Time Frame: 50 minutes

Subject Matter: Fundamental Counting Principle

Anticipatory Set:

Construct a tree diagram if three coins are tossed at the same time. How many possible outcomes are there?

Objective: TSWBAT find the total number outcomes in a sequence of events, using the fundamental counting rule.

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:

*Fundamental Counting Rule*

* In a sequence of *n* events in which the first one has *k1*possibilities and the second event has *k2* and the third has *k3*, and so forth, the total number of possibilities of the sequence will be

*k1 • k2 • k3 • • • kn*

* *Note:* In this case *and* means to multiply

Example 1:

A coin is tossed and a die is rolled. Find the number of outcomes for the sequence of events.

Example 2:

Paint manufacturer wishes to manufacture several different paints. The categories include

|  |  |
| --- | --- |
| Color | Red, Blue, White, Black, Green, Brown, Yellow |
| Type | Latex, Oil |
| Texture | Flat, Semi-gloss, High-gloss |
| Use | Outdoor, Indoor |

How many different kinds of paint can be made if a person selects one color, one type, one texture, and one use?

Example 3:

There are four blood types, A, B, AB, and O. Blood can also be Rh+ and Rh-. Finally, a blood donor can be classified as either male or female. How many different ways can a donor have his or her blood labeled?

Example 4:

The digits 0, 1, 2, 3, and 4 are to be used in a four digit ID card. How many different cards are possible if repetitions are permitted?

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LET ME TRY

1. How many 5 digit zip codes are possible if digits can be repeated? If there cannot be repetitions?
2. How many ways can a baseball manager arrange a batting order of 9 players?
3. How many different ways can 7 floral arrangements be arranged in a row on a single display shelf?
4. How many different ways can 6 radio commercials be played during a 1-hour radio program?
5. A store manager wishes to display 8 different brands of shampoo in a row. How many ways can this be done?
6. There are 8 different Statistics books, 6 different geometry books, and 3 different trigonometry books. A student must select one book of each type. How many different ways can this be done?

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HOMEWORK

1. At a local cheerleaders’ camp, 5 routines must be practiced. A routine may not be repeated. In how many different orders can these 5 routines be presented?
2. The call letters of a radio station must have 4 letters. The first letter must be a K or a W. How many different station call letters can be made if repetitions are not allowed? If repetitions are allowed?
3. How many different 3-digit identification tags can be made if the digits can be used more than once? If the first digit must be 5 and repetitions are not permitted?
4. How many different ways can 9 trophies be arranged on a shelf?
5. A baseball manger has 5 pitchers and 2 catchers, how many different pitcher-catcher combinations can he field?