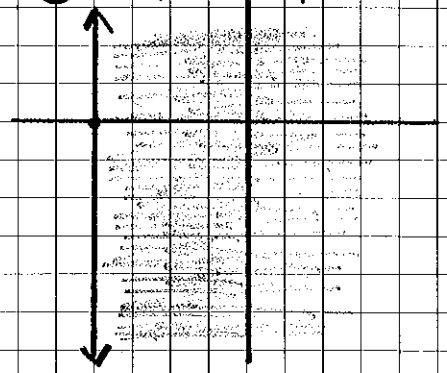
4.5 G

1-9, 20, 21, 22, 23

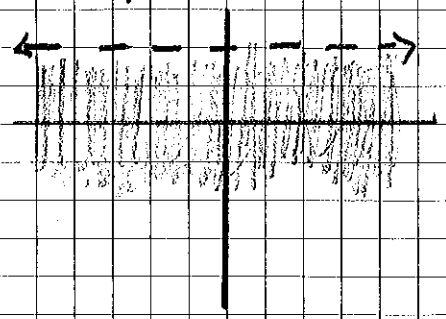
① $x \geq -4$



line is solid because of $\geq$

Shade to right because of $\geq$. Greater is to the right of a vertical line.

② $y < 2$



line is dashed because of $<$. It is not equal.

Shade below because of $<$. Less than is below a horizontal line.

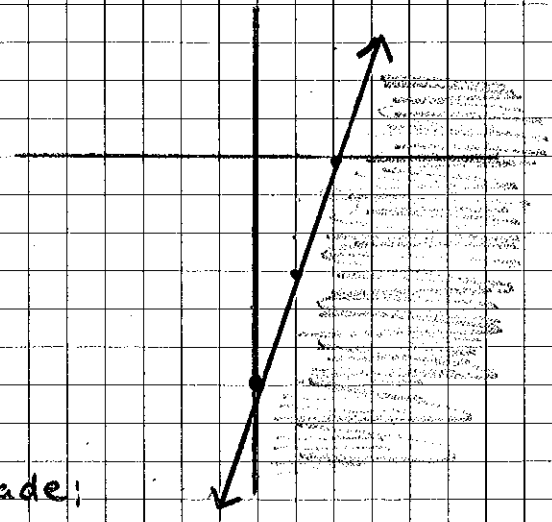
③ $3x - y \geq 6$

$-3x \quad -3x$

$-y \geq -3x + 6$

$\div -1 \quad \div -1 \quad \div -1$

$y \leq 3x - 6$



How to Know where to shade:

Test a point.

$(0,0) \quad 3(0) - 0 \geq 6$

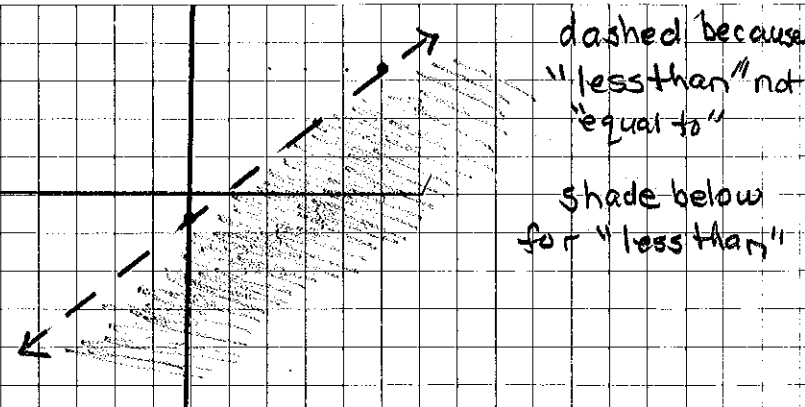
4.5 6

④ $-4x + 5y < -3$

$+4x \quad +4x$

$\frac{5y}{5} < \frac{4x - 3}{5}$

$y < \frac{4}{5}x - \frac{3}{5}$



dashed because "less than" not "equal to"

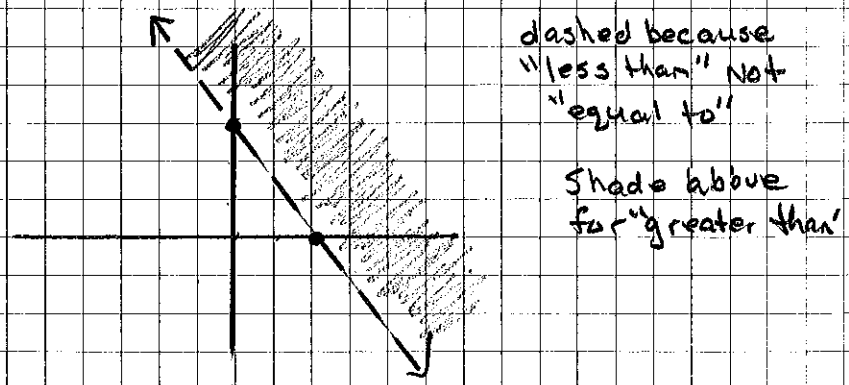
Shade below for "less than"

⑤ $3x + 2y > 6$

$-3x \quad -3x$

$\frac{2y}{2} > \frac{-3x + 6}{2}$

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



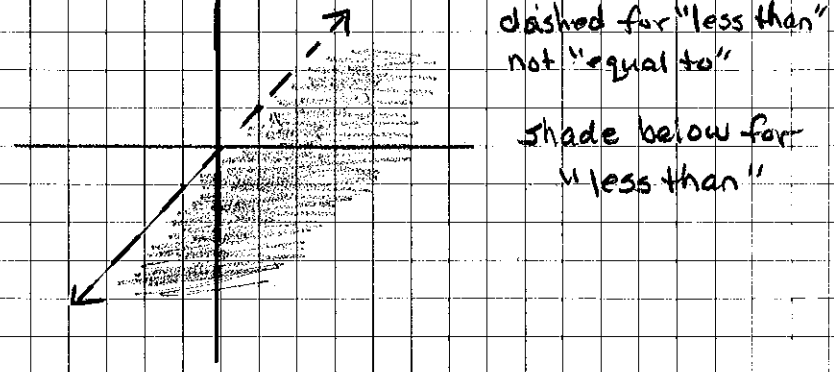
dashed because "less than" Not "equal to"

Shade above for "greater than"

⑥ $y < x$

slope is $\frac{1}{1}$

y-int is $\emptyset$



dashed for "less than" not "equal to"

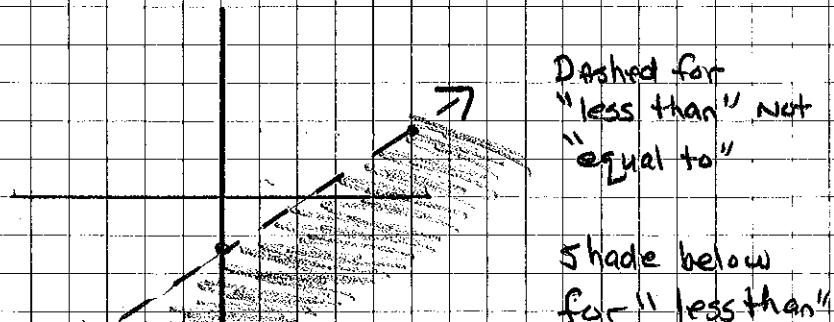
Shade below for "less than"

⑦ $3x - 5y > 6$

$-3x \quad -3x$

$\frac{-5y}{-5} > \frac{-3x + 6}{-5}$

$y < \frac{3}{5}x - \frac{6}{5}$



Dashed for "less than" Not "equal to"

Shade below for "less than"

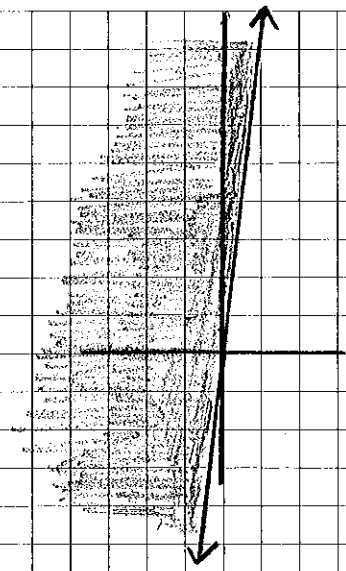
4.5 6

(8) (a) $x \leq \frac{y}{9}$ (9)

$9x \leq y$

slope is 9

y-int is 0



Test (-1, 1)

$x \leq \frac{y}{9}$

$-1 \leq \frac{1}{9}$ True

So, shade left or above.

Solid line because of "or equal to"

(9) $\frac{x}{4} < 4y - 3$

$+3 \quad +3$

$\frac{x}{4} + 3 < 4y$

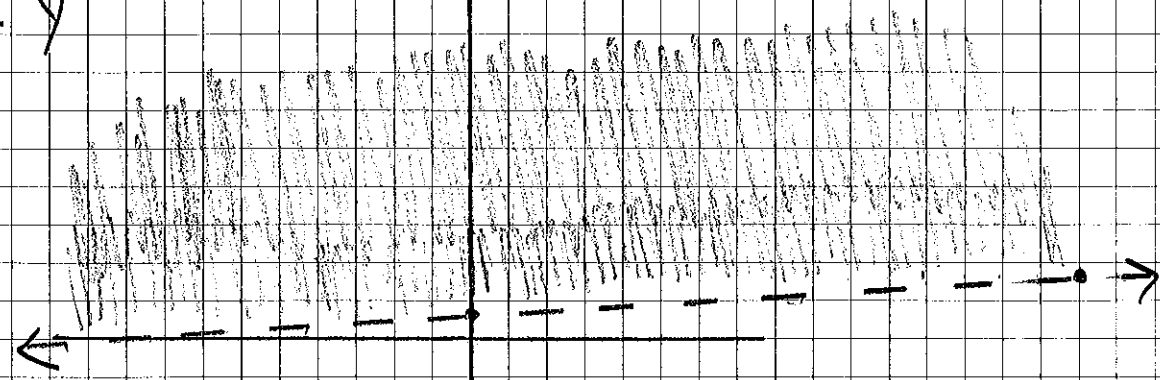
$\frac{x}{4} \quad \frac{3}{4} \quad \frac{4y}{4}$

$\frac{x}{16} + \frac{3}{4} < y$

Test (0,0) $\frac{0}{4} < 4(0) - 3$

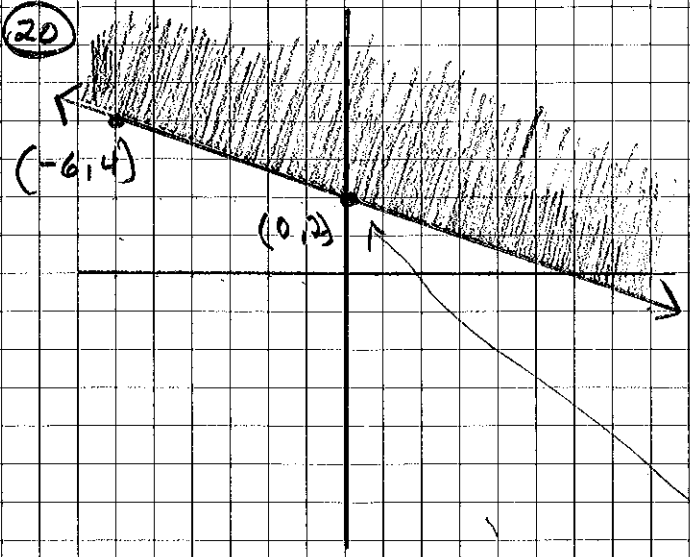
$0 < -3$

Not true. So shade other side.



4.5 6

(20)



Two methods of finding slope

① Start at (-6,4)

To get to (0,2), you have to move two down and six right.

$-\frac{2}{6} = -\frac{1}{3}$

② m = slope

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4-2}{-6-0} = \frac{2}{-6} = -\frac{1}{3}$

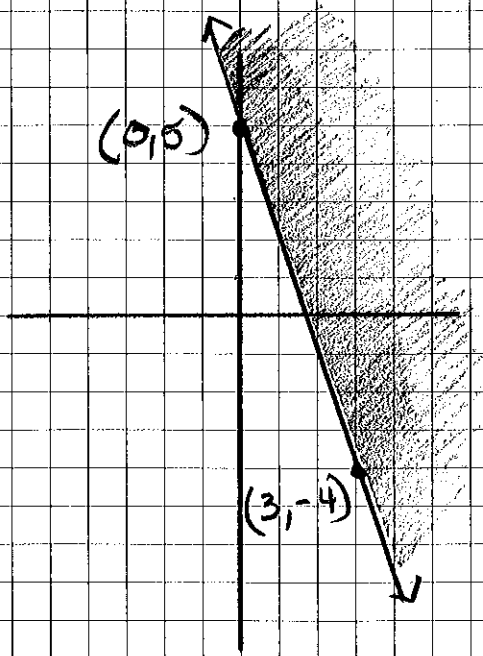
y-intercept is 2

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

Since it is shaded above and the line is solid, you will use $\geq$

So, $\boxed{y \geq -\frac{1}{3}x + 2}$

(21)



$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{5 - -4}{0 - 3} = \frac{9}{-3} = -\frac{3}{1} = -3$

y-intercept is 5.

$y \geq -3x + 5$

4.5 G

(22) Last sentence of the problem tells you the unknowns you are looking for.

x = how many pizzas
y = how many drinks

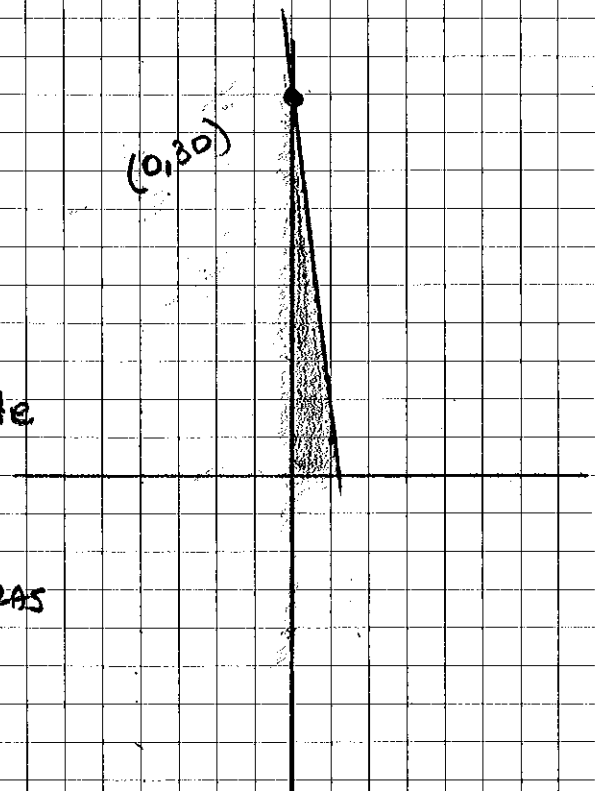
pizzas are $9 each: $9x$
drinks are $1 each: $1y$ or just y

You can spend <u>at most</u> $30. That means it cannot be more than 30, so it has to be less than. But you do have $30, so it <u>can</u> be 30.

$\leq$

$$9x + y \leq 30$$
$$-9x \qquad -9x$$
$$y \leq -9x + 30$$

EACH LINE REPRESENTS 3 units



Do not graph or shade the negative portions, because you cannot purchase negative pizzas or negative drinks.

(23)

x = number of tickets to be sold at door

Already sold 40 in advance at \$4 each: $40 \cdot 4 = 160$

Tickets sold at door are \$5 each: $5x$

At least \$400: ≥ 400

$$5x + 160 \geq 400$$
$$-160 \quad -160$$
$$\frac{5x}{5} \geq \frac{240}{5}$$
$$x \geq 48$$