

NAME _____

DATE _____

Supplemental Exercises

1. Eight people are waiting on standby for a flight. Four seats become available: one with ample leg room, one window seat, one aisle seat, and one seat in the middle. The people on standby will be given their choice of seats in the order in which their names are picked from the list.
 - a. How many arrangements of people on standby can take the available seats on the flight?

 - b. Is this a combination or a permutation? _____
 - c. Why? _____
2. One part of a mathematics test contains eleven problems. Students are required to work any eight problems of their choice. How many selections of eight problems are possible?

3. How many two-digit numbers can be written using only the digits 5 and 6, where repetition is allowed?

 - a. Prove your answer by listing all the possibilities.
4. How many five-digit numbers can be formed from the digits 3, 4, 5, 6, and 7 if repetition of digits is allowed?

5. A car dealership offers its latest model with a choice of five exterior colors, three interior colors, and the option of a sun roof. How many different cars does a buyer have to choose from?

 - a. What method of probability did you use to determine your answer?

6. For its first time subscribers, a book club offers 3 books for \$1 with a choice of 22 book titles. How many different sets of 3 books can a prospective member choose?

- a. Is the order of selection important for this problem? Why or why not?

_____ ; _____

- b. Is this a combination or a permutation? _____

7. Complete the following table showing the ways in which a true/false test having different numbers of questions can be answered.

Number of questions	1	2	3	4
Number of ways for answers to appear	—	—	—	—

- a. Are the choices made in answering the questions of a true/false test dependent or independent? _____
- b. By which method did you determine your answers in this problem: the fundamental counting principle, permutations, or combinations?

Find the following (Show your work!):

8. $7!$

9. $(3!)^2$

10. $(3^2)!$

11. $(3!)!$

12. $(2!)(3!)$

13. $(2 \cdot 3)!$

14. $1! \cdot 1 + 2! \cdot 2 + 3! \cdot 3$

15. $1! \cdot 1 + 2! \cdot 2 + 3! \cdot 3 + 4! \cdot 4$

16. $1! \cdot 1 + 2! \cdot 2 + 3! \cdot 3 + 4! \cdot 4 + 5! \cdot 5$