Prob/Stat/Discrete

Homework 1.3   Name_____

For problems 1 and 2 describe a universal set U that includes all elements in the given sets. Answers may vary.

1. A = {William Shakespeare, Charles Dickens}
   B = {Mark Twain, Robert Louis Stevenson}
2. A = {Acura RSX, Toyota Camry, Mitsubishi Lancer}
   B = {Dodge Ram, Chevrolet Impala}

In exercise 3, let U = {a, b, c, d, e, f, g}, A = {a, b, f, g}, B = {c, d, e}, C = {a, g}, and D = {a, b, c, d, e, f}. Use the roster method to write the following set.

3. C'

In exercise 4, let U = {1, 2, 3, 4, . . ., 20}, A = {1, 2, 3, 4, 5}, B = {6, 7, 8, 9}, C = {1, 3, 5, 7, . . ., 19}, and D = {2, 4, 6, 8, . . ., 20}. Use the roster method to write the following set.

4. D'

In exercise 5, let U = {1, 2, 3, 4, . . .}, A = {1, 2, 3, 4, . . ., 20}, B = {1, 2, 3, 4, . . ., 50}, C = {2, 4, 6, 8, . . .}, and D = {1, 3, 5, 7, . . .}. Use the roster method to write the following set.

5. B'

In exercises 6-10, let

$$U = \{1, 2, 3, 4, 5, 6, 7\}$$

$$A = \{1, 3, 5, 7\}$$

$$B = \{1, 2, 3\}$$

$$C = \{2, 3, 4, 5, 6\}.$$

Find each of the following sets.

6. B ∩ C
7. B U C
8. B'
9. B' ∩ C
10. B U C'

In exercises 11-15, let

$U = \{a, b, c, d, e, f, g, h\}$
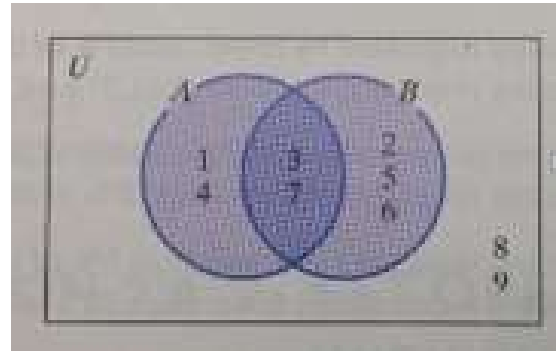
$A = \{a, g, h,\}$

$B = \{b, g, h,\}$

$C = \{b, c, d, e, f\}.$

Find each of the following sets.

11. $B \cap C$
12. $B \cup C$
13. B'
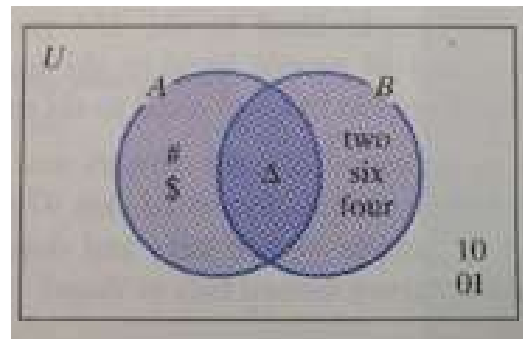14. $B' \cap C$
15. $B \cup C'$

In exercises 16-21, use the Venn diagram to represent each set in roster form.

16. B
17. $A \cup B$
18. A'
19. $(A \cap B)'$
20. $A' \cap B$
21. $A \cup B'$

In exercises 22-25, use the Venn diagram to represent each set in roster form.

22. A
23. $A \cap B$
24. $n(A \cap B)$
25. $n(B')$

Use formula for the cardinal number of the union of two sets to solve Exercises 26-27.

26. Set A contains 30 elements, set B contains 18 elements, and 5 elements are common to sets A and B. How many elements are in $A \cup B$?

27. Set A contains 12 numbers and 18 letters. Set B contains 14 numbers and 10 letters. One number and 6 letters are common to both sets A and B. Find the number of elements in set A or set B.