

SOLUTIONS..

PUZZLE WORKSHEET:

What Did the Toothless Old Termite Say When He Entered a Tavern ?

Graph each pair of inequalities below and indicate the solution set of the system with crosshatching or shading. The crosshatching or shading, if extended, would cover a set of three letters. Print these letters in the three boxes at the bottom of the page that contain the exercise number.

① $y < x - 1$
 $y \geq -3$

② $x \leq 2$
 $y \leq \frac{2}{3}x - 1$

③ $y < -x + 1$
 $y > \frac{1}{2}x - 2$

④ $y < x$
 $3x + 2y > 4$

⑤ $x - 3y \leq 12$
 $x > 2$

⑥ $y \leq 1$
 $2x + y < 1$

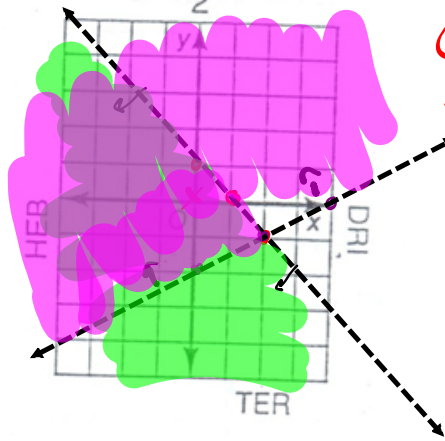
4	4	4	3	3	3	6	6	6	1	1	1	5	5	5	2	2	2
I	S	T	H	E	B	A	R	T	E	N	D	E	R	H	E	R	E

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③

③ $y < -x + 1$
 $y > \frac{1}{2}x - 2$

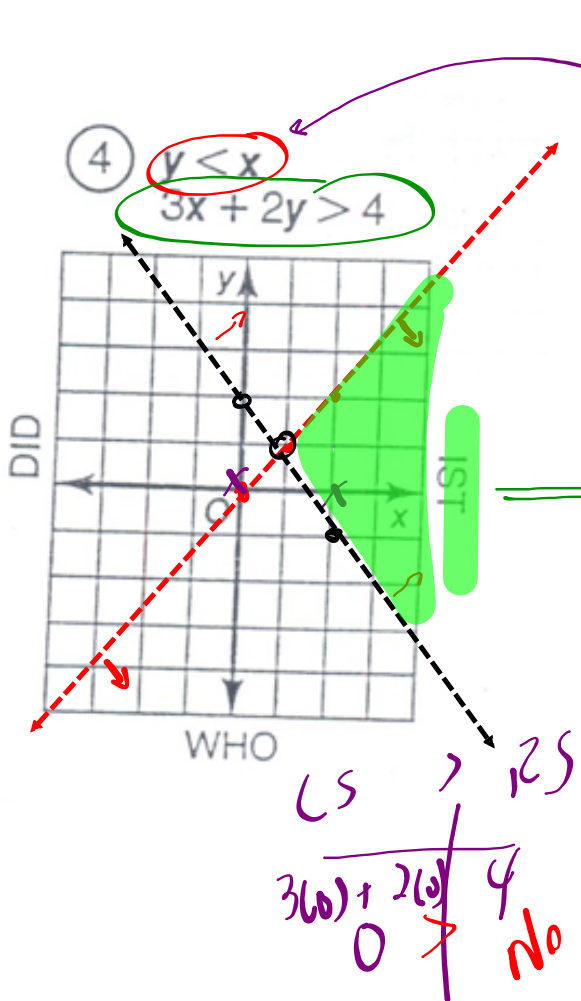


$y = -x + 1$
 $CS < RS$

0	$- (0) + 1$
	1
	yes

$y = \frac{1}{2}x - 2$
 $CS > RS$

0	$\frac{1}{2}(0) - 2$
	-2
	yes



$y = x$
 Test $(2, 0)$
 $LS < RS$

$$\begin{array}{r|l} 0 & 4 & 2 \\ \hline & & \text{yes} \end{array}$$

$3x + 2y = 4$
 $\frac{2y}{2} = -\frac{3x}{2} + \frac{4}{2}$
 $y = -\frac{3}{2}x + 2$

WARM-UP: Graph the solution and state 2 possible solutions...

$$\{(x, y) \mid 2x + y > 8, x \in W, y \in W\}$$

$$\{(x, y) \mid y \leq 2, x \in W, y \in W\}$$

$$2x + y = 8$$

$$y = -2x + 8$$

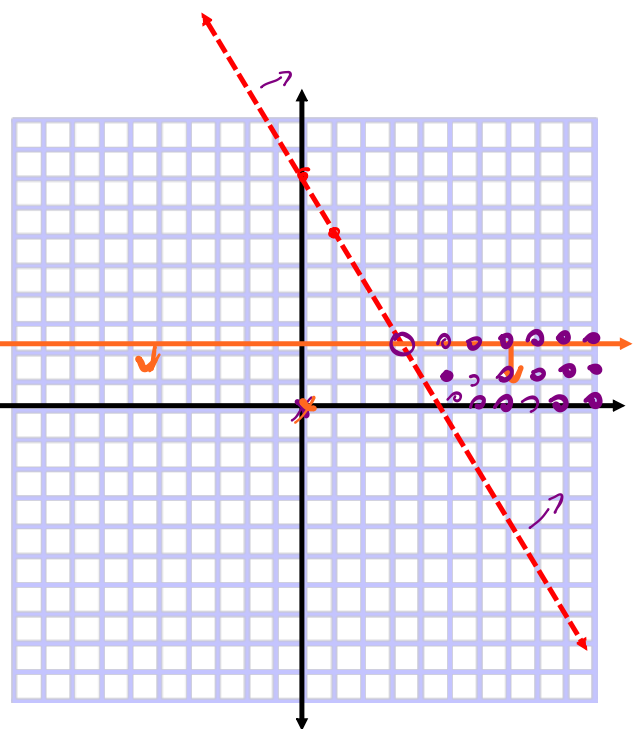
$2x + 0$	$>$	8
0	$>$	8
		No

test
(0, 0)

$$y = 2$$

horizontal

0	\leq	2
		Yes



Applications: Systems Involving Inequalities

STEP 1 - Declare Variables
State Restrictions

STEP 2 - Create Linear Inequalities

STEP 3 - Graph Solution Set

STEP 4 - Answer question(s)

EXAMPLE #1:

To raise funds for π - day, the PI Committee has 500 T-shirts to sell.

They have two varieties:

#1. 'I 8 Sum π ' or #2. ' π - DAY 2017'.

* They expect to sell at least twice as many of the first as the second. *1st depends on 2nd*

Dependency → is when one variable relies on the other variable

y depends on x

dependent
ex: distance

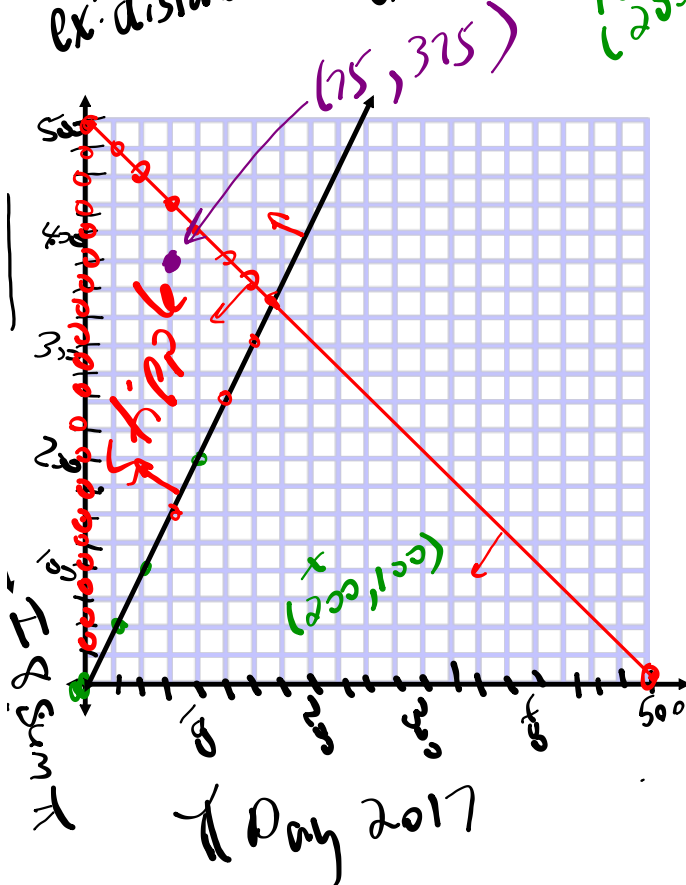
independent
ex: time

a) Define the variables and restrictions. Write a system of linear inequalities that models the situation

x → # of option #2 shirts
y → # of option #1 shirts
 $x \in \mathbb{W}$ $y \in \mathbb{W}$

b) Graph the system of inequalities.

1) $x + y \leq 500$
2) $y \geq 2x$
Test $(200, 100)$
 $100 \geq 2(200)$
 $100 \geq 400$ *Not a solution*



$$x + y = 500$$

$$\underline{x\text{-int}}$$

$$x + 0 = 500$$

$$(500, 0)$$

$$\underline{y\text{-int}}$$

$$0 + y = 500$$

$$(0, 500)$$

$$y = 2x$$

x	y
100	200

c) State a combination of T-shirt sales.

$75 \rightarrow \pi$ Day 2017
 $375 \rightarrow I 8 \pi$

$$2y = x$$

x	y
20	10

VS

$$y = 2x \checkmark$$

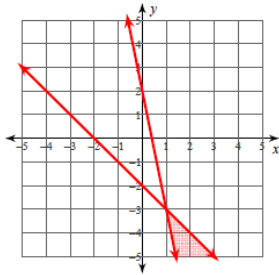
x	y
30	60

Homework:

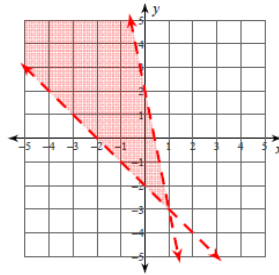
Worksheet - Systems of Linear Inequations.docx



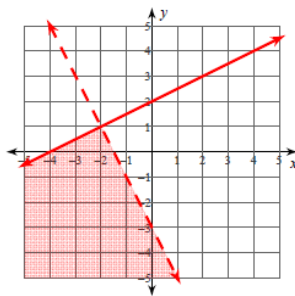
1) $y \leq -x - 2$
 $y \geq -5x + 2$



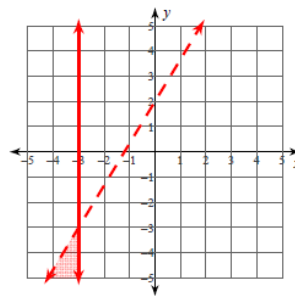
2) $y > -x - 2$
 $y < -5x + 2$



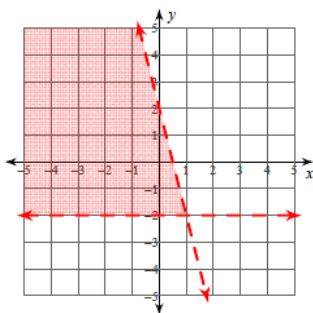
3) $y \leq \frac{1}{2}x + 2$
 $y < -2x - 3$



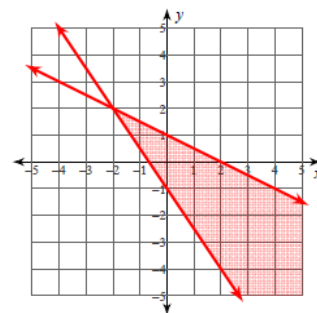
4) $x \leq -3$
 $y < \frac{5}{3}x + 2$



7) $4x + y < 2$
 $y > -2$



6) $3x + 2y \geq -2$
 $x + 2y \leq 2$



Attachments

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