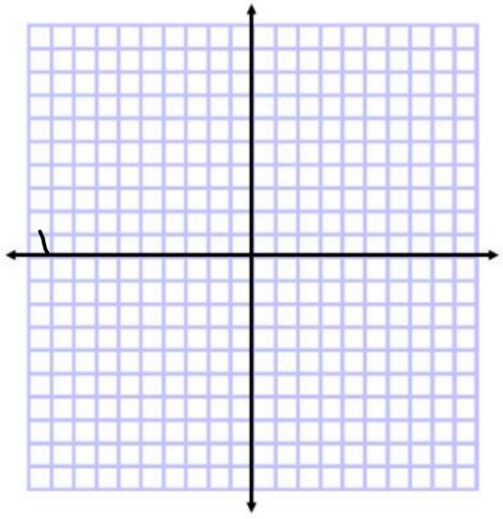
Algebra 2 3.2

Solve systems of inequalities by graphing (2 or more) (< > ≤ ≥)

**Algebra 1 Ch. 5

Determine the coordinates of vertices of feasible regions

y=mx+b
slope
y-intercept
system of ~~equations~~ (< >)
inequality
test point (shade T)
open interval (< >)
closed interval (≤ ≥)
vertex (p. vertices)
whiteboards



KeyConcept Solving Systems of Inequalities

Step 1 Graph each inequality, shading the correct area.

Step 2 Identify the region that is shaded for all of the inequalities. This is the solution of the system.

Example 1 Intersecting Regions

Solve the system of inequalities.

a) $y > 2x - 4$

b) $y \leq -0.5x + 3$

$0 > 0 - 4$

$0 > -4$

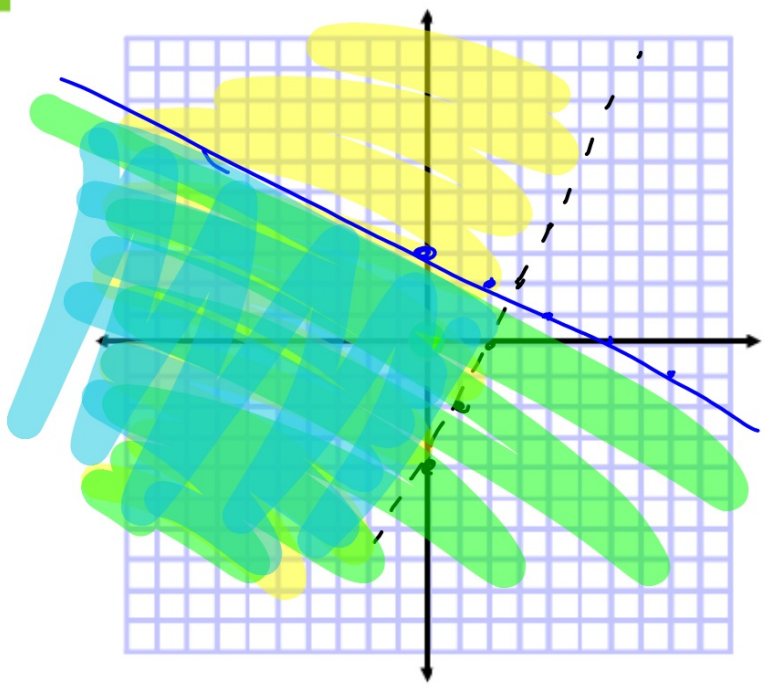
-0.5

-1

2

$0 \leq 0 + 3$

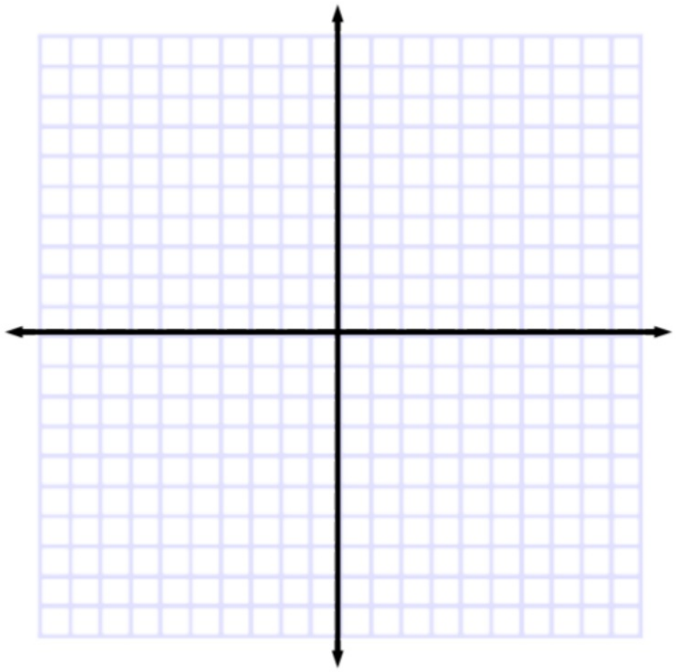
$0 \leq 3$



GuidedPractice

1A. $y \leq -2x + 5$

$y > -\frac{1}{4}x - 6$



Example 2 Separate Regions

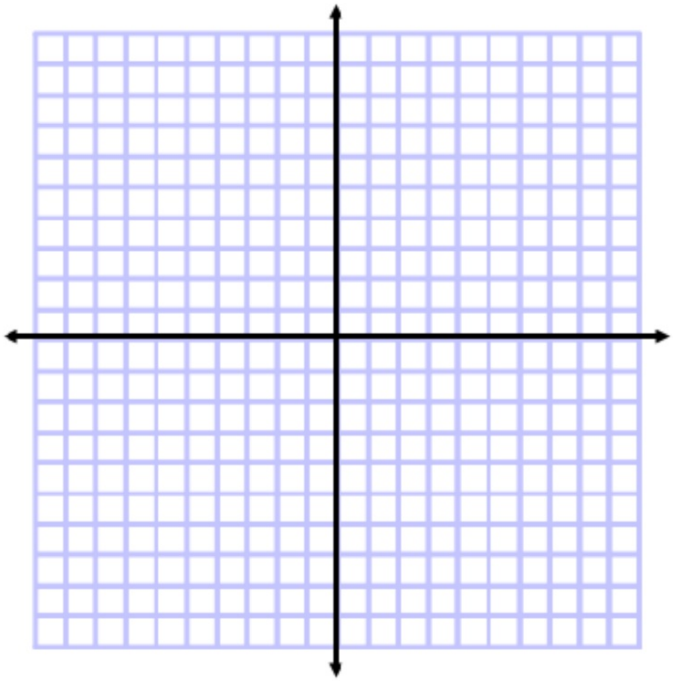
Solve the system of inequalities by graphing.

$y \geq x + 5$

$y < x - 4$

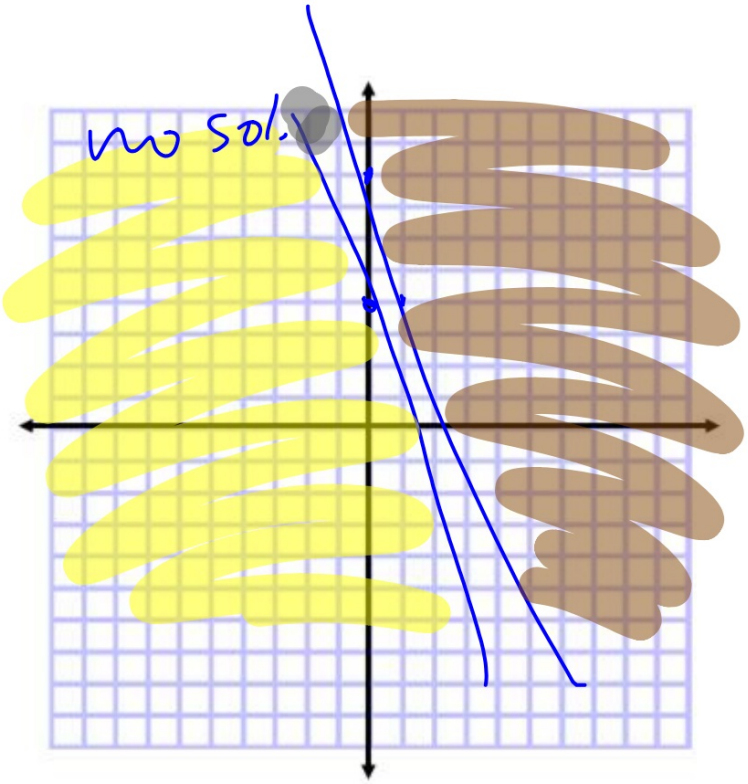
$y = 3$

$x = 2$



GuidedPractice

2A. $y \geq -4x + 8$
$y < -4x + 4$



Graph & shade. Locate the feasible region. Answer the question.

Example 4 Find Vertices

Find the coordinates of the vertices of the triangle formed by $y \geq 2x - 8$, $y \leq -\frac{1}{4}x + 6$, and $4y \geq -15x - 32$.

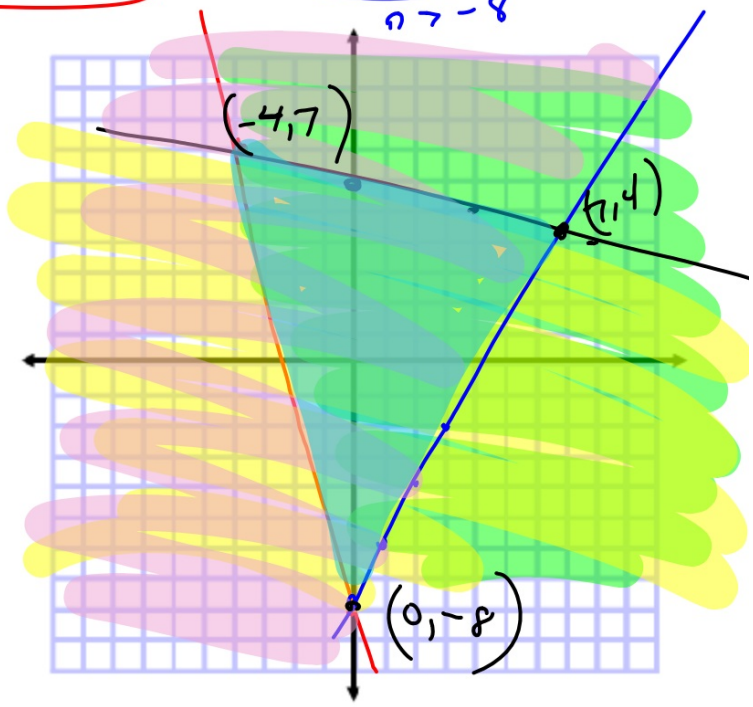
$\frac{}{4} \quad \frac{}{4} \quad \frac{}{4}$

$y \geq -\frac{15}{4}x - 8$

$0 \leq 0 + 6$

$-\frac{15}{4} \quad +\frac{15}{-4}$

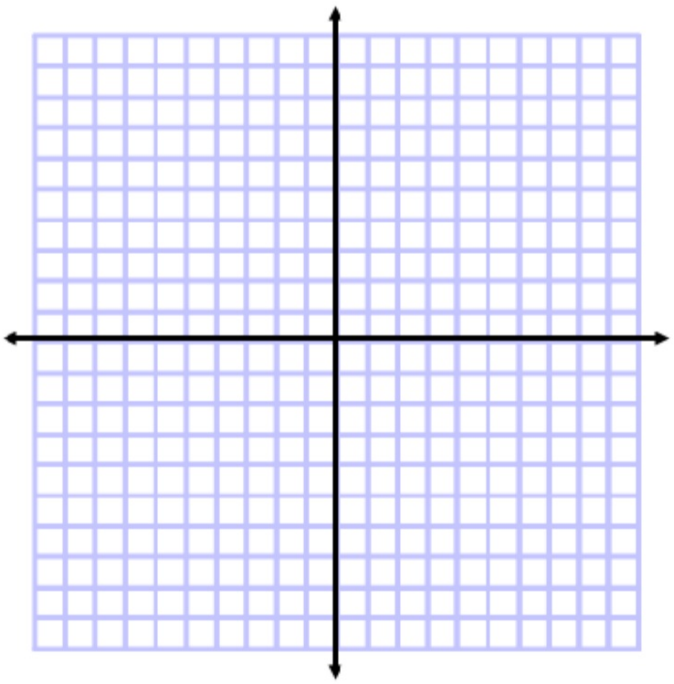
$0 \geq 0 - 32$



GuidedPractice

Find the coordinates of the vertices of inequalities.

4A. $y \geq -3x - 6$
$2y \geq x - 16$
$11y + 7x \leq 12$



Can you drive for a negative number of hours?

GuidedPractice

3. TRAVEL Mr. and Mrs. Rodriguez are driving across the country with their two children. They plan on driving a maximum of 10 hours each day. Mr. Rodriguez wants to drive at least 4 hours a day but no more than 8 hours a day. Mrs. Rodriguez can drive between 2 and 5 hours per day. Write and graph a system of inequalities that represents this information.

$x + y \leq 10$

$4 \leq x \leq 8$

$2 \leq y \leq 5$

Can you study for a negative number of hours?

Real-World Example 3 Write and Use a System of Inequalities

TIME MANAGEMENT Chelsea has final exams in calculus, physics, and history. She has up to 25 hours to study for the exams. She plans to study history for 2 hours. She needs to spend at least 7 hours studying for calculus, but over 14 is too much. She hopes to spend between 8 and 12 hours on physics. Write and graph a system of inequalities to represent the situation.

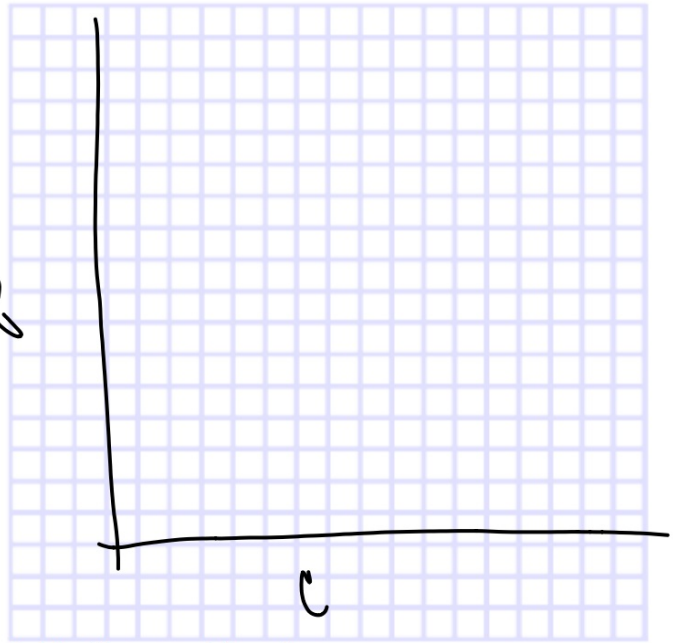
next…

$C + P + 2 \leq 25$

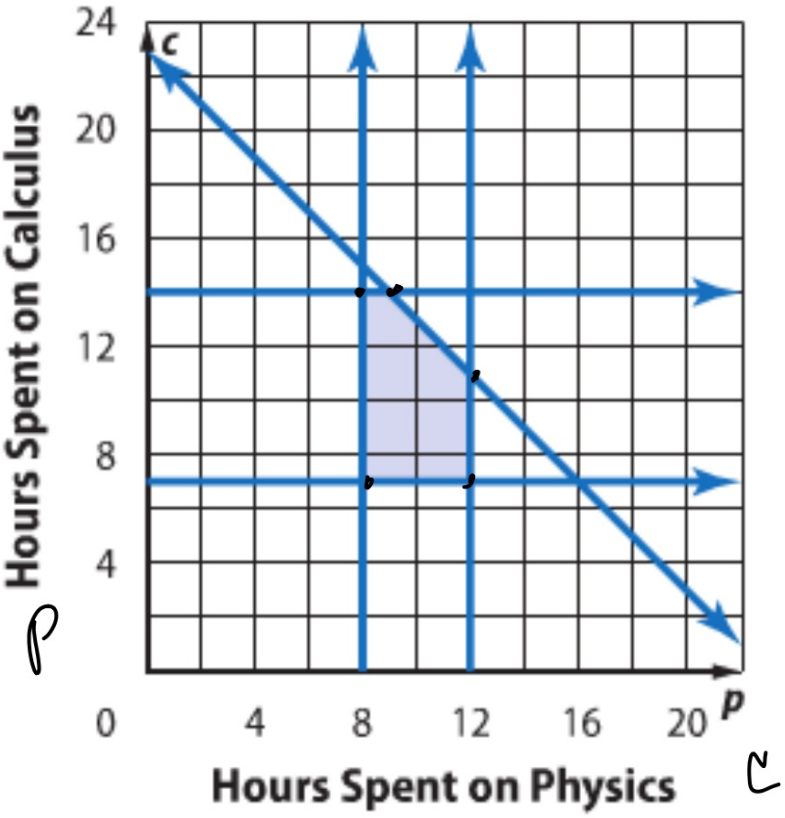
$7 \leq C \leq 14$

$8 \leq P \leq 12$

$P \leq -C + 23$



Hint: use a letter that is meaningful in the problem!


24
20
16
12
8
4
0
c
p
4
8
12
16
20
Hours Spent on Calculus
Hours Spent on Physics

3.2 7-25.