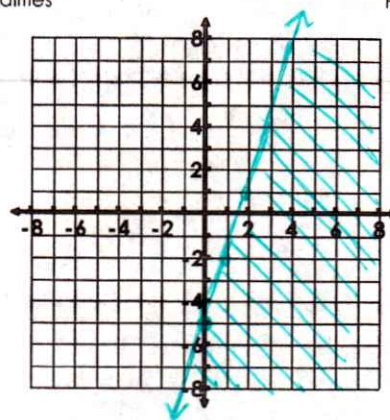


KEY 11/19

$$\begin{array}{r} -3x \quad -3x \\ -y \geq -3x + 5 \\ \hline -1 \quad -1 \quad -1 \end{array} \quad \text{* flip ineq.}$$

$$y \leq 3x - 5$$

Type of Line: solid
Slope: 3 Y-int: -5
Shade: below

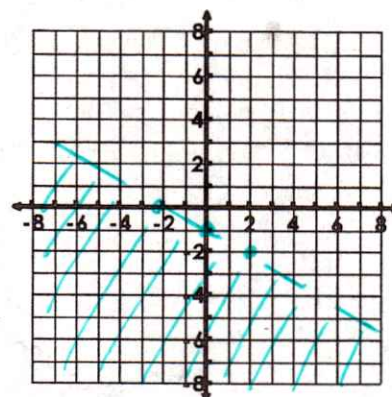


10. $x + 2y < -2$

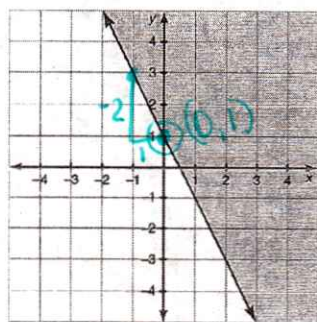
$$\begin{array}{r} -x \quad -x \\ 2y < -x - 2 \\ \hline 2 \quad 2 \quad 2 \end{array}$$

$$y < -\frac{1}{2}x - 1$$

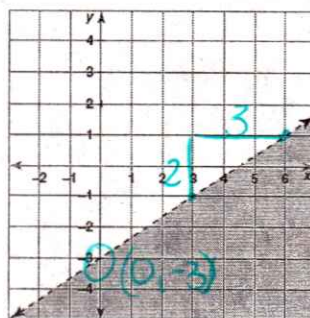
Type of Line: dashed
Slope: -1/2 Y-int: -1
Shade: below



c11. Name each linear inequality (think about shading, slope, y-intercept, dashed/solid line, etc).



$m = -2$ $b = 1$
Line: Dashed or Solid
Shaded: Above or Below
Inequality:
 $y \geq 2x + 1$



$m = 2/3$ $b = -3$
Line: Dashed or Solid
Shaded: Above or Below
Inequality:
 $y < 2/3x - 3$

12. Determine if the following points are solutions to the inequality: $y > -3x - 2$

$x \quad y$
a. (1, 3)

$$3 > -3(1) - 2$$

$$3 > -5$$

✓
true

yes (1, 3) is a
solution

$x \quad y$
b. (-2, 4)

$$4 > -3(-2) - 2$$

$$4 > 4$$

x

not a solution

$x \quad y$
c. (-3, 5)

$$5 > -3(-3) - 2$$

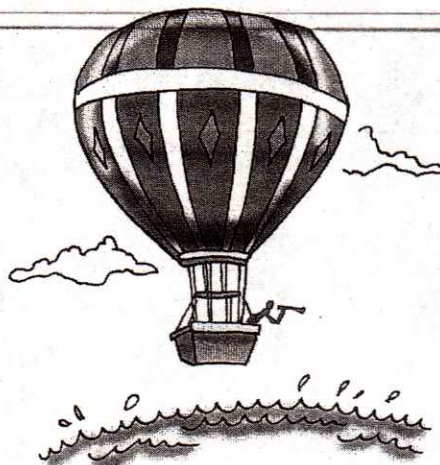
$$5 > 7$$

x

not a solution

"I'm completely lost... water everywhere I can see... both engines have failed... Wait! I see land. I'm going to try to land. I think it's..."

Those were the last words heard from Harold in his hot-air balloon. The last time the balloon showed up on radar, it was near the Solomon Islands in the Pacific Ocean.



Your Task: determine where to send the search-and-rescue teams! Use the following reports along with the map on the Lesson 9.3.2 Resource Page and look carefully for information that will help you draw boundary lines. Write a system of inequalities to give to the search-and-rescue team. Be sure to identify the probable landing site on the map.

Basic facts of the case:

The balloon departed from the airport at the very northern tip of the Philippines. The flight was supposed to follow a straight path *directly* to an airport in French Polynesia.

The balloon's last known location was at $(-1000, 1000)$ near the Solomon Islands.

$$y = \frac{2}{3}x - 2000$$

Pilot's report from a nearby airplane:

"We were on our way from Australia, when we saw a hot-air balloon sinking rapidly. I am certain that it crashed south of our flight path. When we left Australia, we traveled 2000 km north for every 3000 km east that we flew."

$$y \leq \frac{2}{3}x + 2000$$

Phone call received today:

"I was a passenger on a flight that flew directly from French Polynesia to Indonesia. I was looking out my window when I saw the balloon going down to the north of where we were flying."

$$y \geq \frac{2}{3}x$$

9-70.

Notice that each system of inequalities below contains the same boundary lines. On graph paper, graph the boundaries for the system on one set of axes. Then, for each pair of inequalities, work with your teammates to decide which region is the solution, if a solution exists. Be ready to share your conclusions with the class.

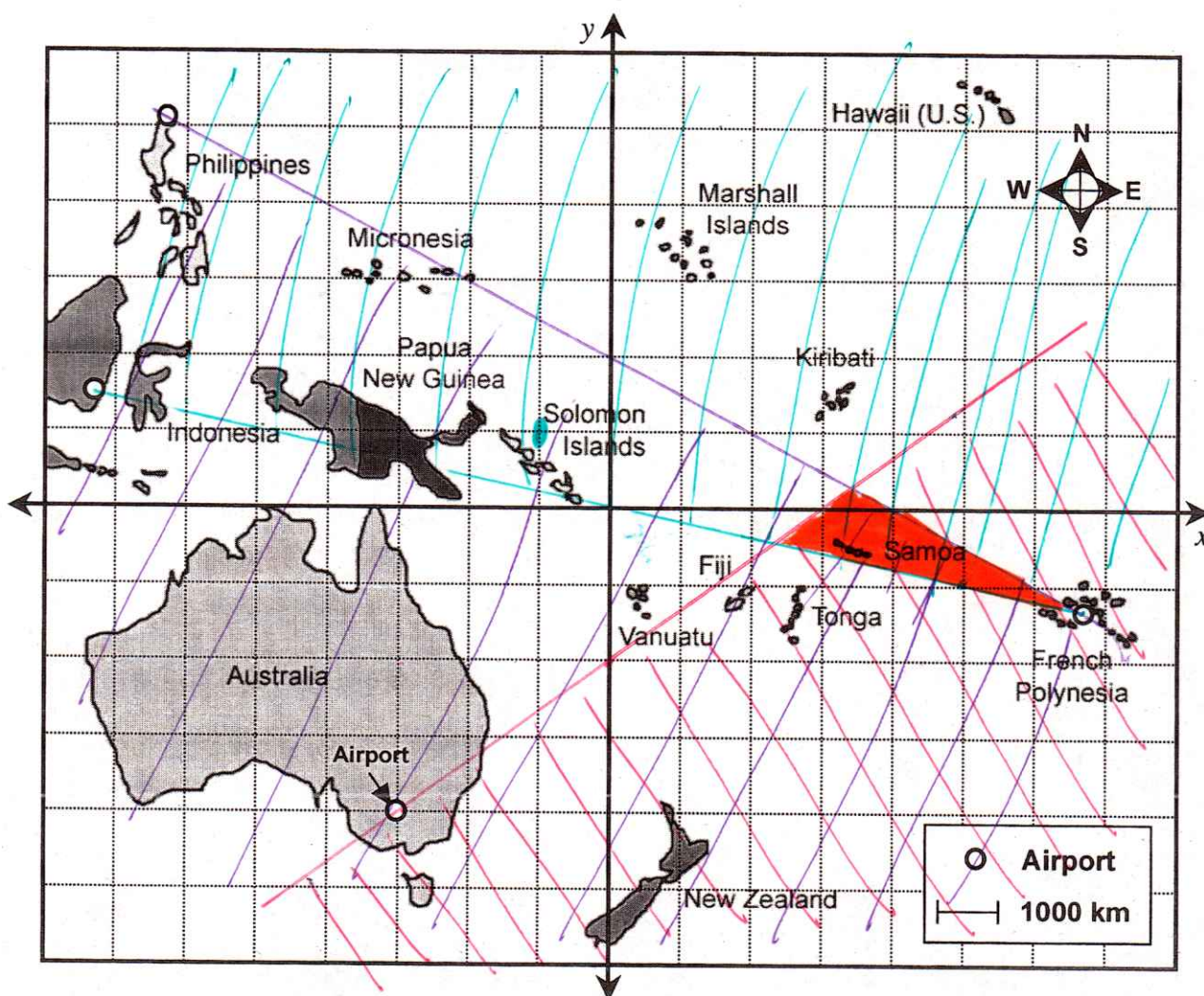
a. $y \leq \frac{2}{3}x + 3$
 $y \geq \frac{2}{3}x$

b. $y \leq \frac{2}{3}x + 3$
 $y \leq \frac{2}{3}x$

c. $y \geq \frac{2}{3}x + 3$
 $y \leq \frac{2}{3}x$

Graphs on separate page

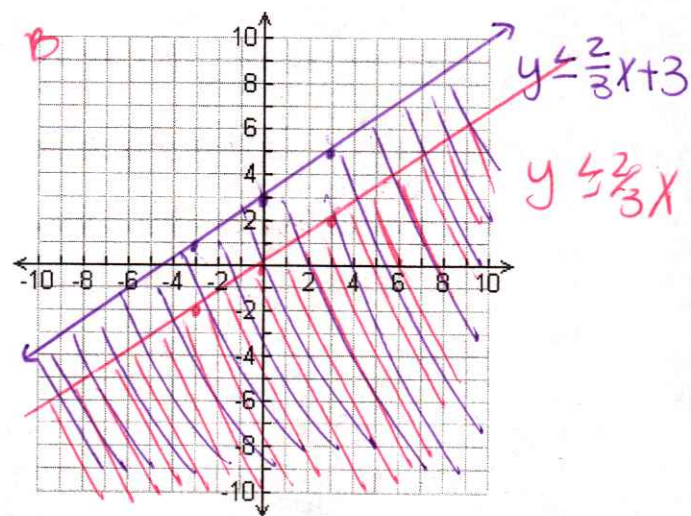
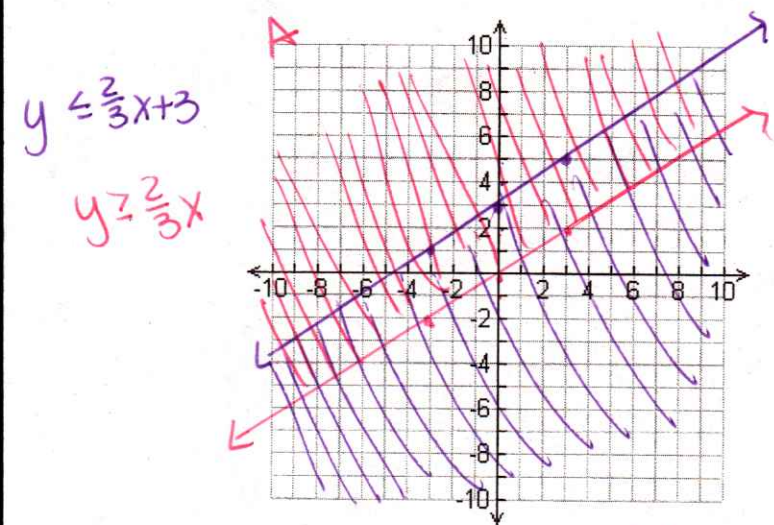
Search and Rescue



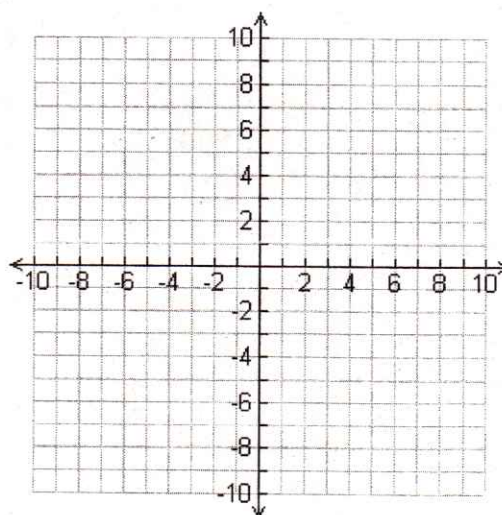
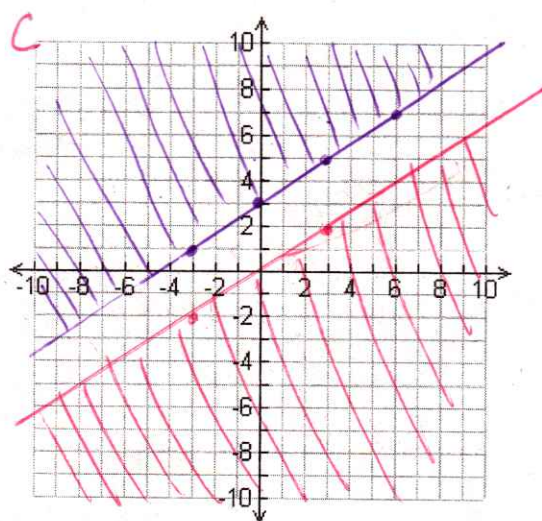
$$y \geq -\frac{1}{5}x$$

$$y \leq \frac{2}{3}x - 2000$$

$$y \leq -\frac{1}{2}x + 2000$$



Solutions in double shaded areas



no solution