

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. $S \cap T$

5. $S \cup T$

6. $S \cap V$

7. $S \cup V$

8. $T \cap V$

9. $T \cup V$

10. $S' \cup V$

11. $S' \cap V$

12. $S' \cup T$

13. $S' \cap T$

14. $V' \cup T$ **15.** $V' \cap T$

16. Let $U = \{b, c, d, e, f, g, h, i, j\}$ $V = \{e\}$ $W = \{c, f, g, j\}$ Find $(V' \cup W')'$

17. Let $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$ $T = \{2, 3, 9\}$ $V = \{8, 9, 10\}$

Find $(T' \cup V)'$

18. Let $U = \{1, 2, 3, 4, 5, 6, 7, 8\}$ $T = \{2, 5\}$ $V = \{1, 2, 3, 7, 8\}$

Find $(V \cap T')'$

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 $(S \cap V)' \cup (W' \cup T)$

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 $[(S \cup W) \cup T']'$

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 $S' \cup (T \cap V)$

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

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

23. $(C \cap B) \cup A$

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

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

26. $(A' \cup B) \cup C'$

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

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

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

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

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

32. $(A \cup C) \cap (A \cup B)$

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

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. $S \cap T = \{b, d, h\}$ **5.** $S \cup T = \{b, c, d, e, f, h, i, k\}$ **6.** $S \cap V = \{b, d, i\}$

7. $S \cup V = \{b, c, d, e, f, g, h, i, k\}$ **8.** $T \cap V = \{b, d, e, f\}$ **9.** $T \cup V = \{b, d, e, f, g, h, i\}$

10. $S' \cup V = \{b, d, e, f, g, i, j\}$ **11.** $S' \cap V = \{e, f, g\}$ **12.** $S' \cup T = \{b, d, e, f, g, h, j\}$

13. $S' \cap T = \{e, f\}$ **14.** $V' \cup T = \{b, c, d, e, f, h, j, k\}$ **15.** $V' \cap T = \{h\}$

16. Let $U = \{b, c, d, e, f, g, h, i, j\}$ $V = \{e\}$ $W = \{c, f, g, j\}$

$(V' \cup W')' = \{ \}$

17. Let $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$ $T = \{2, 3, 9\}$ $V = \{8, 9, 10\}$

$(T' \cup V)' = \{2, 3\}$

18. Let $U = \{1, 2, 3, 4, 5, 6, 7, 8\}$ $T = \{2, 5\}$ $V = \{1, 2, 3, 7, 8\}$

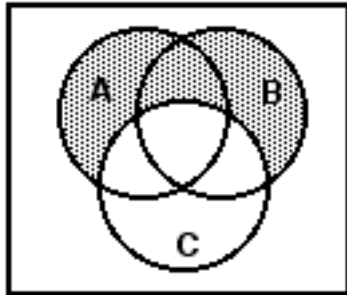
$(V \cap T')' = \{2, 4, 5, 6\}$

19. $U = \{1, 2, 3, 4, 5, 6, 7\}$ $S = \{2, 4, 5\}$ $T = \{3, 5, 7\}$

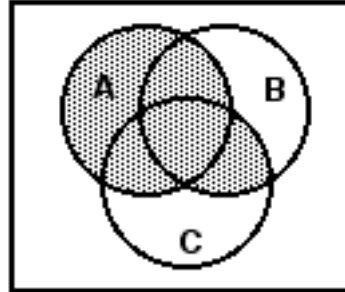
$V = \{2, 3, 4, 5, 7\}$ $W = \{1, 2, 3, 4, 6\}$ $(S \cap V)' \cup (W' \cup T) = \{1, 3, 5, 6, 7\}$

20. $U = \{a, b, c, d, e, f, g\}$ $S = \{a, b, c, d, e, g\}$
 $T = \{a, b, f, g\}$ $V = \{d\}$ $W = \{a, c, d, e, g\}$ $[(S \cup W) \cup T']' = \{f\}$
 21. Let $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$ $S = \{1, 2, 5, 6, 7\}$ $T = \{5, 6\}$
 $V = \{1, 2, 3, 5, 6, 9\}$ $S' \cup (T \cap V) = \{3, 4, 5, 6, 8, 9\}$

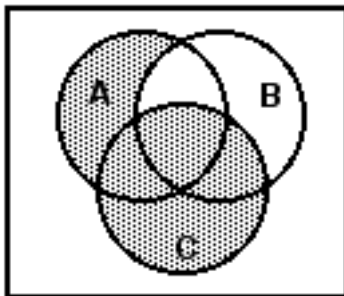
22. $(B \cup A) \cap C'$



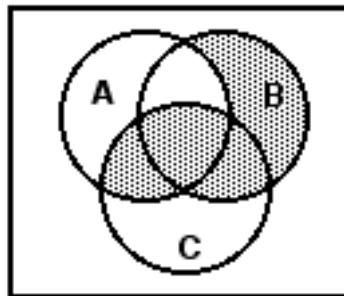
23. $(C \cap B) \cup A$



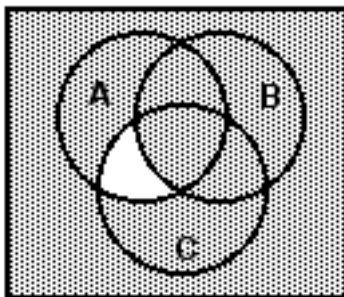
24. $C \cup (A \cap B')$



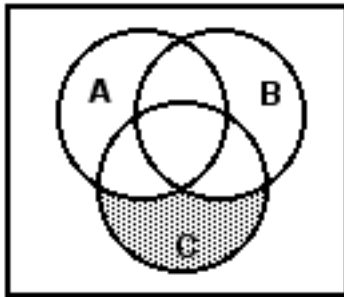
25. $(A' \cap B) \cup (A \cap C)$



26. $(A' \cup B) \cup C'$

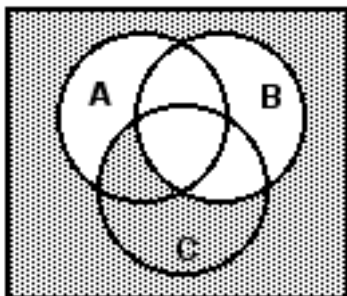
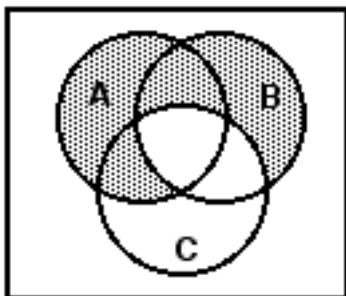


27. $(A \cup B)' \cap C$

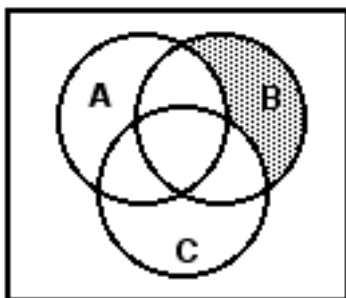


28. $(A \cap B') \cup (B \cap C')$

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



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



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

