Exam 1 GREEN   A. Miller   Fall 98   Math 210

Show all work.
Explain your answers.
You may use a "dumb" calculator,
but one is not neccessary.

Name————————————————————————

Circle the time of your TA section:

Tues 8:50   Tues 9:55   Thurs 8:50   Thurs 9:55

Problem	Points	Score
1	18 %	
2	15 %	
3	17 %	
4	16 %	
5	18 %	
6	16 %	
Total	100%	

1. (18 %) Let $A = \{a, c, e\}$ and $B = \{c, d\}$. Find the following sets.

(a) $A \cup B$

(b) $A \cap B$

(c) $A \times B$

(d) $(A \times B) \cap (B \times A)$

(e) A' if the universal set is $U = \{a, b, c, d, e, f\}$

(f) the set of **all** subsets of the set B

2. (15 %) Draw a Venn diagram for each of the following sets. Shade the area corresponding to the set.

    (a) B'

    (b) $A \cap B$

    (c) $A \cup (B' \cap C)$

3. (17 %) A corporation employs 62 people in the areas of sales, research, and production. Some employees are in more than one area; indeed, one is in all three areas, 11 are in sales and production, 4 are in research and production, and 5 are in sales and research. There are three times as many people in sales as in production and twice as many in production as there are in research. How many are there in sales?

4. (16 %) An an experiment is performed which has three possible outcomes

$$S = \{p, q, r\}$$

The probability of outcome p is twice the probability of outcome q and the probability of outcome q is twice the probability of outcome r. What is the probability of the event $E = \{p, q\}$?

5. (18 %) A total quality management team consisting of 3 people from engineering, 2 people from marketing, and 2 people from finance is to be formed. There are 9 people from engineering, 4 from marketing, and 3 from finance qualified for the team. How many different total quality management teams can be formed?

6. (16 %) A runner enters two races, both to be run on a 6-lane track. The runner is assigned a lane for each race. Assuming that the lane assignments are made at random, what is the probability that the runner has lane 6 for at least one race?

Answers

3. 54
4. 6/7
5. 1512
6. 11/36