

## 7.2 Complementary and Supplementary Angles

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### Learning Targets

- **Classifying Pairs of Angles**  
*(complementary, supplementary, neither)*
- **Finding the value of "x"**
- **Constructing Angles**



Calculator  
Protractor

**Complete the statement.**

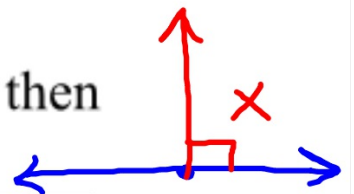
Two angles are   ?   if the sum of their measures is  $90^\circ$ . **complementary**

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

People often have trouble remembering which is  $90^\circ$  and which is  $180^\circ$ . Make up your own way to help you remember the definitions.

Tell whether the statement is *always*, *sometimes*, or *never* true. Explain.

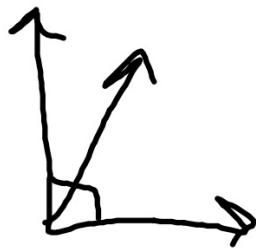
1. If  $x$  and  $y$  are supplementary angles, then  $x$  is right.



Sometimes

2. If  $x$  and  $y$  are complementary angles, then  $y$  is acute.

Always



$$x + y = 90$$

**Tell whether the statement is *always*, *sometimes*, or *never* true. Explain.**

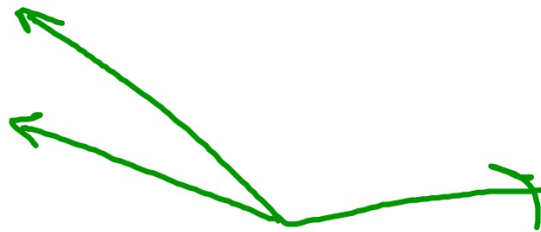
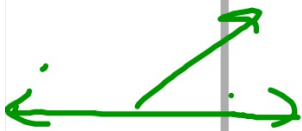
3. If  $x$  is a right angle and  $y$  is an acute angle, then  $x$  and  $y$  are supplementary angles.



Never

4. If  $x$  is acute and  $y$  is obtuse, then  $x$  and  $y$  are supplementary angles.

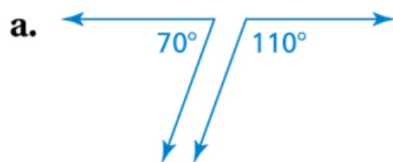
Sometimes



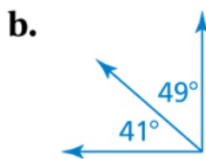
Learning  
Target 1

## Classifying Pairs of Angles

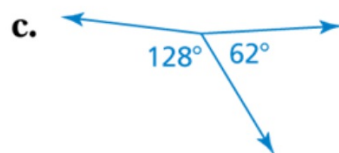
Tell whether the angles are *complementary*, *supplementary*, or *neither*.



Supp.



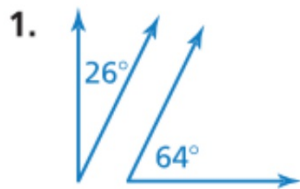
Comp.



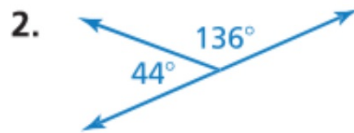
$190^\circ$   
Neither

## Ok - It's your turn . . .

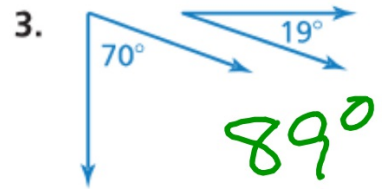
Tell whether the angles are *complementary*, *supplementary*, or *neither*.



Comp.



Supp.



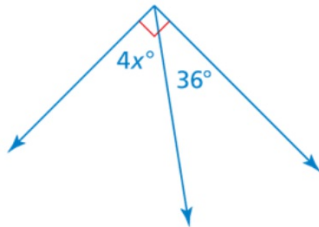
Neither

Learning  
Target 2

## Finding a value for "x"

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

a.

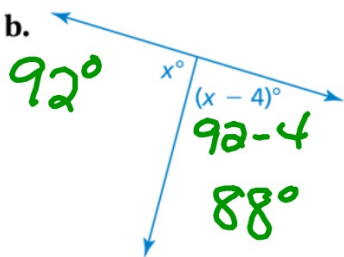


Comp.  $4x + 36 = 90$   
 $\quad - 36 \quad - 36$ 

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 $\frac{4x}{4} = \frac{54}{4}$   $x = 13.5^\circ$

b.



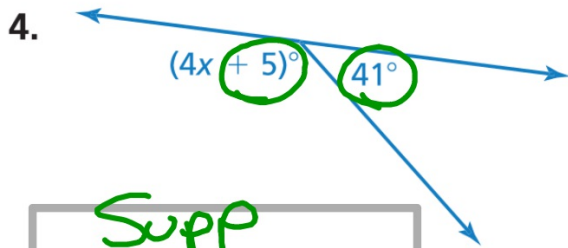
Supp.  $x + x - 4 = 180$   
 $2x - 4 = 180$   
 $\quad + 4 \quad + 4$ 

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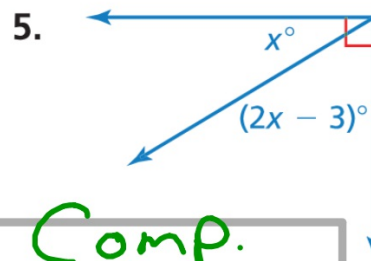
 $\frac{2x}{2} = \frac{184}{2}$   $x = 92^\circ$

## Ok - It's your turn . . .

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



Supp



Comp.

$$\begin{array}{r} 4x + 46 = 180 \\ - 46 \quad - 46 \\ \hline 4x = 134 \\ \frac{4x}{4} = \frac{134}{4} \\ x = 33.5^\circ \end{array}$$

$$\begin{array}{r} 3x - 3 = 90 \\ + 3 \quad + 3 \\ \hline 3x = 93 \\ \frac{3x}{3} = \frac{93}{3} \\ x = 31^\circ \end{array}$$

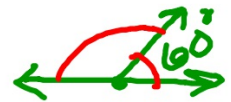


Learning  
Target 3

## Constructing Angles

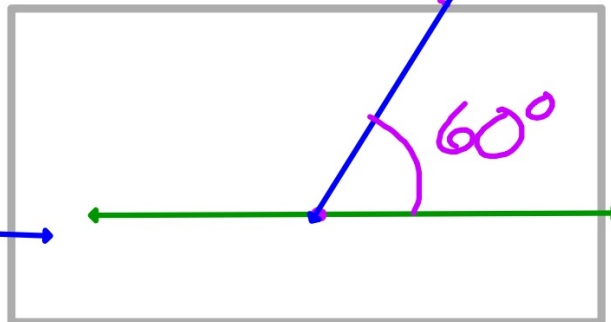
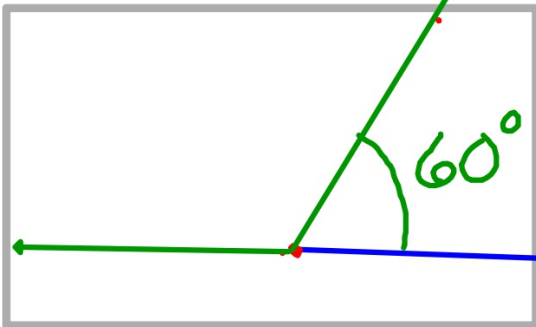
Draw a pair of adjacent supplementary angles so that one angle has a measure of 60°.

180



Step 1: Use a protractor to draw a 60° angle.

Step 2: Extend one of the sides to form a line.



Learning  
Target 3

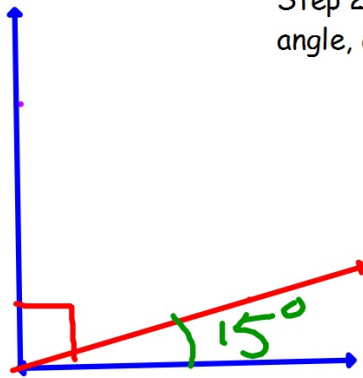
## Constructing Angles

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Draw a pair of adjacent complementary angles so that one angle has a measure of 15 degrees.

Step 1: Use a protractor to draw a 90 angle

Step 2: Using either side of the 90 angle, construct an interior 15 angle.



# Homework

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Pg. 280

#1, 2, 6-24 even

#15

and \* 27