MA110	FINITE MATHEMATICS	FALL 2000
December 2000	FINAL EXAM	Jellett

SCORE

/200

NAME:.....

$$\mu = \frac{\sum x}{n} \qquad s = \sqrt{\frac{\sum (x-\mu)^2}{n-1}}$$

Margin of Error formula: **MOE**=$\frac{z_{\alpha/2}}{2\sqrt{n}}$

1. (i) Construct a truth table for the logical expression

$p \vee \sim q$

(i) Complete the following truth table for the logical expression $p \vee (\sim q \wedge r)$

2. A survey of 2,000 college seniors yielded the following information: 1,324 favored capital punishment, 937 favored stricter gun control, and 591 favored both. Draw an appropriately labeled Venn diagram illustrating this state of affairs and answer the following questions:

(i) How many favored capital punishment or stricter gun control?

(ii) How many favored capital punishment but not stricter gun control?

(iii) How many favored stricter gun control but not capital punishment?

(iv) How many favored neither capital punishment nor stricter gun control?

3. A card is dealt from a complete deck of 52 cards. Find the probability that the card is

(i) a black queen

(ii) black or a queen

(iii) not a black queen

4. Three cards are dealt from a deck of 52. Find the probability of each of the following:

(i) All three are clubs

(ii) Exactly two are clubs

(iii) At least two are clubs

(iv) The first is a jack of clubs, the second is a queen of clubs, and the third is a king of clubs.

5. In order to study the composition of families in Winslow, Arizona, 40 randomly selected married couples were surveyed to determine the number of children in each family. The following results were obtained:

3	1	0	4	1	3	2	2	0	2
0	2	2	1	4	3	1	1	3	4
2	1	3	0	1	0	2	5	1	2
3	0	0	1	2	3	1	2	0	2

(i) Organise the given data into a frequency distribution, and draw a histogram to illustrate it.

(ii) Find the mean number of children per family.

(iii) Find the median number of children per family.

(iv) Find the mode number of children per family.

(v) Find the standard deviation of the number of children per family.

6. The heights of a large group of people are assumed to be normally distributed. Their mean height is 68 inches, and the standard deviation is 4 inches. What percentage of these people are the following heights?

(i) taller than 73 inches

(ii) between 60 and 75 inches

7. A survey asked, "Do you think the president is doing a good job?" Of the 1200 Americans surveyed, 800 responded yes. Find the sample proportion and, for each of the following levels of confidence, the margin of error associated with the poll:

(i) 90%

(ii) 95%

(iii) 98%

Compare your three answers, and explain clearly what they tell you about the proportion of *all* Americans who think the president is doing a good job.