

Example 3:

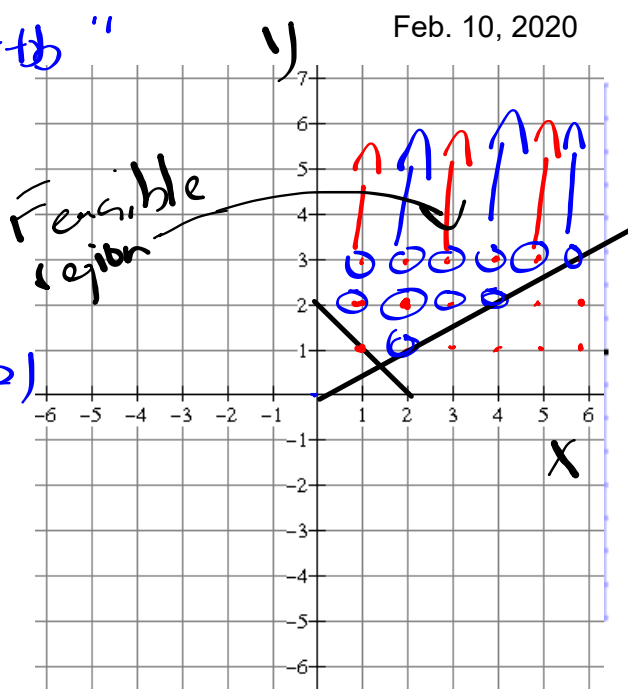
Graph the system
 $\{(x, y) | x + y \geq 2, x \in N, y \in N\}$
 $\{(x, y) | 2y \geq x, x \in N, y \in N\}$

Handwritten notes and calculations:

$x + y = 2$
 Test pt $(2, 2)$
 $2 + 2 \geq 2$
 $4 \geq 2$ ✓

$y \geq \frac{1}{2}x$
 Test pt $(2, 2)$
 $2(2) \geq 2$
 $4 \geq 2$ ✓

Additional notes: $y = mx + b$



Sept. 25, 2014

Sept. 25, 2013

Example 4:

Feb. 10, 2020

GOAL

Solve problems by modelling systems of linear inequalities.

LEARN ABOUT the Math

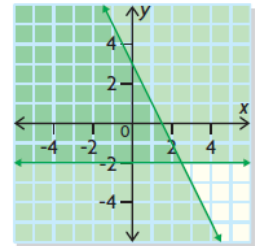
A company makes two types of boats on different assembly lines: **aluminum fishing boats** and **fibreglass bow riders**.

- When both assembly lines are running at full capacity, a maximum of 20 boats can be made in a day.
- The demand for fibreglass boats is greater than the demand for aluminum boats, so the company makes at least 5 more fibreglass boats than aluminum boats each day.



EXPLORE...

- What conclusions can you make about the system of linear inequalities graphed below?



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$x + y \leq 20$

$x + 5 \leq y$

$y > x + 5$

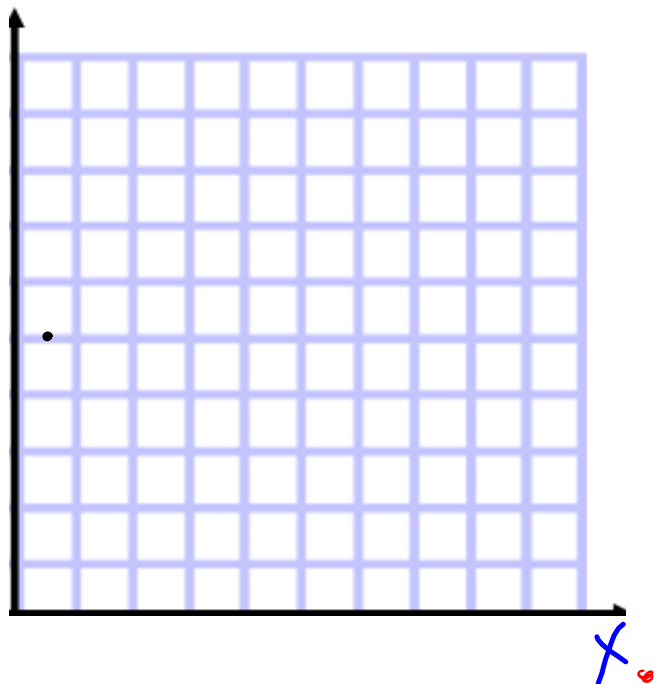
What combinations of boats should the company make each day?

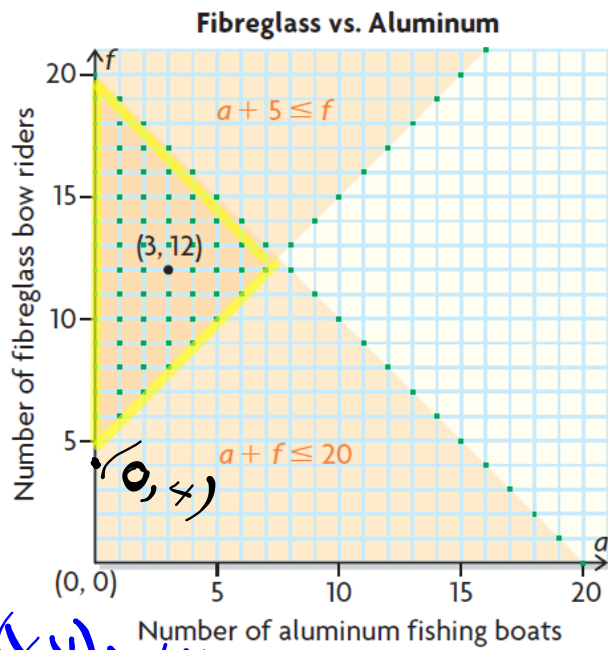
a) $x = \text{aluminum boats}$
 $y = \text{fb}$
 restriction: $x \in \mathbb{N}, y \in \mathbb{N}$

Solution in set notation:

$\{(x, y) \mid x + y \leq 20, x \in \mathbb{N}, y \in \mathbb{N}\}$

$\{(x, y) \mid y > x + 5, x \in \mathbb{N}, y \in \mathbb{N}\}$





$x + 5 \leq y$
 $\hookrightarrow y \geq x + 5$
 Domain
 $x \in \mathbb{W} \leq 7$

Range:
 $y \in \mathbb{W} \quad 5 \leq y \leq 20$

$(x, y) \quad x + y$

$\{(a, f) \mid a + f \leq 20, a \in \mathbb{W}, f \in \mathbb{W}\}$

$\{(a, f) \mid a + 5 \leq f, a \in \mathbb{W}, f \in \mathbb{W}\}$

$y + 5 \leq x$

Gr 11 RF1 Section 5.2 & 5.3 Assignment

/20

Name:

Assignment Due Wednesday

1. Page 225 # 1 & 2

2. Page 236: # 4bd, 7, 8

Quiz Friday (on first two assignments)

3. Word Problem: Show all work on a separate piece of graph paper.

1. A banquet room is set up to seat, at most, 750 people. Each rectangular table seats 24 people, and each circular table seats 5 people.

a) Define the variables and write a linear inequality to represent the number of each type of table needed.

b) The organizers of the banquet would like to have as close to the same number of rectangular tables and circular tables as possible. What combination of tables could they use? Explain your choice using a graph.

4. Graphing: Show all work on this page or a separate piece of graph paper.

Sketch the solution to each system of inequalities.

$$\begin{aligned} 1) \quad & y \leq -x - 2 \\ & y \geq -5x + 2 \end{aligned}$$

$$\begin{aligned} 2) \quad & y > -x - 2 \\ & y < -5x + 2 \end{aligned}$$