Pg. 221 - 1b, 2, 4, 5af

① b) $\cancel{-1}y < -6x + 3$

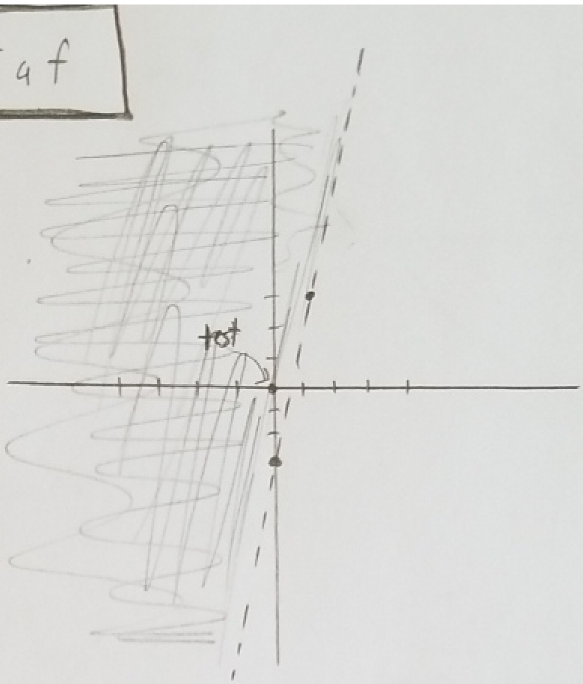
$\frac{\cancel{-1}}{-1} \quad \frac{}{-1} \quad \frac{}{-1}$

$y > 6x - 3$

Test (0,0)

$-0 < -6(0) + 3$

$\boxed{0 < 3}$ ✓



② $2x + 3y > 6$

a) Dashed, due to > not ≥

b) Above

c) i) ~~(1,1)~~ ii) ~~(1,0)~~ iii) (1,2) ✓

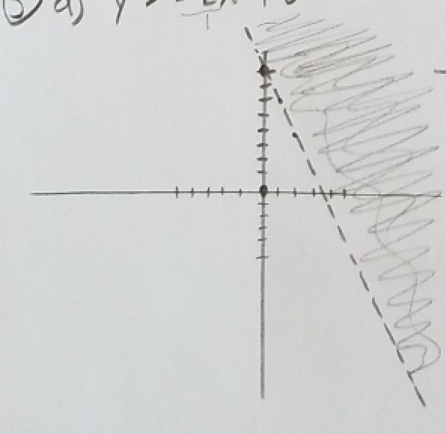
x-int	y-int
$2x+3(0)>6$	$2(0)+3y>6$
$\frac{\cancel{2}x}{\cancel{2}} > \frac{6}{2}$	$\frac{\cancel{3}y}{\cancel{3}} > \frac{6}{3}$
$\boxed{x > 3}$	$\boxed{y > 2}$
(3,0)	(0,2)

④ a) Matches with (ii) b/c it is a dashed line (>) + is all Real #'s ($x \in R, y \in R$)

b) " " (i) -> dashed (>) and only integers ($x \in W$, $y \in W$) (whole #'s)

c) " " (iii) -> solid (≥) and real #'s

⑤ a) $y > -\frac{2}{1}x + 8$



Test (0,0)

$0 > -2(0) + 8$

$\boxed{0 > 8}$ X

∴ shade opposite side of line!

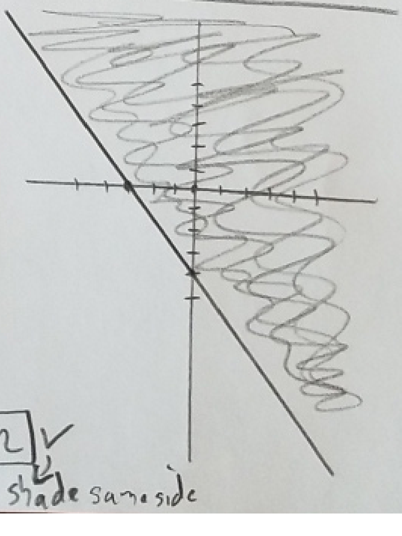
⑤ f) $4x + 3y \geq -12$

x int	y int
$4x + \cancel{3(0)} \geq -12$	$\cancel{4(0)} + 3y \geq -12$
$\frac{\cancel{4}x}{\cancel{4}} \geq \frac{-12}{4}$	$\frac{\cancel{3}y}{\cancel{3}} \geq \frac{-12}{3}$
$x \geq -3$ (-3,0)	$y > -4$ (0,-4)

Test (0,0)

$4(0)+3(0) \geq -12$ } $\boxed{0 \geq -12}$ ✓

∴ shade same side



$\boxed{\text{Pg. 222 - 9, 10, 12}}$

⑨ a) x - teddy bears
y - tickets

$\$10x + \$32y \geq \$5000$

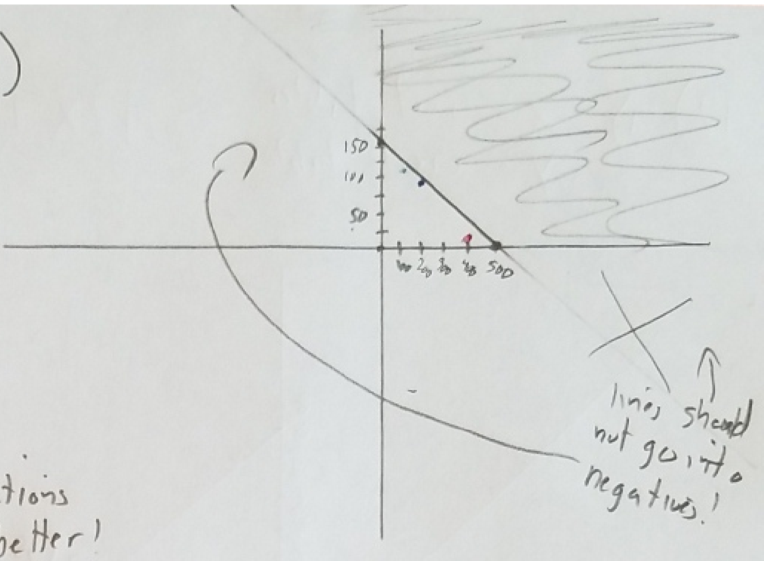
b) $\{x \mid x \geq 0, x \in I\}$ ← no upper restrictions as the more the better!

$\{y \mid y \geq 0, y \in I\}$

* both are also only integers as you can't sell fractions of bears + tickets.

x int	y int
$10x + \cancel{32(0)} \geq 5000$	$\cancel{10(0)} + 32y \geq 5000$
$\frac{\cancel{10}x}{\cancel{10}} \geq \frac{5000}{10}$	$\frac{\cancel{32}y}{\cancel{32}} \geq \frac{5000}{32}$
$\boxed{x \geq 500}$ $\boxed{(500, 0)}$	$\boxed{y \geq 156.25}$ $\boxed{(0, 156.25)}$

c)



lines should not go into negatives!

Test (0,0)

$10(0) + 32(0) \geq 5000$

$\boxed{0 \geq 5000}$ X

d) i) (400, 20) X

ii) (205, 98) ? → $10(205) + 32(98) \geq 5000$

$\boxed{5186 \geq 5000}$ ✓

iii) (156, 105) ? → $10(156) + 32(105) \geq 5000$

$1560 + 3360 \geq 5000$

$\boxed{4920 \geq 5000}$ X

* For (ii) + (iii) it was too close on graph to know for sure. In this case test your X + Y in your inequality

---

⑩ a) x - maple
y - birch

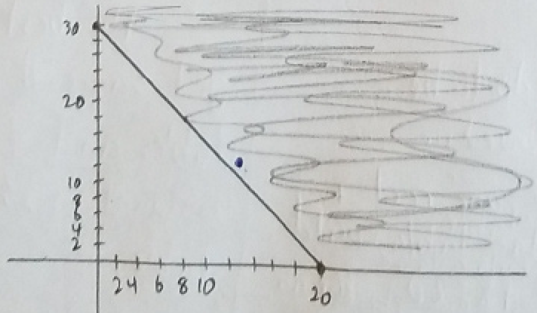
$\$75x + \$50y \geq \$1500$

$\{x \mid x \geq 0, x \in I\}$

$\{y \mid y \geq 0, x \in I\}$

b)

x int	y int
$75x + \cancel{50(0)} \geq 1500$	$\cancel{75(0)} + 50y \geq 1500$
$\frac{\cancel{75}x}{\cancel{75}} \geq \frac{1500}{75}$	$\frac{\cancel{50}y}{\cancel{50}} \geq \frac{1500}{50}$
$\boxed{x \geq 20}$ $\boxed{20,0}$	$\boxed{y \geq 30}$ $\boxed{0, 30}$



Test (0,0)

$75(0) + 50(0) \geq 1500$

$\boxed{0 \geq 1500}$ X

c) i) $\boxed{(13, 13)}$?

$75(13) + 50(13) \geq 1500$

$975 + 650 \geq 1500$

$\boxed{1625 \geq 1500}$ ✓

(ii) a) (14, 9) or b) (9, 14)

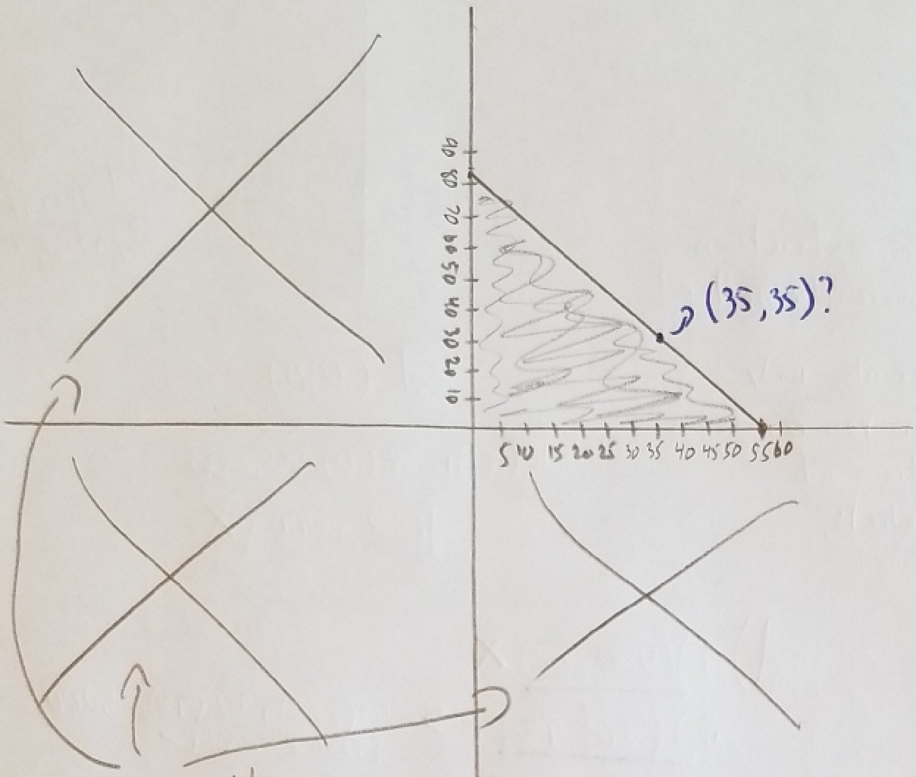
a) $75(14) + 50(9) \geq 1500$

$\boxed{1500 \geq 1500}$ ✓

b) $75(9) + 50(14) \geq 1500$

$\boxed{1375 \geq 1500}$ X

12) a) x - rect. tables
y - circle tables → $\underline{12x + 8y \leq 660}$



* can't have a negative # of tables!

x int	y int
$12x + \cancel{8(0)} \leq 660$	$\cancel{12(0)} + 8y \leq 660$
$\frac{\cancel{12}x}{\cancel{12}} \leq \frac{660}{12}$	$\frac{\cancel{8}y}{\cancel{8}} \leq \frac{660}{8}$
$\boxed{x \leq 55}$	$\boxed{y \leq 82.5}$
$\boxed{55, 0}$	$\boxed{0, 82.5}$

Test (0,0)

$12(0) + 8(0) \leq 660$

$\boxed{0 \leq 660}$ ✓

---

b) we need to get as close to 660 as possible while keeping a similar # of tables so we may need to try a few possibilities. I will show them above as blue dots (since the line represents exactly 660 this is where we start).

(35,35)

↳ $12(35) + 8(35) \leq 660$

$420 + 280 \leq 660$

$\boxed{700 \leq 660}$ X

too high

(34,34)

$12(34) + 8(34) \leq 660$

$408 + 272 \leq 660$

$\boxed{680 \leq 660}$ X

just a bit too high

↳ needs to be 20 lower. Since, one rect + circular table would be 12 + 8 = 20, we can remove one of each.

(33, 33)

$12(33) + 8(33) \leq 660$

$396 + 264 \leq 660$

$\boxed{660 \leq 660}$

∴ the best combo to get same # of each tables and fit max amount is 33 of each table.