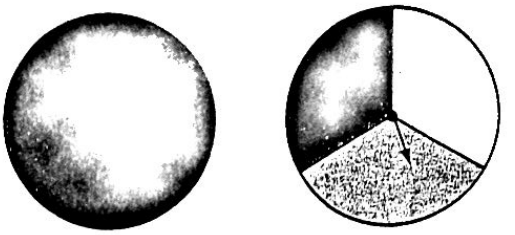
CHECK FOR UNDERSTANDING

Communicating Mathematics

Study the lesson. Then complete the following.

1. **Explain** the fundamental counting principle in your own words.
2. **Describe** the difference between independent and dependent events. Give an example of each.
3. **Draw** a tree diagram to illustrate all the different choices when spinning both spinners at the same time.



4. **Explain** the advantages of using a simpler problem to solve problems.

MATH JOURNAL

5. Now that the middle digit in an area code can be any number between 0 or 9, show how many area code combinations are possible.

Guided Practice

Draw a tree diagram to illustrate all of the possibilities.

6. the possibilities for boys and girls in a family with two children (*Hint:* Having a boy, then a girl is different from having a girl, then a boy.)
7. sweatshirts that come in sizes small, medium, and large and in the colors red, navy, and white

State whether the following events are *independent* or *dependent*.

8. choosing the color and size of a pair of shoes
9. choosing the winner and loser of a chess game

Solve each problem.

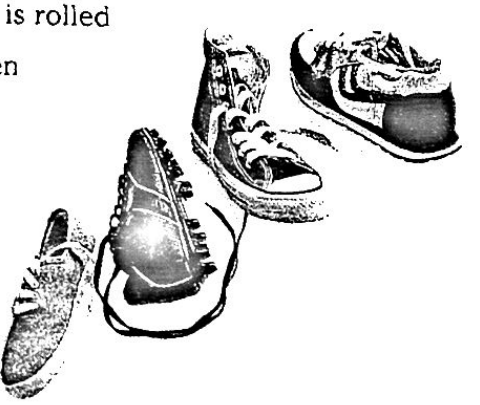
10. **School** At Dublin Coffman High School, Cecelia is taking six different classes. Assuming that each of these classes is offered each period, how many different schedules might she have?
11. **Tests** Alberto's math quiz has eight true-false questions. How many different choices for giving answers to the eight questions are possible?

EXERCISES

Practice

Draw a tree diagram to illustrate all of the possibilities.

12. two pennies are tossed and a number cube is rolled
13. boys and girls in a family with three children
14. buying tennis, basketball, aerobic, running, or cross-country shoes in black, white, blue, or red
15. ordering a hamburger rare, medium, or well done with either ketchup, mayonnaise, cheese, onion, or tomato as your choice of topping
16. choosing a phone that comes in a wall or desk model in black, almond, or transparent that has a redial or hold button



State whether the events are *independent* or *dependent*.

17. choosing a president, vice president, secretary, and treasurer for Student Council

18. selecting a fiction book and a non-fiction book at the library

19. The letters A through Z are written on pieces of paper and placed in a jar. Four of them are selected one after the other without replacing any of the pieces of paper.

20. Each of six people guess the total number of points in a basketball game. They write down the guess without telling what it is.

Solve each problem.

21. Suppose five points in a plane represent towns that are connected by roads. Starting at any one town, how many different routes are there so that you visit each town exactly once?

22. How many different batting orders does a baseball team of nine players have if the pitcher bats last?

23. The letters r, s, t, v, and w are to be used to form 5-letter passwords for an office security system. How many passwords can be formed if the letters can be used more than once in any password?

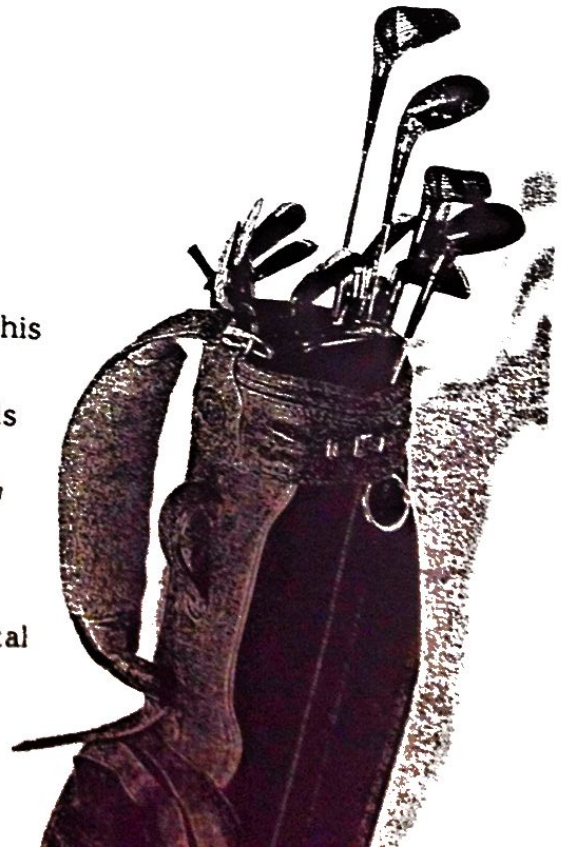
24. In some states, a standard license plate has three letters followed by three digits. The first letter cannot be I or O, and the last digit cannot be zero. How many possible plates are there?

25. How many ways can six books be arranged on a shelf if one of the books is a dictionary and it must be on an end?

26. For a particular model of truck, a truck dealer offers 5 versions of that model, 16 body colors, and 8 truck cab colors. How many different possibilities are available for that model?

referring to
ve mean a
52 cards.

27. Suppose five cards are drawn from a standard deck of cards. Three are red and two are black.
    a. How many possibilities are there for this hand?
    b. Suppose exactly one of the black cards is a face card. Now how many possibilities are there? *A face card is a jack, queen, or king.*



Critical Thinking

28. Write a problem that uses the fundamental counting principle and has an outcome of 2340. Explain in your own words how you went about finding a problem to fit the criteria.

tions and