

**TEST POLICIES (REMINDERS)**

If you know that you will be absent on the day of a test, it may be possible to make arrangements with me to take the test on an earlier day. This alternative is not automatic!! Each case will be considered individually. You should notify me as soon as possible regarding planned absences. There are no make-up exams provided for unexpected absences. If you miss an exam for an unexpected absence, the average that you earn on the final will make-up the score for your missed exam. There are no exceptions – do not ask!!

**HONOR POLICY:** You must observe the following rules during any in class exam or quiz.

- (1) Be prepared to move to a designated seat if requested. I will request that the class sit every other row if possible.
- (2) You are not to leave the room without permission.
- (3) You must not look anywhere in the room other than at your own test paper.
- (4) You may not use or even touch a cell phone. Remember your cell phone is to be silenced in class.
- (5) You may not speak to another student.
- (6) You may not share materials with another student.
- (7) Have all your materials ready. You may not retrieve items from your backpack etc.

**Failure to observe all of the policies will result in a zero score for the test or quiz.**

When you complete the test, hand it to me personally. You may leave the room at this time. The only questions permitted during an exam are in reference to a misprint, omission, or illegible text. You are responsible for being prepared for the exam. Do not ask me how to do the problem, ask for a hint about how to do the problem, or ask whether or not your answer is correct. Please do not share (at this time) your misery of being absent for a particular topic, that you forgot how to do the problem, or that you do not have enough time. You will not have the time to figure out problems on exam day. You are to come prepared, polished, and ready to complete the exam. You must turn in your test paper when time is called. I will give a five minute warning before collecting exams. If you do not hand in your paper at that time, I will not accept it later. It is your responsibility to keep track of time during the exam.

**TEST REVIEW PROBLEMS**

**This test review will give you an idea of the difficulty level of the problems that will be on the exam. This test review contains a sample problem from every topic that will be covered on the exam. Test problems will be similar, but not identical. If you have done all the homework, asked for help as needed, and reviewed the material diligently, you should now find this review easy to moderate to complete. If you struggle with the review, we will go over some solutions in class. However, please be aware that your struggle is an indication that you should go back to the homework sets and work additional problems similar to those on this review in order to perform well on the exam.**

The problems begin on the next page. The answers are included at the end of the review.

**\*\* Also review group work exercises, quizzes, and class examples. \*\***

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1. A Poll is conducted among the voters in a certain district to correlate their political affiliations with their stands on the abortion issue. Voters are classified as democrats (D), republicans (R), or independents (I). They are asked whether they are pro-life (L), pro-choice (C), or undecided (U). The political affiliation and the corresponding response are recorded.
  - A. Write the sample space for this poll.
  - B. List the outcomes which belong to the events
    - E = "the respondent is pro-choice"
    - F = "the respondent is not a republican and is pro-life"
2. Let  $S = \{a, b, c, d\}$  be a sample space for some experiment. If  $p(a) = .4$ ,  $p(b) = .2$ ,  $p(c) = .1$ , what is  $p(d)$ ?
3. The sample space for an experiment is  $S = \{s_1, s_2, s_3, s_4, s_5\}$ . Suppose that  $p(s_1) = .24$ ,  $p(s_2) = .32$ ,  $p(s_3) = .15$  and  $p(s_4) = .02$ .
  - A. Find  $p(s_5)$ .
  - B.  $p(\{s_1, s_3\})$

4. The table below gives the distribution of blood types by gender.

Blood Type	Male	Female	TOTAL
O	80	370	450
A	150	250	400
B	50	50	100
AB	20	30	50
TOTAL	300	700	1,000

A person is selected at random from this group. What is the probability that the person selected

- A. does not have blood type O
  - B. is a female with blood type AB
  - C. is male or has blood type B
  - D. is neither female nor has blood type O
  - E. is female given that the person's blood type is O
  - f. has blood type A given that the person is male
5. Of the coffee makers sold in an appliance store, 4% have either a faulty switch or a defective cord, 2.9% have a faulty switch, and 0.9% have both defects. What is the probability that a coffee maker will have
  - A. a defective cord?
  - B. neither a defective cord nor a faulty switch?
  - C. a defective cord, but not a faulty switch?
  - D. a faulty switch given that it has a defective cord?
6. If the probability that event A occurs is .53, the probability that event B occurs is .72, and the probability that both events A and B occur is .48, find each of the following probabilities:
  - A.  $\Pr(A')$
  - B.  $\Pr(A \cup B)$
  - C.  $\Pr(A' \cap B')$
  - D.  $\Pr(A \cap B')$
  - E.  $\Pr(A|B)$
  - F. Are A and B independent?

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7. Suppose that past records concerning car accidents in a certain community on the last day of a Memorial Day weekend showed the following:

	<u>Rain</u>	<u>No Rain</u>	<u>Total</u>
Accident	25	15	40
No Accident	335	625	960
Total	360	640	1000

Determine each of the following:

- A. The probability that a car was involved in an accident.
- B. The probability that a car was involved in an accident and that there was rain.
- C. The probability that a car was involved in an accident if it is known that there was rain.
8. In a certain town 18% of the people own a dog and drive a truck. Sixty percent of the people own a dog. Thirty percent of the people drive a truck.
- A. Draw a two-circle Venn Diagram using the information given.
- B. What is probability that a person owns a dog, but does not drive a truck?  $P(D \cap T')$
- C. What is the probability that a person both does not own a dog and does not drive a truck?  $P(D' \cap T')$
- D. Are the events "owns a dog" and "drives a truck" independent? Remember, your answer to this is based on the computation and comparison of two probabilities that you should recall. Do not answer based on your opinion.
9. A shipment of 50 hand-held digital planners, including four that are defective, is sent to a large electronics store.
- A. If one planner is selected, what is the probability that it is defective?
- B. If three planners are selected, what is the probability that all three are defective?
- C. If three planners are selected, what is the probability that exactly two are defective?
- D. If three planners are selected, what is the probability that at least two (that is exactly two or all three) are defective?
- E. If the original shipment of 50 hand-held digital planners, with 4 defective were representative of a larger batch of 2400 planners, how many planners would you expect to be defective in this larger batch of 2400?
10. In a shipment of 11 electric scooters with 2 defective
- A. If one scooter is selected, what is the probability that it is defective?
- B. If two scooters are selected, what is the probability that all two are defective?
- C. If two scooters are selected, what is the probability that exactly one is defective?
- D. If two scooters are selected, what is the probability that at least one (that is exactly one or both) are defective?
- E. If the original shipment of 11 electric scooters, with 2 defective were representative of a larger batch of 1000 scooters, how many scooters would you expect to be defective in this larger batch of 1000?
11. Two people, Dave and Mary, are running for class president. The odds for Dave to win the election are 12 to 17. What is the probability that Dave wins the election? What are the odds for Mary to win the election?
12. The probability that Lynn will win a certain game is .025. What are the odds for Lynn winning the game?

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13. What is the probability that a randomly selected student is

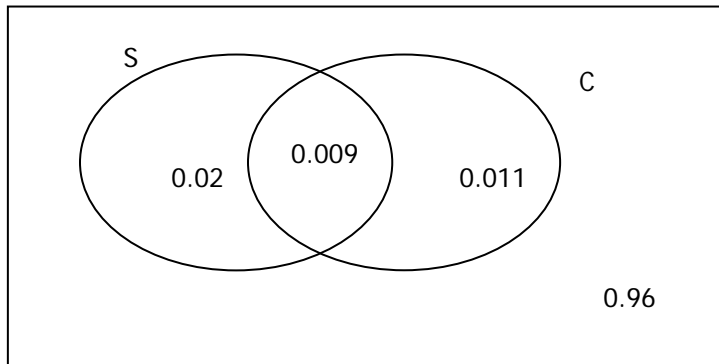
CLASS RANK	DEAN'S LIST	NOT ON DEAN'S LIST
FRESHMEN	200	300
SOPHOMORE	250	150
JUNIOR	350	50
SENIOR	200	300
TOTAL	1000	800

- A. a junior given that the student is on the Dean's List
- B. a junior on the Dean's list
- C. on the Dean's list
- D. either a junior or is on the Dean's list
- E. is on the Dean's list given that the student is a junior

**ANSWERS:**

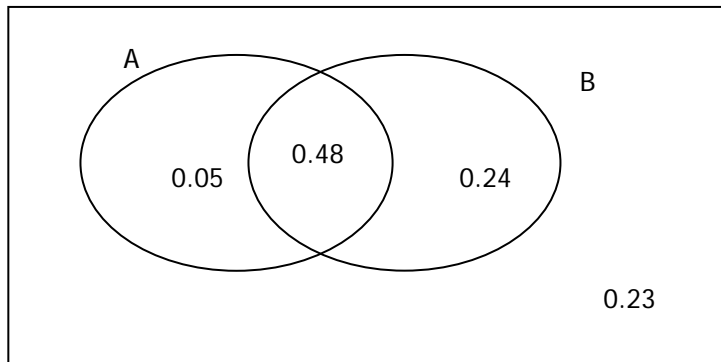
- 1. A.  $S = \{DL, DC, DU, RL, RC, RU, IL, IC, IU\}$  B.  $E = \{DC, RC, IC\}$  F.  $\{DL, IL\}$
- 2.  $1 - (.4 + .2 + .1) = .3$
- 3. A.  $1 - (.24 + .32 + .15 + .02) = 0.27$  B.  $.24 + .15 = 0.39$
- 4. A.  $(400 + 100 + 50)/1000 = 550/1000 = 11/20 = 0.55$  B.  $30/1000 = 3/100 = 0.03$   
 C.  $(300 + 50)/1000 = 350/1000 = 7/20 = .35$   
 D.  $(300 - 80)/1000 = 220/1000 = 11/50 = 0.22$   
 E.  $370/450 = 37/45 = 0.82$  F.  $150/300 = 1/2 = 0.5$

5.



- A. 0.02
- B. 0.96
- C. 0.011
- D.  $0.009/0.02 = 0.45$

6.

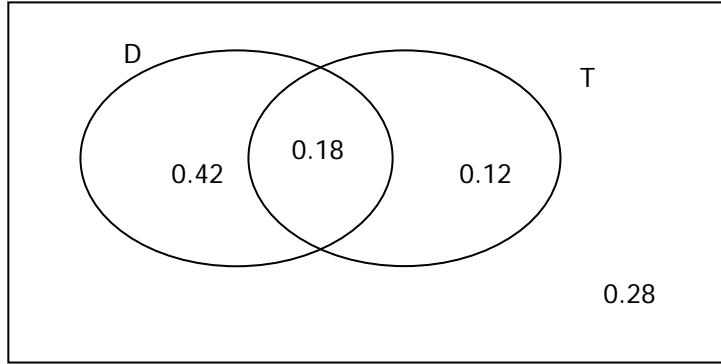


- A. 0.47
- B. 0.77
- C. 0.23
- D. 0.05
- E.  $0.48/0.72 = 48/72 = 2/3 = .67$
- F. No,  $P(A) = 0.53 \neq P(A|B) = 0.67$

- 7. A.  $40/1000 = 1/25 = 0.04$   
 B.  $25/1000 = 1/40 = 0.025$   
 C.  $25/360 = 5/72 = 0.0694$

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8.



- B. 0.42
- C. 0.28
- D. Yes,  $P(D) = .6 = P(D|V) = .6$

9.

A.  $4/50$

B.  $\frac{C_{4,3}}{C_{50,3}} = \frac{4}{19600}$  or  $\frac{4}{50} \cdot \frac{3}{49} \cdot \frac{2}{48} = \frac{24}{117,600} = 0.0002 = 0.0002$

C.  $\frac{C_{4,2} \cdot C_{46,1}}{C_{50,3}} = \frac{6(46)}{19600}$  or

$C_{3,2} \cdot \left(\frac{4}{50} \cdot \frac{3}{49} \cdot \frac{46}{48}\right) = 3 \cdot \left(\frac{4}{50} \cdot \frac{3}{49} \cdot \frac{46}{48}\right) = \frac{1656}{117,600} = 0.01408$

D.  $\frac{24}{117,600} + \frac{1656}{117,600} = \frac{1680}{117,600} = 0.01428$  (part B + part C)

E.  $(4/50)(2400) = 192$

10.

A.  $2/11$

B.  $\frac{C_{2,2}}{C_{11,2}}$  or  $\frac{2}{11} \cdot \frac{1}{10} = \frac{2}{110} = 0.018$

C.  $\frac{C_{2,1} \cdot C_{9,1}}{C_{11,2}} = \frac{2 \cdot 9}{55} = \frac{18}{55}$  or  $C_{2,1} \cdot \left(\frac{2}{11} \cdot \frac{9}{10}\right) = 2 \cdot \left(\frac{2}{11} \cdot \frac{9}{10}\right) = \frac{36}{110} = 0.327$

D.  $\frac{2}{110} + \frac{36}{110} = \frac{38}{110} = 0.345$  (part B + part C) E.  $(2/11)(1000) \sim 182$

11. A.  $12/29$

B. 17 to 12

12. 1 to 39

13. A.  $350/1000 = 7/20 = .35$

B.  $350/1800 = 7/36 = 0.194$

C.  $1000/1800 = 5/9 = .56$

D.  $1050/1800 = 7/12 = 0.583$

E.  $350/400 = 7/8 = 0.875$