PRACTICE EXERCISES

1 – 15: U = {b, c, d, e, f, g, h, i, j, k} S = {b, c, d, h, i, k}
T = {b, d, e, f, h} V = {b, d, e, f, g, i}

Find: **1.** S′ **2.** T′ **3.** V′ **4.** S∩T **5.** S∪T **6.** S∩V **7.** S∪V
8. T∩V **9.** T∪V **10.** S′∪V **11.** S′∩V **12.** S′∪T **13.** S′∩T
14. V′∪T **15.** V′∩T

16. Let U = { b, c, d, e, f, g, h, i, j } V = {e} W = {c, f, g, j} Find (V′ ∪ W′)′

17. Let U = { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 } T = {2, 3, 9} V = {8, 9, 10}
Find (T′ ∪ V)′

18. Let U = { 1, 2, 3, 4, 5, 6, 7, 8 } T = {2, 5} V = {1, 2, 3, 7, 8}
Find (V∩T′)′

19. U = {1, 2, 3, 4, 5, 6, 7} S = {2, 4, 5} T = {3, 5, 7}
V = {2, 3, 4, 5, 7} W = {1, 2, 3, 4, 6} Find (S∩V)′ ∪ (W′∪ T)

20. U = {a, b, c, d, e, f, g} S = {a, b, c, d, e, g}
T = {a, b, f, g}V = {d} W = {a, c, d, e, g} Find [(S∪W) ∪ T′]′

21. Let U = { 1, 2, 3, 4, 5, 6, 7, 8, 9 } S = {1, 2, 5, 6, 7} T = {5, 6}
V = {1, 2, 3, 5, 6, 9} Find S′∪(T∩V)

22 – 33: On a standard 3-circle Venn diagram, shade the region(s) corresponding to the set:

22. (B ∪ A) ∩ C′ **23.** (C ∩ B) ∪ A **24.** C ∪ (A ∩ B′)
25. (A′ ∩ B) ∪ (A ∩ C) **26.** (A′ ∪ B) ∪ C′ **27.** (A ∪ B)′ ∩ C
28. (A ∩ B′) ∪ (B ∩ C′) **29.** (C ∪ A′) ∩ B′ **30.** (B ∩ C′) ∩ A′
31. (B ∩ C′) ∪ A **32.** (A ∪ C) ∩ (A ∪ B) **33.** (A ∩ C)′ ∪ B

ANSWERS TO PRACTICE EXERCISES

1 – 10: U = {b, c, d, e, f, g, h, i, j, k} S = {b, c, d, h, i, k}
T = {b, d, e, f, h} V = {b, d, e, f, g, i}

1. S′ ={e, f, g, j} **2.** T′={c, g, i, j, k} **3.** V′={c, h, j, k}
4. S∩T = {b, d, h} **5.** S∪T= {b, c, d, e, f, h, i, k} **6.** S∩V= {b, d, i}
7. S∪V= {b, c, d, e, f, g, h, i, k} **8.** T∩V= {b, d, e, f} **9.** T∪V= {b, d, e, f, g, h, i}
10. S′∪V= {b, d, e, f, g, i, j} **11.** S′∩V= {e, f, g} **12.** S′∪T = {b, d, e, f, g, h, j}
13. S′∩T = {e, f} **14.** V′∪T= {b, c, d, e, f, h, j, k} **15.** V′∩T= {h}

16. Let U = { b, c, d, e, f, g, h, i, j } V = {e} W = {c, f, g, j}
(V′ ∪ W′)′ = { }

17. Let U = { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 } T = {2, 3, 9} V = {8, 9, 10}
(T′ ∪ V)′ = {2, 3}

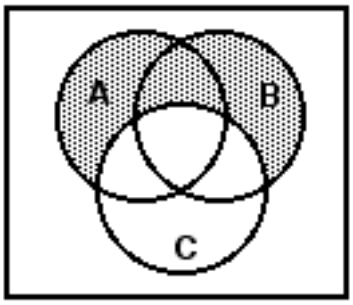
18. Let U = { 1, 2, 3, 4, 5, 6, 7, 8 } T = {2, 5} V = {1, 2, 3, 7, 8}
(V∩T′)′ = {2, 4, 5, 6}

19. U = {1, 2, 3, 4, 5, 6, 7} S = {2, 4, 5} T = {3, 5, 7}
V = {2, 3, 4, 5, 7} W = {1, 2, 3, 4, 6} (S∩V)′ ∪ (W′∪ T) = {1, 3, 5, 6, 7}

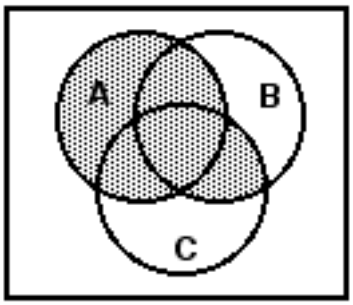
20. U = {a, b, c, d, e, f, g} S = {a, b, c, d, e, g}
T = {a, b, f, g}V = {d} W = {a, c, d, e, g} [(S∪W) ∪ T′]′ = {f}

21. Let U = { 1, 2, 3, 4, 5, 6, 7, 8, 9 } S = {1, 2, 5, 6, 7} T = {5, 6}
V = {1, 2, 3, 5, 6, 9} S′∪(T∩V) = {3, 4, 5, 6, 8, 9}

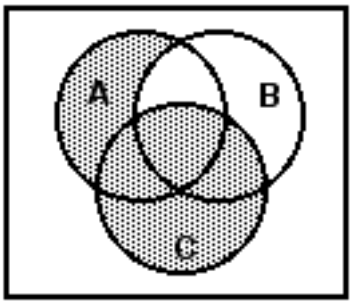
22. (B ∪ A) ∩ C′



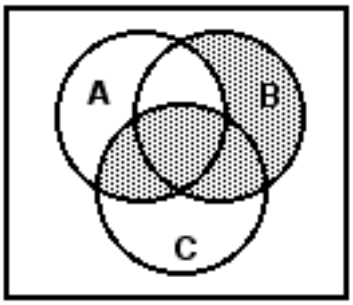
23. (C ∩ B) ∪ A



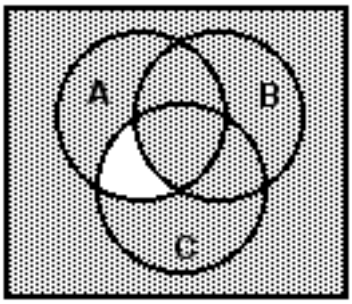
24. C ∪ (A ∩ B′)



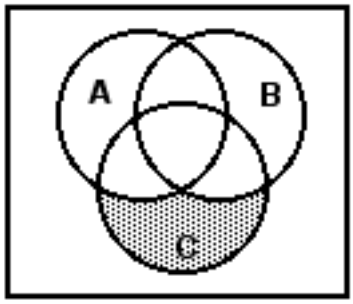
25. (A′ ∩ B) ∪ (A ∩ C)



26. (A′ ∪ B) ∪ C′

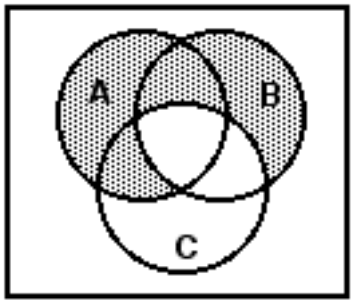


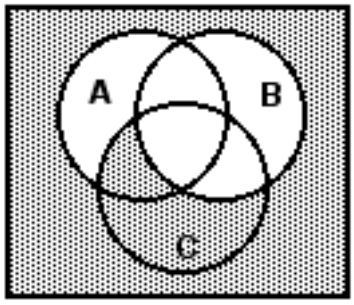
27. (A ∪ B)′ ∩ C



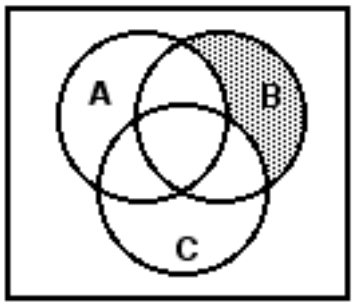
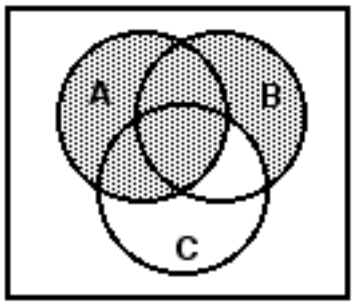
28. (A ∩ B′) ∪ (B ∩ C′)

29. (C ∪ A′) ∩ B′





30. $(B \cap C') \cap A'$



31. $(B \cap C') \cup A$