Review 5A

1. Find the sample space of a committee of two chosen from the people: Amber, Bryce, Catlin, and Dexter.

2. In problem #1, describe the event "Dexter is on the committee."

3. Find the probability of the event in problem #2.

4. Suppose a survey of 500 people showed that 210 had type O blood, 215 had type A, 55 had type B and 20 had type AB. Write a probability distribution for this frequency distribution.

5. Using the distribution from the last problem, answer the question: "What is the probability that a person surveyed does not have type O blood?"

6. Suppose a pair of dice are thrown. What is the probability that the sum of the numbers thrown is an odd number.

7. A College survey showed that 63% of freshmen took english composition, 15% took calculus and 25% took neither class. What is the probability that a former freshman chosen at random took both English composition and calculus?

8. Suppose an urn contains 2 white balls and 6 black balls. If 4 balls are selected at random without replacement, what is the probability that at least one is white?

9. If 8 electronic games from each case of 24 are randomly selected and tested before shipping and the case is not shipped if any defective games are found, what is the probability that a case with 2 defective games is shipped.

10. Two cards are drawn from a standard deck of 52 cards. What is the probability that the second card is a heart, given that the first card is a heart?

11. Suppose that 70% of drivers are classed as being "careful" whereas 30% of the drivers are classed as being "reckless". Suppose further that a careful driver has a 0.05 probability of being in an accident in a given year, while for a reckless driver the probability is 0.2. What is the probability that a randomly selected driver will have an accident within a year?

12. In the last problem what is the probability that a driver involved in an accident is a reckless driver.

Answers to problems on other side: 1. $\{(H), (T,H), (T,T,H), (T,T,T,H), (T,T,T,T,H), (T,T,T,T,T)\}$; 2. $\{(T,T,H), (T,T,T,H), (T,T,T,T,H), (T,T,T,T,T)\}$; 3. $\frac{1}{4}$; 4.

Distance	$d < 1$	$1 < d < 5$	$5 < d < 20$	$20 < d$
Probability	.2857	.4615	.1978	.0549

5. .7473; 6. $\frac{2}{13}$; 7. 1.8%; 8. $\frac{11}{221} \approx .4977$; 9. $\frac{52}{59} \approx .8814$; 10. $\frac{3}{8}$; 11. 75%; 12. $25\frac{1}{3}$%.

Review 5B

1. Suppose that you toss a coin until you get the first head or until you have tossed it 5 times, whichever comes first. What is the sample space.

2. In problem #1, describe the event "the coin is tossed at least 3 times."

3. Find the probability of the event in problem #2.

4. Suppose a survey of divers stopped along a street revealed that 26 had a destination that was less than a mile from their starting point, 26 had a destination between 1 and 5 miles from their starting point, 18 had a destination between 5 and 20 miles from their starting point and 5 had a destination more that 20 miles from their starting point. Write a probability distribution associated with this data.

5. Using the distribution from the last problem, answer the question: "What is the probability that a driver surveyed was traveling less than 5 miles?"

6. Suppose a card is selected at random from a standard deck of 52 cards. What is the probability that it is a Jack or an Ace.

7. In a survey taken by 1000 students, 869 reported that their father was employed outside the home, 47 reported that their father was employed in the home, 59 reported that their father was not employed, and 43 reported having no father. What proportion of fathers were reported as working both at home and outside the home?

8. Suppose two cards are drawn at random from a standard deck of 52 cards. What is the probability that both are face cards?

9. If 3 oranges are chosen out of a box of 60 oranges, where half have symptoms of *sour rot*. What is the probability that at least one orange will not have symptoms of sour rot?

10. If an urn contains 5 black balls and 5 white balls, and 3 balls are drawn without replacement, what is the probability that the third ball is white given that the first two balls are white?

11. Suppose for an elective next semester you will either take a basket weaving or a philosophy course depending on what your adviser decides. You estimate a probability of getting an A in basket weaving as 0.95, while in philosophy it is 0.70. However that chances of your adviser choosing basket weaving is only 20% while there is an 80% chance of being advised into the philosophy course. What is your probability of ending up with an A?

12. Suppose the person in the last problem got an A in the course. What is the probability that they took basket weaving?

Answers to problems on other side: 1. $\{\{A,B\},\{A,C\},\{A,D\},\{B,C\},\{B,D\},\{C,D\}\}$; 2. $\{\{A,D\},\{B,D\},\{C,D\}\}$; 3. $\frac{1}{2}$; 4.

Type	*O*	*A*	*B*	*AB*
Probability	.42	.43	.11	.04

5. .58; 6. $\frac{1}{2}$; 7. .03; 8. $\frac{11}{14} \approx .7857$; 9. $\frac{10}{23} \approx .4348$; 10. $\frac{12}{51} \approx .2353$; 11. 9.5%; 12. $\frac{12}{19} \approx .6316$.