## C: ANSWERS TO SELECTED PROBLEMS

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Chapter 2.1, Sets and Subsets
    1. Washington, West Virginia, Wisconsin, Wyoming.
    3. This is not a well-defined set.
    5. All students with blue eyes. All students who are male. All students who own a dog.
    7. {1,3,5,7,9,11,13,15,17,19}.
    9. [a] False, [c] True.
    11. {x you add the two adjacent elements to get the next element between 0 and 100}
    13. }6
15. [a] \subseteq, [c] =, [e] =.
17. Yes, the empty set is always a subset of any set.
19. [b] and [c] are well-defined sets.
21. }B={6,8,10,12}\mathrm{ .
23. [a] True, [c] False.
25. }W={1,2,3,4}
27. There are 29 different coin combinations.
29. 4 possible subsets: {},{a},{b},{a,b}.
31. There are 16 possible subsets.
33. {1,2,3,4,5,6,8,9,10,12,15,16,18,20,24,25,30,36}.
35. {0,1,2,3,4,5,6}.
37. }60\mathrm{ wolves are on the island.
39. {(Y, Y, Y, N), (Y, Y, N, Y), (Y, N, Y, Y), (N, Y, Y, Y), (Y, Y, Y, Y)}.
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## Chapter 2.2, Set Operations

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1. \(A \cup B=\{a, b, c, e, g, r, t, w\}, A \cap B=\{b, e, t\}\).
3. \(C=\{\) Jose, Beverly, Tom, Phil, Sue \(\}\).
5. \(\}\), The empty set.
7. \(M-N=\{\) Mike, Jody \(\}\).
9. \(P-Q=\{3,7\}, Q-P=\{9\}\).
11. [a] \((H \cup K)^{\prime}=\{c, d, e, o\},[\mathrm{b}] H^{\prime} \cap K^{\prime}=\{c, d, e, o\}\),
[c] \((H \cap K)^{\prime}=\{b, c, d, e, o, u\},[\mathrm{d}] H^{\prime} \cup K^{\prime}=\{b, c, d, e, o, u\}\).
13. [a] True, [b] True, [c] False.
15. \(\{\) Nick, Linda, Mike, Jody\}.
17. [a] \(\left(A^{\prime}\right)^{\prime}=\{1,2,3,4\}=A\), [b] \((A \cap B) \cup(B \cap C)=\{3,4,5,6\}=B\), [c] \(A \cup B \cap C=\{5,6\}\).
19. \(W=\{(1,1),(2,2),(3,3),(4,4),(5,5),(6,6)\}\).
21. [a] \(\{c, e, f\},[\mathrm{b}]\{e\},[\mathrm{c}]\{(a, a),(a, f),(e, a),(e, f)\}\).
23. \(S=\{(H, H),(H, T),(T, H),(T, T)\}\).
25. \(A=\{1,3,5,7,9\}, B=\{2,3,5,7\}, C=\{6,7,8,9\}\).
27. 17.
29. \(S=\{H H H, H H T, H T H, T H H, H T T, T H T, T T H, T T T\}\).
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Chapter 2.3, Venn Diagrams

35. 50.

## Chapter 2.4, Chapter Review

Mastery Quiz

1. [a, c, d], 2. [b, c, d], 3. [b], 4. [d], 5. [d], 6. [d], 7. [c], 8. [d], 9. [a], 10. [a]

## Review

1. $\{(c, a),(c, e),(c, u),(u, a),(u, e),(u, u)\}$.
2. $[a]\{4,6\},[c]\{(2,4),(2,5),(2,6),(3,4),(3,5),(3,6),(5,4),(5,5),(5,6),(7,4),(7,5)$, $(7,6)\},[\mathrm{e}]\{3,5,7\}$.
3. $\quad 2^{k}$, where $k$ is the cardinality.
4. $\{1,2\}$.
5. 48. 
1. 19. 
1. $\quad 39+43-27=55$.
2. 22. 
1. The element $(a, a)$ is the only one.
2. [a] 40, [b] 10
3. $A=\{3,4,5,8,9,11\}, B=\{2,5,6,8,10\}, C=\{3,6,7,8,11\}$.
