

Prof. S. Brick
Spring '01

Finite Mathematics; Quiz 0

Math 110
section 52

1. Print your name. What is your year in school and your (probable) major ?
You must print legibly. Do not use a ultrafine pencil that is difficult to read.
2. Why are you taking this course and this particular section of it ? Are you aware that night classes often seem to be run at a faster pace ?
3. What is Mathematics and why do we study it ?
4. What do you like most about math ? What do you like least about it ?
5. Name a famous mathematician.
6. Do you have math anxiety, and if so what do you plan on doing about it ?
7. What grade do you honestly expect to get from this class ? Why ?

0. Print your name: _____

1. Use a Venn diagram to determine whether or not the following is a valid syllogism:

Some math professors wear glasses.

S.B. wears glasses.

Therefore, S.B. is a math professor.

2. Consider the sequence “1,11,111,…” What sort of reasoning is used when you assert that “1111 is the next number” ?

3. Use a truth table to determine when if ever the wff $(p \wedge (\neg q)) \rightarrow q$ is true ?

0. Print your name: _____

1. Show that implications are logically equivalent to their contrapositives.

2. Suppose A and B are sets, inside a “universal” set U , with $A \neq \emptyset$, and with $A \subset B$. Draw a Venn diagram and shade in the region $A^c \cap B$.

3. List all the subsets of the set $X = \{c, o, w\}$

0. Print your name: _____

1. Draw a Venn diagram for two nonempty distinct sets A and B with $A^c \cap B = \emptyset$.

2. A store survey of 307 customers shows that 185 made purchases, 202 were satisfied with the service at the store, and 55 who didn't make purchases weren't satisfied with the service. What percent of those who made purchases were satisfied with the service? Use a Venn diagram.

3. In a dorm holding 1237 students, 563 are taking Math, 489 are taking English, and 322 are taking Chemistry. Suppose 98 of these are taking all three, 243 are taking English and Chemistry, 47 are only taking Chemistry, and 176 are taking Math and English. What percentage of students in the dorm are just taking exactly one of these three classes?

0. Print your name: _____

1. A coin is flipped four times. Find the probability that there are more heads than tails.

2. Two dice are rolled. Find the probability that the roll is an eight or a nine.

3. Two cards are dealt from a normal deck of cards. Find the probability of a pair.

0. Print your name: _____

1. In a survey of students, one third of the students are taking Math 110, of which 85% love math. Half of those not taking Math 110 love math. What percentage of the students surveyed love math ?

2. You invent a game, where a player flips three coins. He wins \$4 if he gets all three heads and \$2 if he gets exactly two heads. Is a charge of \$1 to play each time a good or bad business move ? Explain.

3. A survey of smokers and non-smokers is taken in a town where very few people smoke. Let A be the event “the person has health problems involving the respiratory system” and B be the event “the person has smoked for fifteen years or more”. Discuss the difference between $P(A \text{ and } B)$ and $P(A \text{ given } B)$. Which is likely to be bigger ? Why ?

0. Print your name: _____

1. Find the mean, median, and mode of $\{98, 85, 40, 90, 90, 50, 40, 40, 95\}$

2. The company MathCo employs 305 people: 42 math majors, 63 stat majors and the rest who didn't major in math or stat (but they all still love math and stat and regularly read math and stat books for fun — who doesn't?). The mean salary of the math majors is \$90,000. The mean salary of the stat majors is \$70,000. The mean salary of the rest is \$30,000. Find the mean salary of the employees of MathCo.

3. On four previous exams, Lew Zer received the scores of 83, 72, 70, and 80 (all out of 100). What does Lew have to score on the fifth exam in order to have a mean score of at least a 80 ?

0. Print your name: _____

1. Consider data as follows: for $0 < x \leq 20$ you have 25 data points, and for $20 < x \leq 30$ you have 25 data points. Draw two histograms, one with the frequency, the other with the relative frequency density.

2. Find the standard deviation of $\{12, 8, 9, 11, 5, 8, 6, 9, 12, 10, 7\}$

3. The quantity “mathlove” has a normal distribution with mean 70 and standard deviation 12. Find the proportion with mathlove between 65 and 80.