Adaptation of 2003 Calculus AB/BC question 1 for Algebra 1

1. Graph the lines \( y = 1 \), \( 2x - 3y = 1 \), and \( 4x + y = 37 \) on the grid provided above.

2. Determine algebraically the points of intersection of the lines. Show the work that determines your answers.

3. Verify your answers to question 2 graphically.
4. Find the lengths of each side of the figure bounded by the lines. (Hint: Use the Pythagorean Theorem.) Show the work that leads to your answers.

5. Determine the area of the figure bounded by the lines.

6. Give coordinates for a set of points that would form a rectangle having the same area as that of the bounded figure.

7. Justify that the area of your rectangle is the same as that of the original figure.

8. Write the equations for the lines that would include the sides of the rectangle created in question 6.