

P1.14

- ① $x = \#$ of motorcycles
 $y = \#$ of all-terrain

② $P = 300x + 200y$

- ③ $x + y \leq 150$ l_1
 $x \geq 2y$ l_2
 $x \geq 90$ l_3
 $y \geq 30$ l_4
 $x \geq 0$ l_5
 $y \geq 0$ l_6

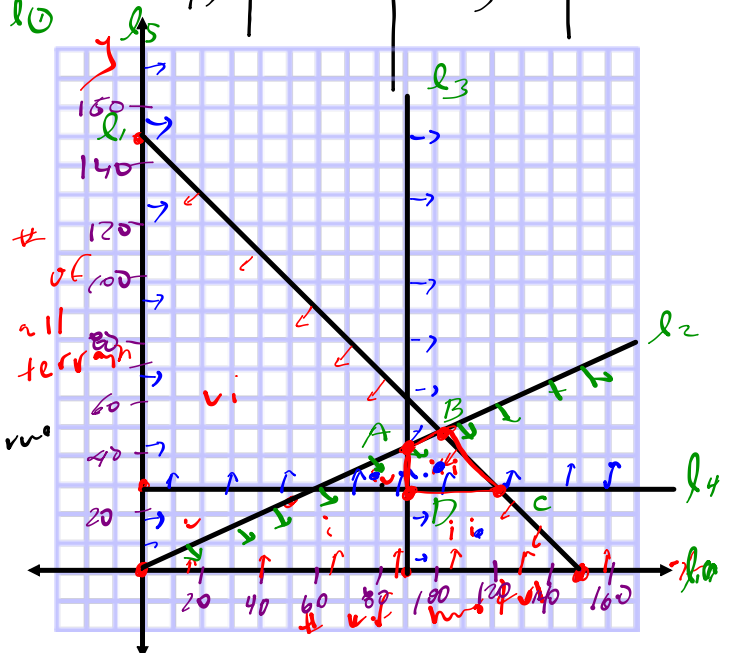
④ Graph constraints

$x + y = 150$

x	y
0	150
150	0

$x = 2y$

x	y
0	0
50	25



• sub (0,0) into $x + y \leq 150$
 $0 + 0 \leq 150$
 $0 \leq 150$ true

• sub (20,0) into $x \geq 2y$
 $20 \geq 2(0)$
 $20 \geq 0$ true

	lines	coordinates
A	3 + 2	(90, 45)
B	1 + 2	(100, 50)
C	1 + 4	(120, 30)
D	4 + 3	(90, 30)

① $x + y = 150$
 $y = 30$

② $x + 30 = 150$ -30
 $x = 120$

③ $x = 90$
 ② $x = 2y$
 sub ③ into ②
 $90 = 2y$
 $y = 45$

④ $x + y = 150$
 ② $x = 2y$
 sub ② into ④
 $2y + y = 150$
 $3y = 150$
 $y = 50$
 sub y into ②
 $x = 2(50)$
 $x = 100$

Unit 4: Verifying (algebraically) a point belongs to the P.O.C.

To do so, a point must satisfy all constraints

Points	$x \geq 90$	$y \geq 30$	$x + y \leq 150$	$x \geq 2y$	Belongs?
(110, 10)	$110 \geq 90$ true	$10 \geq 30$ false			No
(80, 35)	$80 \geq 90$ false				No
(100, 40)	$100 \geq 90$ +	$40 \geq 30$ +	$100 + 40 \leq 150$ +	$100 \geq 2(40)$ $100 \geq 80$ +	Yes

P 4.8 # 1

Unit 5: Determining which vertex is the optimal point

P 1.14

- ① x = # of motorcycles
 y = # of all-terrain

Note Bene! To find optimal point, sub each vertex into ^{optimization} equation.

② $P = 300x + 200y$

	lines	coordinates
A	3 + 2	(90, 45)
B	1 + 2	(100, 50)
C	1 + 4	(120, 30)
D	4 + 3	(90, 30)

- ① $P = 300(90) + 200(45)$
 $P = \$36,000$
 ② $P = \$40,000$
 ③ $P = \$42,000$
 ④ $P = \$33,000$

∴ the dude must sell 120 motorcycles and 30 all-terrain vehicles.

P 5.29

P. 5.21
 attention
 cost

P 5.14

chart
 of
 steps

Introduction of a new constraint

Q1: Because of the new minimum wage the supplier doesn't want to give more than 115 motorcycles.

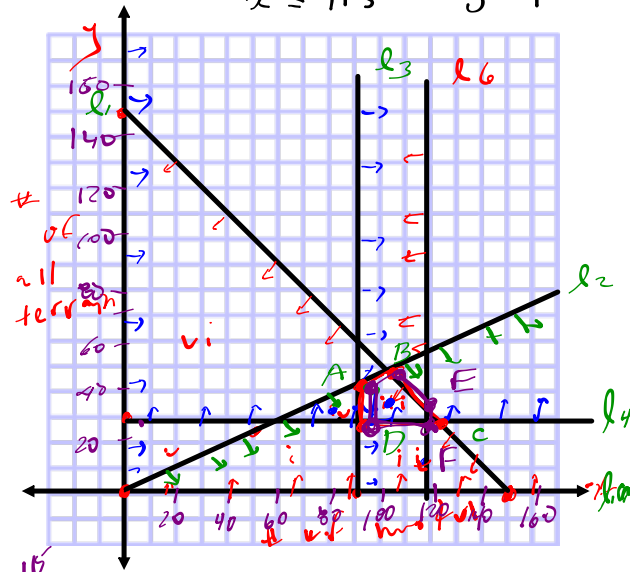
Does this have an affect on our profit? $x \leq 115$ - graph it!

P 1.14

- ① $x = \#$ of motorcycles
- $y = \#$ of all-terrain

② $P = 300x + 200y$

	lines	coordinates
A	3 + 2	(90, 45)
B	1 + 2	(100, 50)
C	1 + 4	(120, 30)
D	4 + 3	(90, 30)
F		(115, 30)
E		(115, 35)



③ $P = 300(90) + 200(45)$

$P = \$36,000$

④ $P = \$40,000$

~~⑤ $P = \$42,000$~~

⑥ $P = \$33,000$

⑦ $P = \$40,500$

⑧ $P = \$41,500$

$x = 115$
 $x + y = 150$
 $115 + y = 150 - 115$
 $y = 35$

negatively
 Yes it affects the profit by \$500 ↓

$P = 5.38$

