Two devices can be used to represent sample spaces. They are tree diagrams and tables.

A tree diagram can be used to determine the outcome of a probability experiment. A tree diagram consists of branches corresponding to the outcomes of two or more probability experiments that are done in sequence.

Sample spaces can also be represented by using tables. For example, the outcomes when selecting a card from an ordinary deck can be represented by a table. When two dice are rolled, the 36 outcomes can be represented by using a table. Once a sample space is found, probabilities can be computed for specific events.

QUIZ #36-41

1. When a coin is tossed and then a die is rolled, the probability of getting a tail on the coin and an odd number on the die is

   a. $\frac{1}{2}$

   b. $\frac{1}{4}$

   c. $\frac{3}{4}$

   d. $\frac{1}{12}$

2. When a coin is tossed and a die is rolled, the probability of getting a head and a number less than 5 on the die is

   a. $\frac{1}{3}$

   b. $\frac{2}{3}$

   c. $\frac{1}{2}$

   d. $\frac{5}{6}$

3. When three coins are tossed, the probability of getting at least one tail is

   a. $\frac{3}{8}$

   b. $\frac{1}{8}$

   c. $\frac{7}{8}$

   d. $\frac{5}{8}$

4. When three coins are tossed, the probability of getting two or more heads is

   a. $\frac{3}{8}$

   b. $\frac{1}{8}$

   c. $\frac{1}{2}$

   d. $\frac{7}{8}$

5. A box contains a penny, a nickel, a dime, and a quarter. If two coins are selected without replacement, the probability of getting an amount greater than 11¢ is

   a. $\frac{5}{72}$

   b. $\frac{2}{3}$

   c. $\frac{3}{4}$

   d. $\frac{5}{6}$

6. A bag contains a red bead, a green bead, and a blue bead. If a bead is selected and its color noted, and then it is replaced and another bead is selected, the probability that both beads will be of the same color is

   a. $\frac{1}{8}$

   b. $\frac{3}{4}$

   c. $\frac{1}{16}$

   d. $\frac{1}{3}$

7. A card is selected at random from an ordinary deck of 52 cards. The probability that the 7 of diamonds is selected is

   a. $\frac{1}{13}$

   b. $\frac{1}{4}$

   c. $\frac{1}{52}$

   d. $\frac{1}{26}$

8. A card is selected at random from a deck of 52 cards. The probability that it is a 7 is

   a. $\frac{1}{4}$

   b. $\frac{1}{52}$

   c. $\frac{7}{52}$

   d. $\frac{1}{13}$

9. A card is drawn from an ordinary deck of 52 cards. The probability that it is a spade is

   a. $\frac{1}{4}$

   b. $\frac{1}{13}$

   c. $\frac{1}{52}$

   d. $\frac{1}{26}$

10. A card is drawn from an ordinary deck of 52 cards. The probability that it is a 9 or a club is

    a. $\frac{17}{52}$

    b. $\frac{5}{8}$

    c. $\frac{4}{13}$

    d. $\frac{3}{4}$

11. A card is drawn from an ordinary deck of 52 cards. The probability that it is a face card is

    a. $\frac{3}{52}$

    b. $\frac{1}{4}$

    c. $\frac{9}{13}$

    d. $\frac{3}{13}$

12. Two dice are rolled. The probability that the sum of the spots on the faces will be nine is

    a. $\frac{1}{9}$

    b. $\frac{5}{36}$

    c. $\frac{1}{6}$

    d. $\frac{3}{13}$

13. Two dice are rolled. The probability that the sum of the spots on the faces is greater than seven is

    a. $\frac{2}{3}$

    b. $\frac{7}{36}$

    c. $\frac{3}{4}$

    d. $\frac{5}{12}$

14. Two dice are rolled. The probability that one or both numbers on the faces will be 4 is

    a. $\frac{1}{3}$

    b. $\frac{4}{13}$

    c. $\frac{11}{36}$

    d. $\frac{1}{6}$

15. Two dice are rolled. The probability that the sum of the spots on the faces will be even is

    a. $\frac{3}{4}$

    b. $\frac{5}{6}$

    c. $\frac{1}{2}$

    d. $\frac{1}{6}$

HISTORY OF DICE AND CARDS

Dice are one of the earliest known gambling devices used by humans. They have been found in ancient Egyptian tombs and in the prehistoric caves of people in Europe and America. The first dice were made from animal bones—namely the astragalus or the heel bone of a hoofed animal. These bones are very smooth and easily carved. The astragalus had only four sides as opposed to modern cubical dice that have six sides. The astragalus was used for fortune telling, gambling, and board games.

By 3000 B.C.E. the Egyptians had devised many board games. Ancient tomb paintings show pharaohs playing board games, and a game similar to today's "Snakes and Ladders" was found in an Egyptian tomb dating to 1800 B.C.E. Eventually crude cubic dice evolved from the astragalus. The dice were first made from bones, then clay, wood, and finally polished stones. Dots were used instead of numbers since writing numbers was very complicated at that time.

It was thought that the outcomes of rolled dice were controlled by the gods that the people worshipped. As one story goes, the Romans incorrectly reasoned that there were three ways to get a sum of seven when two dice are rolled. They are 6 and 1, 5 and 2, and 4 and 3. They also reasoned incorrectly that there were three ways to get a sum of six: 5 and 1, 4 and 2, and 3 and 3.