

YOUR NAME: _____

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Read each problem **very carefully** before starting to solve it. Each problem is worth 10 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. How much ethanol should be added to 90 gallons of gasoline that contains 10% ethanol to get a mixture that is 80% ethanol?

2. Solve the compound inequality

$$2 \leq 3 - \frac{1}{4}x \quad \text{and} \quad \frac{5 - 3x}{4} < 2.$$

Please, write your answer in interval notation.

3. Solve the absolute value inequality

$$3|5 - 2x| - 26 \geq 7.$$

Please, write your answer in interval notation.

4. We are given a line ℓ that passes through the points $(-1, 7)$ and $(14, -3)$.

(a) Find an equation for the line ℓ' that is perpendicular to ℓ and passes through $(-1, 7)$.

(b) Is the line ℓ' of Part (a) parallel to the line ℓ'' that has equation $3x + 2y = -10$? Please, justify your answer.

5. Graph the solution set of the inequality **in two variables**

$$5x + 3y \geq 15.$$

Please, be clean, label on your graphs all points of interest and show all your steps clearly.