Examples:
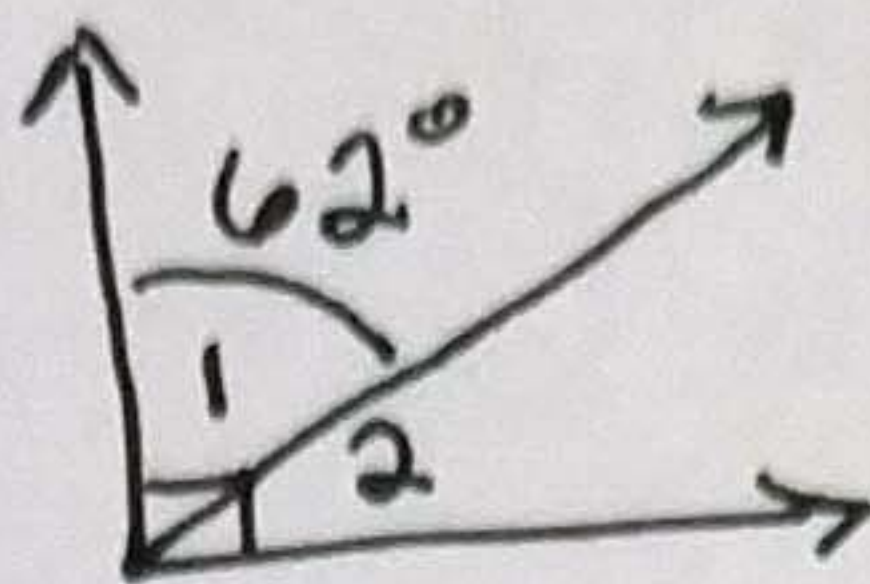
4. ∠1 is the complement of ∠2. $m\angle 1 = 62°$. Find $m\angle 2$. Draw a diagram.

$m\angle 1 + m\angle 2 = 90$

$\begin{array}{r} 62 + m\angle 2 = 90 \\ -62 \qquad\quad -62 \end{array}$
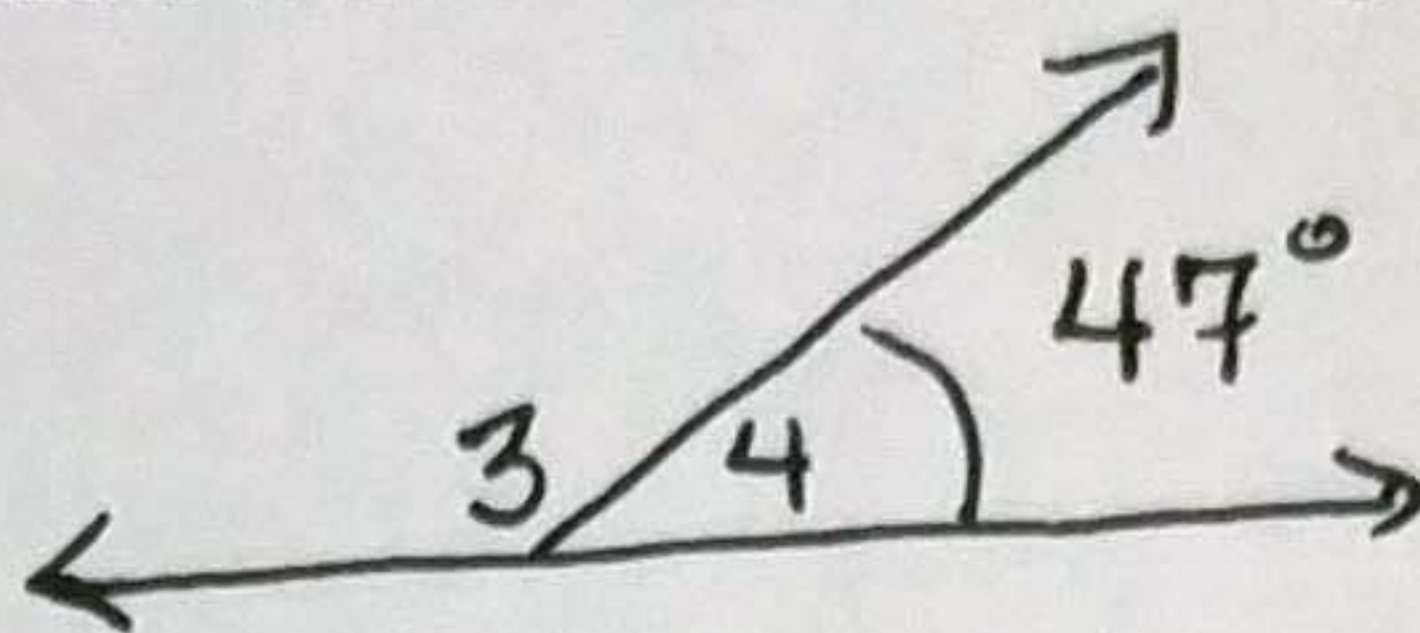
$\boxed{m\angle 2 = 28°}$

5. ∠3 is the supplement of ∠4. $m\angle 4 = 47°$. Find $m\angle 3$. Draw a diagram.

$m\angle 3 + m\angle 4 = 180$

$\begin{array}{r} m\angle 3 + 47 = 180 \\ -47 \qquad -47 \end{array}$

$\boxed{m\angle 3 = 133°}$

Using Algebra with Complementary, Supplementary, and Adjacent Angles

Examples:

6. ∠LMN and ∠PQR are complementary angles. Find the measures of the angles when $m\angle LMN = (4x - 2)°$ and $m\angle PQR = (9x + 1)°$.

$m\angle LMN + m\angle PQR = 90$

$(4x - 2) + (9x + 1) = 90$

$13x - 1 = 90$

$13x = 91$

$x = 7$

$m\angle LMN = 4x - 2$
$= 4(7) - 2$
$\boxed{= 26°}$

$m\angle PQR = 9x + 1$
$= 9(7) + 1$
$\boxed{= 64°}$

7. ∠1 and ∠2 are supplementary angles. Find the measures of the angles when $m\angle 1 = (7x + 13)°$ and $m\angle 2 = (25x + 7)°$

$m\angle 1 + m\angle 2 = 180$

$(7x + 13) + (25x + 7) = 180$

$32x + 20 = 180$

$32x = 160$

$x = 5$

$m\angle 1 = 7x + 13$
$= 7(5) + 13$
$\boxed{= 48°}$

$m\angle 2 = 25x + 7$
$= 25(5) + 7$
$\boxed{= 132°}$

8. When viewed from the side, the frame of a ball-return net forms a pair of supplementary angles with the ground. Find $m\angle BCE$ and $m\angle ECD$.

$m\angle BCE + m\angle ECD = 180$

$(4x + 8) + (x + 2) = 180$

$5x + 10 = 180$

$5x = 170$

$x = 34$

$m\angle BCE = 4x + 8$
$= 4(34) + 8$
$\boxed{= 144°}$

$m\angle ECD = x + 2$
$= 34 + 2$
$\boxed{= 36°}$