

**Review Writing Equations in Standard Form:  $Ax + By = C$** 

Keywords to Show Multiply:

each, per, every

\* align units!

\*\*These words usually tell you what to multiply by  $x$  or by  $y$ .\*\*There is usually another number given, the total, which is  $C$  in  $Ax + By = C$ .Sometimes, these words are *implicit*, meaning the problem does not use them, but we have to *think* them.Define variables for each scenario. Write 2 standard form equations. SET UP the system to solve by elimination.

1) By car and by train, a business woman travels 500 miles in 13 hours. The car traveled at a rate of 50mph. The train traveled at a rate of 35mph. How many hours did she spend on each type of transportation?

$$x: \text{hours on car} \quad (-35)(x + y = 13) \quad 50x + 35y = 500$$

$$y: \text{hours on train} \quad -35x - 35y = -455 \rightarrow \text{cancel out the "y"}$$

$$2 \text{ options} \rightarrow -50x - 50y = -650 \rightarrow \text{cancel out the "x"}$$

2) The Ramy family bought 4 sandwiches and 3 salads. They spent \$24. The Johnson family bought 2 sandwiches and 6 salads and spent \$30. How much does 1 sandwich cost? How much does 1 salad cost?

$$x: \text{cost of 1 sandwich} \quad 4x + 3y = 24 \quad 2x + 6y = 30$$

$$y: \text{cost of 1 salad} \quad * \text{multiply by } -2 \quad * \text{multiply by } -2$$

$$\text{to cancel the "y"} \quad \text{to cancel the "x"}$$

Define variables for each scenario. Write 2 standard form equations. SOLVE the system by elimination.

3) Louise has \$36 in five-dollar bills and singles. She has 8 total bills. How many of each bill does she have?

$$x: \$5 \text{ bills} \quad (x + y = 8)(-1) \quad 5x + 1y = 36$$

$$y: \$1 \text{ bills} \quad -x - y = -8 \quad -x - y = -8$$

$$4x = 28$$

$$x = 7$$

$$\begin{array}{r} 7 + y = 8 \\ -7 \quad -7 \\ \hline y = 1 \end{array}$$

7 \$5 bills
1 \$1 bill

4) Lisa is selling tickets to the school's annual talent show. On the first day of ticket sales, she sold 4 senior citizen tickets and 5 student tickets for a total of \$102. The next day, her revenue was \$126 from 7 senior citizen tickets and 5 student tickets. What is the price of 1 senior citizen ticket? Of 1 student ticket?

$$x: \text{price of sen. ticket} \quad 4x + 5y = 102 \quad (7x + 5y = 126)(-1)$$

$$y: \text{price of child ticket} \quad -7x - 5y = -126 \quad -7x - 5y = -126$$

$$-3x = -24$$

$$x = 8$$

$$4(8) + 5y = 102$$

$$32 + 5y = 102$$

$$5y = 70$$

$$y = 14$$

Each sen. ticket cost \$8.

Each child ticket cost \$14.