Key

NAME _____ DATE _____ PERIOD _____

# 6-6 Notes

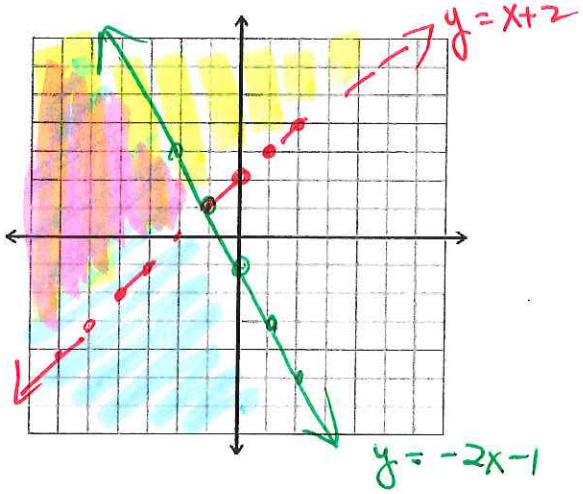
## *Systems of Inequalities*

= solution

**Systems of Inequalities** The solution of a **system of inequalities** is the set of all ordered pairs that satisfy both inequalities. If you graph the inequalities in the same coordinate plane, the solution is the region where the graphs overlap.

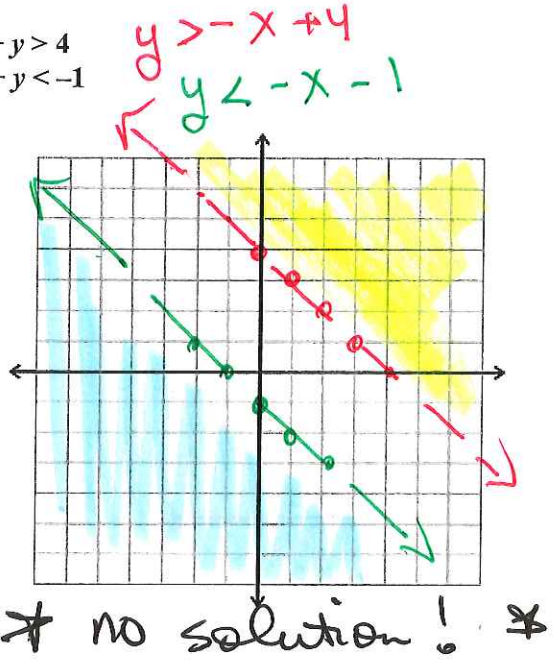
**Example 1:**
**Solve the system of inequalities by graphing**

$y > x + 2$
$y \leq -2x - 1$




**Example 2:**
**Solve the system of inequalities by graphing.**

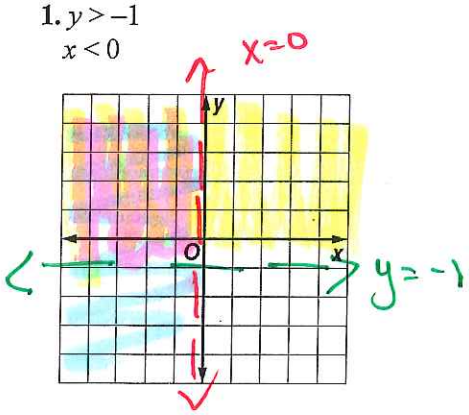
$x + y > 4$
$x + y < -1$



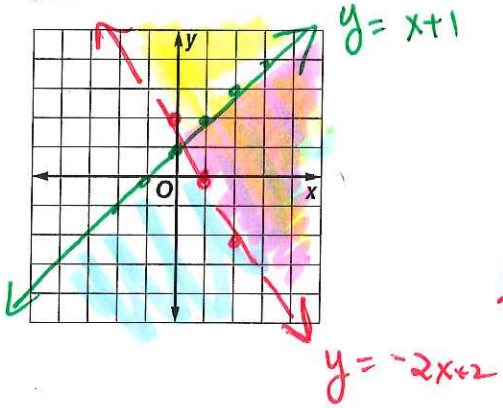

**Exercises**

**Solve each system of inequalities by graphing.** Give two ordered pairs that are solutions and two that are not solutions.

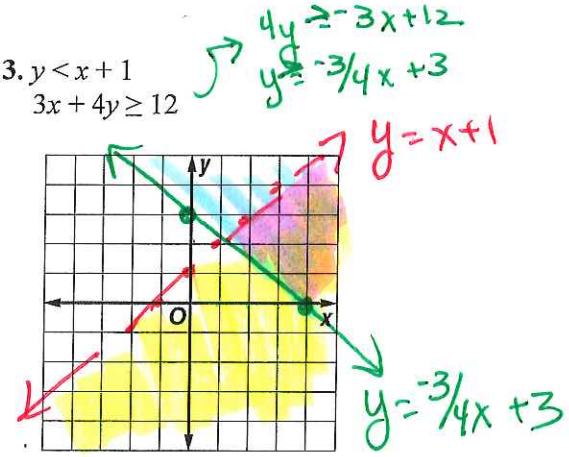
**1.** $y > -1$
$x < 0$




**2.** $y > -2x + 2$
$y \leq x + 1$




**3.** $y < x + 1$
$3x + 4y \geq 12$




= solution: overlapping shaded blue & yellow regions.

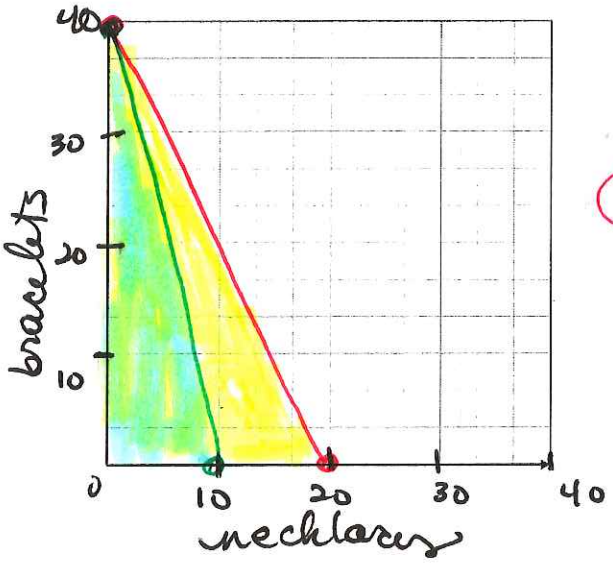
NAME _____ DATE _____ PERIOD _____

**7. Business:** AAA Gem Company produces necklaces and bracelets. In a 40-hour week, the company has 400 gems to use. A necklace requires 40 gems and a bracelet requires 10 gems. It takes 2 hours to produce a necklace and a bracelet requires one hour. How many of each type can be produced in a week?

Let $n$ = the number of necklaces that will be produced
$b$ = the number of bracelets that will be produced.

$2n + 1b \leq 40$
$40n + 10b \leq 400$

*graph with intercepts*




$2n + 1b \leq 40$
$2n = 40$ | $1b = 40$
$n = 20$ | $b = 40$

$40n + 10b \leq 400$
$40n = 400$ | $10b = 400$
$n = 10$ | $b = 40$

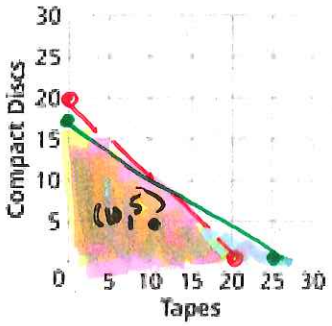
multiple answers - Intercepts (0,40) max of 40 bracelets & no necklaces

(10,0) max of 10 necklaces & no bracelets

**8. RECREATION** Maria had $150 in gift certificates to use at a record store. She bought fewer than 20 recordings. Each tape cost $5.95 and each CD cost $8.95. How many of each type of recording might she have bought?

let x = tapes
let y = CD's

$x + y \leq 20$
$5.95x + 8.95y \leq 150$




Graph w/ intercepts

$x + y \leq 20$
$x = 20$ $y = 20$

$5.95x + 8.95y \leq 150$
$5.95x = 150$ | $8.95y = 150$
$x = 25$ | $y = 16$

(10,5)
10 tapes & 5 CD's
etc.

Any solution in pink region
ex: 20 tapes & no CDs
16 CDs & no tapes