ANSWERS

2.1 (a) $S = \{8, 16, 24, 32, 40, 48\}$

(b) $S = \{-5, 1\}$

(c) $S = \{T, HT, HHT, HHH\}$

(d) S ={Africa, Antarctica, Asia, Australia, Europe, North America, South America}

(e) $S = \phi$

2.3 $A = C$

2.5 Using the tree diagram, we obtain

$S = \{1HH,\ 1HT,\ 1TH,\ 1TT,\ 2H,\ 2T,\ 3HH,\ 3HT,\ 3TH,\ 3TT,\ 4H,\ 4T,\ 5HH,\ 5HT,\ 5TH,\ 5TT,\ 6H,\ 6T\}$

2.7 $S_1 = \{MMMM, MMMF, MMFM, MFMM, FMMM, MMFF, MFMF, MFFM, FMFM, FFMM, FMMF, MFFF, FMFF, FFMF, FFFM, FFFF\}$;
$S_2 = \{0, 1, 2, 3, 4\}$

2.9 (a) $A = \{1HH, 1HT, 1TH, 1TT, 2H, 2T\}$

(b) $B = \{1TT, 3TT, 5TT\}$

(c) $A' = \{3HH, 3HT, 3TH, 3TT, 4H, 4T, 5HH, 5HT, 5TH, 5TT, 6H, 6T\}$

(d) $A' \cap B = \{3TT, 5TT\}$

(e) $A \cup B = \{1HH, 1HT, 1TH, 1TT, 2H, 2T, 3TT, 5TT\}$

2.11 (a) $S = \{M_1M_2, M_1F_1, M_1F_2, M_2M_1, M_2F_1, M_2F_2, F_1M_1, F_1M_2, F_1F_2, F_2M_1, F_2M_2, F_2F_1\}$

(b) $A = \{M_1M_2, M_1F_1, M_1F_2, M_2M_1, M_2F_1, M_2F_2\}$

(c) $B = \{M_1F_1, M_1F_2, M_2F_1, M_2F_2, F_1M_1, F_1M_2, F_2M_1, F_2M_2\}$

(d) $C = \{F_1F_2, F_2F_1\}$

(e) $A \cap B = \{M_1F_1, M_1F_2, M_2F_1, M_2F_2\}$

(f) $A \cup C = \{M_1M_2, M_1F_1, M_1F_2, M_2M_1, M_2F_1, M_2F_2, F_1F_2, F_2F_1\}$

2.15 (a) {nitrogen, potassium, uranium, oxygen}

(b) {copper, sodium, zinc, oxygen}

(c) {copper, sodium, nitrogen, potassium, uranium, zinc}

(d) {copper, uranium, zinc}

(e) ϕ

(f) {oxygen}

2.19 (a) The family will experience mechanical problems but will receive no ticket for a traffic violation and will not arrive at a campsite that has no vacancies.

(b) The family will receive a traffic ticket and arrive at a campsite that has no vacancies but will not experience mechanical problems.

(c) The family will experience mechanical problems and will arrive at a campsite that has no vacancies.

(d) The family will receive a traffic ticket but will not arrive at a campsite that has no vacancies.

(e) The family will not experience mechanical problems.