MTH 23.5 LECTURE NOTES (Ojakian)

Topic 11: Probability - Contingency Tables and Trees

OUTLINE

References (**Algebra Book**: None; **Statistics Book**: 3.4, 3.5)

1. Contigency Tables
2. Trees

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1. Contingency tables

(a) Example 3.20 (page 183)

(b) Students: Try It - 3.20 (page 184)

(c) Example 3.22 (page 186-187): With probabilities instead of quantities.

2. Trees

(a) Example: Like 3.25 - page 191 (*BUT, do with replacement*)

(b) Example: Now do page 191 (without replacement). See schematic on page 192.

(c) Students: Do example 3.26 (page 192-193).

3. Tree Examples

(a) Note: WITH and WITHOUT replacement. Reprsent the following using tree diagrams.

PROBLEM 1. *Two cards are drawn from a regular deck of 52 cards,* **with replacement**.

i. What is the probability that the first card is an ace and the second is a king?

ii. What is the probability the first card is NOT an ace and the second is a king?

PROBLEM 2. *Two cards are drawn from a regular deck of 52 cards,* **without replacement**.

i. What is the probability that the first card is an ace and the second is a king?

ii. What is the probability the first card is NOT an ace and the second is a king? (watch out!)

PROBLEM 3. *A jar contains 2 red marbles, 5 blue marbles, and 5 yellow marbles.*

i. Suppose you take 2 marbles, without replacement. What is the probability that you take 1 blue and 1 yellow, in any order.

ii. Suppose you take 2 marbles, with replacement. What is the probability that you take 1 blue and 1 yellow, in any order.

iii. Suppose you take 3 marbles, without replacement. What is the probability that all are red?

iv. Suppose you take 3 marbles, without replacement. What is the probability that at least one is not red?