Name: _____ Date: _____ Hour: __Alg 1__

Unit 4 Day 14: Review Day

Focus Question: Can I solve a system by choosing an efficient method?

Determine which system has zero, one, and infinite solutions. Explain why each occurs. If it is one solution, decide if the lines are perpendicular. Check your answer by graphing.

slopes are opp. recip.

A. $3x - 6y = 24$

$-6y = -3x + 24$

$-3x \quad -3x$

$y = -\dfrac{1}{2}x - 2$

B. $2(3x - 6y = 0) \cdot 2$ $-6x + 12y = 0$

$-6x + 12y = 4$

C. $3x - 6y = -12$

$(-4,0)\ (0,2)$ Graphing

$\dfrac{3x}{3} - \dfrac{6y}{-6} = \dfrac{-12}{3}$

$y - 5 = \dfrac{1}{2}(x - 6)$

pt $(6,5)$

$3x - 6(-\tfrac{1}{2}x - 2) = 24$

$3x + 3x + 12 = 24$

$6x + 12 = 24$

$\underline{-12 \quad -12}$

$\dfrac{6x}{6} = \dfrac{12}{6}$

$x = 2$

$y = \tfrac{1}{2}x - 4$

$-\tfrac{1}{2} \quad \tfrac{1}{2}$

opp but not recip. so not perp.

$0 = -4$ False

$\varnothing$

parallel (same slope) diff y int

coinciding (same slope same y int)

∞

Subs.

$y = -\tfrac{1}{2}(2) - 2$

$y = -1 - 2$

$y = -3$

1 sol $(2, -3)$
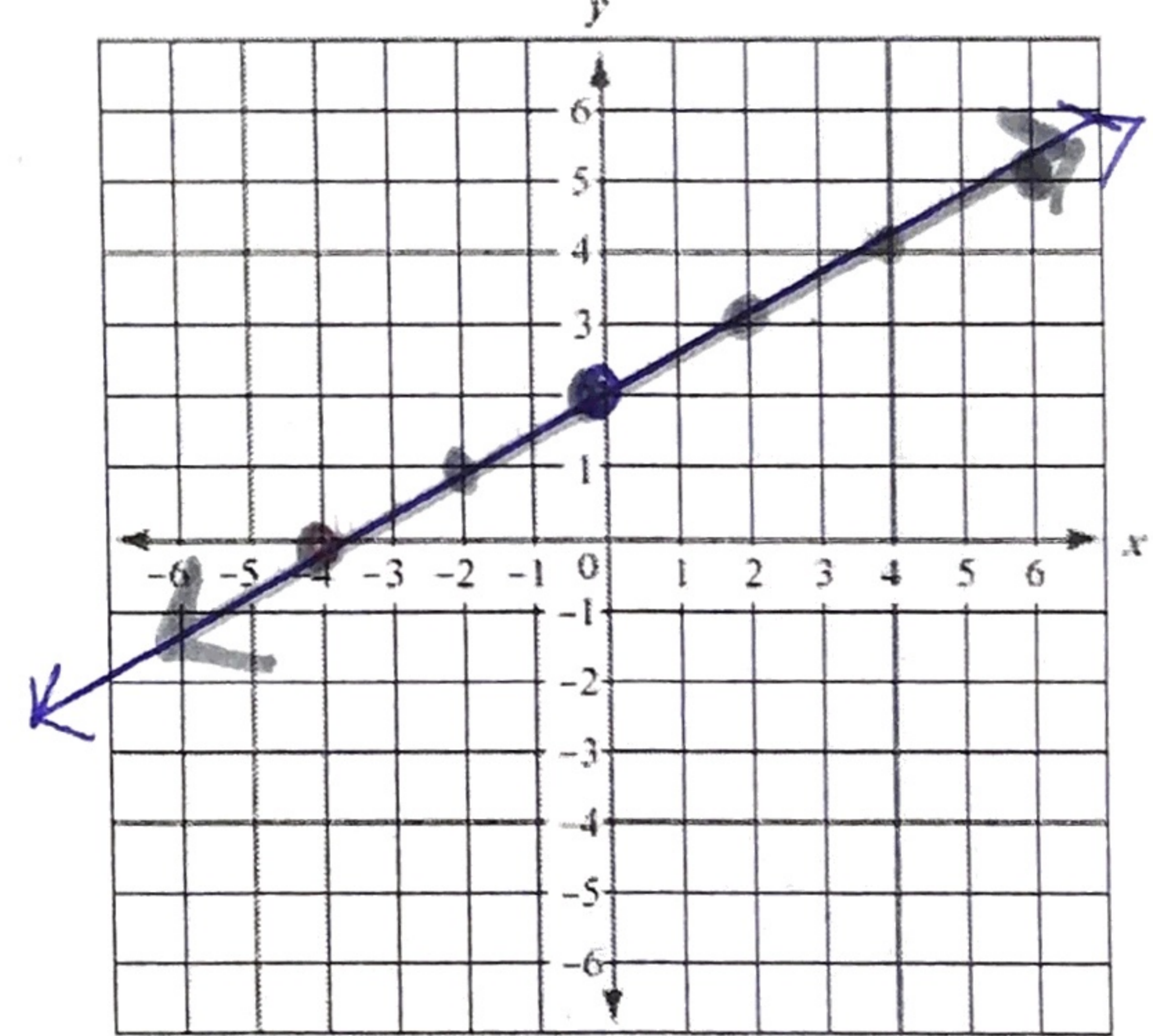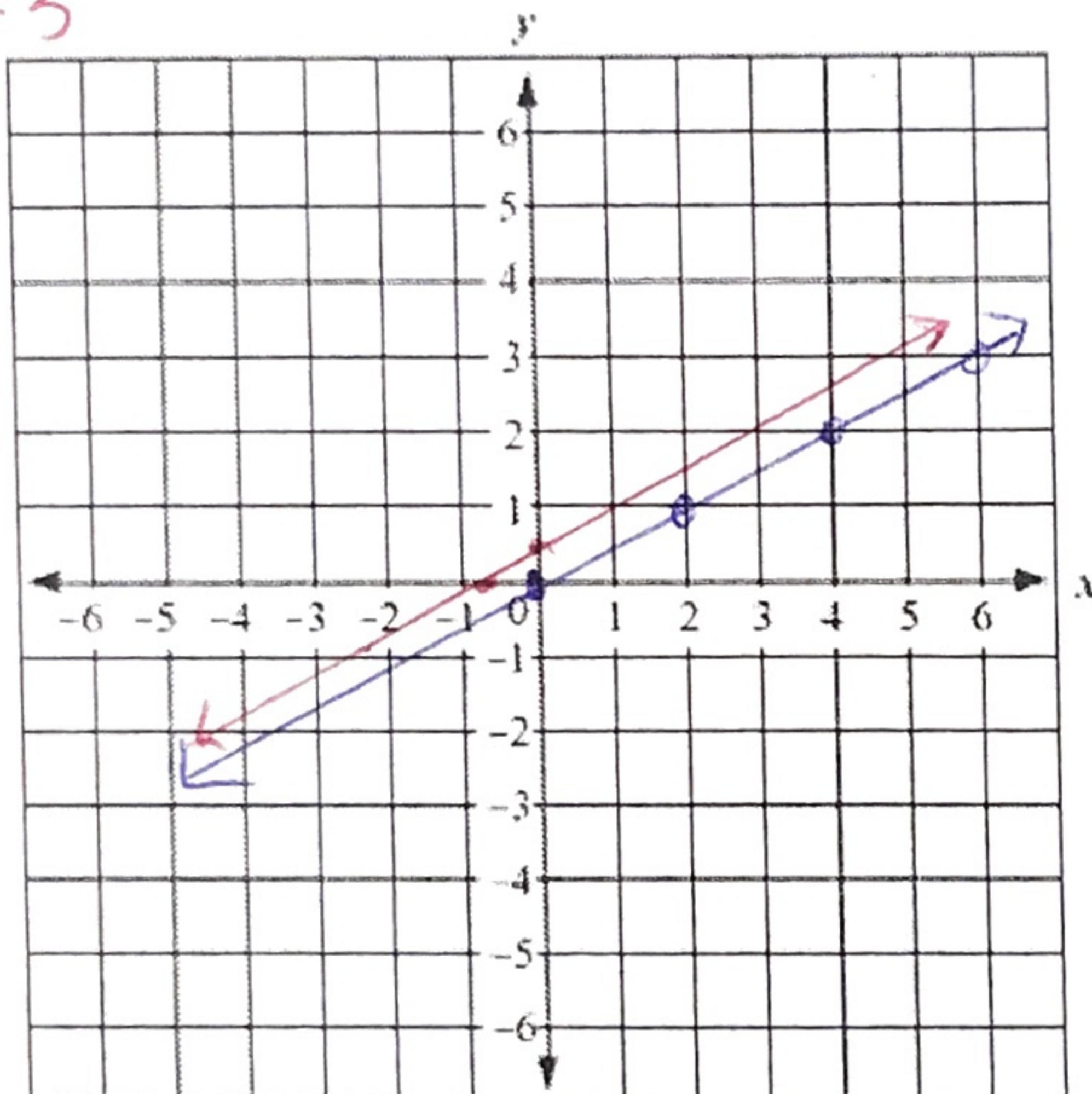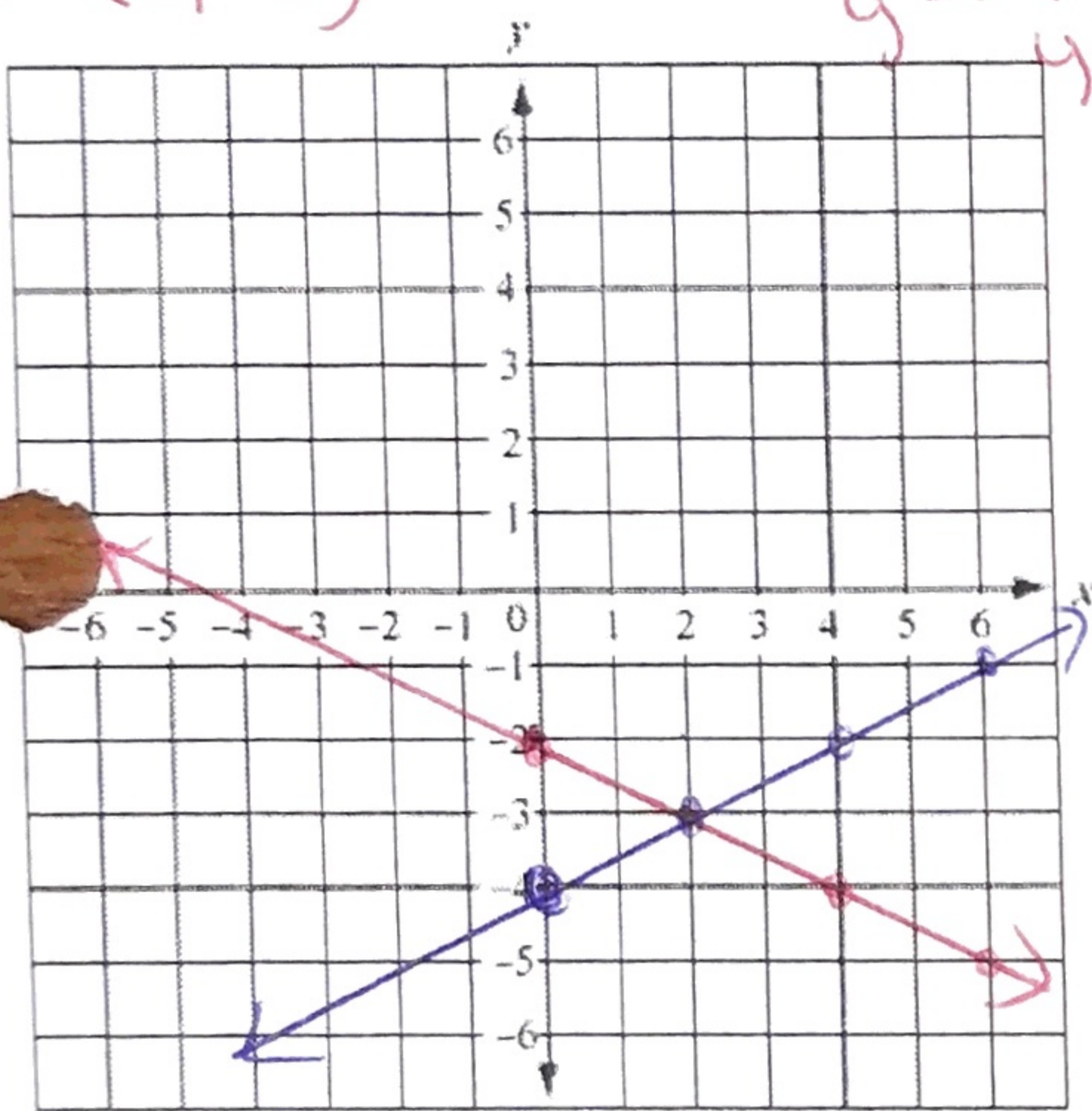
Do your work for the following problems on your own paper.

Problem	Variables	Equations	Best Method	Answer
Phone company A charges a customer enrollment fee of $30 and $40 per month. Phone company B charges $60 per month but only a $5 enrollment fee. When would it be best to choose company B?	C: cost A (comp A) M: # of months B (comp B)	$C_A = 40m + 30$ $C_B = 60m + 5$	$f(x) = g(x)$ $C_B < C_A$	If you only plan on having the phone 1 month

when company B costs less

Problem	Variables	Equations	Method	Answer
Marsha is buying plants and soil for her garden. The soil cost $4 per bag, and the plants cost $10 each. She wants to buy at least 5 plants and can spend no more than $100. ↑ inequalities only way to solve is graph!	x: # of bags of soil y: # of plants	$4x + 10y \leq 100$ $y \geq 5$	Graph	Many possible $(3, 7)$ or $(5, 6)$
A breakfast menu list 2 eggs with 1 sausage patty for $2.23 and 3 eggs with 2 sausage patties for $3.76. How much would you expect to pay for the Glutton's Breakfast of 5 eggs and 7 sausage patties?	s: cost of sausage e: cost of egg	$2(2e + s) = 2.23 \cdot 2$ $3e + 2s = 3.76$	Elim.	$9.31
You pay $24.50 for 10 gallons of gasoline and 1 quart of oil at a gas station. Your friend pays $22 for 8 gallons of the same gasoline and 3 quarts of the same oil. Find the cost of 1 gallon of gasoline.	q: cost of oil g: cost of gas	$3(10g + q) = 24.50 \cdot 3$ $8g + 3q = 22$	Eliminate (the q)	$g \approx \$2.34$
Kennedy High School was selling bumper stickers and shirts as a fundraiser for their student council. They were keeping orders similar to the table below. They know Janice bought 1 bumper sticker and 3 shirts. How much was Janice's total?	b: cost of bumper stickers s: cost of shirts	$3(2b + 5s) = 53 \cdot 3$ $2(3b + 4s) = 48 \cdot 2$	Elim.	$31

Table for last problem:

Customer	Bumper Stickers	Shirts	Total
Margie	2	5	53
Jack	3	4	48

$C_B < C_A$

$60m + 5 < 40m + 30$

$-40m \phantom{+5 <}\; -40m$
_____

$20m + 5 < 30$

$\; -5 \quad -5$
_____

$\dfrac{20m}{20} < \dfrac{25}{20}$

$m < {}^{25}/_{20}$

#of plants

#of bags of soil

Solutions
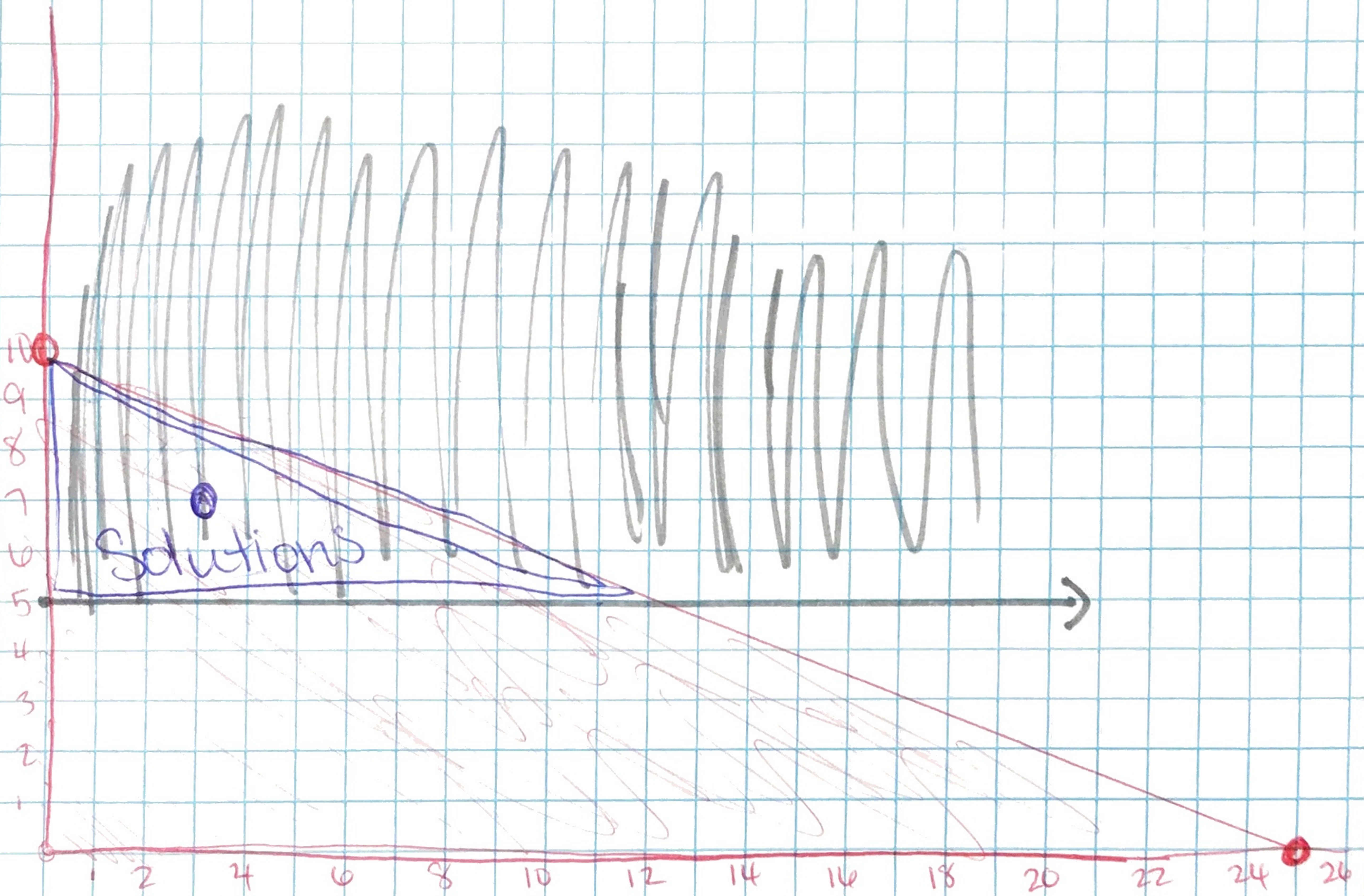
$$4e + 2s = 4.46$$
$$-3e + 2s = 3.76$$
$$e \quad\quad = .7$$

$$e = \$0.70 \qquad 5e + 7s$$
$$5(.7) + 7(.83)$$
$$9.31$$

$$2(.7) + s = 2.23 \quad s = .83$$
$$1.40 + s = 2.23$$
$$-1.40 \qquad -1.40$$
$$s = .83$$

Kennedy High School
$$6b + 15s = 159$$
$$-6b \mp 8s = -96$$
$$\frac{7s}{7} = \frac{63}{7}$$
$$s = 9$$

Janice $b + 3s$
$$4 + 3(9)$$
$$4 + 27$$
$$\boxed{31}$$

$$2b + 5(9) = 53$$
$$2b + 45 = 53$$
$$-45 \quad -45$$
$$\frac{2b}{2} = \frac{8}{2}$$
$$b = 4$$

Oil & Gas
$$30g + 3q = 73.5$$
$$8g + 3q = 22$$
$$\frac{22g}{22} \quad \frac{q}{q} = \frac{51.5}{22}$$
$$g \approx 2.34$$