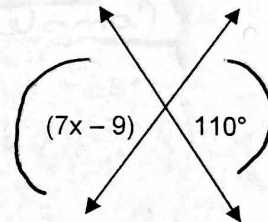


Problem Set 2: Angle Relationships—Introduction

1. Use the figure to the right to answer the questions below
a: Identify the **angle relationship** in the diagram.

VERTICAL

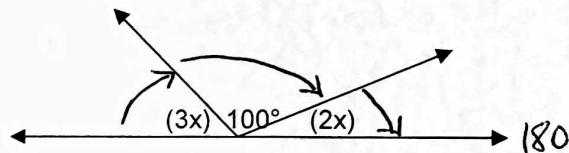


- b: Write an algebraic equation for the angle relationship shown in the figure and solve for x.

$$\begin{array}{r} 7x - 9 = 110 \\ +9 \quad +9 \\ \hline 7x = 119 \\ x = 17 \end{array}$$

2. Use the figure to the right to answer the questions below
a: Identify the **angle relationship** in the diagram.

SUPPLEMENTARY



- b: Write an algebraic equation for the angle relationship shown in the figure and solve for x.

$$\begin{array}{r} 3x + 100 + 2x = 180 \\ 5x + 100 = 180 \\ -100 \quad -100 \\ \hline 5x = 80 \\ x = 16 \end{array}$$

- c: Find the measures of the missing angles.

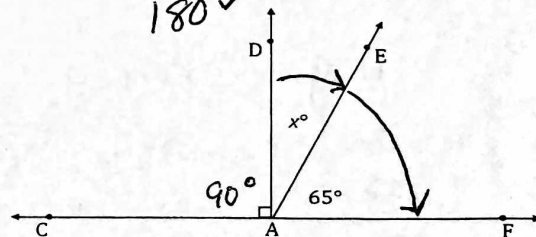
$$\begin{array}{l|l} 3x & 2x \\ 3(16) & 2(16) \\ \hline 48^\circ & 32^\circ \end{array}$$

check

$$\begin{array}{r} 48 \\ +32 \\ +100 \\ \hline 180 \end{array}$$

3. Use the figure to the right to answer the questions below
a: Identify the **angle relationship** in the diagram.

Complementary



- b: Write an algebraic equation for the angle relationship shown in the figure and solve for x.

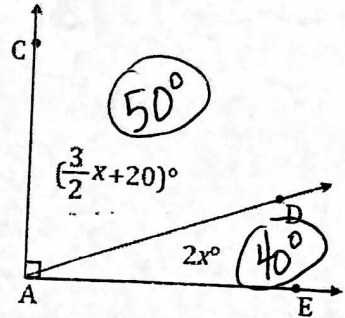
$$\begin{array}{r} x + 65 = 90 \\ -65 \quad -65 \\ \hline x = 25 \end{array}$$

4. Use the figure to the right to answer the questions below

a: Identify the *angle relationship* in the diagram.

Complementary

b: Write an algebraic equation for the angle relationship shown in the figure and solve for x.



$$\left(\frac{3}{2}x + 20\right) + 2x = 90$$

$$\frac{3}{2}x + \frac{4}{2}x + 20 = 90$$

$$\frac{7}{2}x + 20 = 90$$

$$\frac{7}{2}x - 20 = 90 - 20$$

$$\frac{7}{2} \cdot \frac{7}{2}x = \frac{70}{2} \cdot \frac{2}{7}$$

$x = 20$

C. $\frac{2x}{2(20)}$

$\angle DAE = 40^\circ$

$\angle DAC = 50^\circ$

5. The ratio of the measures of a pair of supplementary angles on a line is 4:5. Write and solve an algebraic equation to find the measures of the two angles.

$$4x + 5x = 180$$

$$\frac{9x}{9} = \frac{180}{9}$$

$x = 20$

4x 5x

4(20) 5(20)

80 100

*Supplementary sum to 180°!

REWIND



6. If p and q are integers, then which of the following is not equivalent?

a: $-\left(\frac{p}{q}\right)$

neg.

b: $\frac{-p}{q}$

neg.

c: $\frac{-p}{-q}$

POSITIVE

d: $\frac{p}{-q}$

neg.

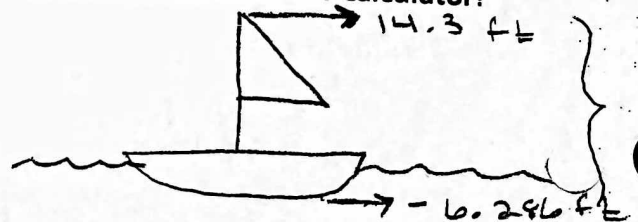
you've seen this before

7. The top of a sailboat mast is 14.3 feet above the water surface. The bottom of the sailboat is 6.286 feet below the water surface. What is the difference in the elevations? Show *all* work! No calculator!

$$14.3 - (-6.286)$$

$$14.3 + 6.286$$

20.586 ft apart



$\frac{143}{586}$