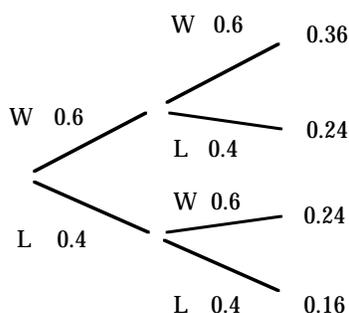# Tree Diagrams 26

Example: The probability of winning a game is 0.60. The
            probability of losing is 0.40. Two games are played.

       a) Find the probability of two wins.

       b) Find the probability of two losses.

       c) Find the probability of a win and a loss.

       d) Find the sum of the probabilities in a), b), and c).

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                              W  0.6
                                        0.36
                 W  0.6
                              L  0.4
                                        0.24
                              W  0.6
                                        0.24
                 L  0.4
                              L  0.4    0.16
```

Answers: a) 0.36, b) 0.16, c) 0.24 + 0.24 = 0.48, d) 1.0.

Problems:

Draw a tree diagram and use the multiplication and addition laws to
solve the following problems.

1) The probability of winning a game is 0.75. Two games are played.
Find the following probabilities.

a) P(two wins)   b) P(two losses)   c) P(one win, one loss)

2) The probability of winning a game is 0.30. Three games are played.
Find the probabilities.

a) P(three wins)   b) P(two wins)   c) P(one win)

3) Find the probability that a three child family has one daughter.

4) Suppose that you toss a coin four times. Find the following probabilities. (This problem can also be solved by using the permutation formula)

a) P(one head)   b) P(two heads)   c) P(four heads)

5) Suppose that you have two bags with marbles. Bag one has 2 red and 3 blue marbles. Bag two has 1 red and 2 blue marbles. One of the bags is chosen randomly, and one marble is removed from it. Find the probabilities.

a) P(red)   b) P(blue)   c) P(R or B)

6) Suppose that one in ten computer chips produced by a plant are defective. Two chips are chosen randomly from the production line. Find the following probabilities.

a) P(no chip is defective)   b) P(one chip is defective)

c) P(two chips are defective)

7) A hockey player scores on 15% of his shots. Find the probability that he will score on exactly two of his next three shots.

Answers: 1)a) 0.56, b) 0.06, c) 0.38, 2)a) 0.027, b) 0.19, c) 0.44, 3) 3/8, 4) a)1/4, b) 3/8, c) 1/16, 5)a) 11/30, b) 19/30, c) 1, 6)a) 0.81, b) 0.18, c) 0.01, 7) 0.057.