
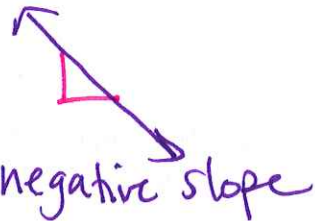


1. With your group, brainstorm and discuss what you know about graphing lines and linear equations. Write down and/or draw what you know. You may also use your book to help you. (The chapter 3 summary is on pages 271-274.)

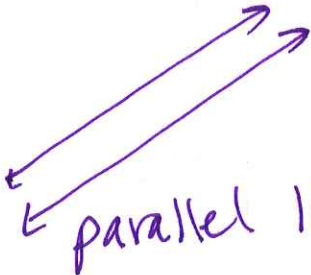
Graphing Lines



positive slope



negative slope



parallel lines

$$y = mx + b$$

$\uparrow$  slope       $\uparrow$  y-intercept

point-slope

$$y - y_1 = m(x - x_1)$$

$$y = 3x + 2$$

Slope

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{\text{rise}}{\text{run}}$$

table of values

x	y	x	y = 3x + 2	y

2. You want to join a gym and you are comparing two local gyms to see which is a better deal. The Abs Gym has a joining fee of \$100 and a monthly fee of \$25. The Krunch Gym has no joining fee and a monthly fee of \$50. Write an equation for each linear pattern below.

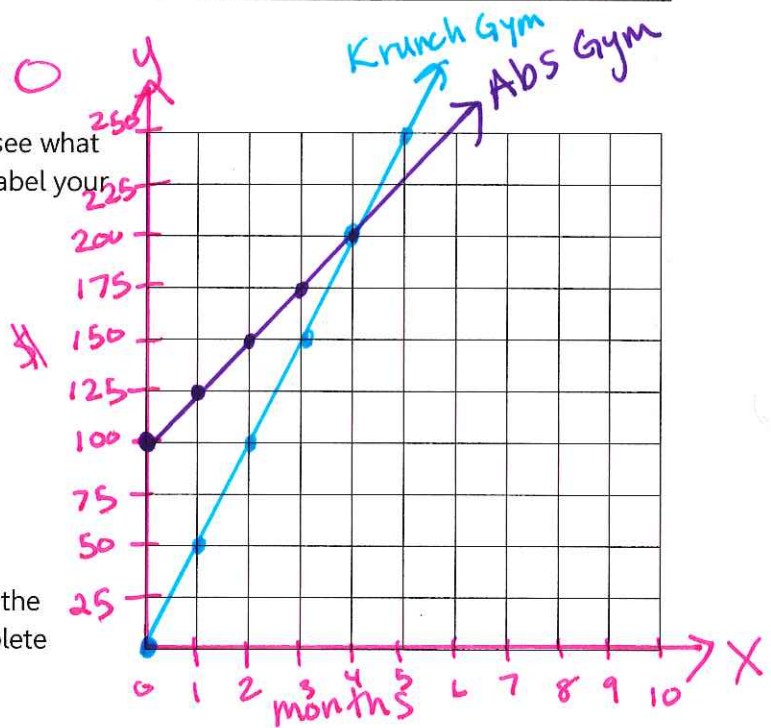
a.

$y = \text{total cost}$       $x = \text{\# of months}$

	Equation of the linear pattern	slope	y-intercept
Abs Gym	$y = 25x + 100$	$\frac{25}{1}$	100 or (0, 100)
Krunch Gym	$y = 50x$	$\frac{50}{1}$	0 (0, 0)

or  
 $y = 50x + 0$

b. Graph the two lines (system) together to see what happens. Choose an appropriate scale and label your axes.



c. What is the solution of this system? Write the solution in solution set notation and a complete sentence.

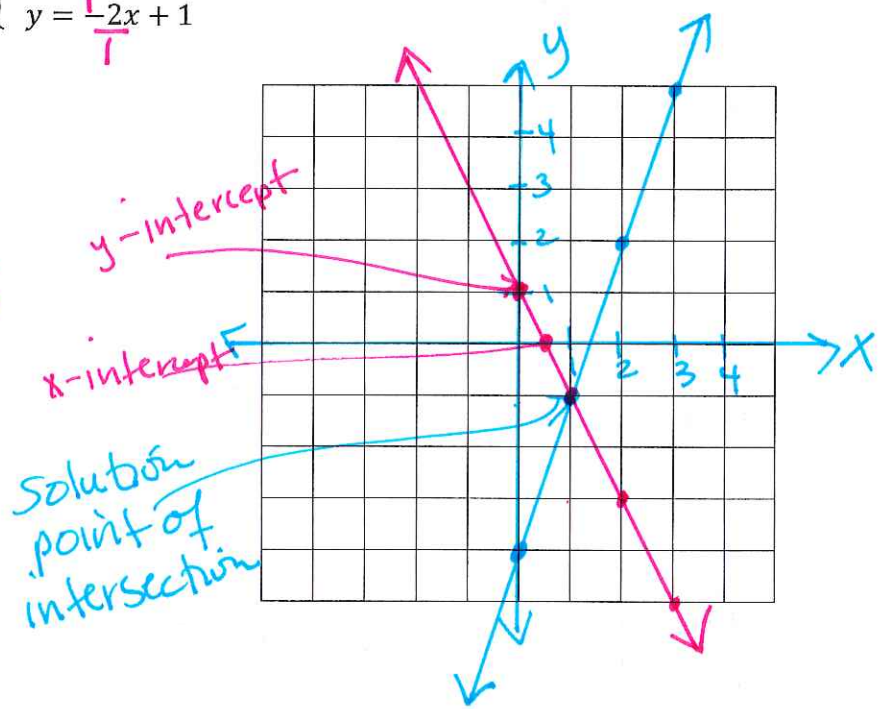
Solution set brackets  $\rightarrow \{(x, y) \mid (4, 200)\}$

After 4 months, the cost of both gyms is the same, or \$200.

d. Which gym would you choose and why?

3. Solve the system by graphing.  $\begin{cases} y = \overset{m}{3}x - \overset{b}{4} \\ y = \overset{m}{-2}x + \overset{b}{1} \end{cases}$

$\{(1, -1)\}$



4. Solve the system by graphing.  $\begin{cases} x + 2y = 2 \\ x - y = 2 \end{cases}$

$y = mx + b$

Solve for y first

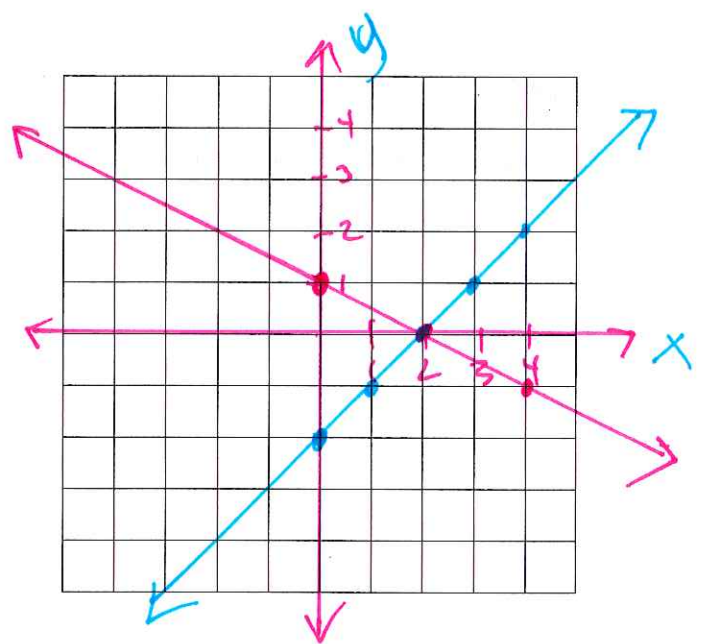
$$\begin{array}{r} x + 2y = 2 \\ -x \quad -x \\ \hline 2y = -x + 2 \\ \frac{2y}{2} = \frac{-x}{2} + \frac{2}{2} \\ y = -\frac{1}{2}x + 1 \end{array}$$

$$y = -\frac{1}{2}x + 1$$

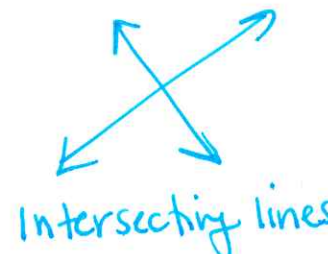
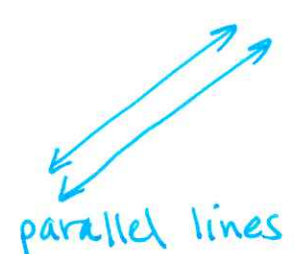

$$\begin{array}{r} x - y = 2 \\ -x \quad -x \\ \hline -y = -x + 2 \\ \frac{-y}{-1} = \frac{-x}{-1} + \frac{2}{-1} \\ y = x - 2 \end{array}$$

$$y = x - 2$$

$\{(2, 0)\}$



5. There are only 3 possible ways that 2 lines can relate to each other. Draw them in the first row of the table. Fill in as much of the table as you can. You may use pages 284-285 to help.

Graph	 Intersecting lines	 parallel lines	 coinciding lines
Number of Solutions	1	none	infinitely many
Slopes and Intercepts	different slopes y-intercepts can be the same or different	same slope different intercepts	same slopes same intercepts
Solution Set Notation	ex: $\{(2, 0)\}$	or $\emptyset$ or $\{ \}$ no solution	ex: $\{(x, y)   y = x - 2\}$

6. Determine whether the given ordered pair is a solution of the system.

$$\begin{cases} 4x + 3y = 1 \\ 3x - 4y = 1 \end{cases}$$

a. Is  $(-1, 1)$  a solution? Show your evidence below.

$$\begin{aligned} 4(-1) + 3(1) &\stackrel{?}{=} 1 \\ -4 + 3 &\stackrel{?}{=} 1 \\ -1 &\neq 1 \quad \text{not a solution} \end{aligned}$$

The point must be on both lines to be a solution.

b. Is  $(\frac{7}{25}, -\frac{1}{25})$  a solution? Show your evidence below.

$$\begin{aligned} \frac{4}{1}(\frac{7}{25}) + \frac{3}{1}(-\frac{1}{25}) &\stackrel{?}{=} 1 \\ \frac{28}{25} + -\frac{3}{25} &\stackrel{?}{=} 1 \end{aligned}$$

$$\frac{25}{25} = 1 \quad \text{True}$$

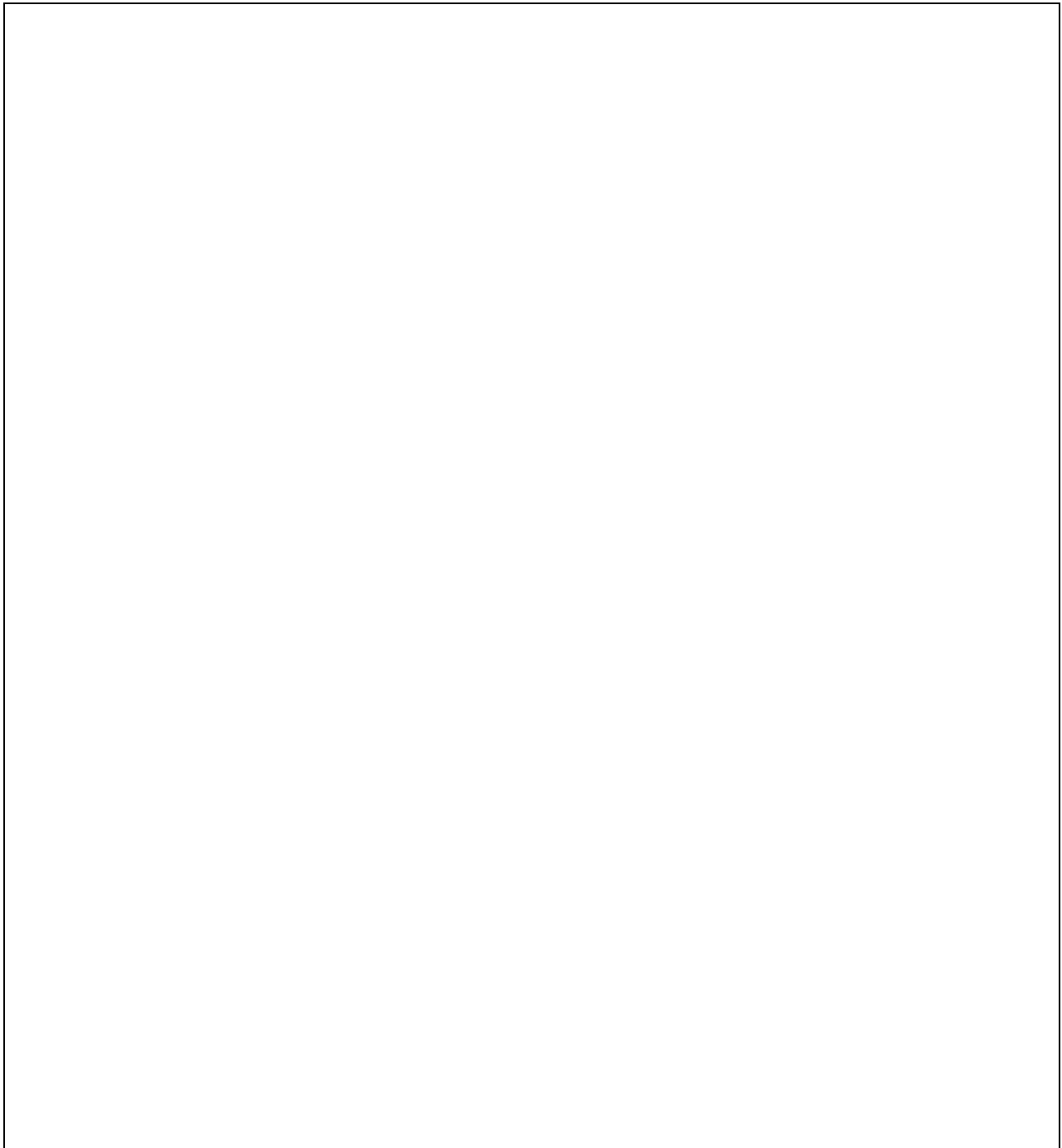
$$\frac{3}{1}(\frac{7}{25}) - \frac{4}{1}(-\frac{1}{25}) \stackrel{?}{=} 1$$

$$\frac{21}{25} + \frac{4}{25} \stackrel{?}{=} 1$$

$$\frac{25}{25} = 1 \quad \text{True}$$

yes,  $(\frac{7}{25}, -\frac{1}{25})$  is a solution.

1. With your group, brainstorm and discuss what you know about graphing lines and linear equations. Write down and/or draw what you know. You may also use your book to help you. (The chapter 3 summary is on pages 271-274.)

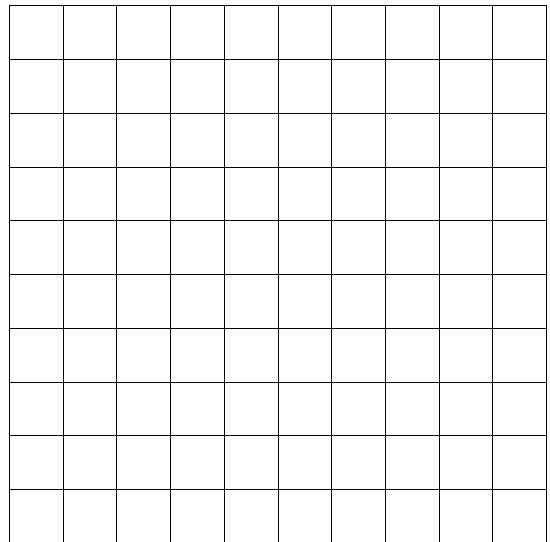
A large, empty rectangular box with a thin black border, occupying most of the page below the instructions. It is intended for students to write down or draw their knowledge about graphing lines and linear equations.

2. You want to join a gym and you are comparing two local gyms to see which is a better deal. The Abs Gym has a joining fee of \$100 and a monthly fee of \$25. The Krunch Gym has no joining fee and a monthly fee of \$50. Write an equation for each linear pattern below.

a.

	<b>Equation of the linear pattern</b>	<b>slope</b>	<b>y-intercept</b>
Abs Gym			
Krunch Gym			

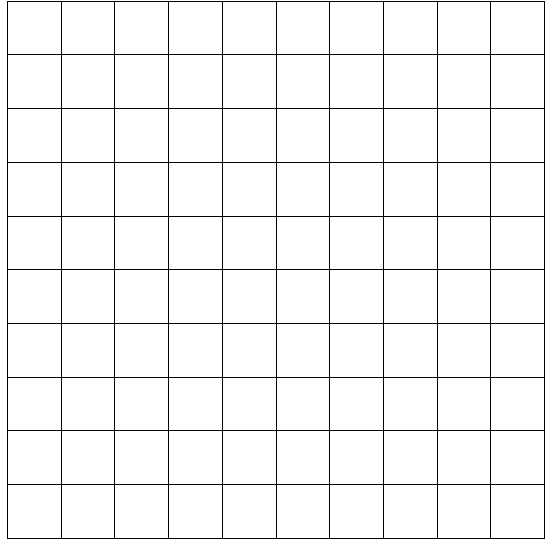
b. Graph the two lines (system) together to see what happens. Choose an appropriate scale and label your axes.



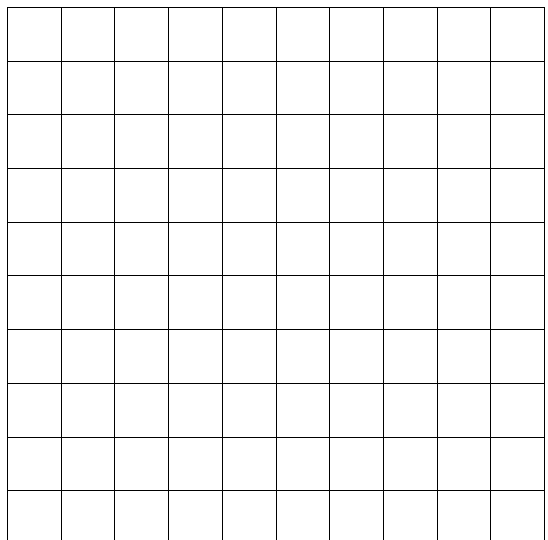
c. What is the solution of this system? Write the solution in solution set notation and a complete sentence.

d. Which gym would you choose and why?

3. Solve the system by graphing.  $\begin{cases} y = 3x - 4 \\ y = -2x + 1 \end{cases}$



4. Solve the system by graphing.  $\begin{cases} x + 2y = 2 \\ x - y = 2 \end{cases}$



5. There are only 3 possible ways that 2 lines can relate to each other. Draw them in the first row of the table. Fill in as much of the table as you can. You may use pages 284-285 to help.

Graph			
Number of Solutions			
Slopes and Intercepts			
Solution Set Notation			

6. Determine whether the given ordered pair is a solution of the system.

$$\begin{cases} 4x + 3y = 1 \\ 3x - 4y = 1 \end{cases}$$

a. Is  $(-1, 1)$  a solution? Show your evidence below.

b. Is  $\left(\frac{7}{25}, -\frac{1}{25}\right)$  a solution? Show your evidence below.