1. $C = A * x + 74$ where A is the cost per item.

   $314 = A * 200 + 74$
   $240 = A * 200$
   $A = 1.20$

   Answer: $C = 1.20x + 74$

2. (a) points $(5, 500)$ and $(7, 200)$
   Answer: $y - 500 = -150(x - 5)$ or $y = -150x + 1250$

   (b) find y when x=0.
   Answer: 1250

3. Answer:
$$\left[\begin{array}{ccc|c} 7 & 0 & 2 & 5 \\ 8 & 0 & -2 & 36 \\ 4 & 2 & 0 & 14 \end{array}\right]$$

4. (a) Profit = Rev - Cost
   $P = A*x-(3x+960)$ where A is the selling price of the sandwich.
   $640 = A * 400 - (3 * 400 + 960)$
   $A = 7$
   Answer: \$7

   (b) solve $7x = 3x + 960$
   Answer: 240 sandwiches

5. use rref.

   Answer: x=0.5, y=0, and $z = -2.5$

6. (a) $x = 10$, $y = 4$, and $z = 18$

   (b) no solution

   (c) $x = 5 - 3y + 2w$
   $z = 8 - 4w$
   y, w =any number

7. use rref.

   DVD Players: 60

   price: 150

8. (a) $\left[\begin{array}{c} 5x+2y \\ 5+3y \end{array}\right]$

   (b) not possible

   (c) $\left[\begin{array}{cc} m & 5 \\ k & 1 \\ 7 & 3 \end{array}\right]$

   (d) not possible

   (e) $\left[\begin{array}{cc} 4 & 12 \\ 6 & 1 \end{array}\right]$

9. points are in the form (x, p)

   $(500, 25)$ and $(550, 40)$

10. Combine the matrices on the left side and you get this:
$$\left[\begin{array}{cc} 2x - 28 & 3y-4z \\ 21-4w & z-8 \end{array}\right] = \left[\begin{array}{cc} 10 & 3 \\ 21 & 4 \end{array}\right]$$
    since the matrices are equal, the corresponding enteries are equal. i.e.

    $2x - 28 = 10$
    $3y - 4z = 3$
    $21 - 4w = 21$
    $z - 8 = 4$

    now solve for the variables.

    Answer: $x = 19$, $y = 17$, $z = 12$, and $w = 0$

11. x = the number to type I cakes made.
    y = the number to type II cakes made.
    z = the number to type III cakes made.

    Objective function:
    $P = 5x + 3y + 2z$

    Constraints:
    $2x + 4y + 2z \leq 120$
    $2x + y + 3z \leq 52$
    $y \geq 2(x + z)$
    $x, y, z \geq 0$

12. $w + 700 = v + 300$
    $m + 800 = 880 + w$
    $450 + v = m + 950$

13. use rref to get this matrix.
$$\left[\begin{array}{ccc|c} 1 & 0 & -1 & -40 \\ 0 & 1 & 2 & 330 \end{array}\right]$$
    From this we know the parametric solution is

    $x = z - 40$ $y = 330 - 2z$ z =any number.

    restrictions on Z: Z = 40, 41, 42, ..., 165

Check the back of the page for more problems.