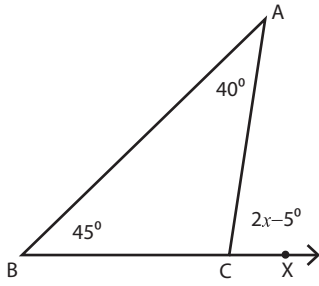


Triangle - Exterior Angle

ES1

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

$$\angle ACX = \angle A + \angle B = 40^\circ + 45^\circ = \mathbf{85^\circ}$$

$$\angle ACX = 2x - 5^\circ$$

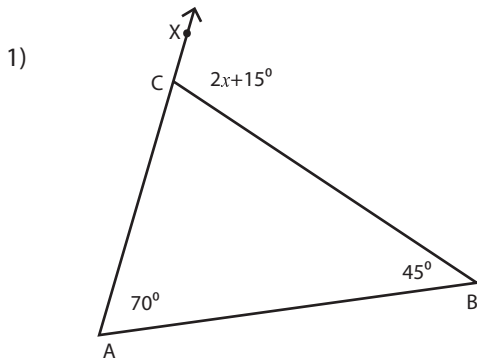
$$2x - 5^\circ = 85^\circ$$

$$2x = 85^\circ + 5^\circ$$

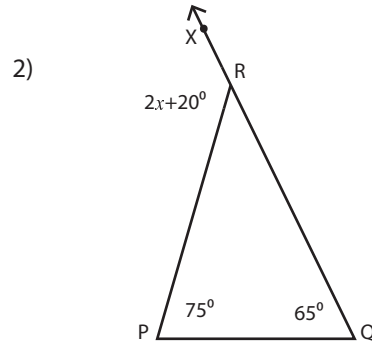
$$2x = 90^\circ$$

$$x = \frac{90^\circ}{2} = \mathbf{45^\circ}$$

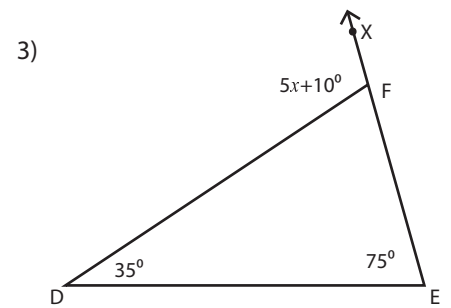
Find the unknown exterior angle and the value of x for each triangle.



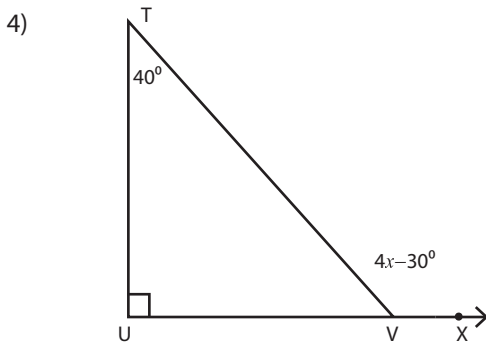
$$\angle BCX = \underline{\hspace{2cm}} ; x = \underline{\hspace{2cm}}$$



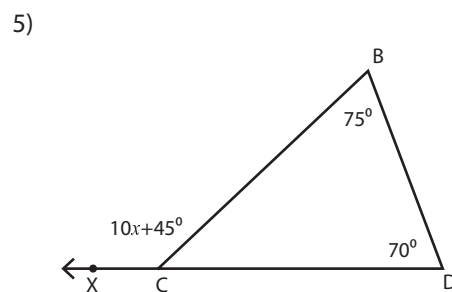
$$\angle PRX = \underline{\hspace{2cm}} ; x = \underline{\hspace{2cm}}$$



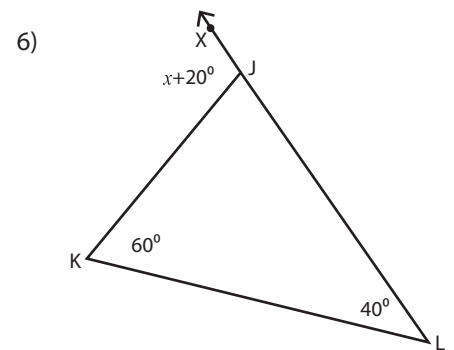
$$\angle DFX = \underline{\hspace{2cm}} ; x = \underline{\hspace{2cm}}$$



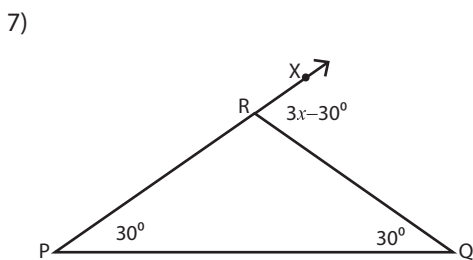
$$\angle TVX = \underline{\hspace{2cm}} ; x = \underline{\hspace{2cm}}$$



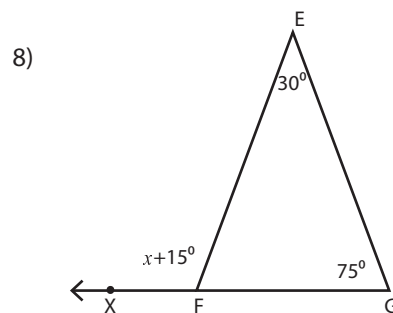
$$\angle BCX = \underline{\hspace{2cm}} ; x = \underline{\hspace{2cm}}$$



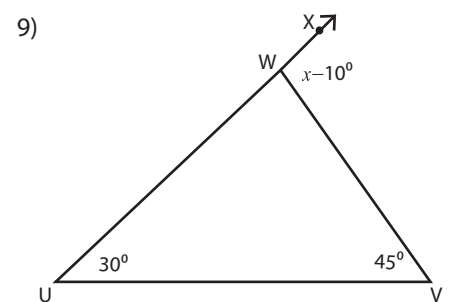
$$\angle KJX = \underline{\hspace{2cm}} ; x = \underline{\hspace{2cm}}$$



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



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

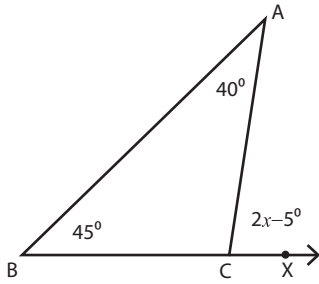


$$\angle VWX = \underline{\hspace{2cm}} ; x = \underline{\hspace{2cm}}$$

Triangle - Exterior Angle

ES1

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

$$\angle ACX = \angle A + \angle B = 40^\circ + 45^\circ = 85^\circ$$

$$\angle ACX = 2x - 5^\circ$$

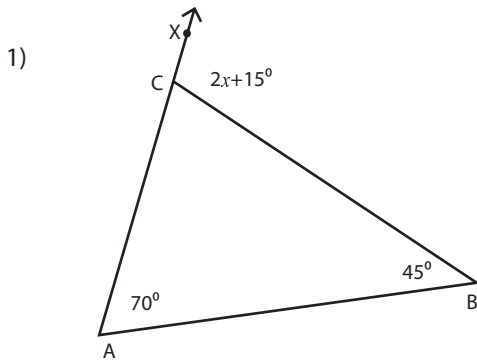
$$2x - 5^\circ = 85^\circ$$

$$2x = 85^\circ + 5^\circ$$

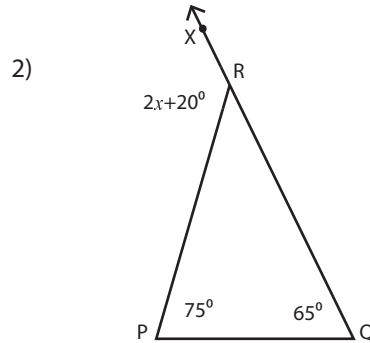
$$2x = 90^\circ$$

$$x = \frac{90^\circ}{2} = 45^\circ$$

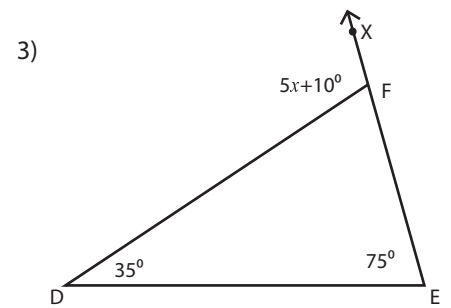
Find the unknown exterior angle and the value of x for each triangle.



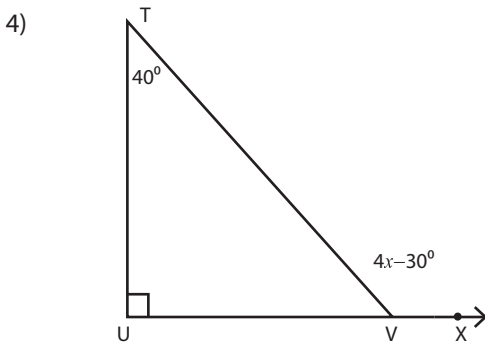
$$\angle BCX = 115^\circ ; x = 50^\circ$$



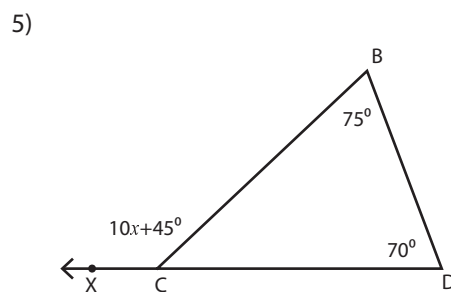
$$\angle PRX = 140^\circ ; x = 60^\circ$$



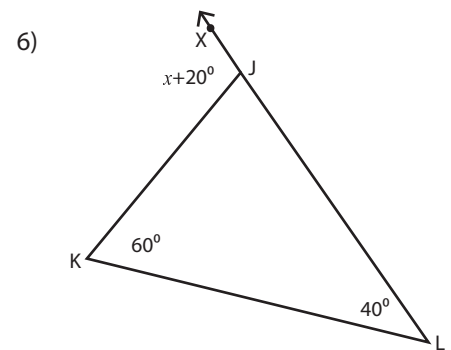
$$\angle DFX = 110^\circ ; x = 20^\circ$$



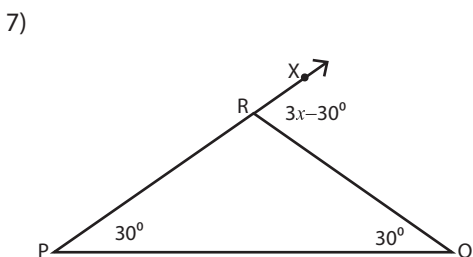
$$\angle TVX = 130^\circ ; x = 40^\circ$$



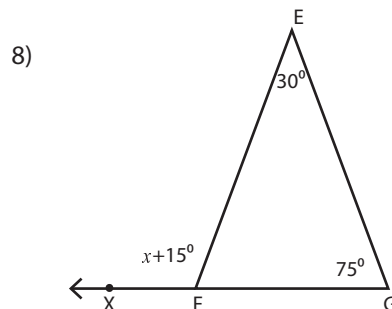
$$\angle BCX = 145^\circ ; x = 10^\circ$$



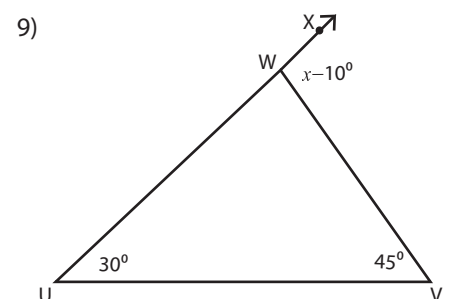
$$\angle KJX = 100^\circ ; x = 80^\circ$$



$$\angle QRX = 60^\circ ; x = 30^\circ$$



$$\angle EFX = 105^\circ ; x = 90^\circ$$

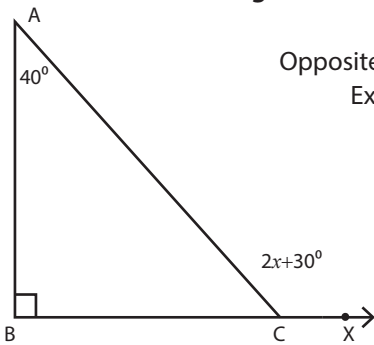


$$\angle VWX = 75^\circ ; x = 85^\circ$$

Triangle - Exterior Angle

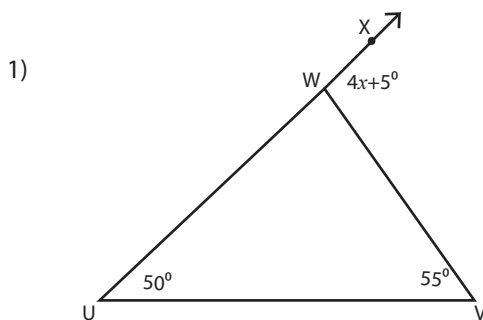
ES2

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

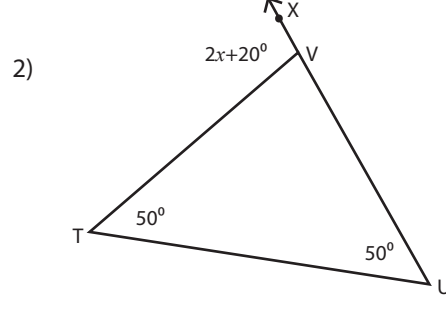


Exterior angle : $\angle ACX$
 Opposite interior angles : $\angle A$ and $\angle B$
 Exterior angle = Sum of opposite interior angles
 $\angle ACX = \angle A + \angle B = 40^\circ + 90^\circ = 130^\circ$
 $\angle ACX = 2x + 30^\circ$
 $2x + 30^\circ = 130^\circ$
 $2x = 130^\circ - 30^\circ$
 $2x = 100^\circ$
 $x = \frac{100^\circ}{2} = 50^\circ$

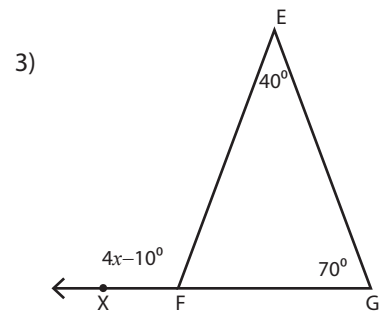
Find the unknown exterior angle and the value of x for each triangle.



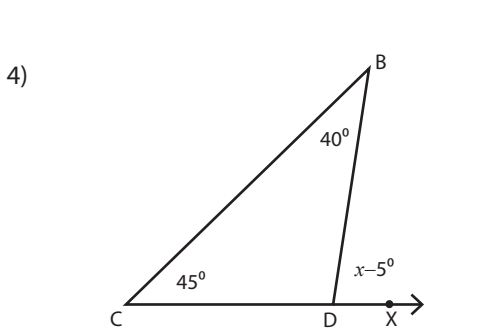
$\angle VWX = \underline{\hspace{2cm}}$; $x = \underline{\hspace{2cm}}$



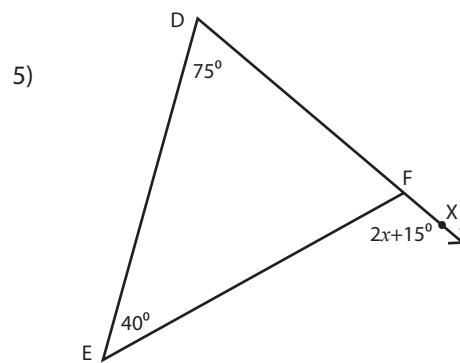
$\angle TVX = \underline{\hspace{2cm}}$; $x = \underline{\hspace{2cm}}$



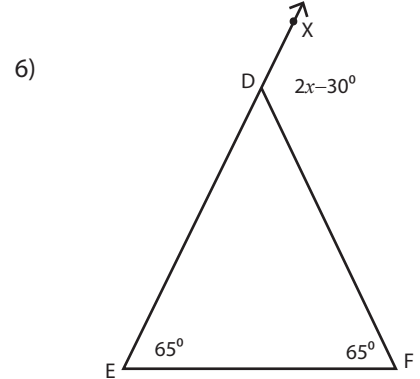
$\angle EFX = \underline{\hspace{2cm}}$; $x = \underline{\hspace{2cm}}$



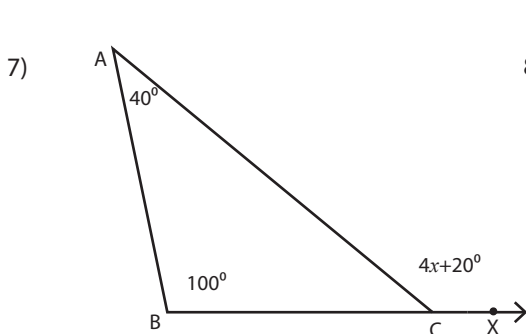
$\angle BDX = \underline{\hspace{2cm}}$; $x = \underline{\hspace{2cm}}$



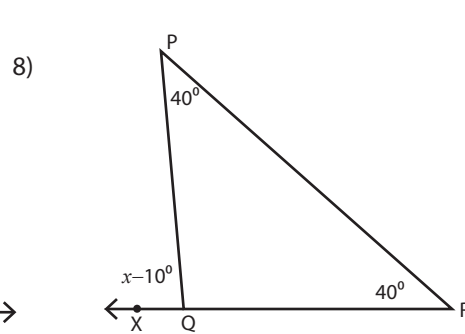
$\angle EFX = \underline{\hspace{2cm}}$; $x = \underline{\hspace{2cm}}$



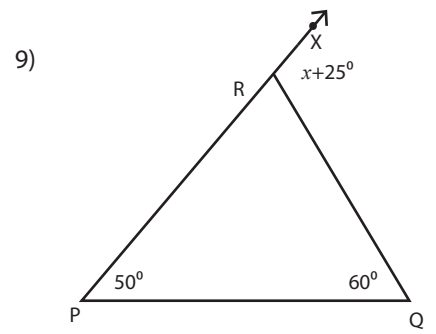
$\angle FDX = \underline{\hspace{2cm}}$; $x = \underline{\hspace{2cm}}$



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



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

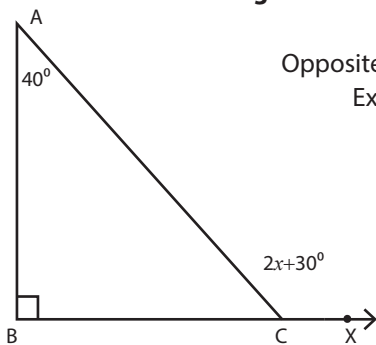


$\angle QRX = \underline{\hspace{2cm}}$; $x = \underline{\hspace{2cm}}$

Triangle - Exterior Angle

ES2

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

$$\angle ACX = \angle A + \angle B = 40^\circ + 90^\circ = 130^\circ$$

$$\angle ACX = 2x + 30^\circ$$

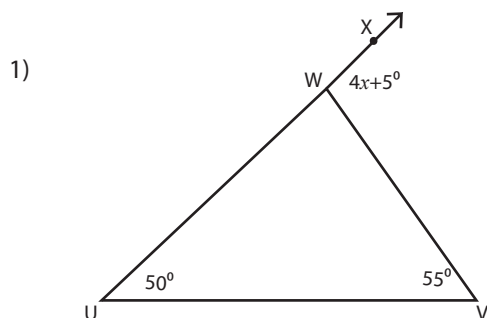
$$2x + 30^\circ = 130^\circ$$

$$2x = 130^\circ - 30^\circ$$

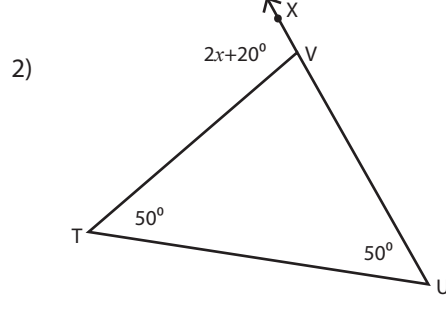
$$2x = 100^\circ$$

$$x = \frac{100^\circ}{2} = 50^\circ$$

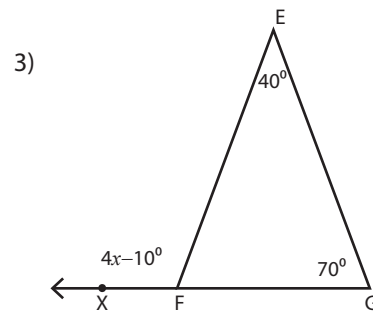
Find the unknown exterior angle and the value of x for each triangle.



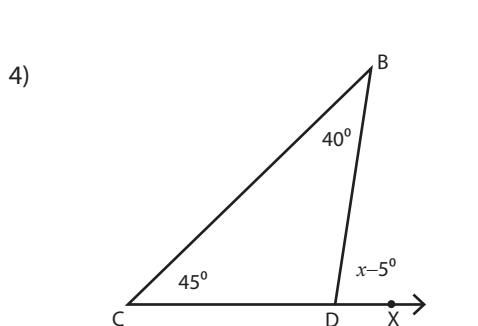
$$\angle VWX = 105^\circ ; x = 25^\circ$$



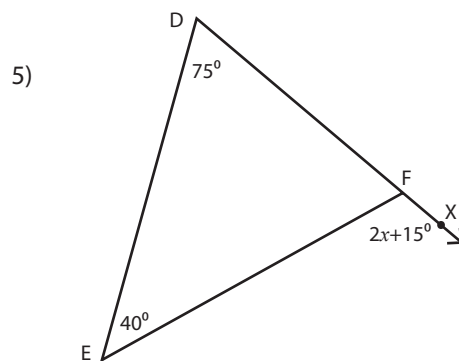
$$\angle TVX = 100^\circ ; x = 40^\circ$$



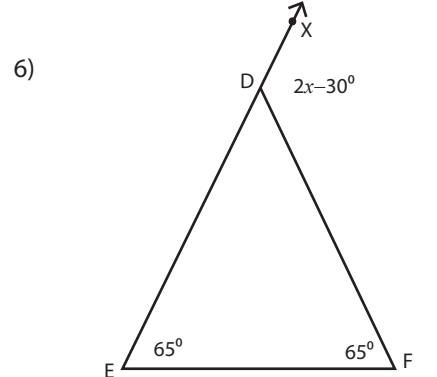
$$\angle EFX = 110^\circ ; x = 30^\circ$$



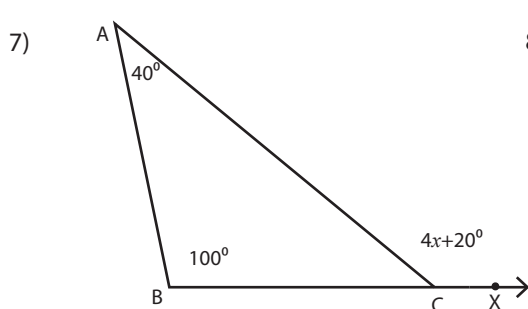
$$\angle BDX = 85^\circ ; x = 90^\circ$$



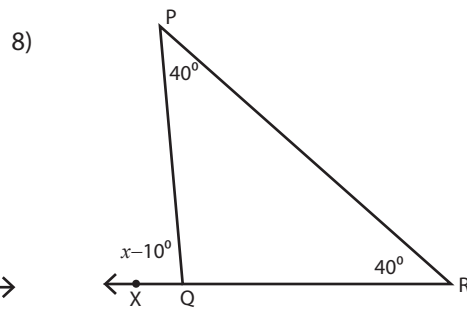
$$\angle EFX = 115^\circ ; x = 50^\circ$$



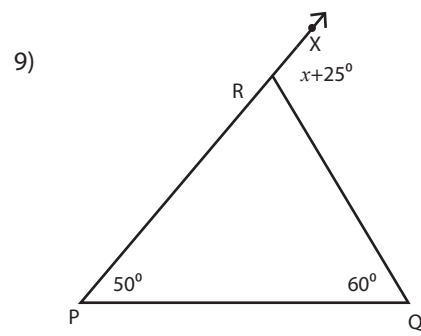
$$\angle FDX = 130^\circ ; x = 80^\circ$$



$$\angle ACX = 140^\circ ; x = 30^\circ$$



$$\angle PQX = 80^\circ ; x = 90^\circ$$

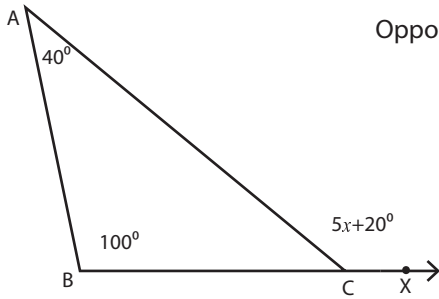


$$\angle QRX = 110^\circ ; x = 85^\circ$$

Triangle - Exterior Angle

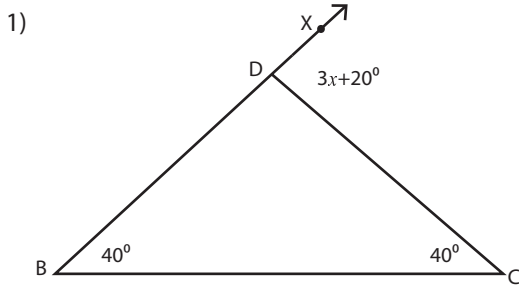
ES3

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

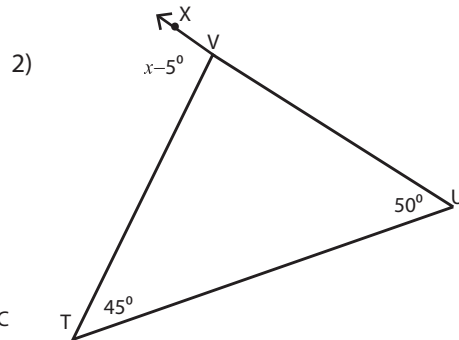


Exterior angle : $\angle ACX$
 Opposite interior angles : $\angle A$ and $\angle B$
 Exterior angle = Sum of opposite interior angles
 $\angle ACX = \angle A + \angle B = 100^\circ + 40^\circ = 140^\circ$
 $\angle ACX = 5x + 20^\circ$
 $5x + 20^\circ = 140^\circ$
 $5x = 140^\circ - 20^\circ$
 $5x = 120^\circ$
 $x = \frac{120^\circ}{5} = 24^\circ$

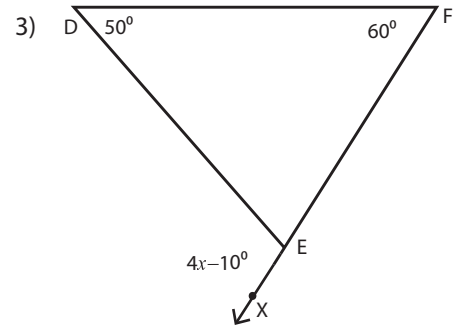
Find the unknown exterior angle and the value of x for each triangle.



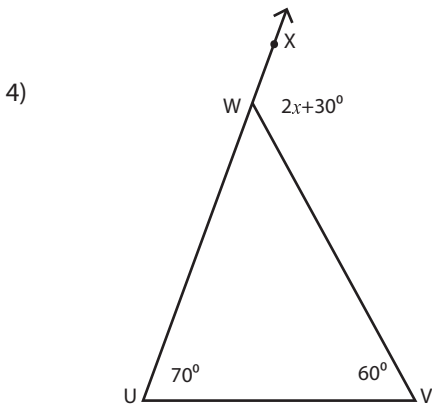
$\angle CDX = \underline{\hspace{2cm}}$; $x = \underline{\hspace{2cm}}$



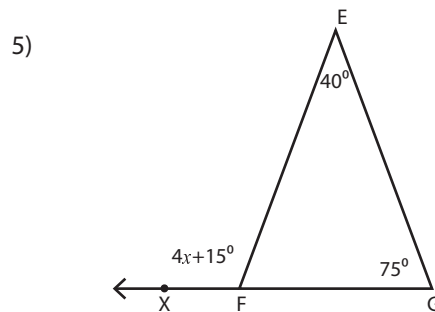
$\angle TVX = \underline{\hspace{2cm}}$; $x = \underline{\hspace{2cm}}$



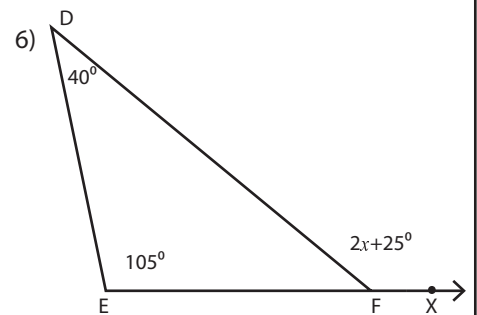
$\angle DEX = \underline{\hspace{2cm}}$; $x = \underline{\hspace{2cm}}$



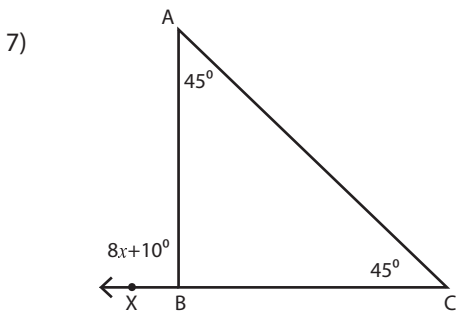
$\angle VWX = \underline{\hspace{2cm}}$; $x = \underline{\hspace{2cm}}$



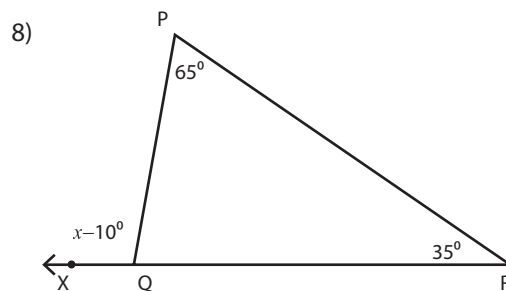
$\angle EFX = \underline{\hspace{2cm}}$; $x = \underline{\hspace{2cm}}$



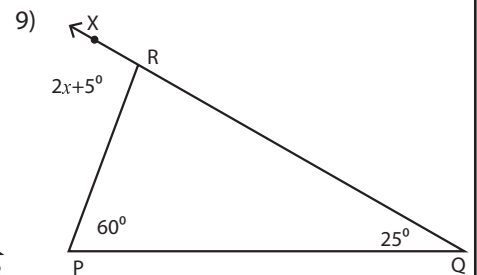
$\angle DFX = \underline{\hspace{2cm}}$; $x = \underline{\hspace{2cm}}$



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



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

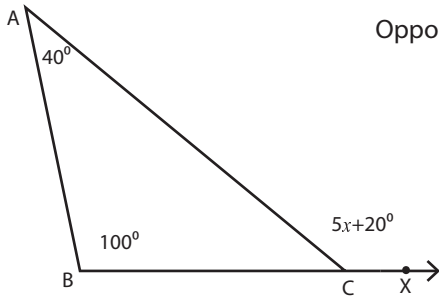


$\angle PRX = \underline{\hspace{2cm}}$; $x = \underline{\hspace{2cm}}$

Triangle - Exterior Angle

ES3

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

$$\angle ACX = \angle A + \angle B = 100^\circ + 40^\circ = 140^\circ$$

$$\angle ACX = 5x + 20^\circ$$

$$5x + 20^\circ = 140^\circ$$

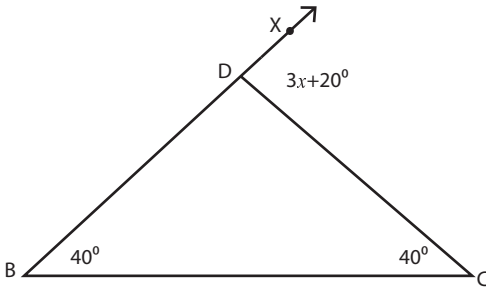
$$5x = 140^\circ - 20^\circ$$

$$5x = 120^\circ$$

$$x = \frac{120^\circ}{5} = 24^\circ$$

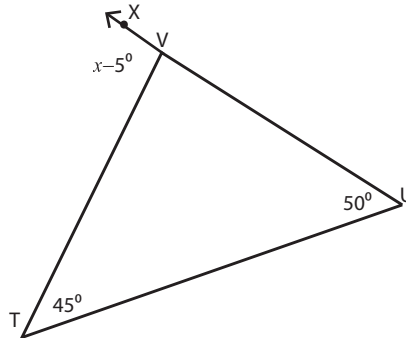
Find the unknown exterior angle and the value of x for each triangle.

1)



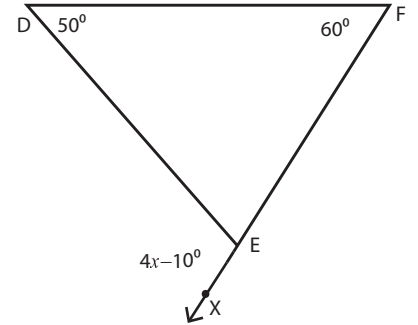
$$\angle CDX = 80^\circ ; x = 20^\circ$$

2)



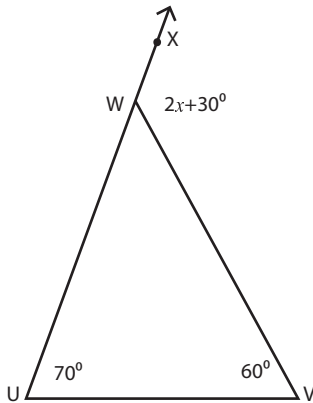
$$\angle TVX = 95^\circ ; x = 100^\circ$$

3)



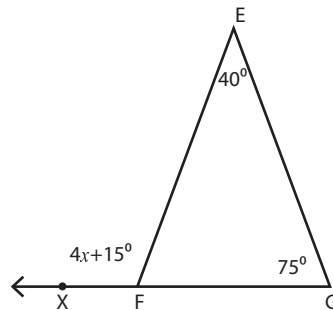
$$\angle DEX = 110^\circ ; x = 30^\circ$$

4)



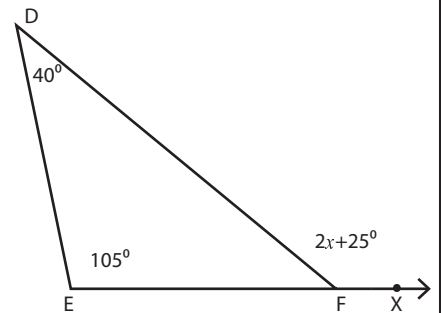
$$\angle VWX = 130^\circ ; x = 50^\circ$$

5)



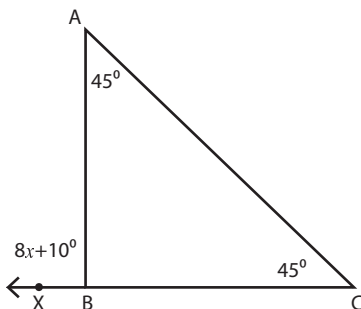
$$\angle EFX = 115^\circ ; x = 25^\circ$$

6)



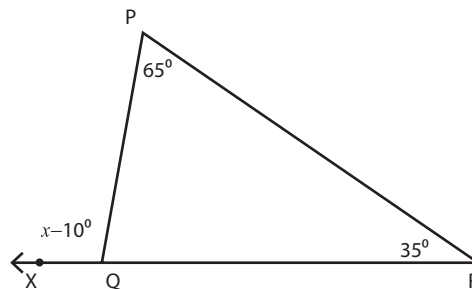
$$\angle DFX = 145^\circ ; x = 60^\circ$$

7)



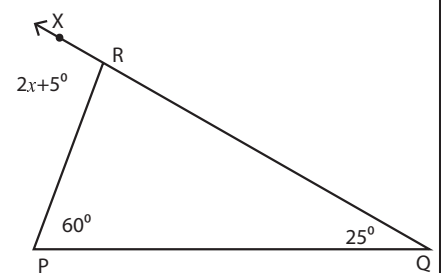
$$\angle ABX = 90^\circ ; x = 10^\circ$$

8)



$$\angle PQX = 100^\circ ; x = 110^\circ$$

9)



$$\angle PRX = 85^\circ ; x = 40^\circ$$

Triangle - Exterior Angle

MS1

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

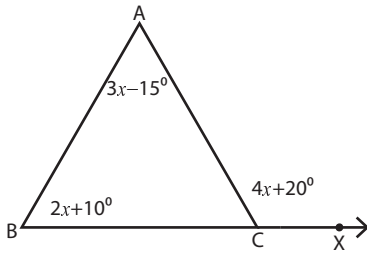
$$\angle ACX = \angle A + \angle B$$

$$4x + 20^\circ = 2x + 10^\circ + 3x - 15^\circ$$

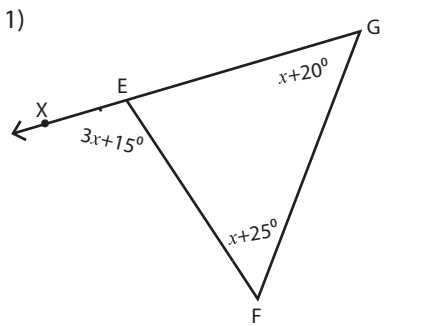
$$4x + 20^\circ = 5x - 5^\circ$$

$$5x - 4x = 20^\circ + 5^\circ$$

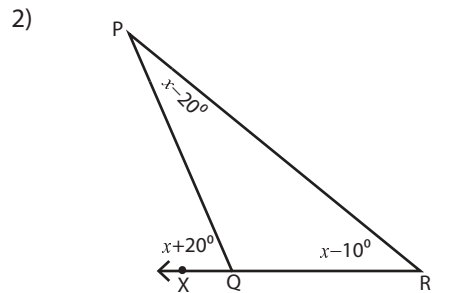
$$x = 25^\circ, \angle ACX = 4 \times 25^\circ + 20^\circ = 120^\circ$$



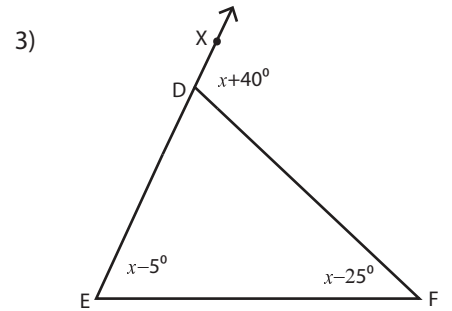
Find the value of x and unknown exterior angle for each triangle.



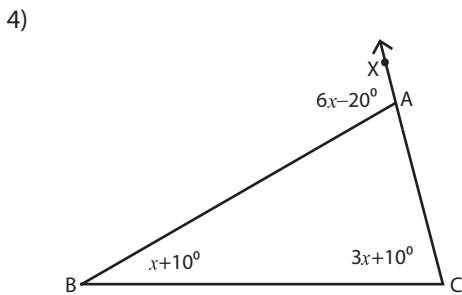
$x = \underline{\hspace{2cm}}$; $\angle FEX = \underline{\hspace{2cm}}$



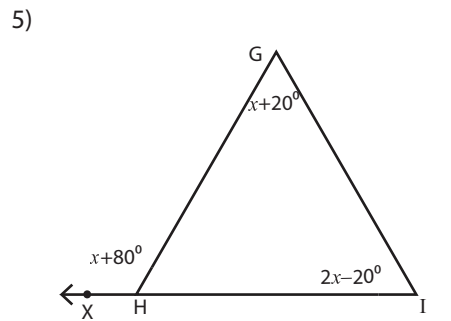
$x = \underline{\hspace{2cm}}$; $\angle PQX = \underline{\hspace{2cm}}$



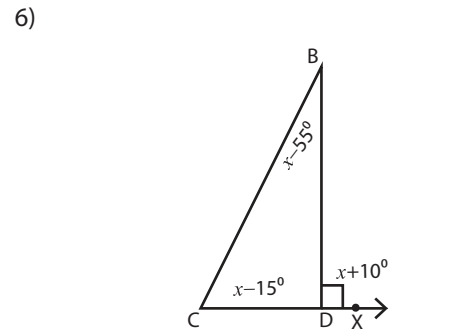
$x = \underline{\hspace{2cm}}$; $\angle FDX = \underline{\hspace{2cm}}$



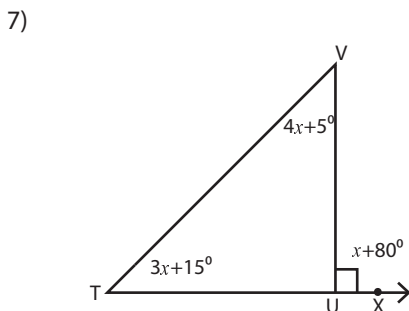
$x = \underline{\hspace{2cm}}$; $\angle BAX = \underline{\hspace{2cm}}$



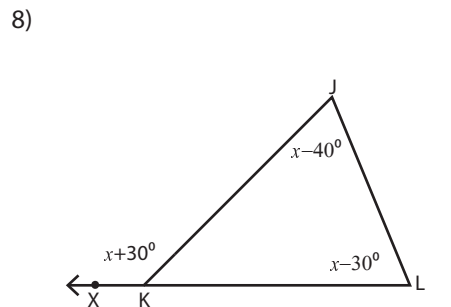
$x = \underline{\hspace{2cm}}$; $\angle GHX = \underline{\hspace{2cm}}$



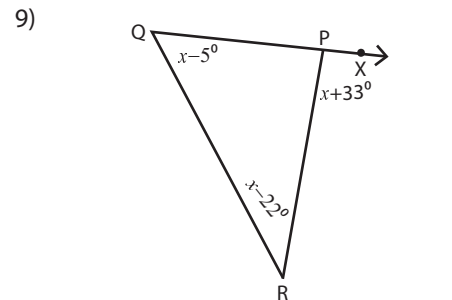
$x = \underline{\hspace{2cm}}$; $\angle BDX = \underline{\hspace{2cm}}$



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



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



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

Triangle - Exterior Angle

MS1

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

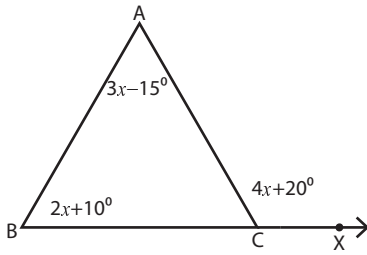
$$\angle ACX = \angle A + \angle B$$

$$4x+20^\circ = 2x+10^\circ + 3x-15^\circ$$

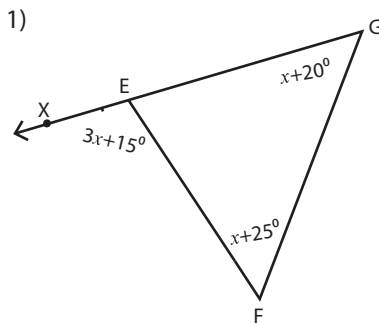
$$4x+20^\circ = 5x-5^\circ$$

$$5x-4x = 20^\circ + 5^\circ$$

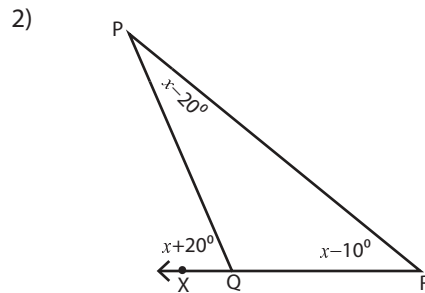
$$x = 25^\circ, \angle ACX = 4 \times 25^\circ + 20^\circ = 120^\circ$$



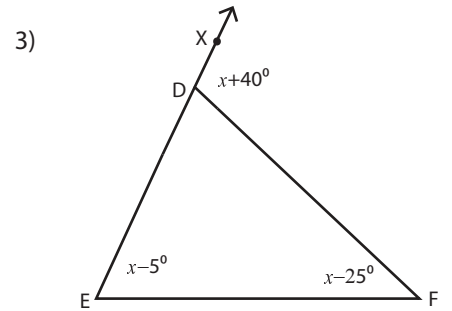
Find the value of x and unknown exterior angle for each triangle.



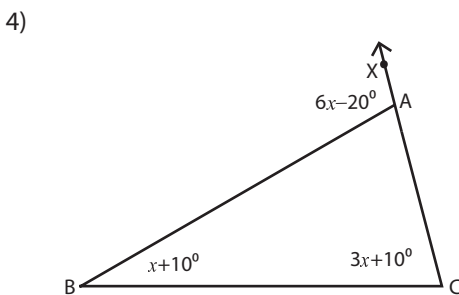
$$x = 30^\circ ; \angle FEX = 105^\circ$$



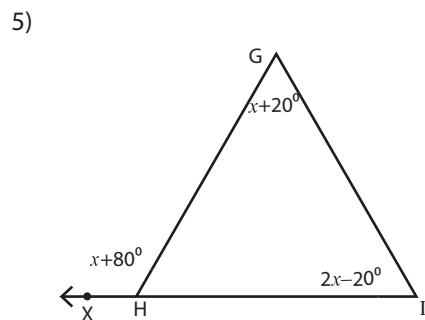
$$x = 50^\circ ; \angle PQX = 70^\circ$$



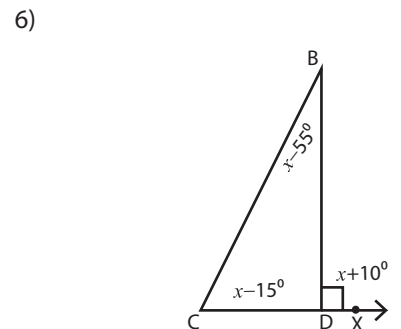
$$x = 70^\circ ; \angle FDX = 110^\circ$$



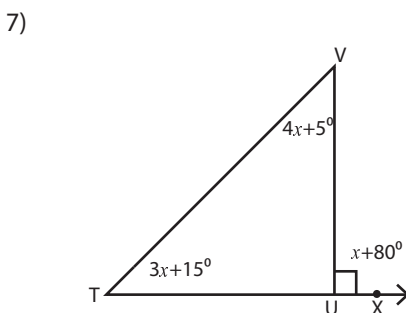
$$x = 20^\circ ; \angle BAX = 100^\circ$$



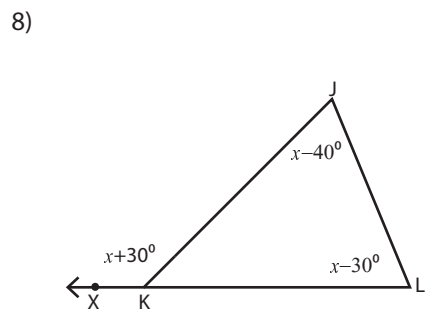
$$x = 40^\circ ; \angle GHX = 120^\circ$$



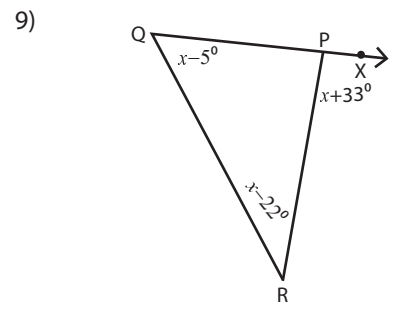
$$x = 80^\circ ; \angle BDX = 90^\circ$$



$$x = 10^\circ ; \angle VUX = 90^\circ$$



$$x = 100^\circ ; \angle JKX = 130^\circ$$

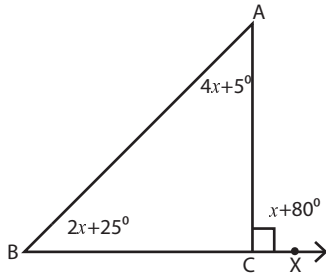


$$x = 60^\circ ; \angle RPX = 93^\circ$$

Triangle - Exterior Angle

MS2

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

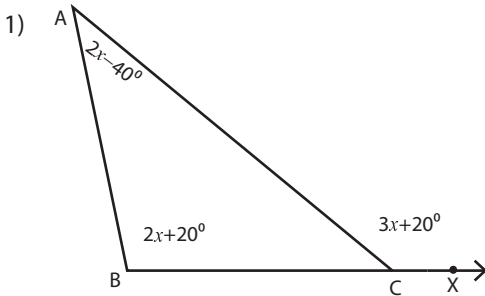


Exterior angle : $\angle ACX$
 Opposite interior angles : $\angle A$ and $\angle B$

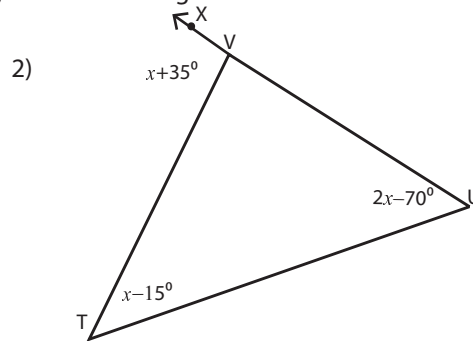
Exterior angle = Sum of opposite interior angles

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

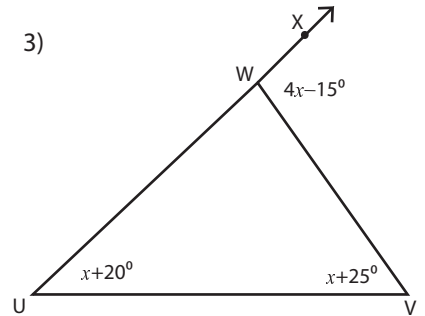
Find the value of x and unknown exterior angle for each triangle.



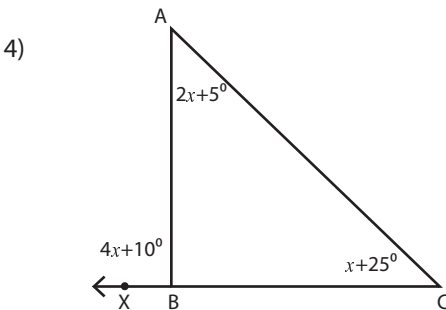
$x = \underline{\hspace{2cm}}$; $\angle ACX = \underline{\hspace{2cm}}$



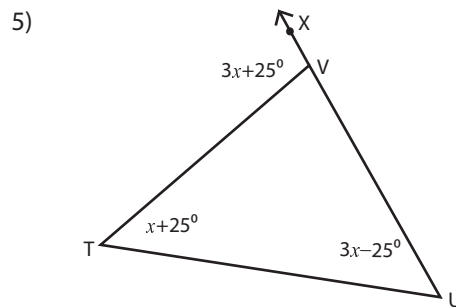
$x = \underline{\hspace{2cm}}$; $\angle TVX = \underline{\hspace{2cm}}$



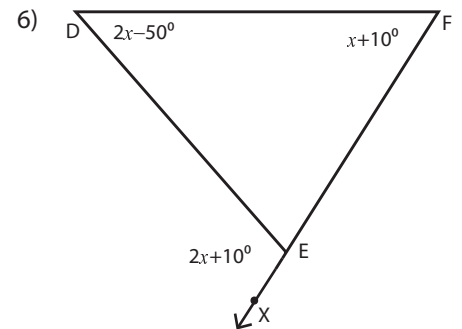
$x = \underline{\hspace{2cm}}$; $\angle VWX = \underline{\hspace{2cm}}$



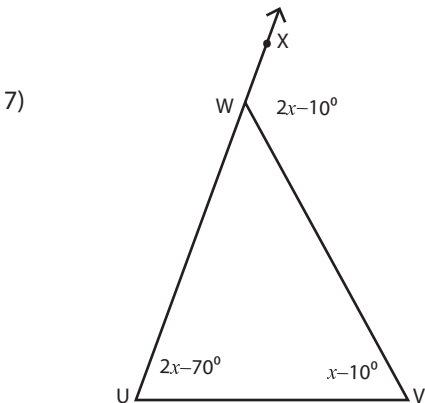
$x = \underline{\hspace{2cm}}$; $\angle ABX = \underline{\hspace{2cm}}$



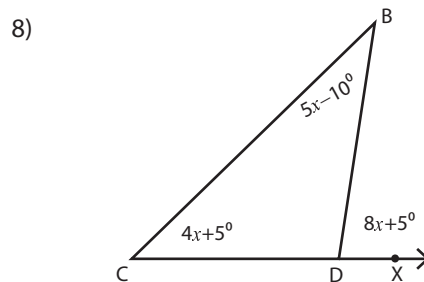
$x = \underline{\hspace{2cm}}$; $\angle TVX = \underline{\hspace{2cm}}$



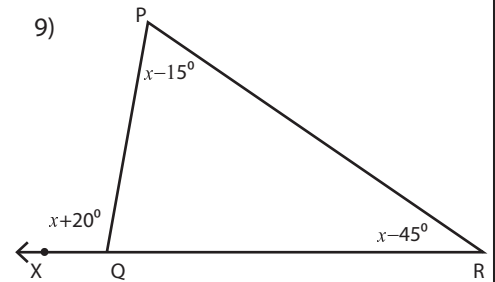
$x = \underline{\hspace{2cm}}$; $\angle DEX = \underline{\hspace{2cm}}$



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



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

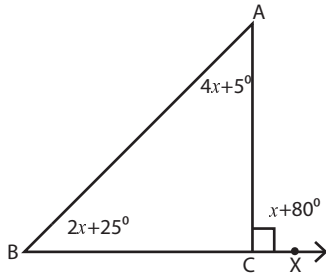


$x = \underline{\hspace{2cm}}$; $\angle PQX = \underline{\hspace{2cm}}$

Triangle - Exterior Angle

MS2

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

$$\angle ACX = \angle A + \angle B$$

$$x+80^\circ = 2x+25^\circ+4x+5^\circ$$

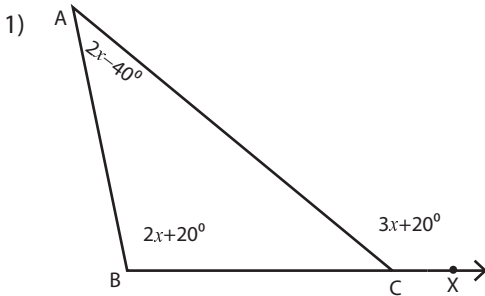
$$x+80^\circ = 6x+30^\circ$$

$$6x - x = 80^\circ - 30^\circ$$

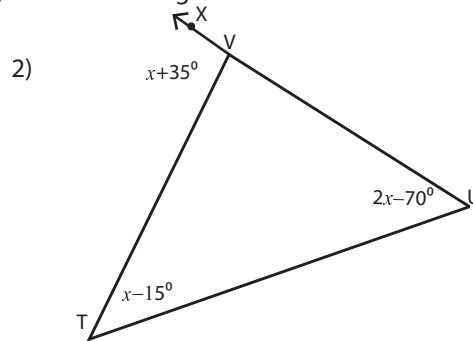
$$5x = 50^\circ$$

$$x = \frac{50^\circ}{5} = 10^\circ, \angle ACX = 10^\circ+80^\circ = 90^\circ$$

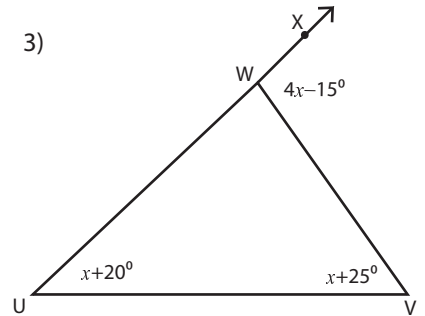
Find the value of x and unknown exterior angle for each triangle.



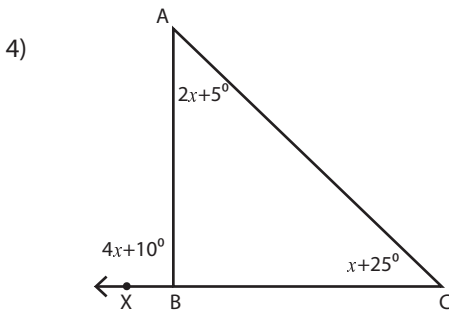
$$x = 40^\circ ; \angle ACX = 140^\circ$$



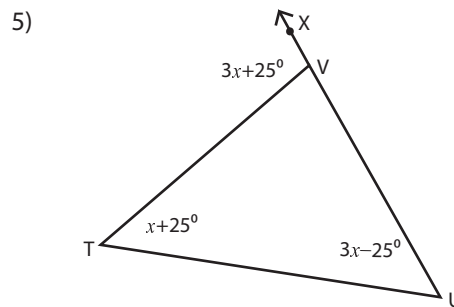
$$x = 60^\circ ; \angle TVX = 95^\circ$$



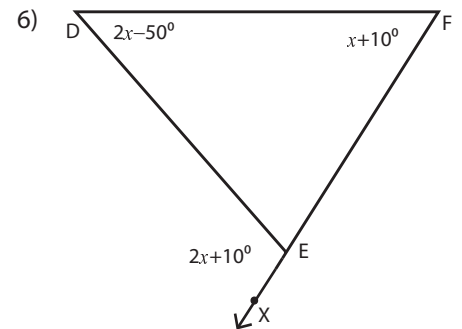
$$x = 30^\circ ; \angle VWX = 105^\circ$$



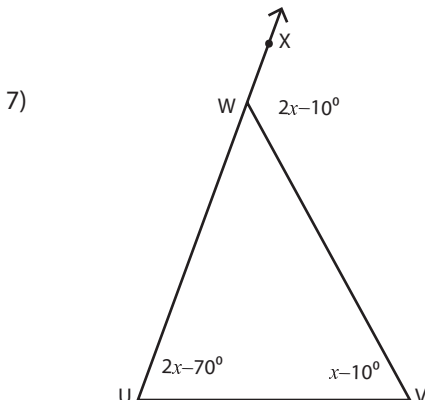
$$x = 20^\circ ; \angle ABX = 90^\circ$$



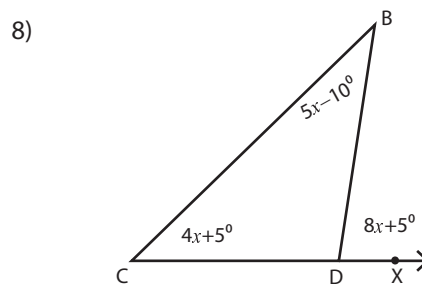
$$x = 25^\circ ; \angle TVX = 100^\circ$$



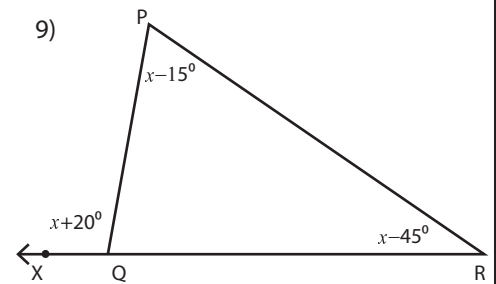
$$x = 50^\circ ; \angle DEX = 110^\circ$$



$$x = 70^\circ ; \angle VWX = 130^\circ$$



$$x = 10^\circ ; \angle BDX = 85^\circ$$

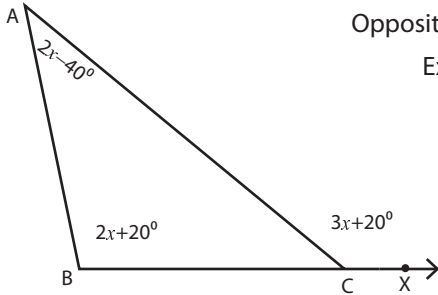


$$x = 80^\circ ; \angle PQX = 100^\circ$$

Triangle - Exterior Angle

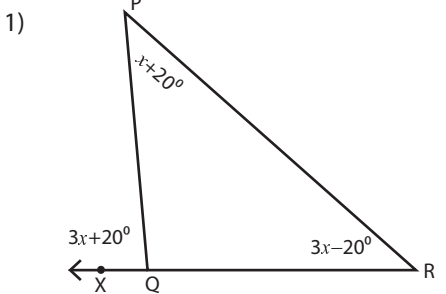
MS3

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

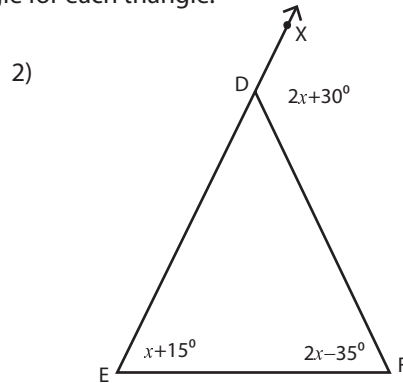


Exterior angle : $\angle ACX$
 Opposite interior angles : $\angle A$ and $\angle B$
 Exterior angle = Sum of opposite interior angles
 $\angle ACX = \angle A + \angle B$
 $3x + 20^\circ = 2x - 40^\circ + 2x + 20^\circ$
 $3x + 20^\circ = 4x - 20^\circ$
 $4x - 3x = 20^\circ + 20^\circ$
 $x = 40^\circ$
 $\angle ACX = 3 \times 40^\circ + 20^\circ = 140^\circ$

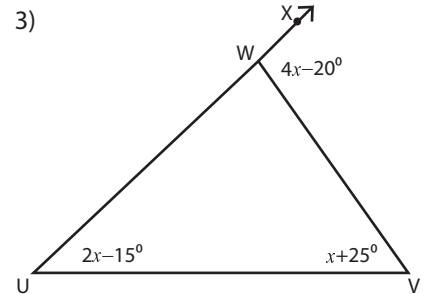
Find the value of x and unknown exterior angle for each triangle.



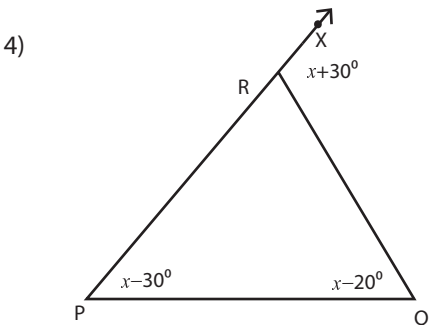
$x = \underline{\hspace{2cm}}$; $\angle PQX = \underline{\hspace{2cm}}$



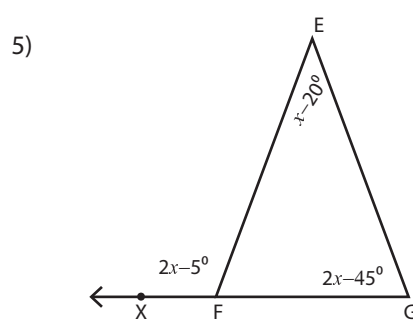
$x = \underline{\hspace{2cm}}$; $\angle FDX = \underline{\hspace{2cm}}$



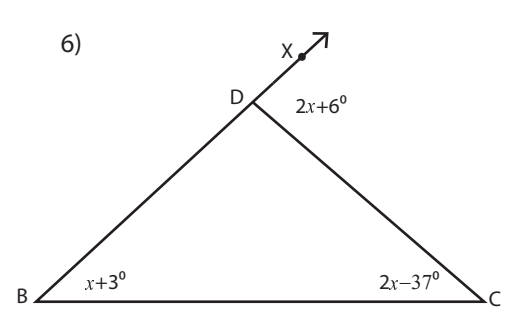
$x = \underline{\hspace{2cm}}$; $\angle VWX = \underline{\hspace{2cm}}$



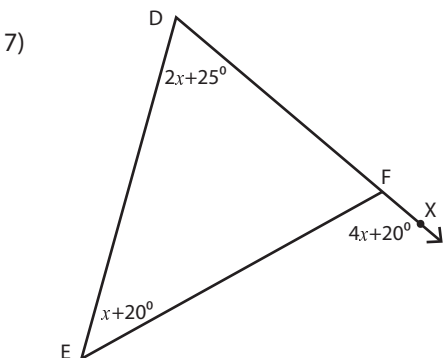
$x = \underline{\hspace{2cm}}$; $\angle QRX = \underline{\hspace{2cm}}$



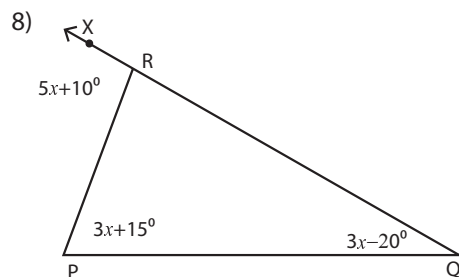
$x = \underline{\hspace{2cm}}$; $\angle EFX = \underline{\hspace{2cm}}$



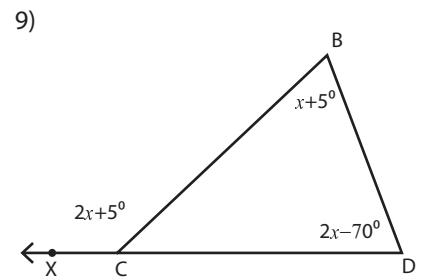
$x = \underline{\hspace{2cm}}$; $\angle CDX = \underline{\hspace{2cm}}$



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



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

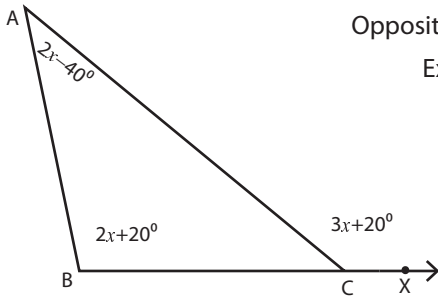


$x = \underline{\hspace{2cm}}$; $\angle BCX = \underline{\hspace{2cm}}$

Triangle - Exterior Angle

MS3

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

$$\angle ACX = \angle A + \angle B$$

$$3x+20^\circ = 2x-40^\circ + 2x+20^\circ$$

$$3x+20^\circ = 4x-20^\circ$$

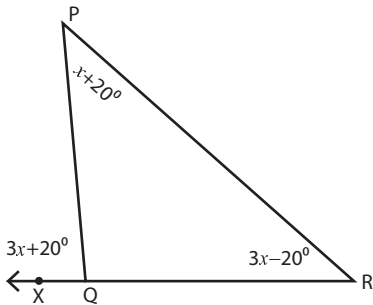
$$4x - 3x = 20^\circ + 20^\circ$$

$$x = 40^\circ$$

$$\angle ACX = 3 \times 40^\circ + 20^\circ = 140^\circ$$

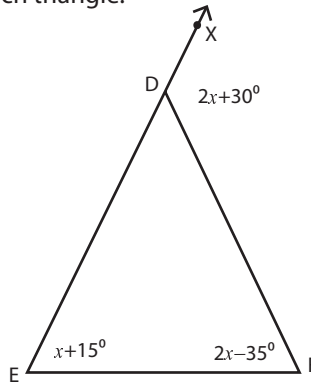
Find the value of x and unknown exterior angle for each triangle.

1)



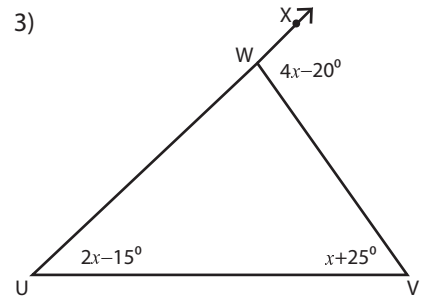
$$x = 80^\circ ; \angle PQX = 80^\circ$$

2)



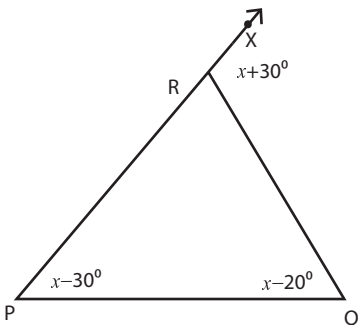
$$x = 50^\circ ; \angle FDX = 130^\circ$$

3)



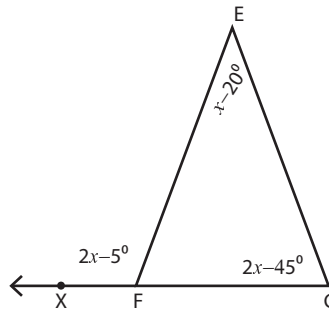
$$x = 30^\circ ; \angle VWX = 100^\circ$$

4)



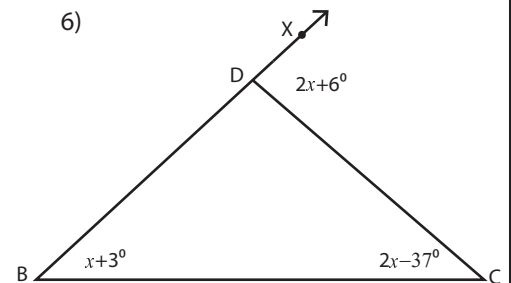
$$x = 80^\circ ; \angle QRX = 110^\circ$$

5)



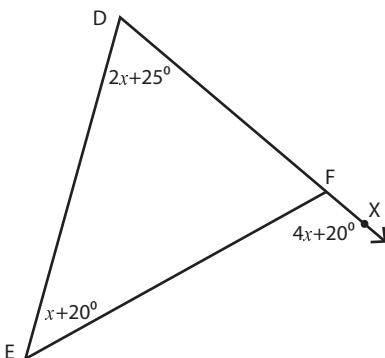
$$x = 60^\circ ; \angle EFX = 115^\circ$$

6)



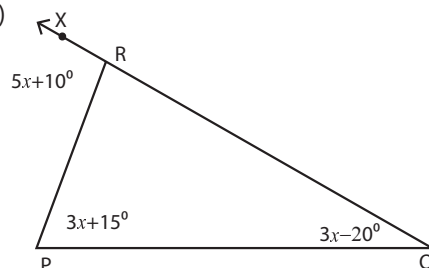
$$x = 40^\circ ; \angle CDX = 86^\circ$$

7)



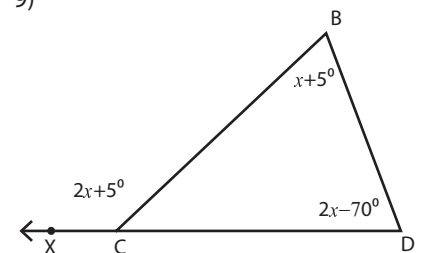
$$x = 25^\circ ; \angle EFX = 120^\circ$$

8)



$$x = 15^\circ ; \angle PRX = 85^\circ$$

9)



$$x = 70^\circ ; \angle BCX = 145^\circ$$