

## Discussion 2

Name\_\_\_\_\_

SHORT ANSWER. Write your answer in the space provided or on a separate sheet of paper.

Provide an appropriate response.

1) Define disjoint events and independent events. Give an example of each.

2) Give an example of events which are independent but not disjoint.

3) What important question must you answer before computing an "or" probability? How does the answer influence your computation?

4) What important question must you answer before computing an "and" probability? How does the answer influence your computation?

5) Interpret the symbol  $P(B|A)$  and explain what is meant by the expression. What do we know if  $P(B|A)$  is not the same as  $P(B)$ ?

Find the indicated probability.

6) The table below describes the smoking habits of a group of asthma sufferers.

	Nonsmoker	Occasional smoker	Regular smoker	Heavy smoker	Total
Men	367	50	65	47	529
Women	316	31	70	45	462
Total	683	81	135	92	991

If one of the 991 people is randomly selected, find the probability of getting a regular or heavy smoker.

- 7) Of the 54 people who answered "yes" to a question, 12 were male. Of the 46 people that answered "no" to the question, 12 were male. If one person is selected at random from the group, what is the probability that the person answered "yes" or was male?
- 8) A study conducted at a certain college shows that 57% of the school's graduates find a job in their chosen field within a year after graduation. Find the probability that 9 randomly selected graduates all find jobs in their chosen field within a year of graduating. Round to the nearest thousandth if necessary.
- 9) You are dealt two cards successively (without replacement) from a shuffled deck of 52 playing cards. Find the probability that the first card is a King and the second card is a queen. Express your answer as a simplified fraction.

Find the indicated probability. Round to the nearest thousandth.

- 10) A sample of 4 different calculators is randomly selected with replacement from a group containing 14 that are defective and 39 that have no defects. What is the probability that at least one of the calculators is defective?

Find the indicated probability. Express your answer as a simplified fraction unless otherwise noted.

- 11) The table below shows the soft drinks preferences of people in three age groups.

	cola	root beer	lemon-lime
under 21 years of age	40	25	20
between 21 and 40	35	20	30
over 40 years of age	20	30	35

If one of the 255 subjects is randomly selected, find the probability that the person is over 40 years of age given that they drink root beer.

## Answer Key

### Testname: DISCUSSION 2

- 1) Disjoint events cannot occur simultaneously. Events are independent if one event does not influence the outcome of the other. Examples will vary.
- 2) Answers will vary, but might include something like eating curry for supper and losing your car keys.
- 3) Are the events disjoint or can the events occur simultaneously? If the events can occur simultaneously you must be careful to count so that each outcome is counted only once.
- 4) Are the events independent or might the outcome of one event affect the outcome of the second? If the events are dependent, you must be sure that the probability of the second event takes into consideration the fact that the first event occurred.
- 5) This is the symbol for conditional probability and means the probability of event B occurring given that A has occurred. A and B are not independent.
- 6) 0.229
- 7) 0.66
- 8) 0.006
- 9)  $\frac{4}{663}$
- 10) 0.719
- 11)  $\frac{2}{5}$