

March 26, 2015<sup>4th</sup>  
Starter

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① What is 18% of 40?    ② 35 is 75% of what?

③ 48 is what percent of 64?

Gothic

## 3/26 Complementary / Supplementary Angles

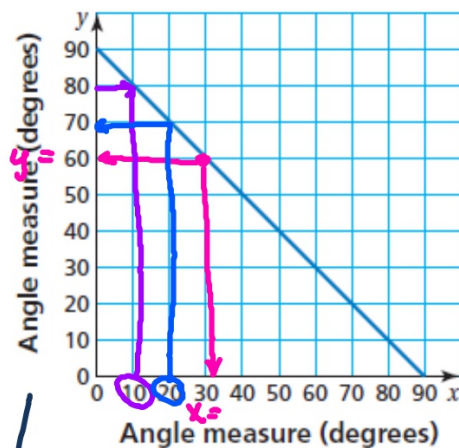
- a. The graph represents the measures of *complementary angles*. Use the graph to complete the table.

x	10°	20°	25°	30°	45°	50°	75°
y	80°	70°	65°	60°	45°	40°	15°

$\frac{10^\circ + 80^\circ}{90}$ 
 $\frac{20^\circ + 70^\circ}{90}$ 
 $\frac{25^\circ + 65^\circ}{90}$

- b. How do you know when two angles are complementary? Explain.

They add up to 90!



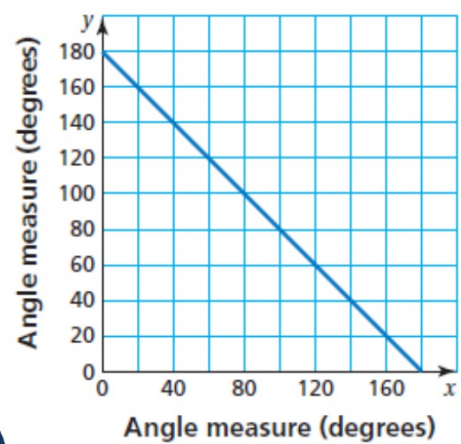
- c. The graph represents the measures of *supplementary angles*. Use the graph to complete the table.

x	20°	30	60°	90°	130	140°	150
y	160	150°	120	90°	50°	40	30°

$\underbrace{\quad}_{180}$ 
 $\underbrace{\quad}_{180}$ 
 $\underbrace{\quad}_{180}$ 
 $\dots$

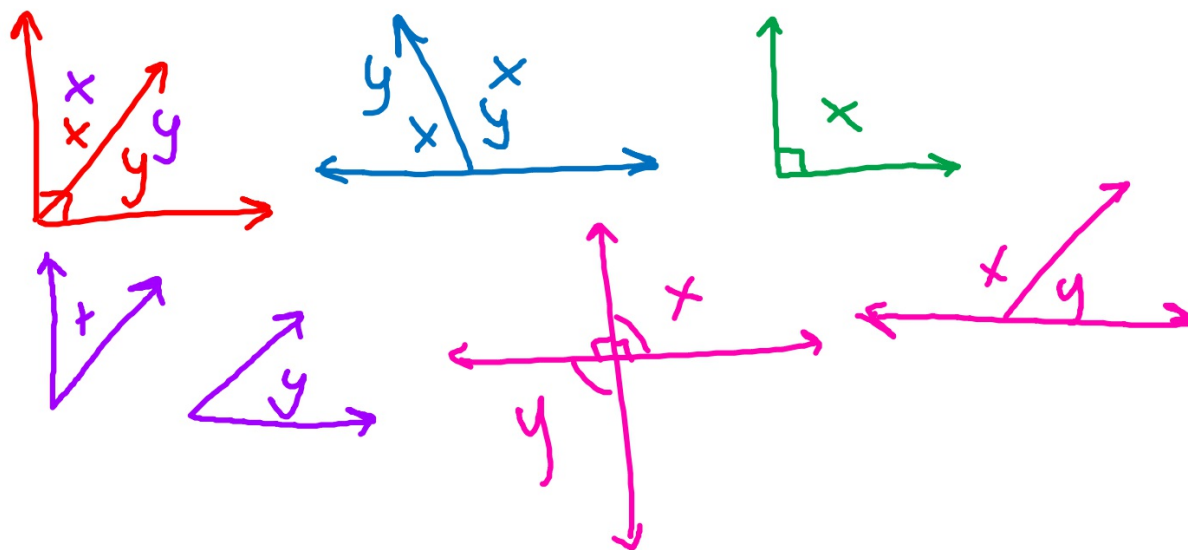
- d. How do you know when two angles are supplementary? Explain.

They add up to 180



Work with a partner. Copy and complete each sentence with *always*, *sometimes*, or *never*.

- a. If  $x$  and  $y$  are complementary angles, then both  $x$  and  $y$  are ALWAYS acute.
- b. If  $x$  and  $y$  are supplementary angles, then  $x$  is Sometime acute.
- c. If  $x$  is a right angle, then  $x$  is never acute.
- d. If  $x$  and  $y$  are complementary angles, then  $x$  and  $y$  are Sometimes adjacent.
- e. If  $x$  and  $y$  are supplementary angles, then  $x$  and  $y$  are sometimes vertical.

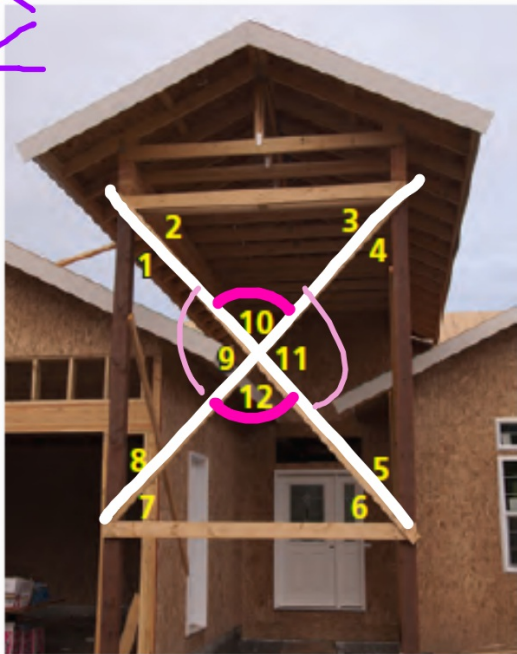


Work with a partner. Tell whether the two angles shown on the clocks are complementary, supplementary, or neither. Explain your reasoning.



$90^\circ$

Name four pairs of complementary angles and four pairs of supplementary angles.



- |                         |                           |
|-------------------------|---------------------------|
| ① $\angle 1 + \angle 2$ | ① $\angle 10 + \angle 9$  |
| ② $\angle 3 + \angle 4$ | ② $\angle 11 + \angle 12$ |
| ③ $\angle 5 + \angle 6$ | ③ $\angle 11 + \angle 10$ |
| ④ $\angle 8 + \angle 7$ | ④ $\angle 9 + \angle 12$  |

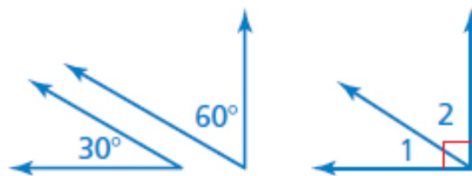
Name two pairs of vertical angles.

- $\angle 10 + \angle 12$   
 $\angle 9 + \angle 11$

### 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



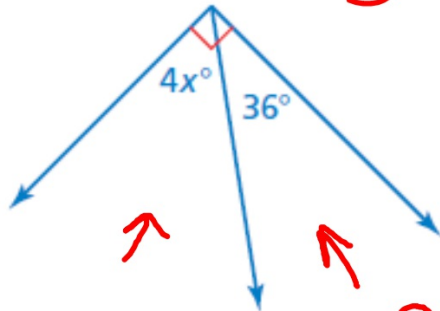
$\angle 3$  and  $\angle 4$  are supplementary angles.



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

Complementary

a.

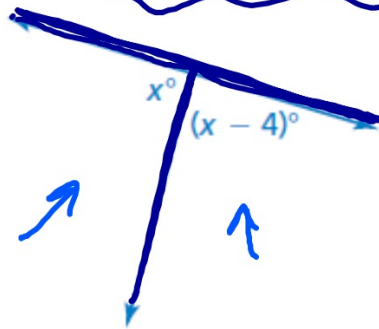


$$\begin{array}{r}
 4x + 36 = 90 \\
 \underline{-36} \quad \underline{-36} \\
 4x = 54 \\
 \underline{\quad} \quad \underline{\quad} \\
 x = 13\frac{1}{2}
 \end{array}$$

Divide by 4

b.

Supplementary



$$\begin{array}{r}
 x + x - 4 = 180 \\
 2x - 4 = 180 \\
 \underline{\quad} \quad \underline{\quad} \\
 2x = 184 \\
 \underline{\quad} \quad \underline{\quad} \\
 x = 92
 \end{array}$$



Homework

Due