Unit 7

L2 Discrete Probability

EX 1: If the menu at a restaurant has the following choices:

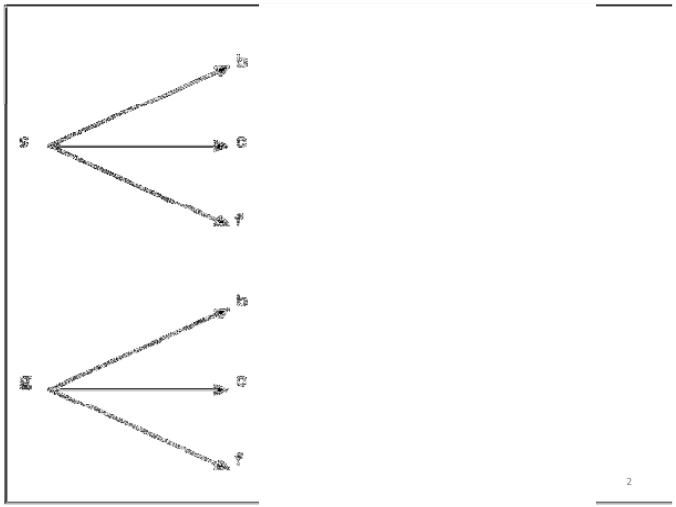
Appetizer: soup or green salad

Main course: beef, chicken or fish

Dessert: pie or ice cream

How many possible outcomes (combinations of meals) are there?

1



2

Basic counting principle

EX 1: If the menu at a restaurant has the following choices:

- **Appetizer**: soup or green salad
- **Main course**: beef, chicken or fish
- **Dessert**: pie or ice cream

How many possible outcomes (combinations of meals) are there?

2 (Appetizer) x 3 (Main) x 2 (Dessert) = 12 possible outcomes

3

Basic Counting Principle

If there are m ways to do one thing,
and n ways to do another,
then there are m x n ways of doing both.

EX 2: How many outfits can be worn with 4 different shirts, 3 pants and 3 pairs of shoes.

4

Ex 3: How many outcomes are there when

a) Rolling 1 die

b) Rolling 2 dice

c) Rolling 3 dice

d) Flipping a coin

e) Flipping a coin 3 x

f) Flipping a coin 3 x and rolling a dice 2 x

5

Ex 4: How many possible Quebec license plates start with 3 numbers followed by 3 letters?

6

How about in Ontario?

How about if no repetition is allowed?

7

The probability can be a fraction, a decimal (between 0 and 1), or a percentage. (0 being impossible, and 1 being certain)

Theoretical Prob = $\frac{\text{\# of desired outcomes}}{\text{total \# of outcomes}}$

8

Practice:
7.1 # 1-5; and 7.2 # 1

9