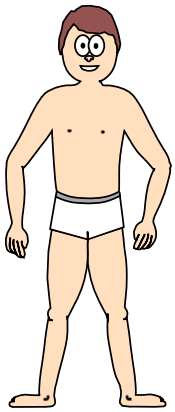
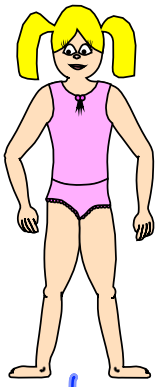
Fundamental Counting Principle

Dressing a person:



Ocean



20 hoola skirts
2 Coconut bras.
4 Sombreros

How many different outfits can Ocean wear?

20 x 2 x 4 = 160 outfits

Fundamental Counting Principle:
If one item can be selected in *m* ways and a second intem can be selected in *n* ways, then the two items can be selcted in m x n ways.

Example 1:
Doug is ordering dinner at a restaurant. There are 2 appetizers, 3 main courses and 4 desserts. How many different meals can Doug order if a meal means one item from each category.

$2 \times 3 \times 4 = 24$ meals

Example 2: 234

How many 3 digit even numbers are there in which no digit is repeated?

0 ~~1~~ 2 3 4 5 6 7 ~~8~~ ~~9~~

$7 \times 9 \times 5$

315

Example 3: A 4 digit number is to be randomly generated.

a)How many 4 digit numbers are possible?

$9 \times 10 \times 10 \times 10$

9000

9

9

b) How many 4 digit numbers are there with no digits repeated?

$7 \times 8 \times 9 \times 10$

5040

c) What is the probability that the four digit number has at least 2 digits that are the same?

$9000 - 5040 = 3960$

$\frac{3960}{9000} = \frac{11}{25}$

Example 4:
At a security company, three-letter security codes in which no letter may be repested are generated using the letters A, E, I, O, U and Y. If the letter G is added to the list of letters, then how many **more** three-letter security codes could be generated?

$6 \times 5 \times 4 = 120$

$7 \times 6 \times 5 = 210$

$210 - 120 =$ 90 more codes

Example 5:
Postal codes are created by going letter-number-letter-number-letter-number. In alberta, all postal codes begin with "T". How many total postal codes are available to be used?

$1 \times 10 \times 26 \times 10 \times 26 \times 10$

$676,000$

Assignment:
Pg.23
1-10