

1. If an  $\angle$  measures  $68^\circ 28' 14''$ , what's the measure of its complement of half this angle?

$34^\circ 14' 7''$

$$\begin{array}{r} 89\ 59\ 60 \\ 90\ 00\ 00 \\ -34\ 14\ 07 \\ \hline 55\ 45\ 53'' \end{array}$$

2. The measure of an angle is 4 times the measure of its complement. What's the supplement of the angle?

Fill in the blank:

$$x + 4x = 90$$

$$5x = 90$$

$$x = 18$$

Suppl =  $180 - 72 = 108^\circ$

OR

$$x = 4(90 - x)$$

$$x = 360 - 4x$$

$$5x = 360$$

$$x = 72$$

Suppl =  $180 - 72 = 108^\circ$

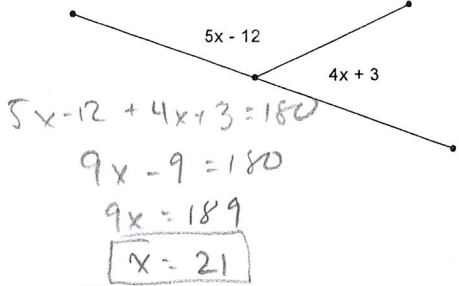
*the compl so the x = 72*

3. If 2 angles are complementary, then they both have to be Acute.

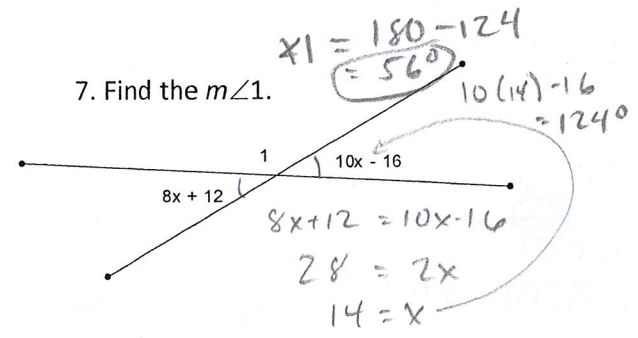
4. Angles that are supplementary and congruent are Right angles.

5. The supplement of an obtuse angle has to be Acute.

6. Find x. *Linear Pair*



7. Find the  $m\angle 1$ .



8.  $AB \perp CD$ . The measure of  $\angle 4$  and  $\angle 5$  are in the ratio 7:5. What are the measures of  $\angle 4$  &  $\angle 5$ ?

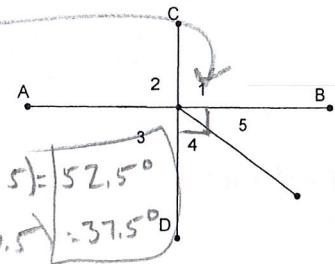
$$7x + 5x = 90$$

$$12x = 90$$

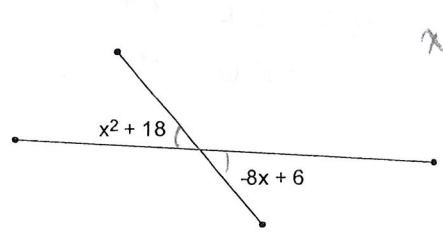
$$x = 7.5$$

$$\angle 4 = 7(7.5) = 52.5^\circ$$

$$\angle 5 = 5(7.5) = 37.5^\circ$$



9. Find x in the diagram below:



$$x^2 + 18 = -8x + 6$$

$$x^2 + 8x + 12 = 0$$

$$(x + 6)(x + 2) = 0$$

$$x = -6, -2$$

10.  $\angle R = 132^\circ$ .  $\angle R$  is bisected, then one of the resulting angles is trisected. What's the measure of one of the smallest angles?

$$132/2 = 66 \frac{\circ}{3} = \boxed{22^\circ}$$

11. If 2  $\angle$ s are supplementary to the same  $\angle$ , then they are Congruent to each other.

12. One of 2 supplementary angles is 4 more than twice the other. What is the measure of the angle? What's the measure of the complement of the angle?

$$\begin{aligned} x + 2x + 4 &= 180 & x &\approx 58.7 \\ 3x + 4 &= 180 & \text{Compl} &= 90 - 58.7 = \boxed{31.3^\circ} \\ 3x &= 176 \end{aligned}$$

13. The measure of the supplement of an angle plus the complement of the same angle is  $168^\circ$ . What's the measure of the original angle?

$$\begin{aligned} (180 - x) + (90 - x) &= 168 \\ 270 - 2x &= 168 \\ -2x &= -102 \\ \boxed{x} &= \boxed{51^\circ} \end{aligned}$$

14. Use the diagram at right. Find  $x$  &  $y$ .

Given:  $AB \perp BD$

$\angle ACB = x + y$

$\angle BCD = 2x + 4$

$\angle ABC = x + 20$

$\angle CBD = y + 10$

Ooops!

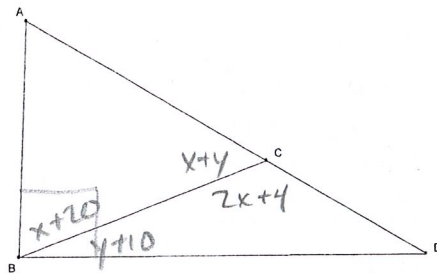
$\angle CBD = y + 10$

$$\begin{aligned} x + 20 + y + 10 &= 90 \\ x + y + 2x + 4 &= 180 \\ \hline x + y &= 60 \\ 3x + y &= 176 \\ -3x & \quad -3x \\ \hline y &= 176 - 3x \end{aligned}$$

$y = 176 - 3x$

$y = 176 - 3(58)$

$\boxed{y} = \boxed{2}$



$x + (176 - 3x) = 60$

$-2x + 176 = 60$

$-2x = -116$

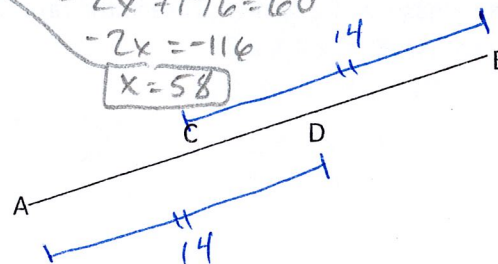
$\boxed{x} = \boxed{58}$

15.  $AB = 24$ ,  $AD = 14$ ,  $\overline{AD} \cong \overline{CB}$

$CD = \underline{4}$

$AC = \underline{= 14 - 4 = 10}$

$DB = \underline{10}$



16.  $\angle ABC$  suppl  $\angle DEF$ ,  $\angle GHI$  suppl  $\angle DEF$ .

$\angle ABC = 5x - 3$  &  $\angle GHI = 3x + 27$

Find  $m\angle DEF$

$\triangle ABC \cong \triangle GHI$

$5x - 3 = 3x + 27$

$2x = 30$

$x = 15$

$\angle ABC = 5(15) - 3 = 72^\circ$

$\angle DEF = 180 - 72 = \boxed{108^\circ}$

$14 + 14 - CD = 24$

$28 - CD = 24$

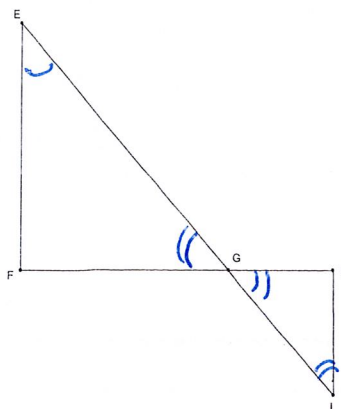
$-CD = -4$

$CD = 4$

19.

Given:  $\angle E \cong \angle EGF$ ,  $\angle I \cong \angle HGI$

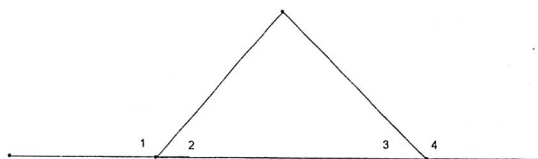
Prove:  $\angle E \cong \angle I$



Statement	Reason
1. $\triangle EGF \cong \triangle HGI$	1. Given
2. $\angle EGF \cong \angle HGI$	2. Vertical Angles Thm
3. $\angle E \cong \angle I$	3. Substitution

Can't be transitive prop!

20. Given:  $\angle 2 \cong \angle 3$   
Prove:  $\angle 1 \cong \angle 4$



Statement	Reason
1. $\angle 2 \cong \angle 3$	1. Given
2. $\angle 1$ Suppl to $\angle 2$ $\angle 3$ Suppl to $\angle 4$	2. Linear Pair Post.
3. $\angle 1 \cong \angle 4$	3. Congruent Supplements Thm

21. Given:  
Prove:

