A group of friends went to a ballgame. At the game they bought some hot dogs and some pizza slices.

p = # pizza slice
h = # hot dogs

The number of pizza slices was one less than twice the number of hot dogs.

$p = 2h - 1$

Pizza slices cost $3 each and hot dogs cost $2.50 each. They spent a total of $48 on the food.

$3p + 2.50h = 48$

$p = 11$
$h = 6$

Write a system of equations to model this situation.

Solve this system to find the number of pizza slices and hot dogs purchased.

Solve this system of equations using substitution to find that they bought 11 pizza slices and 6 hot dogs.

Solve each system of equations using substitution.

1. $y = \frac{1}{2}x + 5$ $\quad y = -\frac{3}{4}x - 5$

2. $4a + 2b = 10$ $\quad 9a + 7b = 25$

1. $y = \frac{1}{2}x + 5$ $\quad y = -\frac{3}{4}x - 5$

$(-8, 1)$

Multiply both sides by the LCM of 2 and 4 to eliminate the denominators.

$4\left(\frac{1}{2}x + 5\right) = \left(-\frac{3}{4}x - 5\right)4$

$2x + 20 = -3x - 20$

$+3x \quad +3x$

$5x + 20 = -20$

$-20 \quad -20$

$5x = -40$

$x = -8$ → $4 = 1$

2. $4a + 2b = 10$ $\quad 9a + 7b = 25$

Solve one of the equations for either a or b then use substitution.

$2b = 10 - 4a$

2

$b = 5 - 2a$

$5 - 2(2)$

$(2, 1)$

$9a + 7(5 - 2a) = 25$

$9a + 35 - 14a = 25$

$-5a = -10$

$a = 2$

solve this system of equations using substitution: