# Section 1.2 – Answers

1. False, since, for example, 1 is not in B.
2. False, because $0 \notin$ N (the natural numbers start at 1).
3. True, since all elements of A are integers.
4. True, since 3 and 6 are in C and C also contains 9 and 12 which are not in the left-hand set.
5. True, since all elements of B are in B.
6. True, since 7 is not in C.
7. True, since 7 is in D.
8. False, because the right-hand set doesn't have an extra element that the left-hand set doesn't have.
9. False. The 2 is not a set, so can't be a subset of B.
10. True. $2 \in$ A, and there's at least one member of A that's not in $\{2\}$.
11. True.
12. True, since all elements of B are natural numbers.
13. True. $\varnothing$ is a subset of every set.
14. True, since all elements of C are natural numbers and Z contains numbers (the odd natural numbers, zero, and the negative integers) which aren't in C.
15. False. There is no member of B that isn't also in C.
16. True, since the two sets are actually equal to each other.
17. True, because if all elements of A are in B, they must also be in C.
18. False, because A could equal B, in which case A $\subseteq$ B but A $\not\subset$ B.
19. True, because all elements of A are in B but C has at least one element that is not in B.
20. $\varnothing$, {1}, {2}, {3}, {1,2}, {1,3}, {2,3}, {1,2,3}
21. $\varnothing$, {1}, {2}, {3}, {1,2}, {1,3}, {2,3}
22. proper subsets: $2^n - 1$, subsets: $2^n$