Solve each system of equations. Give your answer as an ordered triple.

1.

$4x + y - 2z = 5$
$8x - 3y + 4z = 8$
$10x + 7y - 6z = 36$

2.

$2b + 7c = -9$
$7a - 3b + c = 74$
$4a - 6c = 22$

3. A farmer has 500 acres to plant corn, soybeans, and wheat. Growing an acre of corn costs $390, an acre of soybeans costs $190, and an acre of wheat costs $170. The farmer plans to grow twice as many acres of wheat as corn. The farmer has a budget of $119,000 to spend on crops this year.
Write and solve a system of equations to find the number of acres of each crop the farmer should plant.

Bellwork Hon Alg 2 Tuesday, October 11, 2016

Answers

Solve each system of equations. Give your answer as an ordered triple.

1.

$4x + y - 2z = 5$
$8x - 3y + 4z = 8$
$10x + 7y - 6z = 36$

$(1.5, 6, 3.5)$

2.

$2b + 7c = -9$
$7a - 3b + c = 74$
$4a - 6c = 22$

$(7, -8, 1)$

A

$\begin{bmatrix} 4 & 1 & -2 \\ 8 & -3 & 4 \\ 10 & 7 & -6 \end{bmatrix}$

B

$\begin{bmatrix} 5 \\ 8 \\ 36 \end{bmatrix}$

A

$\begin{bmatrix} 0 & 2 & 7 \\ 7 & -3 & 1 \\ 4 & 0 & -6 \end{bmatrix}$

B

$\begin{bmatrix} -9 \\ -74 \\ 22 \end{bmatrix}$

3. A farmer has 500 acres to plant corn, soybeans, and wheat. Growing an acre of corn costs $390, an acre of soybeans costs $190, and an acre of wheat costs $170. The farmer plans to grow twice as many acres of wheat as corn. The farmer has a budget of $119,000 to spend on crops this year.
Write and solve a system of equations to find the number of acres of each crop the farmer should plant.

C = # acres of corn
S = # acres of soybeans
W = # acres of wheat

$C + S + W = 500$
$390C + 190S + 170W = 119{,}000$
$W = 2C \rightarrow -2C + W = 0$

A

$\begin{bmatrix} 1 & 1 & 1 \\ 390 & 190 & 170 \\ -2 & 0 & 1 \end{bmatrix}$

B

$\begin{bmatrix} 500 \\ 119000 \\ 0 \end{bmatrix}$

150 acres of corn
50 acres of soy
300 acres of wheat