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Course 565/665 Lecture Number _____ Date 1/24/03

Lecturer Dr. Caragnano Note Taker Fulmer

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Combining Events

- What is the probability of A or B or A and B.
- "OR", but the events are not ME.
- In this case, we cannot apply the addition or the multiplication rules.

Nothing: Neither A nor B.

Something: A or B or (A and B)

$$P_{\text{something}} = [1 - P_{\text{nothing}}]$$

$$P_{\text{nothing}} = [1 - P_A][1 - P_B]$$

$$\begin{aligned} P_{\text{something}} &= 1 - 1 + P_B + P_A - P_A P_B \\ &= P_A + P_B - P_A P_B \end{aligned}$$

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Lecturer Cavagnero Note Taker Fulmer

Composite Events

- Elementary event, eg. (for example) 1 die roll.
- Composite event: a series (2 die rolls).

Example Probability of getting a 1 on the first roll and a 4 on the second roll.

Using a brute force method (writing out all of the possibilities:

<u>1,1</u>	<u>2,1</u>	<u>3,1</u>	<u>4,1</u>	<u>5,1</u>	<u>6,1</u>
2,2	2,2	3,2	<u>4,2</u>	5,2	6,2
3,1	2,3	3,3	<u>4,3</u>	5,3	6,3
4,1	2,4	3,4	<u>4,4</u>	5,4	6,4
5,1	2,5	3,5	<u>4,5</u>	5,5	6,5
6,1	2,6	3,6	<u>4,6</u>	5,6	6,6

11 possibilities.

- Class A: Only a 1 on the first roll (5)
Class B: Only a 4 on the second roll (5)
Class C: Both a 1 on the first and a 4 on the second roll (1)