

MA 110 Homework 4

This homework assignment is to be written out, showing all work, with problems numbered, code number on each page, and answers clearly indicated. The assignment is to be handed in by 8:00 AM, Tuesday, December 5. Late assignments will not be accepted after the key is posted on Dec. 7.

1. Four fair coins are tossed at once. The sequence of heads and tails that shows up is observed.
 - a. What is the sample space for this experiment (list all outcomes)?
 - b. What is the probability that exactly three heads are showing?
 - c. What is the probability that at least three heads are showing?
 - d. What is the probability that the number of heads showing is not the same as the number of tails?
 - e. Make up an event that might occur in this situation and compute its probability.

2. Two fair 6-sided dice are rolled at once. The pair of numbers showing up is observed.
 - a. How many outcomes are in the sample space for this experiment?
 - b. What is the probability that the sum of the faces showing is 9?
 - c. What is the probability that the difference (larger minus smaller) of the faces showing is 3?
 - d. What is the probability that both dice show even numbers and the sum is 8?
 - e. What is the probability that the product of the faces showing is at least 15?

3. A box contains 2 green marbles and 4 white marbles.
 - a. A single marble is drawn at random from the box. What is the probability that it is green?
 - b. Two marbles are drawn, but the first is replaced before drawing the second. What is the probability that both are green?
 - c. Two marbles are drawn, but the first is not replaced before drawing the second. What is the probability that both are green?
 - d. Two marbles are drawn without replacement. What is the probability that they are the same color?
 - e. Two marbles are drawn without replacement. What is the probability that they are not the same color?

4. Three unusual coins are tossed at once. One has both sides heads. One is loaded so that the probability of it coming up heads is $1/3$. One is fair (so not really unusual).
 - a. What is the probability of rolling three heads?
 - b. What is the probability of rolling three tails?
 - c. What is the probability of rolling exactly two heads?
 - d. What is the probability of rolling at least two heads?
 - e. Make up a compound event that might occur in this situation and compute its probability.

5. Nine fair coins are tossed at once.
 - a. What is the probability that exactly one is a head?
 - b. What is the probability that exactly two are heads?
 - c. What is the probability that at most two are heads?
 - d. What is the probability that at least two are heads?

Print Code Number: _____

6. There are five tests in a Stat 101 class, each counting equally toward the test average. Suppose your scores on the first four tests are 81, 86, 90, and 96. What must you make on the fifth test to bring your average up to 90? (Assume no rounding.)

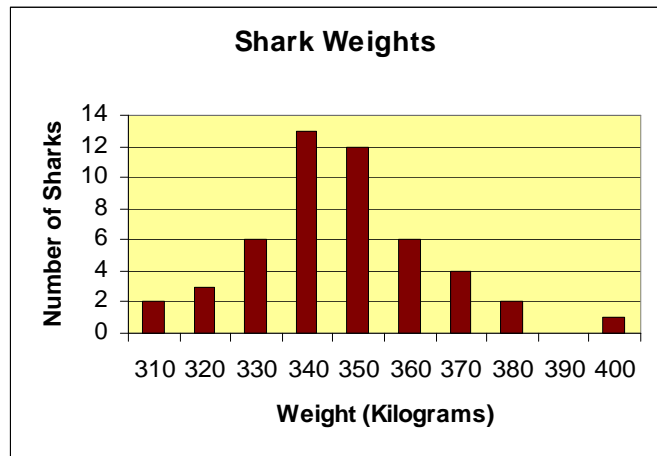
Table 1.1

Table 1.1 is a frequency table of scores of a group of students on a 10-point mathematics quiz. Questions 7-15 refer to this table.

Quiz Score	2	3	4	5	6	7	8	9	10
Number of Students	1	2	4	8	9	5	3	1	1

7. Construct a bar graph displaying the data in Table 1.1. Be sure to label your axes appropriately.
8. The total number of students taking the quiz is ?
9. Construct a pie chart based on Table 1.1 with categories as follows: score 0-4, score 5-7, and score 8-10.
10. The average score on the quiz is ?
11. The median score on the quiz is ?
12. The first and third quartiles on the quiz are ?
13. The minimum and maximum on the quiz are ?
14. The interquartile range on the quiz is ?
15. Determine the five number summary of the quiz scores and construct a box plot using the five number summary of the quiz scores.

Questions 16-22 refer to the adjacent bar graph displaying the weight of great white sharks caught in the Bay of Biscay last June.



16. What is the total number of sharks caught?
17. What is the average weight of the sharks caught?
18. What is the median weight of the sharks caught?
19. What are the first and third quartile of the shark weights?
- 20-22. Re-do questions 17-19 on the assumption that an additional shark weighing 390 kg was caught.