Section 10.1

Fundamental counting principle: $m \cdot n \cdot p$
different possible outcomes where m, n, p are
separate events.

Small amounts you can use a tree diagram

How many combinations of pizza are possible?

Given: thin or thick crust
      pepperoni or sausage
      olives, mushrooms or pineapple

What if the problem is too big to draw a tree diagram?

How many ways can you frame a picture?

Given: 12 frame styles
       55 colors for styles
       11 shades of blue mat

License Plates

3 letters followed by 3 digits

Repeat:

No Repeats:

Number or letter:

Permutation: Order matters

$$_nP_r = \frac{n!}{(n - r)!}$$

r = # choosing
n = total

Calculate:

$_5P_3$

$_{24}P_5$

How many ways can you burn 4 of 12 songs onto a CD?

How many ways can you select a President, VP and secretary from a group of 10 people?

Factorials

0! = 1 by definition

1! = 1

2! = 2·1 = 2

3! = 3·2·1 = 6

4! = 4·3·2·1 = 24

What would 12! equal?

Distinguishable Permutations

How many ways to write   EYE

MIAMI

MISSISSIPPI