14.1 Part I Counting Principle Worksheet

I. State whether the events are independent or dependent.

1. Choosing a president, vice president, secretary, and treasurer for Student Council, assuming that a person can hold only one office. Dependent

2. Selecting a fiction book and a nonfiction book at the library.

   Independent

3. Each of six people guess the total number of points scored in a basketball game. Each person writes down his or her guess without telling what it is.

   Independent

4. 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 them.

   Dependent

II. Solve each problem.

5. Tim wants to buy one of three different albums he sees in a music store. Each is available on tape and CD. How many combinations of album and format does he have to choose?

   $3 \cdot 2 = 6$

6. A video store has 8 new releases this week. Each is available on DVD and Blue Ray. How many ways can a customer choose a new release and a format to rent?

   $8 \cdot 2 = 16$

7. Carlos has homework to do in Math, Chemistry, and English. How many ways can he choose the order in which to do his homework?

   $3 \cdot 2 \cdot 1 = 6$

8. The menu for a banquet has a choice of 2 types of salad, 5 main courses, and 3 desserts. How many ways can a salad, main course, and dessert be selected to form a meal?

   $2 \cdot 5 \cdot 3 = 30$

9. A golf club manufacturer makes drivers with 4 different shafts lengths, 3 different lofts, 2 different grips, and 2 different club head materials. How many different combinations are possible?

   $4 \cdot 3 \cdot 2 \cdot 2 = 48$

10. Each question on a five-question multiple-choice quiz has answer choices labeled A, B, C, and D. How many different ways can a student answer the five questions?

$4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 = 1024$

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

$5 \cdot 4 \cdot 3 \cdot 2 \cdot 1 \cdot \boxed{2} = 240$

12. In how many orders can eight actors be listed in the opening credits of a movie if the leading actor must be listed first or last?

$7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1 \cdot \boxed{2} = 10{,}080$

13. Abby is registering at a Web Site. She must select a password containing 6 numerals to be able to use the site. How many passcodes are allowed if no digits may be used more than once?

$10 \cdot 9 \cdot 8 \cdot 7 \cdot 6 \cdot 5 = 151{,}200$

14. How many different 5 digit codes are possible if the first digit cannot be 0 and no digit may be used more than once?

$9 \cdot 9 \cdot 8 \cdot 7 \cdot 6 = 27{,}216$

15. How many different 3 letter, 4 digit license plates are there if letters can be repeated but the numbers can't?

$26 \cdot 26 \cdot 26 \cdot 10 \cdot 9 \cdot 8 \cdot 7 = 88{,}583{,}040$

16. How many numbers between 100 and 999, inclusive, have 7 in the tens place?

$10 \cdot 9 = 90$

17. A coin is tossed four times. How many possible sequences of heads or tails are possible?

$2 \cdot 2 \cdot 2 \cdot 2 = 16$

18. A coin is tossed 6 times and a die is rolled 3 times. How many possible outcomes are possible?

$2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 6 \cdot 6 \cdot 6 = 13{,}824$