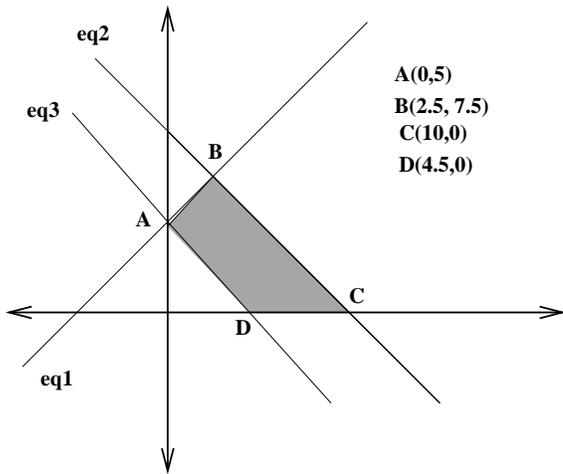


1. feasible region



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

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

4. (a) Produce 80 batches of vanilla, 0 batches of mocha, and 70 batches of strawberry. The maximum profit is \$320. There will be 40 eggs left over.

(b) Now produce 90 batches of vanilla, 0 batches of mocha, and 10 batches of strawberry. The maximum profit is \$310. There are 30 eggs left over and 10 cups of milk left over.

5. This is not correct.  $S_2 = -2$ .

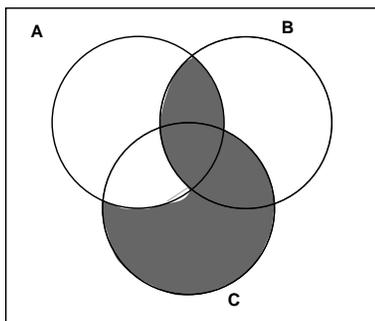
6. The answers are listed in column form.

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

7. (a)  $\emptyset$ ,  $\{a\}$ ,  $\{b\}$ ,  $\{c\}$ ,  $\{a, b\}$ ,  $\{a, c\}$ ,  $\{c, b\}$ , and A.

(b) any two of the subsets above such that their intersection is empty.

8. figure below.



9.  $(A \cap B^C \cap C^C) \cup (B \cap A^C \cap C^C)$

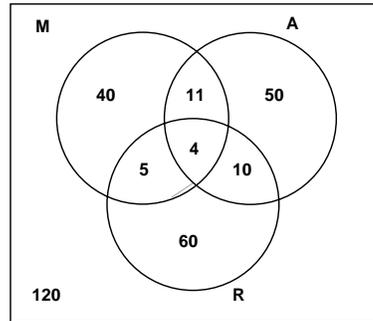
10. (a)  $\{1, 2, 4, 6, 7, 8\}$

(b)  $\{2, 4, 8\}$

(c)  $\{3, 5, 9\}$

11. see back of the book for these answers.

12. (a) figure below



(b) 150

(c) 221

(d) 19

(e) 110

(f) 105

13. 3

14. (a) 240 (b) 480 (c) 48

15. (a) 17576000

(b) 12167000

(c) 12164000

16.  $53 \frac{1}{3}$  minutes

17. 54740

18. (a) 15504 (b) 1860480

19. (a) 126

(b) 21

(c) 70

20. (a) 30,045,015 (b) 2,661,120

21. 336

22. (a) 12 (b) 198 (c) 100

23. 56

24. 64,864,800

25. (a)  $S = \{(1, h), (1, t), (2, h), (2, t), (3, h), (3, t), (4, h), (4, t)\}$

(b) Any two subsets of S that are disjoint.