CONDITIONAL PROBABILITY & INDEPENDENCE OF EVENTS [PIRNOT 13.3]

EX 13.3.1: One fair 3-sided die & one fair 4-sided die are both rolled.

(a) Determine the sample space for the experiment.

(b) Find P(die 1 shows 3), P(die 2 shows 4), P(die 1 shows 3 and die 2 shows 4)

(c) Find the probability that die 1 shows 3 given die 2 shows 4.

(d) Find the probability that die 2 shows 4 given die 1 shows 3.

(e) Are the events "die 1 shows 3" & "die 2 shows 4" independent?

EX 13.3.2: The incidence of a virus in a village is 10% and that a test correctly identifies the virus 95% of the time. Assume that false positives occur 8% of the time.

(a) Draw a probability tree representing the experiment. Label all relevent events & probabilities.

(b) What is the probability of a person in the village having the virus?

(c) What is the probability of a person in the village not having the virus?

(d) What is the probability of a person testing positive for the virus given the person has the virus?

(e) What is the probability that if a person has the virus then the person tests negative for the virus?

(f) What is the probability that a person has the virus and tests negative for the virus?