Matrix Sec. 7

1. 
\[
\begin{bmatrix}
-6 & 7 & 2 \\
-1 & 2 & 1.33E-16 \\
4 & -5 & -1
\end{bmatrix}
\]
The entry in the second row and third column is essentially 0. This is probably machine error in the way the arithmetic for the matrices is done. Don’t try to edit your array! Instead either copy and paste a copy as just values and then edit it or change the formatting the one above to just values using paste special, then edit it.

2. 
\[
A^{-1} = \begin{bmatrix}
-1 & 2 \\
2 & -3
\end{bmatrix}
\quad x = -2 \quad y = 5
\]

3. a. The entry in the second row second column needs to be 1. Use \(\frac{1}{2}\) of row 1. Next use -6 row 2 plus row 1. The reduced matrix is 
\[
\begin{bmatrix}
1 & 0 & -10 & -6 \\
0 & 1 & 2 & \frac{1}{2}
\end{bmatrix}
\]
b. Change the entry in the first row first column to 1. Could use minus row 3 plus row 1.

c. Change the entry in the second row third column to 0. Use -3 row 3 plus row 2.

d. Change the entry in the first row first column to 1. Could use \(\frac{1}{2}\) row 2 plus row 1.

4. 
\[
A^{-1} = \begin{bmatrix}
4 & -5 & -1 \\
-1 & 2 & 0 \\
-6 & 7 & 2
\end{bmatrix}
\quad m = 1 \quad s = 4 \quad c = 2
\]
The order of the variables makes no difference in the final answer but does in the inverse.

5. 
\[
x = 1 \quad y = 3 \quad z = -1
\]

6. a. No, because A inverse doesn’t exist.
   b. Yes, there are 4 wizards and 2 fighters.
   c. No, there is negative labor cost. Even though the matrix can algebraically be solved the application has no solution.

7. a. Didn’t do the operation always across the matrix.
   b. Illegal row operation used.
   c. First the operation is illogical. Should use minus row 1 plus row 3 next. Second there is an arithmetic error in the first row first column.
   d. First the operation is illogical. Should use minus row 1 plus row 2 next. Second there is an arithmetic error in the second row first column.

8. (1) 
\[
A^{-1} = \begin{bmatrix}
2 & -1 \\
-5 & 3
\end{bmatrix}
\quad \text{You need 3 large boxes and 5 small boxes.}
\]
There are 5 grandsons and 1 granddaughter.

There are 2000 triangular tiles, 9000 square tiles, and 9000 hexagonal tiles.