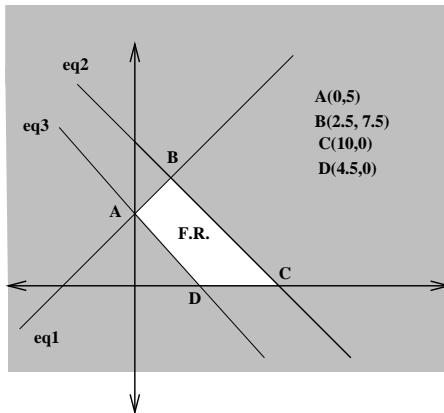


Solutions to Sample problems 2.

1. feasible region labeled F.R.



2. max at (2.5, 7.5) maximum value is 25.

3. min at (4.5, 0) minimum value is 4.5.

4. x = the number of batches of Vanilla
 y = the number of batches of Mocha
 z = the number of batches of Strawberry

$$\max P = 3x + 2y + 4z$$

constraints:

$$2x + y + z \leq 220$$

$$x + y + 2z \leq 120$$

$$2x + 2y + 2z \leq 200$$

$$z \leq 10$$

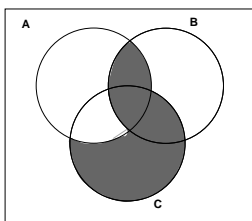
$$x \geq 0, y \geq 0, z \geq 0$$

5. The answers are listed in column form.

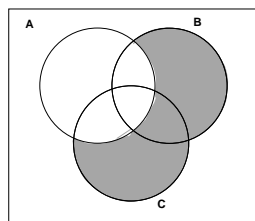
F	F	T
T	F	F
T	T	F
F	F	F

6. (a) $\emptyset, \{a\}, \{b\}, \{c\}, \{a, b\}, \{a, c\}, \{c, b\}$, and A .
 (b) $\emptyset, \{a\}, \{b\}, \{c\}, \{a, b\}, \{a, c\}, \{c, b\}$
 (c) any two of the subsets above such that their intersection is empty.

7. part a)



part b)

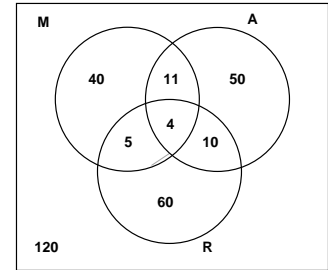


8. (a) $(A \cap B^C \cap C^C) \cup (B \cap A^C \cap C^C)$
 (b) $(A^C \cap C) \cup (B^C \cap C) = (A^C \cup B^C) \cap C = (A \cap B)^C \cap C$

9. (a) $\{1, 2, 4, 6, 7, 8\}$
 (b) $\{2, 4, 8\}$
 (c) $\{3, 5, 9\}$

10. see the solutions for the on-line suggest homework for these answers.

11. (a) figure to the side
 (b) 150
 (c) 221
 (d) 19
 (e) 110
 (f) 105



12. 3
 13. (a) 17576000
 (b) 12167000
 (c) 12164000
 14. $53 \frac{1}{3}$ minutes
 15. (a) 15504 (b) 1860480
 16. (a) 126
 (b) 21
 (c) 70
 17. 336
 18. (a) 12 (b) 198 (c) 100
 19. 64,864,800

20. (a) $S = \{(1, h), (1, t), (2, h), (2, t), (3, h), (3, t), (4, h), (4, t)\}$
 (b) no they are not mutually exclusive since $(2, h)$ is in both E and F.
 (c) Any two subsets of S that are disjoint.

21. (a) $\frac{7}{80}$
 (b) $\frac{20}{80}$
 (c) $\frac{2}{80}$
 (d) $\frac{22}{80}$

22. Incorrect. Stock prices may go up, go down, or stay the same.

23. (a) .2
(b) .5
(c) No
(d) .7