

Warm-Up

1. Mark had 28 coins some were nickels and some were dimes. The total value of the coins was \$2.30. How many nickels did he have?

① let $x = \#$ of nickels
 ② let $y = \#$ of dimes

type 1	x	$.05$	$.05x$
type 2	y	$.10$	$.10y$
total	28		2.30

③ $x + y = 28$
 $5x + 10y = 230$

2. Mike and Kim invest \$10000 in equipment to print yearbooks for schools. Each yearbook costs \$5.75 to print and sells for \$25. How many must they sell to break even?

① let $x = \#$ of yearbooks to B.E. = \$10,000
 ② let $y = \$$ to break even

③ $y = 10000 + 5.75x$
 $y = 25x$

3. How much of a 20% salt solution must be added to a 50% salt solution to make 40 ml of a 40% solution?

① let $x = \text{amt of } 20\% \text{ solution}$
 let $y = \text{amt of } 50\% \text{ solution}$

②

amt	x	20	$20x$
type 1	x	$.20$	$.20x$
type 2	y	$.50$	$.50y$
total mix	40		16

③ $x + y = 40$
 $20x + 50y = 1600$

6.6 Systems of Linear Inequalities

Unit 2 D

Solution to a system of inequalities is the overlapping shaded regions.

Solution Possibilities:

- Intersecting Regions: Overlapping shaded region is the solution
- Separate Regions: No solution exists

Example 1:

$$\begin{cases} x \geq 2 \\ y > 3 \end{cases}$$

$x \geq 2$
 above solid no slope

$y > 3$
 above dashed $m=0$ $b=3$

Example 2:

$$\begin{cases} y < 2 - x \\ y > x + 4 \end{cases}$$

$y < 2 - x$
 $y < -x + 2$
 $m = -1$ $b = 2$
 below dashed

$y > x + 4$
 $m = 1$ $b = 4$
 above dashed

Example 3:

$$\begin{cases} 4x - 3y < 7 \\ 2y - x < -6 \end{cases}$$

$4x - 3y < 7$
 $-4x \quad -4x$
 $\frac{-3y < -4x + 7}{-3} \quad \frac{-3y < -4x + 7}{-3}$
 $y > \frac{4}{3}x - \frac{7}{3}$
 $m = \frac{4}{3}$
 above dashed

$2y - x < -6$
 $+x \quad +x$
 $\frac{2y < -x - 6}{2} \quad \frac{2y < -x - 6}{2}$
 $y < \frac{1}{2}x - 3$
 $m = \frac{1}{2}$ $b = -3$
 below dashed

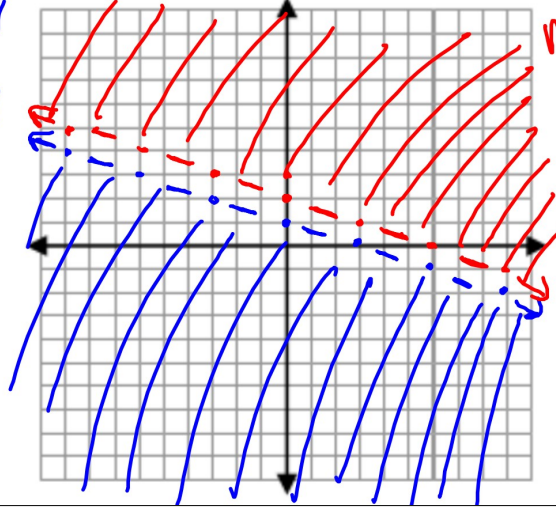
Example 4: $y < -\frac{1}{3}x + 1$

$-3y < x - 6$

$\frac{-3y < x - 6}{-3} \quad \frac{-3y < x - 6}{-3}$

$y > -\frac{1}{3}x + 2$

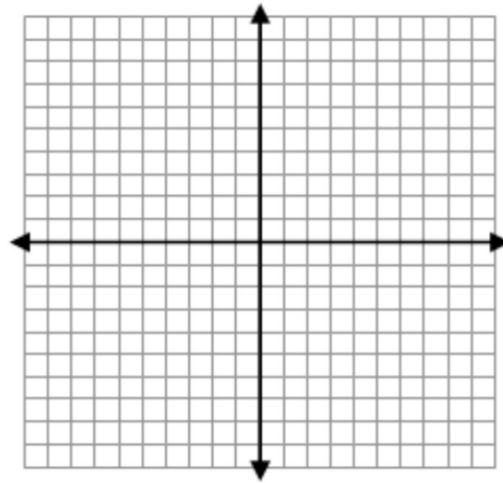
$y < -\frac{1}{3}x + 1$
C
 $m = -\frac{1}{3}$ $b = 1$
below
dashed



$m = -\frac{1}{3}$
 $b = 2$
dashed
above

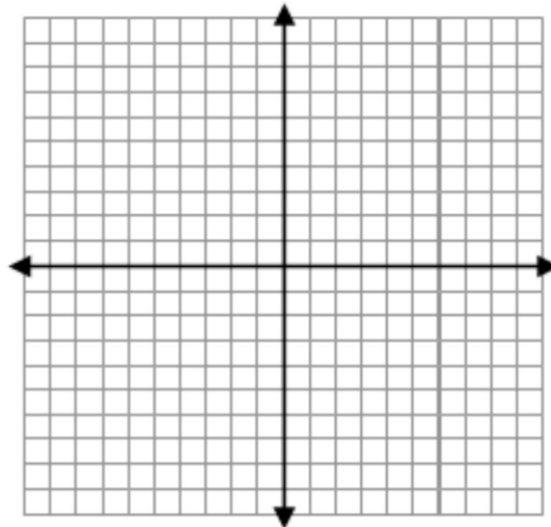
Example 5: $y \leq -\frac{4}{3}x$

$y \geq -x$

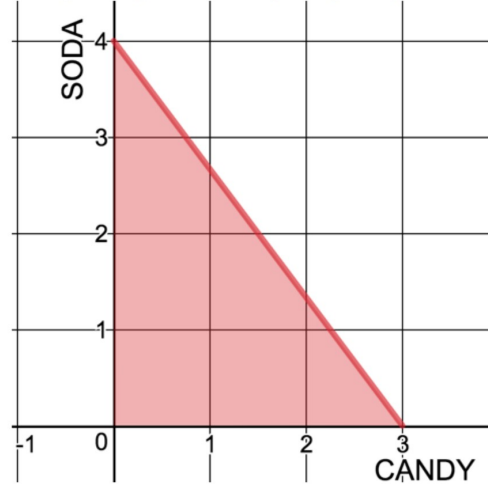


Example 6: $-x < 4 - y$

$y \geq x - 6$



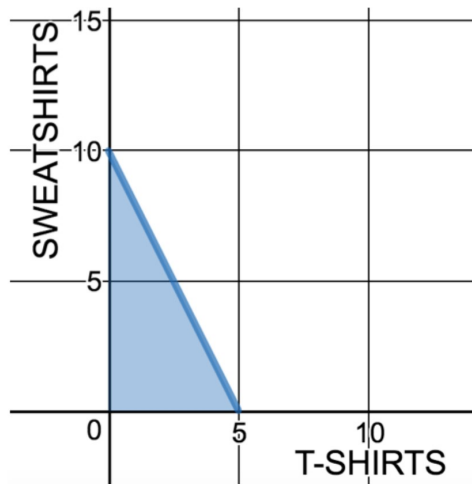
Interpreting Linear Inequality Graphs:



Step 1: write the inequality in slope intercept form

Step 2: convert to standard form

Step 3: write in words



- A. The # of sweatshirts, y , plus two times the number of t-shirts, x , is at most 10.
- B. The # of sweatshirts, y , minus half the number of t-shirts, x , is at most 10.
- C. The # of sweatshirts, y , plus half the number of t-shirts, x , is at most 10.
- D. The # of sweatshirts, y , minus two times the number of t-shirts, x , is at most 10.

