

# Angle Pairs

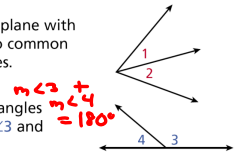
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## Definitions:

### Pairs of Angles

**Adjacent angles** are two angles in the same plane with a common vertex and a common side, but no common interior points.  $\angle 1$  and  $\angle 2$  are adjacent angles.

A **linear pair** of angles is a pair of adjacent angles whose noncommon sides are opposite rays.  $\angle 3$  and  $\angle 4$  form a linear pair.



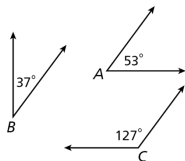
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## Definitions:

### Complementary and Supplementary Angles

**Complementary angles** are two angles whose measures have a sum of  $90^\circ$ .  $\angle A$  and  $\angle B$  are complementary.

**Supplementary angles** are two angles whose measures have a sum of  $180^\circ$ .  $\angle A$  and  $\angle C$  are supplementary.



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## Complementary

$\angle A$  &  $\angle B$  are comp.

- ① If  $m\angle A = 20^\circ$   
then  $m\angle B = 90^\circ - 20^\circ = 70^\circ$
- ② If  $m\angle A = 35^\circ$   
then  $m\angle B = 90^\circ - 35^\circ = 55^\circ$
- ③ If  $m\angle A = x$   
then  $m\angle B = 90^\circ - x$
- ④ If  $m\angle A = 2x + 4$   
then  $m\angle B = 90^\circ - (2x + 4)$

## Supplementary

$\angle C$  &  $\angle D$  are supp.

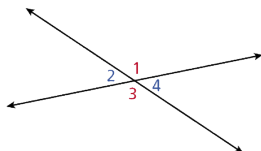
- ① If  $m\angle C = 20^\circ$   
then  $m\angle D = 180^\circ - 20^\circ = 160^\circ$
- ② If  $m\angle C = x$   
then  $m\angle D = 180^\circ - x$

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**Vertical angles** are two nonadjacent angles formed by two intersecting lines.

$\angle 1$  and  $\angle 3$  are vertical angles, as are  $\angle 2$  and  $\angle 4$ .

**Vertical angles are congruent.**



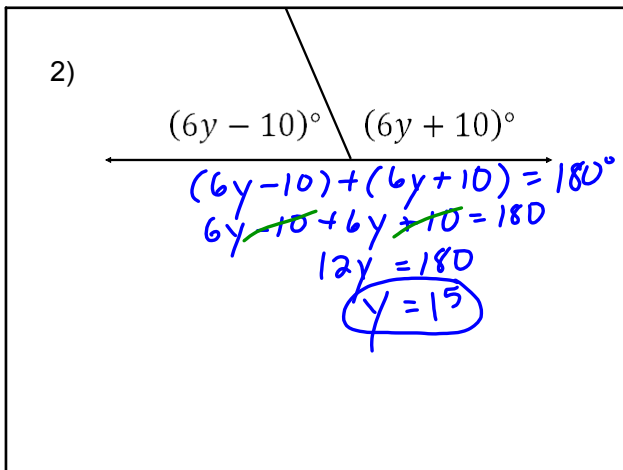
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Find the values of the variables.

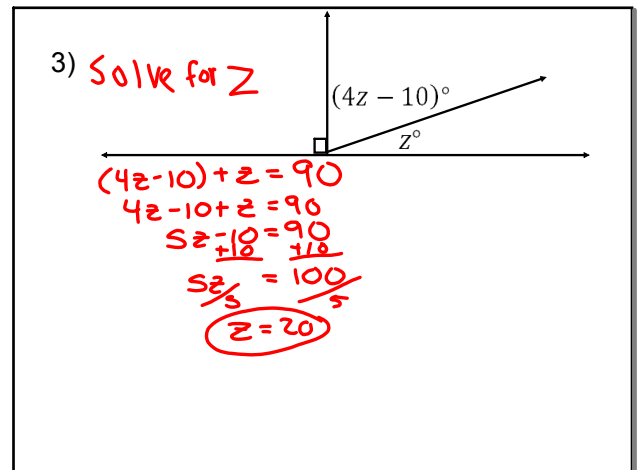
1)  $(3x - 40)^\circ$  and  $(2x - 10)^\circ$  are vertical angles.

$$\begin{array}{r}
 3x - 40 = 2x - 10 \\
 -2x \quad -2x \\
 \hline
 x - 40 = -10 \\
 +40 \quad +40 \\
 \hline
 x = 30
 \end{array}$$

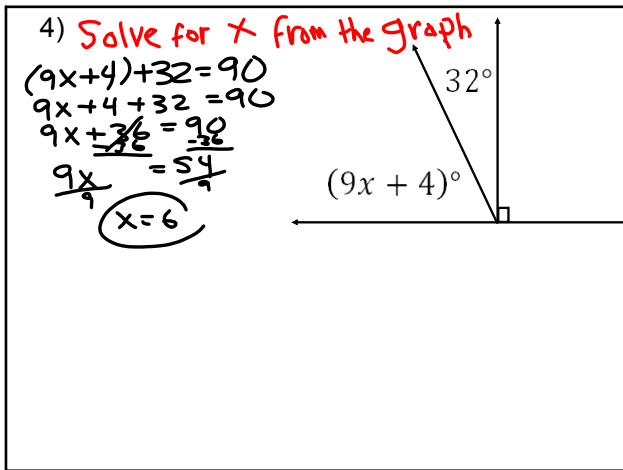
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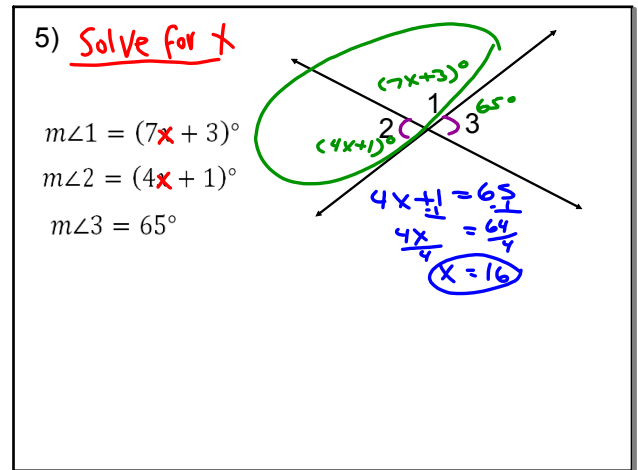
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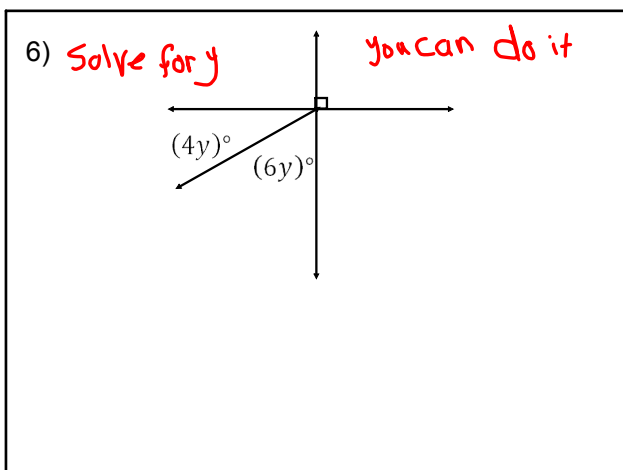
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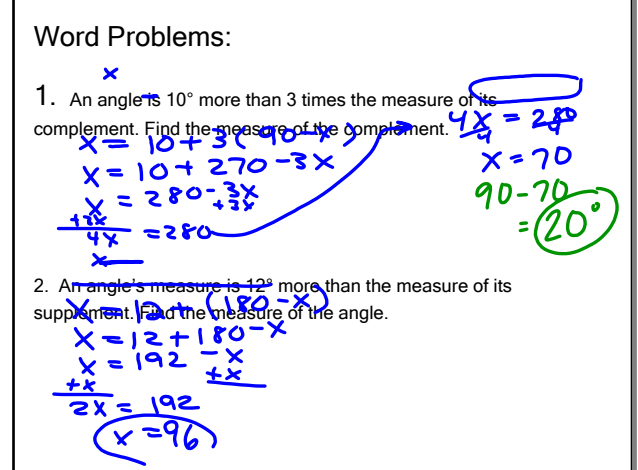
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