

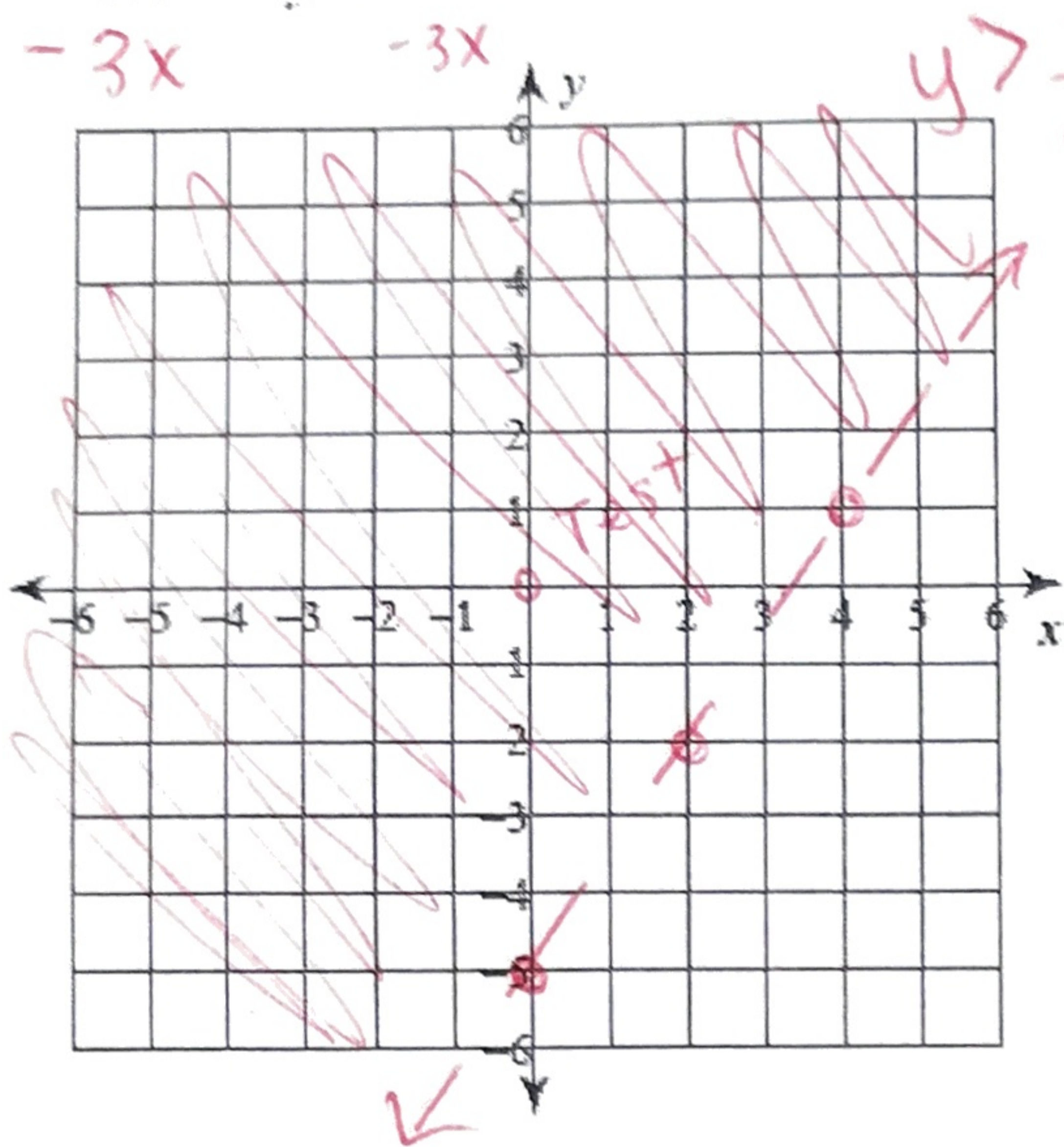
Name: _____

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#31 Solving Inequalities

1) Graph each of the following inequalities.

a) $3x - 2y < 10$

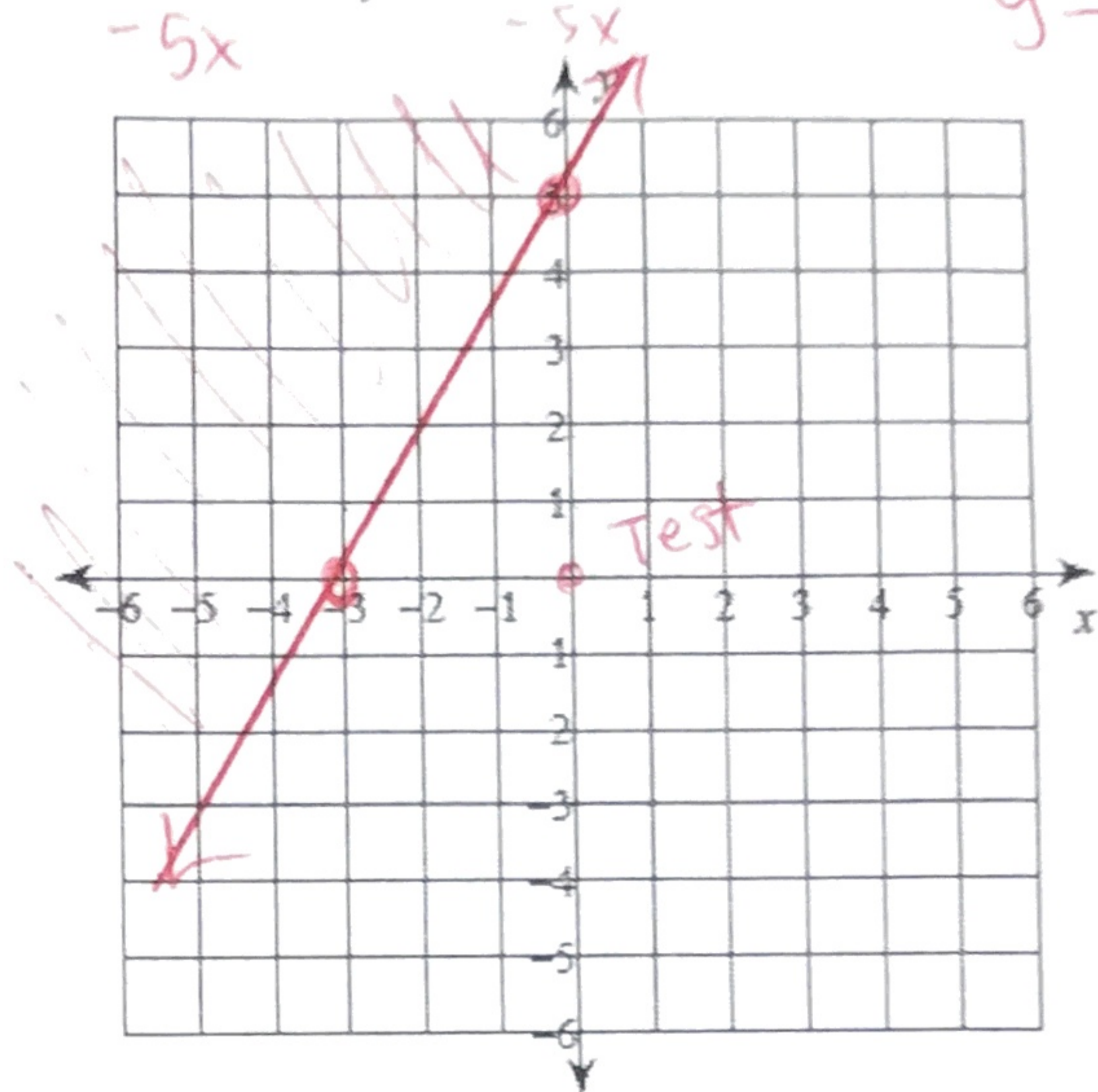


$$\frac{-2y < -3x + 10}{-2} \quad \frac{-2y < -3x + 10}{-2}$$

$$y > \frac{3}{2}x - 5$$

Test
 $3(0) - 2(0) < 10$
 $0 - 0 < 10$
 $0 < 10$
 True

b) $5x - 3y \leq -15$



$$\frac{-3y \leq -5x - 15}{-3} \quad \frac{-3y \leq -5x - 15}{-3}$$

$$y \geq \frac{5}{3}x + 5$$

Test
 $5(0) - 3(0) \leq -15$
 $0 - 0 \leq -15$
 $0 \leq -15$
 False

You mow lawns for \$12 each lawn and charge \$6 an hour for babysitting. You want to save up for summer camp and need at least \$600. Write an inequality that shows the combinations of yards mowed and hours babysat needed to reach your goal.

x: # of lawns mowed
 y: # of hours babysitting

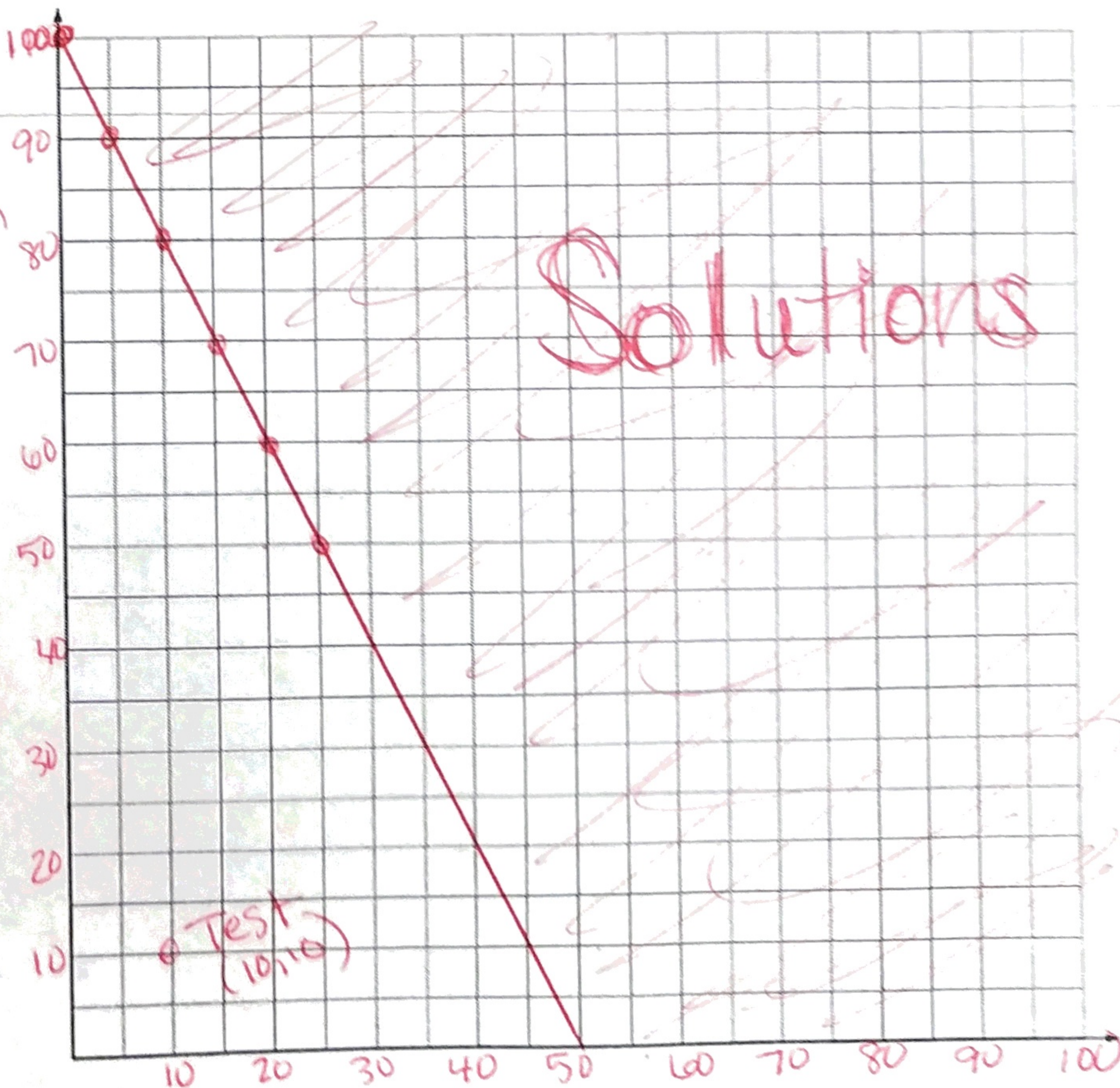
$$12x + 6y \geq 600$$

$$\frac{6y \geq -12x + 600}{6} \quad \frac{6y \geq -12x + 600}{6}$$

$$y \geq -2x + 100$$

graph
 solid

hours babysitting



Test
 $12(10) + 6(10) \geq 600$
 $120 + 60 \geq 600$
 $180 \geq 600$ False

lawns mowed

3) Solve the following inequalities. Write your answer in interval notation.

a) $-3x + 2 < 14$
 $\quad -2 \quad -2$

$$\frac{-3x}{-3} < \frac{12}{-3}$$

$$x > -4$$
$$(-4, \infty)$$

b) $10 \geq 6(2x - 5) - 14x$

$$10 \geq 12x - 30 - 14x$$

$$10 \geq -2x - 30$$
$$+30 \quad +30$$

$$\frac{40}{-2} \geq \frac{-2x}{-2}$$

$$-20 \leq x \text{ or } x \geq -20 \quad [-20, \infty)$$

c) $6(3x - 2) + 10x > 4x - 10$

$$18x - 12 + 10x > 4x - 10$$

$$28x - 12 > 4x - 10$$
$$-4x \quad -4x$$

$$24x - 12 > -10$$
$$+12 \quad +12$$

$$\frac{24x}{24} > \frac{2}{24}$$

$$x > \frac{1}{12}$$
$$\left(\frac{1}{12}, \infty\right)$$

d) $5x - 4(2x + 6) \leq 16 - 3x$

$$5x - 8x - 24 \leq 16 - 3x$$

$$-3x - 24 \leq 16 - 3x$$
$$+3x \quad +3x$$

$$-24 < 16$$

True

$$\infty$$