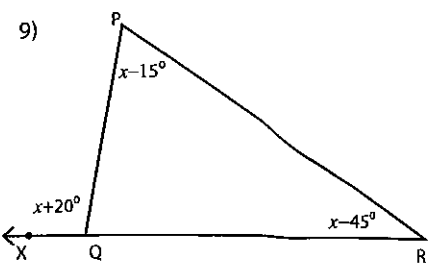
$x = \underline{\hspace{2cm}}$  ;  $\angle DEX = \underline{\hspace{2cm}}$



$x = \underline{\hspace{2cm}}$  ;  $\angle VWX = \underline{\hspace{2cm}}$



$x = \underline{\hspace{2cm}}$  ;  $\angle BDX = \underline{\hspace{2cm}}$



$x = \underline{\hspace{2cm}}$  ;  $\angle PQX = \underline{\hspace{2cm}}$