

Notes 5-2

Int 1

Equations from Angles and Triangles

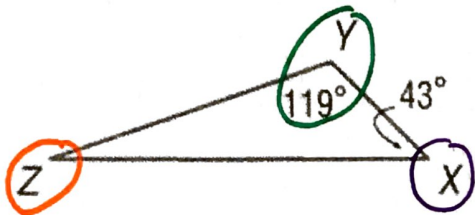
Unit 5

For the following problems, do each of the following steps.

- a) Identify the type of angle relationship that is shown. — All 3 angles in a  $\Delta$  always add up to  $180^\circ$ .
- b) Set up an equation.
- c) Solve the equation for x.

measure of  $\angle Z$

Ex. 1: Find  $m\angle Z$ .



$$180 = m\angle Z + m\angle Y + m\angle X$$

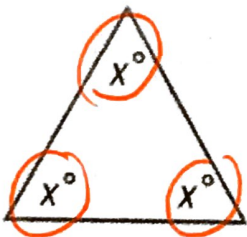
$$180 = Z + 119 + 43$$

$$180 = Z + 162$$

$$-162 \quad -162$$

$$18 = Z$$

Ex. 2:

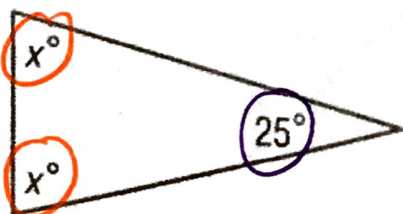


$$x + x + x = 180$$

$$\frac{3x}{3} = \frac{180}{3}$$

$$x = 60$$

Ex. 3:



$$x + x + 25 = 180$$

$$2x + 25 = 180$$

$$-25 \quad -25$$

$$\frac{2x}{2} = \frac{155}{2}$$

$$x = 77.5$$

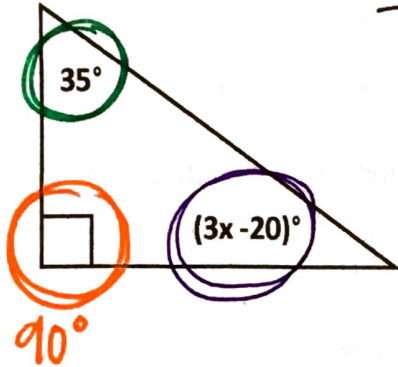
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Ex. 4:

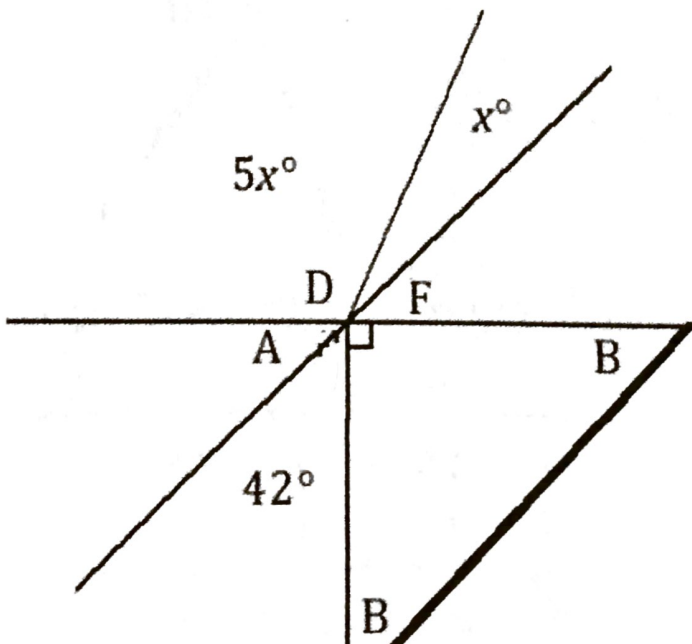


$$\begin{array}{r}
 35 + 90 + 3x - 20 = 180 \\
 -35 \qquad \qquad \qquad -35 \\
 \hline
 90 + 3x - 20 = 145 \\
 -90 \qquad \qquad \qquad -90 \\
 \hline
 3x - 20 = 55 \\
 +20 \qquad \qquad +20 \\
 \hline
 3x = 75 \\
 \frac{3x}{3} = \frac{75}{3} \\
 \boxed{x = 25}
 \end{array}$$

Ex. 5: In  $\triangle ABC$ , if  $m\angle A = 25^\circ$ , and  $m\angle B = 53^\circ$ , what is  $m\angle C$ ?

$$\begin{array}{r}
 A + B + C = 180 \\
 25 + 53 + C = 180 \\
 78 + C = 180 \\
 -78 \qquad \qquad \qquad -78 \\
 \hline
 \boxed{C = 102}
 \end{array}$$

Ex. 6: Solve for x.



For the following problems, do each of the following steps.

a) Identify the type of angle relationship that is shown.

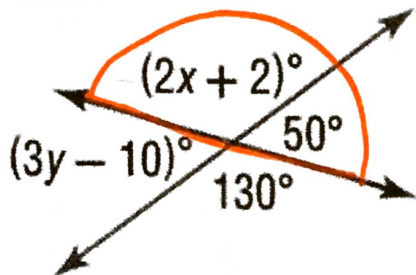
Are the angles vertical, supplementary, or complementary?

b) Set up an equation.

c) Solve the equation for x.

Ex. 7: What is the value of x?

Supplementary  $\triangle = 180^\circ$



$$180 = 2x + 2 + 50$$

$$180 = 2x + 52$$

$$\begin{array}{r} 180 \\ -52 \\ \hline 128 \end{array} = \begin{array}{r} 2x \\ -52 \\ \hline 2x \end{array}$$

$$\frac{128}{2} = \frac{2x}{2}$$

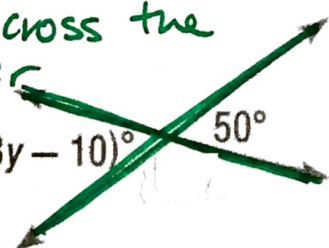
$$64 = x$$

$$x = 64$$

Ex. 9: What is the value of y?

Vertical means across the X from each other

They are the SAME SIZE which means they are EQUAL!



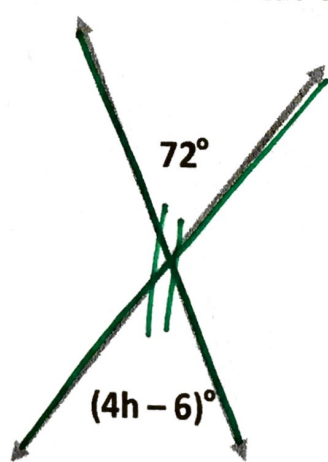
$$3y - 10 = 50$$

$$\begin{array}{r} 3y - 10 \\ +10 \\ \hline 3y \end{array} = \begin{array}{r} 50 \\ +10 \\ \hline 60 \end{array}$$

$$\frac{3y}{3} = \frac{60}{3}$$

$$y = 20$$

Ex. 10: What is the value of h?



$$4h - 6 = 72$$

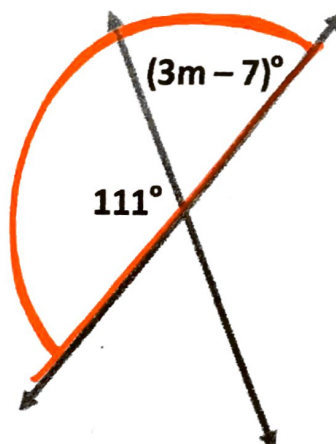
$$\begin{array}{r} 4h - 6 \\ +6 \\ \hline 4h \end{array} = \begin{array}{r} 72 \\ +6 \\ \hline 78 \end{array}$$

$$\frac{4h}{4} = \frac{78}{4}$$

$$h = 19.5$$

Ex. 8: What is the value of m? Supp.

Half circle  
 $= 180^\circ$



$$111 + 3m - 7 = 180$$

$$\begin{array}{r} 111 + 3m - 7 \\ -111 \\ \hline 3m - 7 \end{array} = \begin{array}{r} 180 \\ -111 \\ \hline 69 \end{array}$$

$$3m - 7 = 69$$

$$\begin{array}{r} 3m - 7 \\ +7 \\ \hline 3m \end{array} = \begin{array}{r} 69 \\ +7 \\ \hline 76 \end{array}$$

$$\frac{3m}{3} = \frac{76}{3}$$

$$m = 25.\bar{3}$$

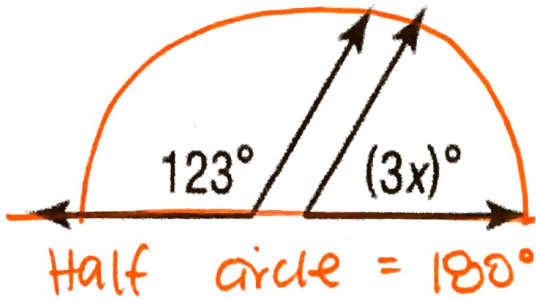
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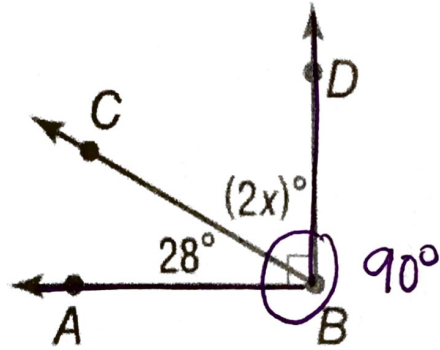
Unit 5

Ex. 9: Find the value of x.



$$\begin{array}{r}
 123 + 3x = 180 \\
 -123 \quad -123 \\
 \hline
 3x = 57 \\
 \frac{3x}{3} = \frac{57}{3} \\
 \boxed{x = 19}
 \end{array}$$

Ex. 10: Find the value of x.



$$\begin{array}{r}
 28 + 2x = 90 \\
 -28 \quad -28 \\
 \hline
 2x = 62 \\
 \frac{2x}{2} = \frac{62}{2} \\
 \boxed{x = 31}
 \end{array}$$