

## **7.2 Complementary and Supplementary Angles**



# Key Ideas

## Complementary Angles

**Words** Two angles are **complementary angles** when the sum of their measures is  $90^\circ$ .

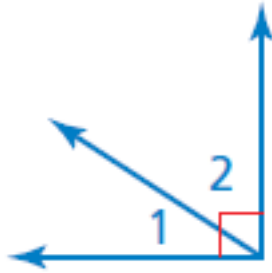
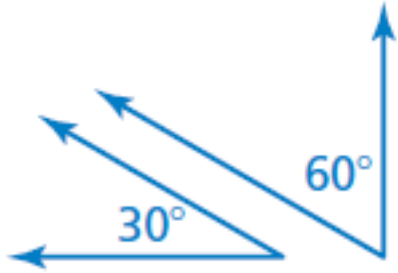


# Key Ideas

## Complementary Angles

**Words** Two angles are **complementary angles** when the sum of their measures is  $90^\circ$ .

### Examples



$\angle 1$  and  $\angle 2$  are complementary angles.

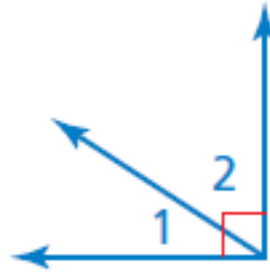
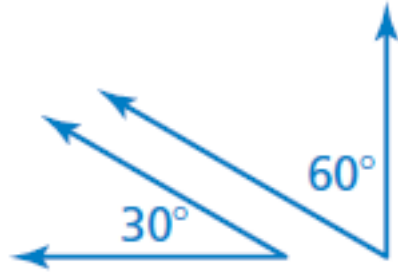


# Key Ideas

## Complementary Angles

**Words** Two angles are **complementary angles** when the sum of their measures is  $90^\circ$ .

### Examples



$\angle 1$  and  $\angle 2$  are complementary angles.

## Supplementary Angles

**Words** Two angles are **supplementary angles** when the sum of their measures is  $180^\circ$ .

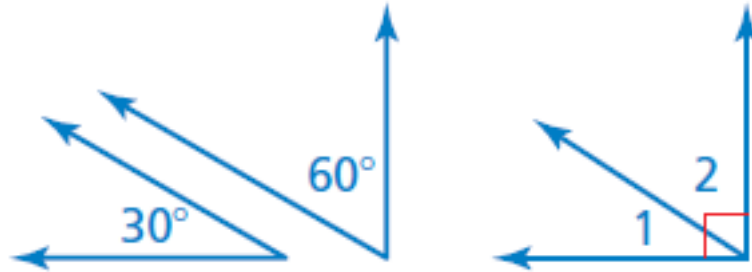


# Key Ideas

## Complementary Angles

**Words** Two angles are **complementary angles** when the sum of their measures is  $90^\circ$ .

### Examples



$\angle 1$  and  $\angle 2$  are complementary angles.

## Supplementary Angles

**Words** Two angles are **supplementary angles** when the sum of their measures is  $180^\circ$ .

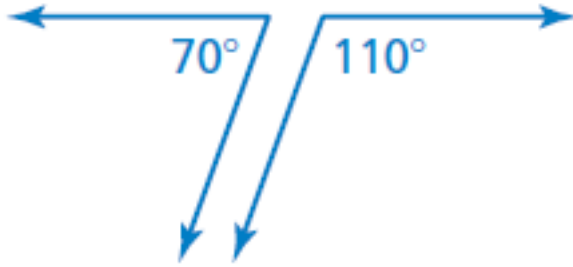
### Examples



$\angle 3$  and  $\angle 4$  are supplementary angles.

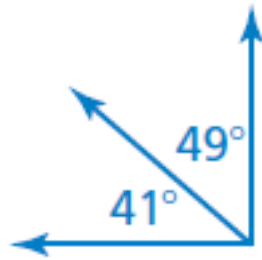
**EXAMPLE****1****Classifying Pairs of Angles**

Tell whether the angles are *complementary*, *supplementary*, or *neither*.

**a.**

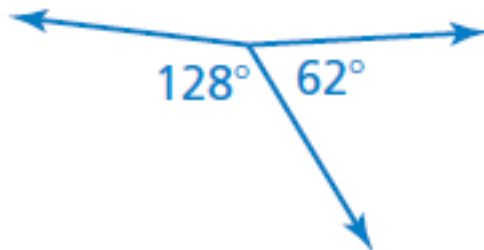
$$70^\circ + 110^\circ = 180^\circ$$

Supplementary

**b.**

$$41^\circ + 49^\circ = 90^\circ$$

Complementary

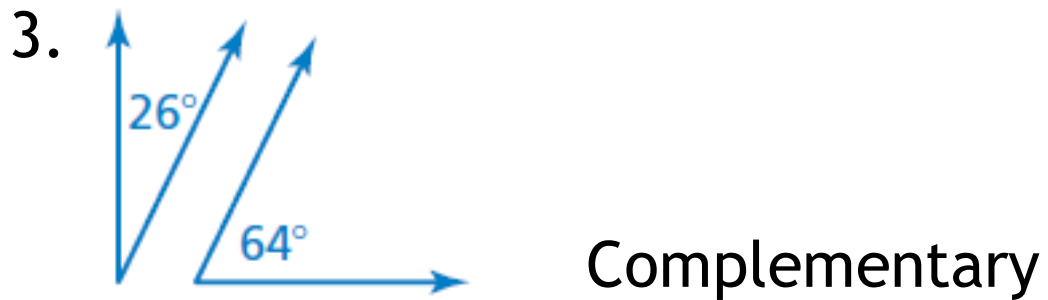
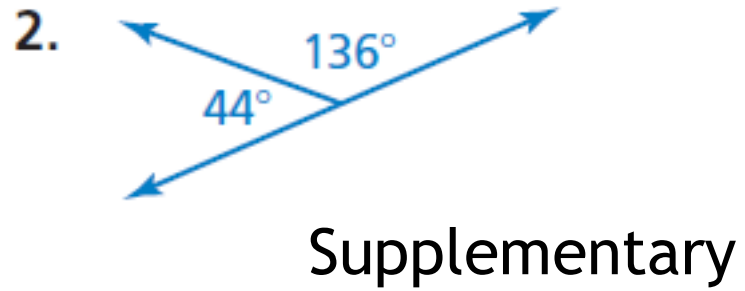
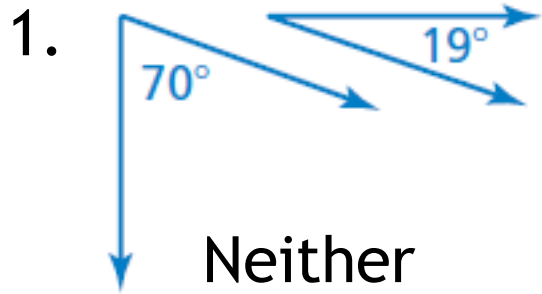
**c.**

$$128^\circ + 62^\circ = 190^\circ$$

Neither

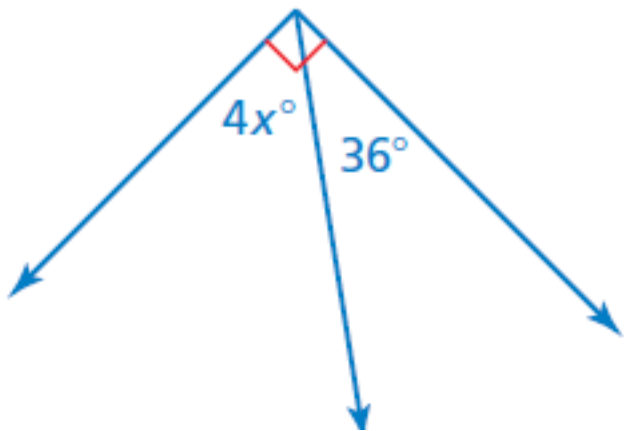
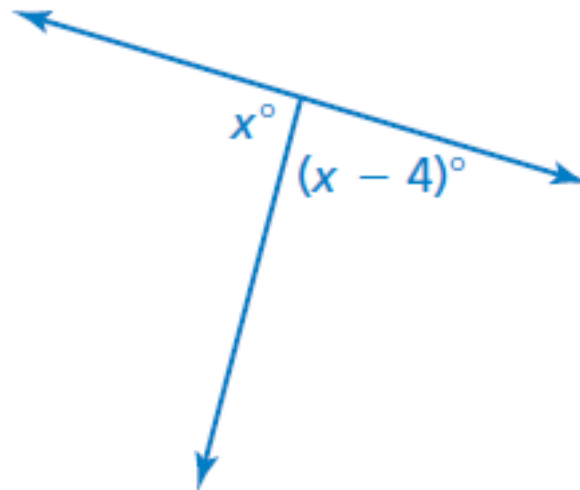
## On Your Own

Tell whether the angles are *complementary*, *supplementary*, or *neither*.



**EXAMPLE****2****Using Complementary and Supplementary Angles**

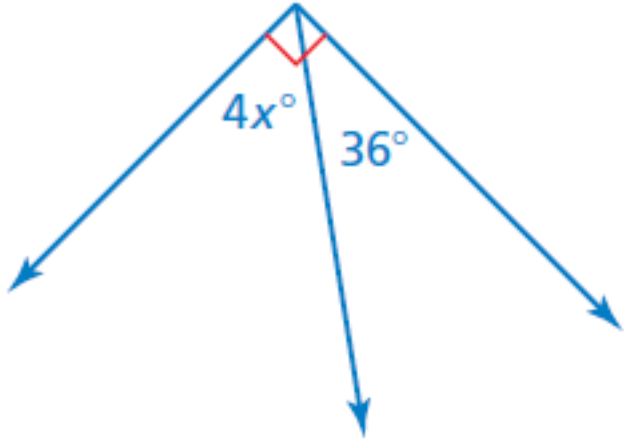
Tell whether the angles are *complementary* or *supplementary*.  
Then find the value of  $x$ .

**a.****b.**

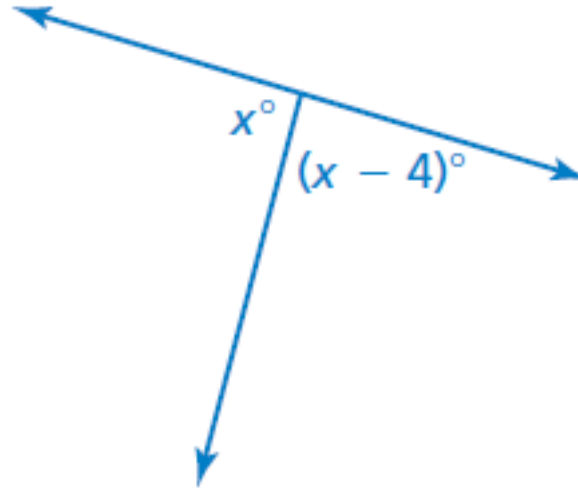


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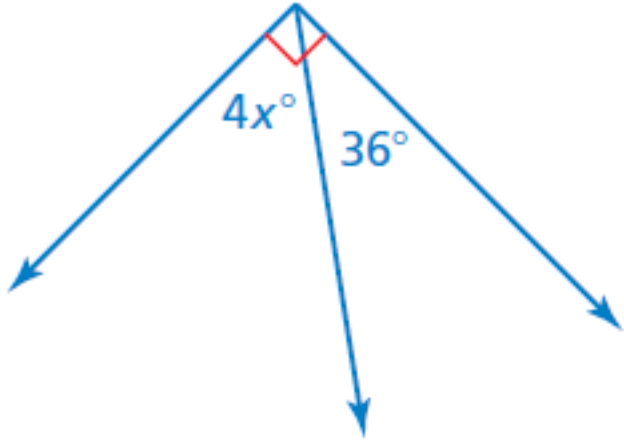
**a.**

The two angles make up a right angle.  
So, the angles are complementary and  
the sum of their measures is  $90^\circ$ .

**b.**

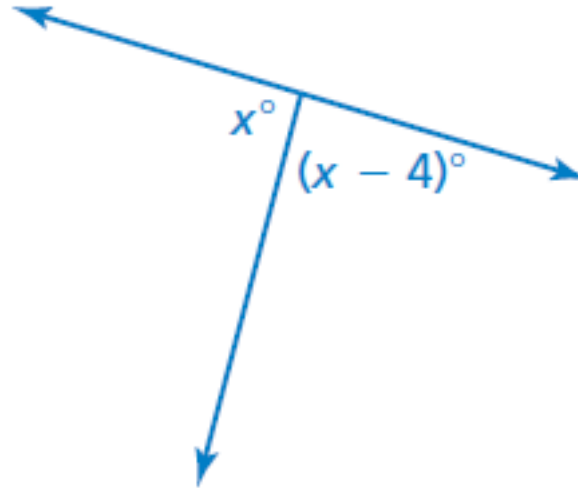
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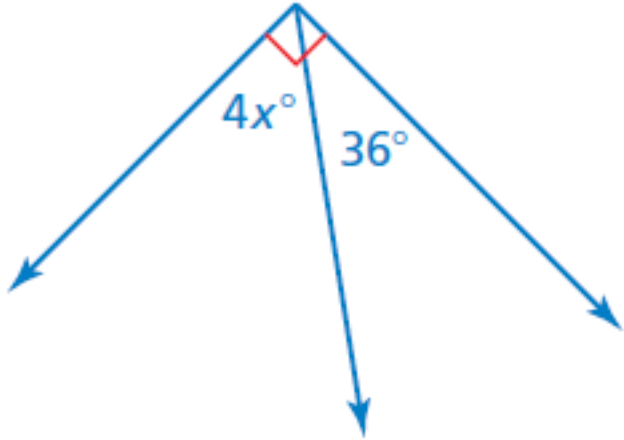
The two angles make up a right angle.  
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$$4x + 36 = 90$$

**b.**

**EXAMPLE****2****Using Complementary and Supplementary Angles**

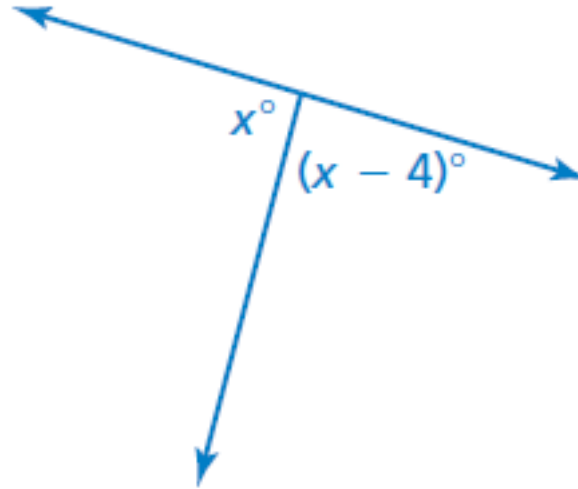
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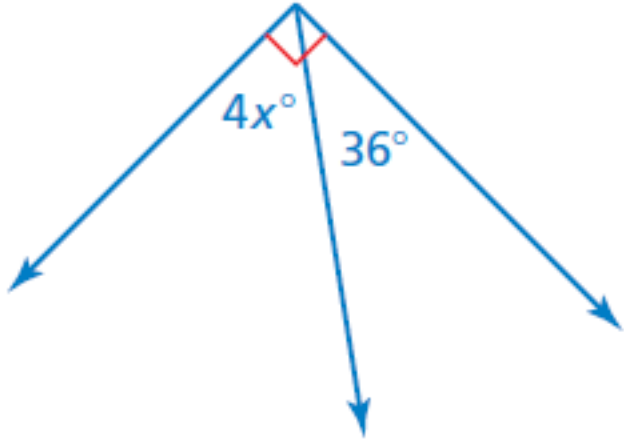
$$4x + 36 = 90$$

$$4x = 54$$

**b.**

**EXAMPLE****2****Using Complementary and Supplementary Angles**

Tell whether the angles are *complementary* or *supplementary*.  
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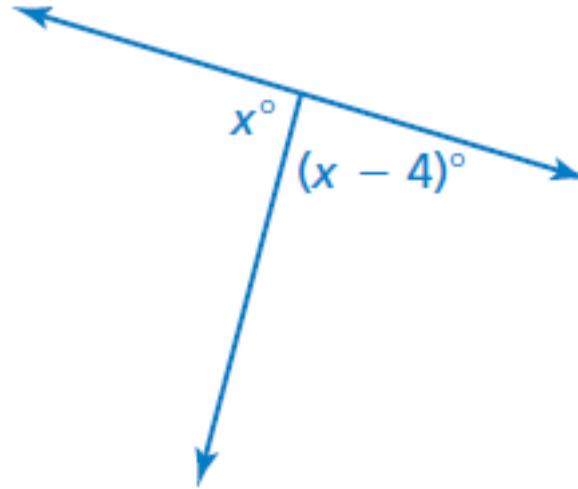
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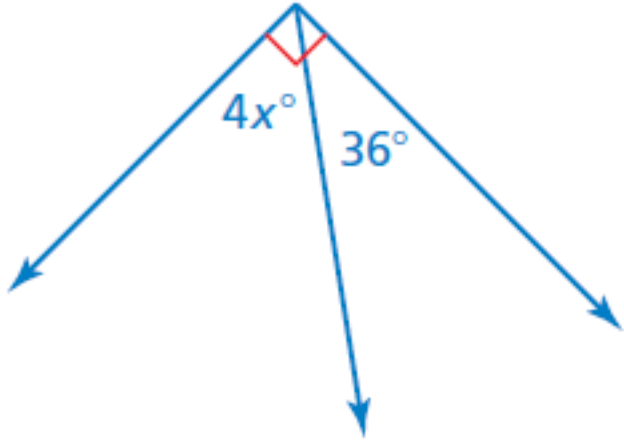
$$4x = 54$$

$$x = 13.5$$

**b.**

**EXAMPLE****2****Using Complementary and Supplementary Angles**

Tell whether the angles are *complementary* or *supplementary*.  
Then find the value of  $x$ .

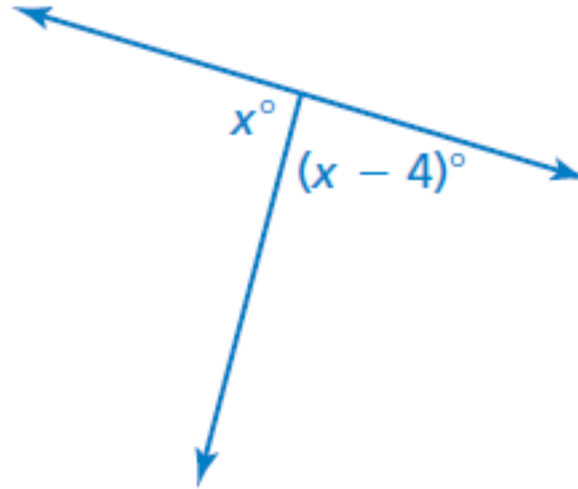
**a.**

The two angles make up a right angle.  
So, the angles are complementary and  
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$$4x + 36 = 90$$

$$4x = 54$$

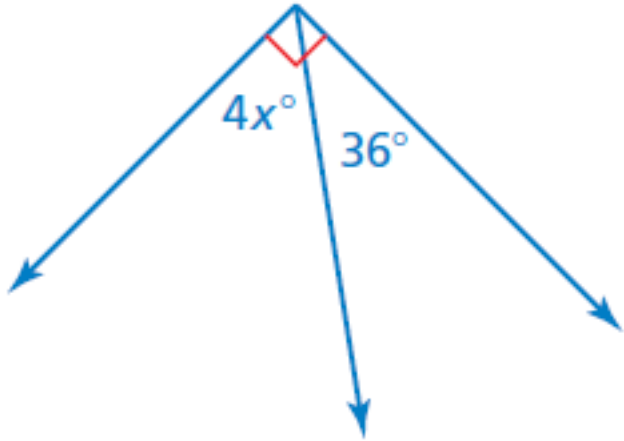
$$x = 13.5$$

**b.**

The two angles make up a straight angle.  
So, the angles are supplementary and  
the sum of their measures is  $180^\circ$ .

**EXAMPLE****2****Using Complementary and Supplementary Angles**

Tell whether the angles are *complementary* or *supplementary*.  
Then find the value of  $x$ .

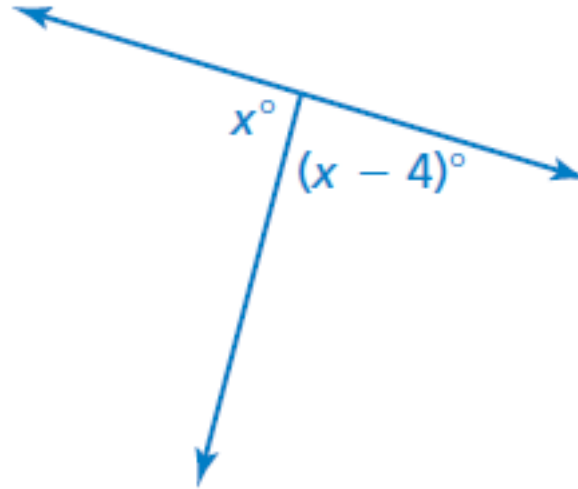
**a.**

The two angles make up a right angle.  
So, the angles are complementary and  
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$$4x + 36 = 90$$

$$4x = 54$$

$$x = 13.5$$

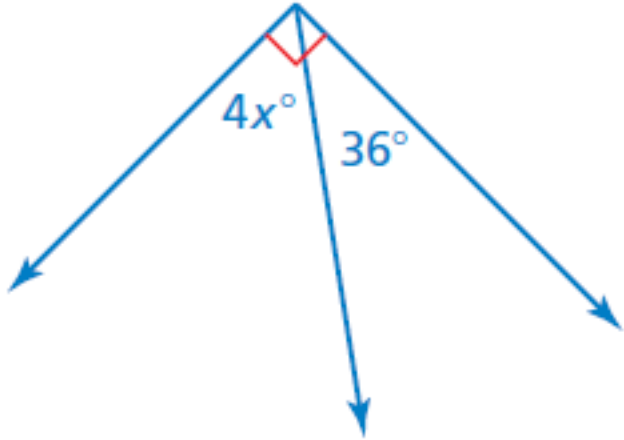
**b.**

The two angles make up a straight angle.  
So, the angles are supplementary and  
the sum of their measures is  $180^\circ$ .

$$x + (x - 4) = 180$$

**EXAMPLE****2****Using Complementary and Supplementary Angles**

Tell whether the angles are *complementary* or *supplementary*.  
Then find the value of  $x$ .

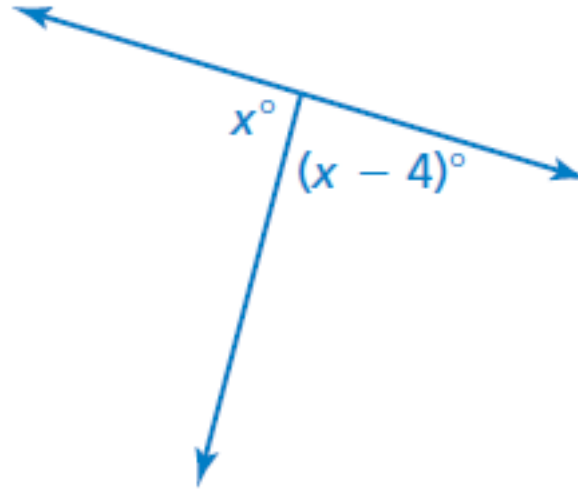
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The two angles make up a right angle.  
So, the angles are complementary and  
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$$4x + 36 = 90$$

$$4x = 54$$

$$x = 13.5$$

**b.**

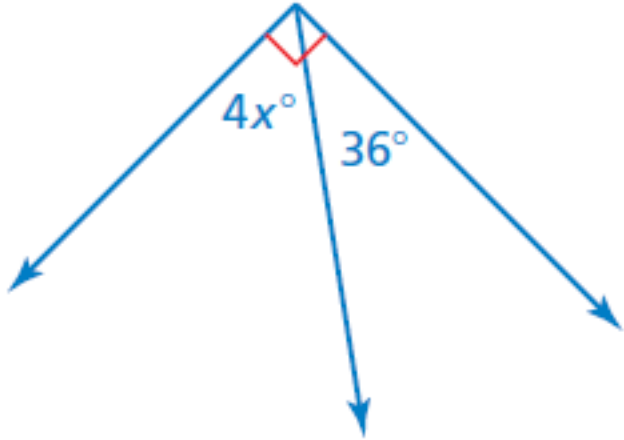
The two angles make up a straight angle.  
So, the angles are supplementary and  
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$$x + (x - 4) = 180$$

$$2x - 4 = 180$$

**EXAMPLE****2****Using Complementary and Supplementary Angles**

Tell whether the angles are *complementary* or *supplementary*.  
Then find the value of  $x$ .

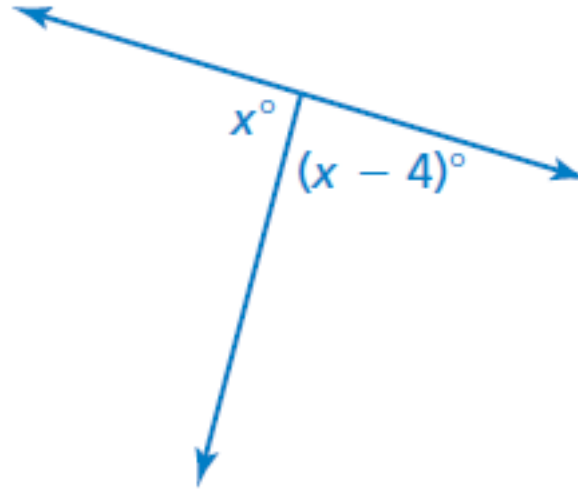
**a.**

The two angles make up a right angle.  
So, the angles are complementary and  
the sum of their measures is  $90^\circ$ .

$$4x + 36 = 90$$

$$4x = 54$$

$$x = 13.5$$

**b.**

The two angles make up a straight angle.  
So, the angles are supplementary and  
the sum of their measures is  $180^\circ$ .

$$x + (x - 4) = 180$$

$$2x - 4 = 180$$

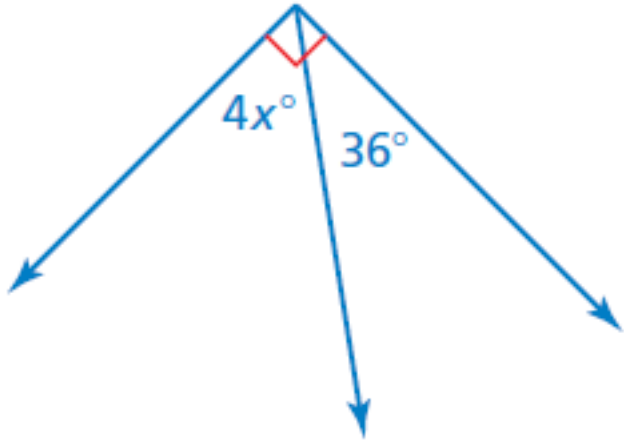
$$2x = 184$$

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Tell whether the angles are *complementary* or *supplementary*.  
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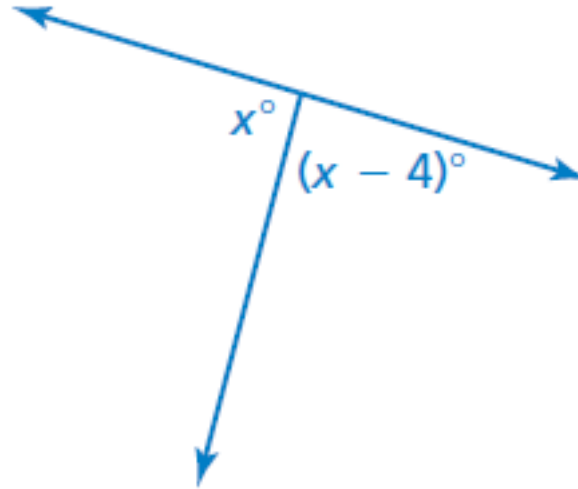
**a.**

The two angles make up a right angle.  
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$$4x + 36 = 90$$

$$4x = 54$$

$$x = 13.5$$

**b.**

The two angles make up a straight angle.  
So, the angles are supplementary and  
the sum of their measures is  $180^\circ$ .

$$x + (x - 4) = 180$$

$$2x - 4 = 180$$

$$2x = 184$$

$$x = 92$$