

MAT 114 – 006
Spring 2009
Test Three
Show all work.

1. A survey of 1000 subscribers to a newspaper revealed that 900 people subscribed to the daily morning edition and 500 subscribed to both the daily and the Sunday edition.

- 1a. How many subscribe to the Sunday edition?
- 1b. How many subscribe to the Sunday edition only?

2. How many 3-digit numbers can be formed using the numerals from the set $\{3, 2, 7, 9\}$ if repetition is not allowed?

3. A four-member executive committee is to be formed from a twelve-member board of directors. In how many ways can it be formed?

4. Goodman Tire has 32 tires of a particular size and grade, 2 of which are defective. If a set of 4 tires is to be selected:

- 4a. How many different selections can be made?
- 4b. How many different selections can be made that do not include any defective tires?

5. $P(E) = 0.1$ and $P(F) = 0.6$. E and F are mutually exclusive events; i.e., $P(E \cap F) = 0$.

- 5a. Find $P(E \cup F)$.
- 5b. Find $P(E')$.

6. 4 marbles are selected at random without replacement from an urn containing 3 white marbles and 5 blue marbles. Determine the probability that exactly 3 of the selected marbles are blue.

7 and 8. The data in the following table were obtained from the financial aid office of a certain university.

A is the event: A student selected at random from this university is an undergraduate student.

B is the event: A student selected at random from this university is receiving financial aid.

	Receiving financial aid	Not receiving financial aid	Total
Undergraduates	4222	3898	8120
Graduates	1879	731	2610
Total	6101	4629	10730

7. Using the table of data above, find each of the following probabilities.

7a. $P(A)$.

7b. $P(B)$.

7c. $P(A \cap B)$.

7d. $P(B|A)$.

8. Using the table of data above, are A and B independent events?

9. A shelf in a department store contains 80 ink cartridges for a printer. 6 of the cartridges are defective. If a customer selects 20 cartridges from the shelf, what is the probability that at least one is defective?