

1. Define the variables that you would use for this word problem. **Do not solve this problem.**

Paul B. was bragging that he cut down 750 trees in one day with only 970 swings of his mighty ax. With a single swing of his ax he could cut down an ash tree. Two swings were needed for each mulberry tree and 4 swings were needed to lay low each majestic redwood tree. When asked about the number of ash trees that he harvested, he replied, "The number of ash trees that I have cut down is eleven times the number of mulberry trees that have fallen to my skill." How many of each type of tree has Paul cut down?

$x$  = the number of ash trees cut down.

$y$  = the number of mulberry trees cut down.

$z$  = the number of redwood trees cut down.

$$x + y + z = 750$$

$$x + 2y + 4z = 970$$

$$x = 11y$$

2. Compute the following. If it is not possible, then write not possible.

$$A = \begin{bmatrix} x & 0 \\ -1 & -2 \\ 1 & 10 \end{bmatrix} \quad B = \begin{bmatrix} y & -1 & 3 \\ 0 & 2 & 1 \end{bmatrix} \quad C = \begin{bmatrix} 1 & m \\ 0 & 2 \\ 4 & -1 \end{bmatrix}$$

(a)  $B^T = \begin{bmatrix} y & 0 \\ -1 & 2 \\ 3 & 1 \end{bmatrix}$

(b)  $3C = \begin{bmatrix} 3 & 3m \\ 0 & 6 \\ 12 & -3 \end{bmatrix}$

(c)  $2A + 3B =$  not possible