1. Solve Problem 30.10 (a) on pg 297 in Schaum’s outline.

\[ \begin{align*}
2x - 3y &= 4 \\
3x + 2y &= 19
\end{align*} \]

**Eqn 1:** \( y = \frac{4 - 2x}{-3}, \quad y = \frac{2}{3}x - \frac{4}{3} \)

**Eqn 2:** \( 3x + 2\left(\frac{2}{3}x - \frac{4}{3}\right) = 19 \)

\[ \begin{align*}
3x + \frac{4}{3}x - \frac{8}{3} &= 19 \\
13 &\Rightarrow \frac{57}{3} + \frac{8}{3} = \frac{65}{3} \\
x &= 5 \\
y &= \frac{2}{3}5 - \frac{4}{3} = 2
\end{align*} \]

2. You want to make a small sandbox for your child using a 15-foot-long piece of lumber you have in your garage. The location for the sandbox will best accommodate a sandbox shaped like a right triangle, with the shortest side equal to 3.5 ft. What are the dimensions of the other two sides? Follow the same steps used for the in-class problems.

1. **Write down data.**
   - Perimeter (P) = 15’
   - Short side = 3.5’

2. **Draw and label a sketch.** Make sure the goal of the problem is included.

3. **Write conditions.**
   - \( P = 15’ \) and \( P = 3.5 + b + c, \quad 3.5 + b + c = 15 \)
   - Pythagorean Theorem: \( (3.5)^2 + b^2 = c^2 \)

4. **Explain how to calculate the answer.**
   - Solve above 2 simultaneous equations with 2 unknowns.

5. **Calculate the answer.**
   - **Solve by substitution.**
     - Eqn 1: \( b = 15 - 3.5 - c, \quad b = 11.5 - c \)
     - Eqn 2: \( 3.5^2 + (11.5 - c)^2 = c^2, \quad 12.25 + 132.25 - 23c + c^2 = c^2 \)
     - \( 144.5 = 23c, \quad c = 6.28 \)
     - \( c = 6.3 \) ft
     - \( b = 15 - 3.5 - 6.3, \quad b = 5.2 \) ft