Time Frame: 50 minutes

Subject Matter: Probability and Counting Rules TELL ME

Anticipatory Set:

In a company there are 7 executives: 4 women and 3 men. Three are selected to attend a management seminar. Find these probabilities.

* 1. All 3 selected will be women.
	2. All 3 selected will be men.
	3. 2 men and 1 woman will be selected.
	4. 1 man and 2 women will be selected.

Objective: TSWBAT find the probability of an event using the counting rules.

Standards: DA – 5.2 Use counting techniques to determine the number of possible outcomes for an event.

Materials: PowerPoint Presentation and Worksheets

SHOW ME

Presentation of Information:

*Review the following.*

*Permutation Rule*

* The arrangement of *n* objects in a specific order using *r* objects at a time is called a *permutation of n objects taking r objects at a time*. It is written as nPr, and the formula is

$$nPr= \frac{n!}{\left(n-r\right)!}$$

*Combination Rule*

* The number of combinations of r objects selected from n objects is denoted by nCr, and the formula is

$$nCr= \frac{n!}{\left(n-r\right)!r!}$$

Le Me Try (Study Guide)

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: Nov. 30, 2010

1. The composition of the Senate of the 107th Congress is

49 Republicans 1 Independent 50 Democrats

A new committee is being formed to study ways to benefit the arts in education. If 3 senators are selected at random to head the committee,

1. What is the probability that they will be all Republicans?
2. What is the probability that they will be all Democrats?
3. What is the probability that there will be 1 from each party, including the Independent?
4. The signers of the *Declaration of Independence* came from the Thirteen Colonies as shown.

|  |  |
| --- | --- |
| Massachusetts 5 | New York 4 |
| New Hampshire 3 | Georgia 3 |
| Virginia 7 | North Carolina 3 |
| Maryland 4 | South Carolina 4 |
| New Jersey 5 | Connecticut 4 |
| Pennsylvania 9 | Delaware 3 |
| Rhode Island 2 |  |

 Suppose that 4 are chosen at random to be the subject of a documentary. Find the probability that

1. All 4 come from Pennsylvania.
2. 2 come from Pennsylvania and 2 come from Virginia.
3. A package contains 12 resistors, 3 of which are defective. If 4 are selected, find the probability of getting
4. No defective resistors.
5. 1 defective resistor.
6. 3 defective resistors.
7. If 50 tickets are sold and 2 prizes are to be awarded, find the probability that one person will 2 prizes if the person buys 2 tickets.
8. A committee of 4 people is to be formed from 6 doctors and 8 dentists. Find the probability that the committee will consist of
9. All dentists
10. 2 dentists and 2 doctors
11. All doctors