PSSA Open Ended Prep - Systems

Situation #1: There are 16 questions on a test. Each question is worth either 5 points or 10 points. The total is 100 points. The following equations can be written.

\[ \begin{align*}
  x + y &= 16 & \text{(where } x \text{ = number of 5-point questions,} \\
  5x + 10y &= 100 & \text{and } y \text{ = number of 10-point questions)}
\end{align*} \]

Part A) Solve the equations as a system in order to determine how many of each question is on the test.

Part B) Mr. Seidel creates a 30 question final exam that is worth 100 points. Each question is worth either 3 points or 5 points. Create two equations that could be used to determine exactly how many of each question is on the test.

Equation #1 __________________

Equation #2 __________________
Situation #2: James contacts two moving companies about relocating to a new house. Each company provides him with estimates that can be modeled by the following equations.

\[
\begin{align*}
  y &= 25x + 100 & (\text{where } x = \text{number of man-hours, and } y = \text{total cost, and the constant represents the cost of the moving truck}) \\
  y &= 20x + 150
\end{align*}
\]

Part A) Solve the equations as a system in order to determine at what point the cost would be the same regardless of the company.

Part B) Suppose that James’ move took a total of 25 man-hours. How much money will he have saved if he chose the “right” moving company? Show all work.