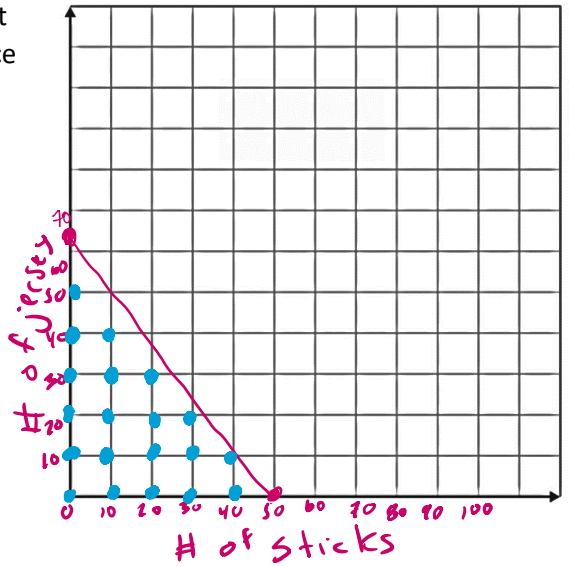
Linyeer Inekwalitees Name: _____

More and More and More Word Problems

1. Liam has been put in charge of buying equipment for his hockey team. Sticks cost $100 and practice jerseys cost $75 each. He has been given a maximum budget of $5000. Write a linear inequality to represent this situation and then show it graphically.



Let x = sticks
y = jerseys

$100x + 75y \leq 5000$

$x \in W$
$y \in W$

x = jerseys
y = sticks

$100y + 75x \leq 5000$

$100x + 75y \leq 5000$
$-100x \quad -100x$

$75y \leq -100x + 5000$

$y \leq -\frac{3}{4}x + 50$

$\frac{75y \leq -100x + 5000}{75}$

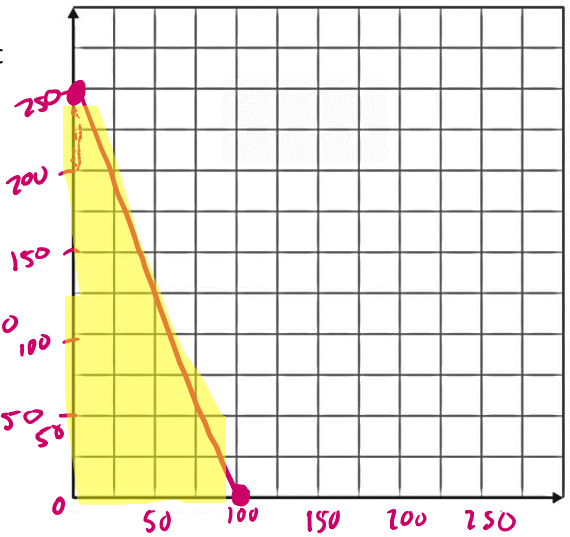
$y \leq -\frac{4}{3}x + \frac{200}{3}$ $(66.\bar{6})$

y-intercept 50
x intercept 66.$\bar{6}$

y-intercept

Find x intercept
$100x = 5000$
$\frac{100x}{100} = 50$

2. At a charity event, raffle tickets are $5 and 50/50 tickets are $2. The event organizers aim to raise at least $500 to save the habitat of the rare teacup panda bear. Write a linear inequality to represent this situation and then graph it.



Let x = raffle tix
y = 50/50

$5x + 2y \geq 500$

$-5x \quad -5x$

$\frac{2y \geq -5x + 500}{2}$

$y \geq -\frac{5}{2}x + 250$

x-intercept: $\frac{5x = 500}{5}$

$x = 100$

$x \in W$
$y \in W$

but because of scale, you can shade

3. Together, Sam and Madi sold at most 40 hamburgers. Sam sold at least 2 more hamburgers than Madi did. Write two inequalities and graph them to show possible solutions to this problem.

Let x = burgers sold by Sami
y = burgers sold by Madi

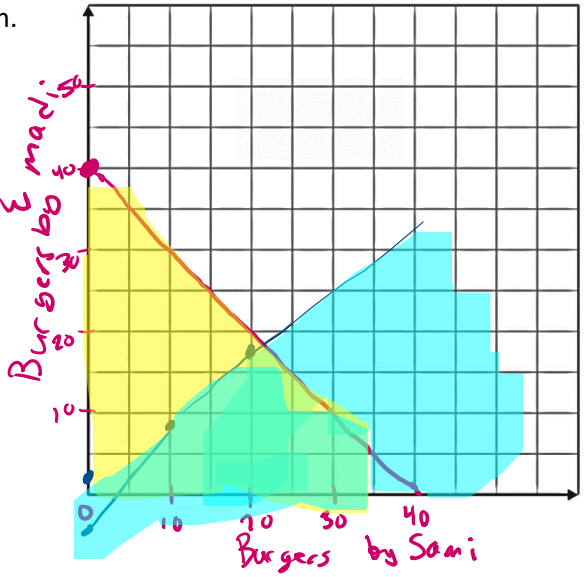
$x + y \leq 40$

$x \geq y + 2$

$x \in W,\ y \in W$

$x + y \leq 40$
$-x \quad -x$
$y \leq -x + 40$

$x \geq y + 2$
$-2 \quad -2$
$x - 2 \geq y$
$y \leq x - 2$

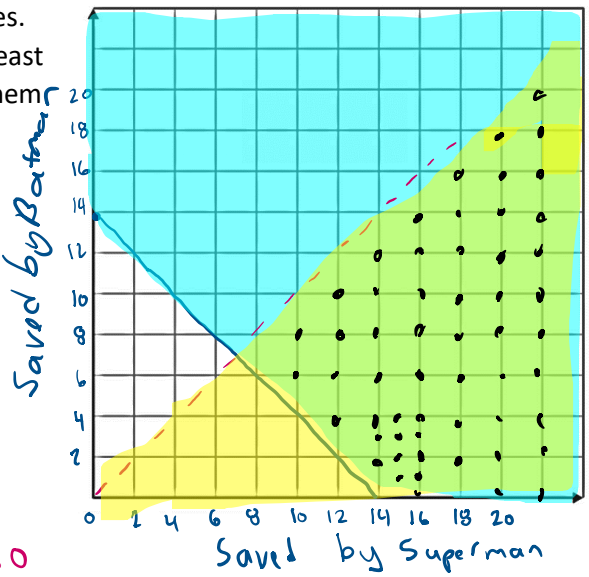


4. Superman saves more people than Batman does. Last month they saved a combined total of at least 14 people. Write two inequalities and graph them to show possible solutions to this problem.

Let x = people saved by Superman
y = by Batman

① $x + y \geq 14$ $\quad x \in W$ $\quad y \in W$

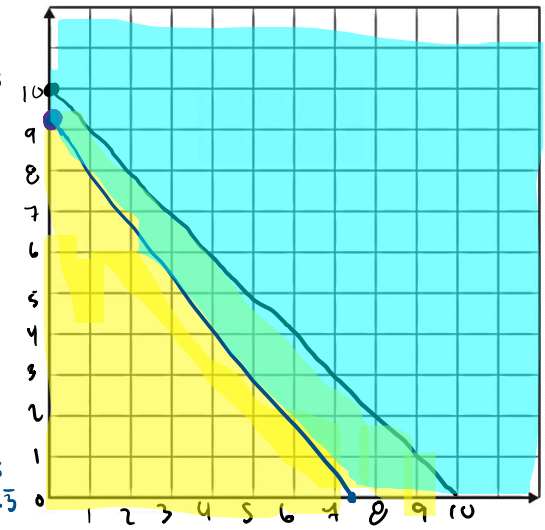
② $x > y$



① $x + y \geq 14$
$y \geq -x + 14$

② $x > y$
$y < x$ & y intercept is 0

5. You can work a total of no more than 10 hours each week at your two jobs. Making balloon animals $15 per hour and your stand-up comedy gig pays $12 per hour. You need to earn at least $110 per week to pay your bills. Write inequalities and graph them to show possible solutions to this problem.



Let x = balloon animals (hours worked)
y = stand up

$x + y \leq 10 \rightarrow y \leq -x + 10$

$15x + 12y \geq 110$ x-intercept $\frac{15x}{15} = \frac{110}{15}$, $x = 7.\overline{3}$

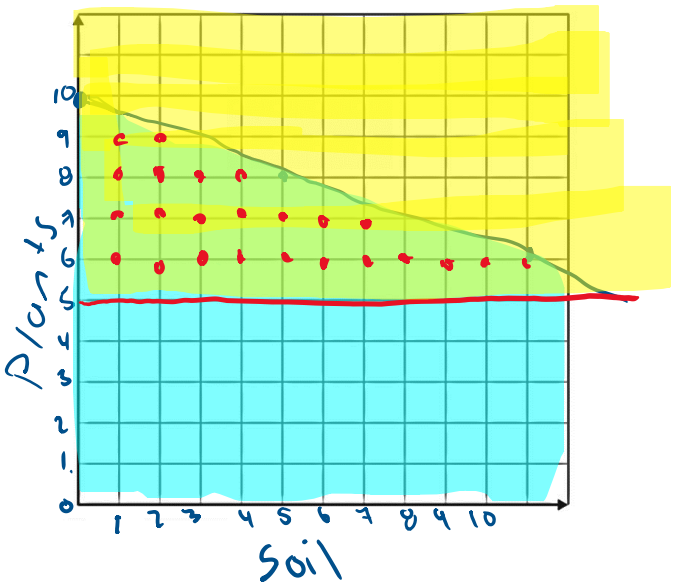
$-15x \quad -15x$

$12y \geq -15x + 110$

$\frac{12}{12}$

$y \geq -\frac{5}{4}x + 9.1\overline{6}$

6. Tori 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. She cannot spend more than $100. Write inequalities and graph them to show possible solutions to this problem.



Let soil = x
plants = y

$4x + 10y \leq 100 \rightarrow \frac{10y}{10} \leq \frac{-4x + 100}{10}$

$y \geq 5$

$y \leq -\frac{2}{5}x + 10$