6.29 (a) S = {germinates, fails to grow}. (b) The survival time could be measured in days, weeks, months, or years. S = {nonnegative integers}. (c) S = {A, B, C, D, F}. (d) Using Y for "yes (shot made)" and N for "no (shot missed)," S = {YYYY, NNNN, YYYN, NNNY, YYNY, NNYN, YNYY, NYNN, NYYY, YNNN, YYNN, NNYY, YNYN, NYNY, YNNY, NYYN}. (There are 16 outcomes in the sample space.) (e) S = {0, 1, 2, 3, 4}

6.30 (a) S = {all numbers between 0 and 24 hours}. (b) S = {0, 1, 2, ... , 11000}. (c) S = {0, 1, 2, ... , 12}. (d) S = {all numbers greater than or equal to 0}, or S = {0, 0.01, 0.02, 0.03, ...}. (e) S = {all positive and negative numbers}. Note that the rats can lose weight.

6.31 S = {all numbers between ___ and ___} The numbers in the blanks may vary. Table 1.10 has values from 86 and 195 cal; the range of values should include at least those numbers. Some students may play it safe and say S = {all numbers greater than 0}

6.32 (a) If two coins are tossed, then by the multiplication principle, there are 2×2 = 4 possible outcomes. The outcomes are illustrated in the following tree diagram:
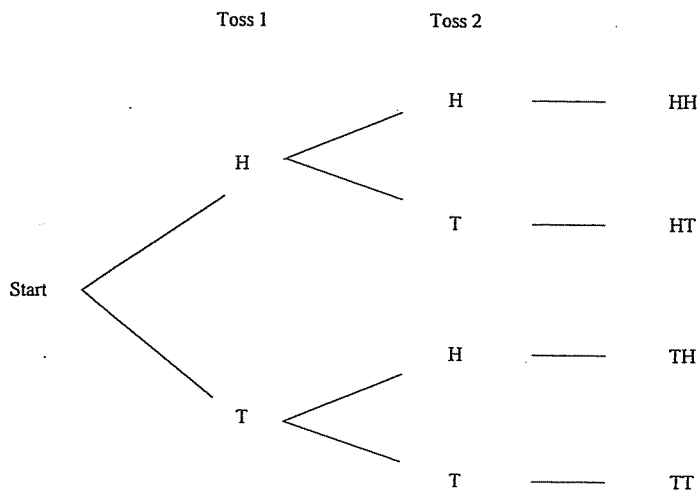
The sample space is S = {HH, HT, TH, TT}. (b) If three coins are tossed, then there are 2×2×2 = 8 possible outcomes. The outcomes are illustrated in the following tree diagram:
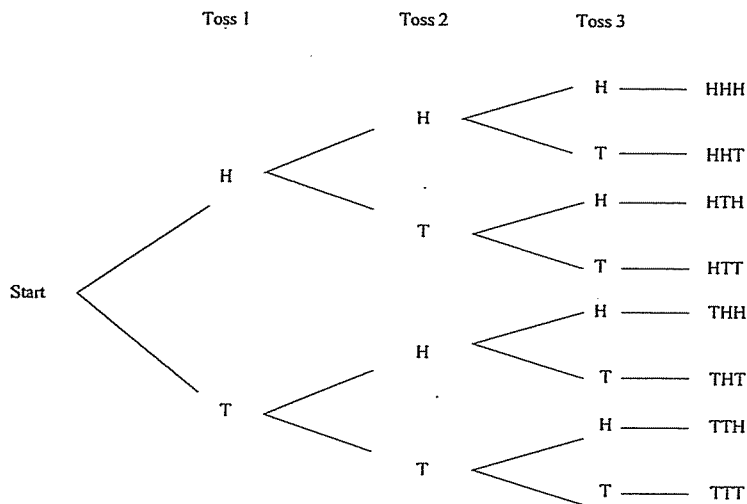
The sample space is S = {HHH, HHT, HTH, HTT, THH, THT, TTH, TTT}. (c) If five coins are tossed, then there are 2×2×2×2×2 = 32 possible outcomes, each of which consists of a string of five letters that may be H's or T's. The sample space is S = {HHHHH, HHHHT, HHHTH, HHTHH, HTHHH, HHHTT, HHTHT, HHTTH, HTHTH, HTTHH, HTHHT, HHTTT, HTHTT, HTTHT, HTTTH, HTTTT, THHHH, THHHT, THHTH, THTHH, TTHHH, THHTT, THTHT, THTTH, TTHTH, TTTHH, TTHHT, THTTT, TTHTT, TTTHT, TTTTH, TTTTT}.

6.33 (a) $10\times10\times10\times10 = 10^4 = 10{,}000$. (b) $10\times9\times8\times7 = 5{,}040$. (c) There are 10,000 four-digit tags, 1,000 three-digit tags, 100 two-digit tags, and 10 one-digit tags, for a total of 11,110 license tags.

6.35 (a)

Number of ways	Sum	Outcomes
1	2	(1, 1)
2	3	(1, 2) (2, 1)
3	4	(1, 3) (2, 2) (3, 1)
4	5	(1, 4) (2, 3) (3, 2) (4, 1)
5	6	(1, 5) (2, 4) (3, 3) (4, 2) (5, 1)
6	7	(1, 6) (2, 5) (3, 4) (4, 3) (5, 2) (6, 1)
5	8	(2, 6) (3, 5) (4, 4) (5, 3) (6, 2)
4	9	(3, 6) (4, 5) (5, 4) (6, 3)
3	10	(4, 6) (5, 5) (6, 4)
2	11	(5, 6) (6, 5)
1	12	(6, 6)

(b) 18. (c) There are 4 ways to get a sum of 5 and 5 ways to get a sum of 8.
(d) Answers will vary but might include:
- The "number of ways" increases by 1 until "sum = 7" and then decreases by 1.
- The "number of ways" is symmetrical about "sum = 7."
- The outcomes show a symmetrical pattern, very similar to stemplots for symmetric distributions.
- Odd sums occur in an even number of ways and even sums occur in an odd number of ways.
- The possible values of the sum are not equally likely, even though all 36 outcomes are equally likely.

6.36 (a) 26. (b) 13. (c) 1. (d) 16. (e) 3.