Stats 2B03 Test #1 (Version 1)
May 26, 2009

Name:_____
(Last Name) (First Name)

Student Number:_____

Instructor: Dyal
Duration: 75 Minutes
Pages: 11 [6 (test) + 2 (formulas) + 3(tables)]
Maximum Mark: 20

This test paper consists of 20 multiple choice questions worth 1 mark each. Marks will NOT be deducted for wrong answers (i.e., there is no penalty for guessing). QUESTIONS MUST BE ANSWERED ON THE COMPUTER CARD with an HB PENCIL. Answer all questions. You are responsible for ensuring that your copy of this paper is complete. Bring any discrepancy to the attention of your invigilator. Only the McMaster standard Calculator Casio fx-991 is allowed.

1. Consider the below variables from the Birth data set. Which of these variables is measured on an ordinal scale?

`sex`	`1 =` male, `2 =` female
`mage`	Age of mother (years)
`hispmom`	Mother of Hispanic origin (C = Cuban, M = Mexican, N= Non-Hispanic, O = other and unknown Hispanic, P = Puerto Rican, S = Central/South American, U = not classifiable)
`gained`	Weight gained during pregnancy (pounds)
`smoke`	`0` = mother did not smoke during pregnancy `1` = mother did smoke during pregnancy
`premie`	`0` = infant was not premature `1` = infant was premature

(a) `sex`, `hispmom`
(b) `mage`, `gained`, `smoke`, `premie`
(c) `mage`, `gained`
(d) `smoke`, `premie`
(e) (a) & (b)

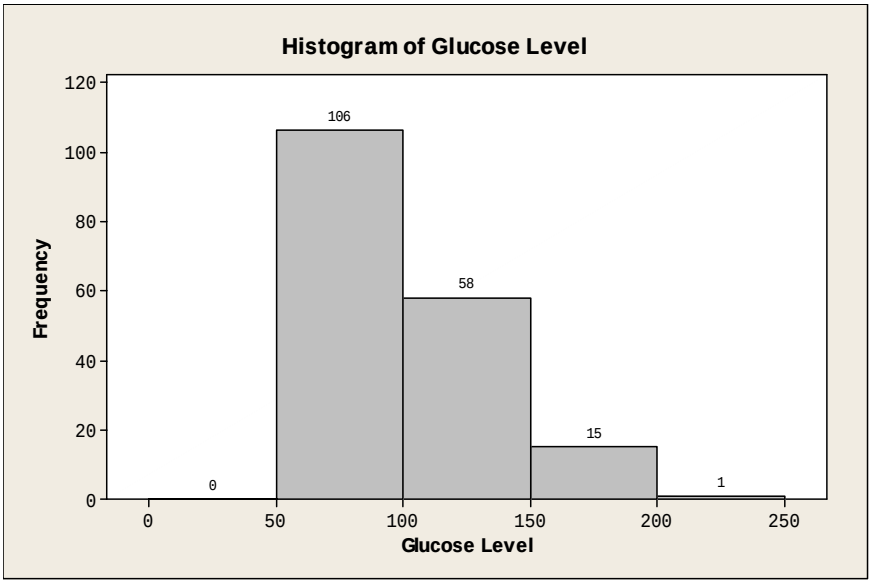
2. The age of patients who received treatment for back pain are summarized in the Minitab output below. How many people between the ages of 20 and 49 years of age were treated for back pain?

```
Stem-and-leaf of C2  N  = 279
Leaf Unit = 1.0

 3    1  799
 55   2  000222333333444455556666666777777788888888899999999
(85)  3  000000000011111112222222222222223333333333444444444455555556666+
 139  4  000000000111111222222222223333333344444445555555555555566666677777+
 56   5  00000001112222233333334444445555555577799 9
 14   6  01112234666
 3    7  024
```

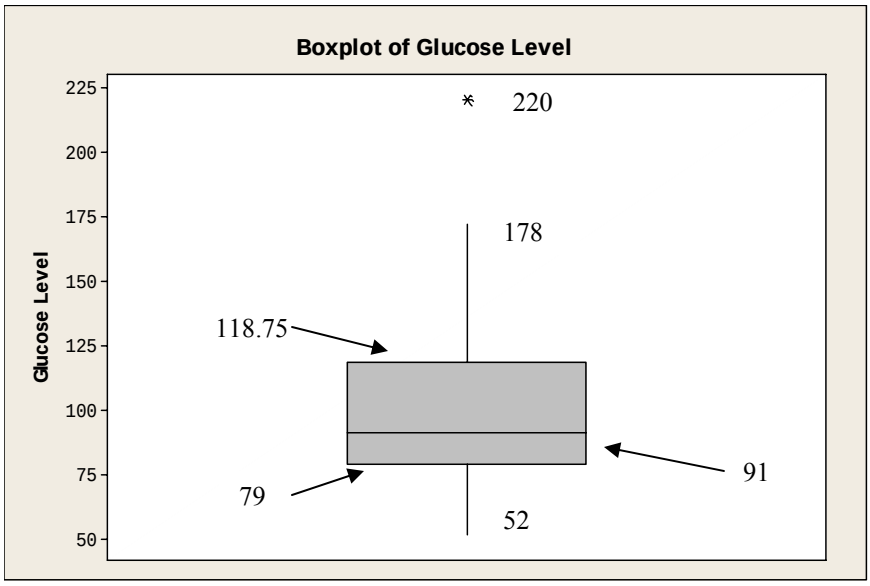
(a) 139 **(b)** 279 **(c)** 282 **(d)** 276 **(e)** 220

3. Consider the following histogram of glucose levels of a group of patients. What is the cumulative percentage of people with glucose levels no more than 150?



(a) 32.22 **(b)** 41.11 **(c)** 58.89 **(d)** 91.11 **(e)** 99.44

4. Consider the following boxplot of glucose levels of a group of patients on a strict diet and exercise routine. What is the interquartile range (IQR) of these patients?



(a) 126 **(b)** 27.75 **(c)** 12 **(d)** 59.25 **(e)** 39.75

5. How many outliers exist in the following data set,

55,44,53,57,39,45,53,43,47,49,57

(a) 0 **(b)** 1 **(c)** 2 **(d)** 3 **(e)** 4

6. The systolic blood pressures of 70 adult males were measured. It was found that $\Sigma X = 9173$ and $\Sigma X^2 = 1207999$. Find the coefficient of variation of this sample.

(a) 66.31 **(b)** 7.11 **(c)** 14.06 **(d)** 1.51 **(e)** 6.87

7. Consider the data set of total cholesterol levels that is summarized in the Minitab output below. Approximately how many of the people in the data set have a total cholesterol level over 224.5?

Descriptive Statistics: Chol

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3
Chol	28	0	253.93	9.02	47.71	142.00	224.50	268.00	282.00

Variable	Maximum
Chol	360.00

(a) 21 **(b)** 7 **(c)** 14 **(d)** 25 **(e)** 75

8. Five people are selected at random from a group of 9 men and 11 women. Find the probability that at least 4 of them are female.

(a) 0.4444 **(b)** 0.5625 **(c)** 0.4195 **(d)** 0.0.0681 **(e)** 0.2214

9. Consider the Minitab Output below which is a cross-tabulation table of the variables `exercise` (`0` = none, `1` = light, `2` = moderate, `3` = heavy) and `gender` (`F` = female, `M` = male) from the Databank data set. If a person is selected at random from the group of people summarized in the below output, find the probability that the person does not exercise heavily or is female.

Tabulated statistics: EXERCISE, GENDER

Rows: EXERCISE Columns: GENDER

	F	M	All
0	25	13	38
1	15	23	38
2	5	8	13
3	5	6	11
All	50	50	100

(a) 0.90 **(b)** 0.94 **(c)** 0.56 **(d)** 0.61 **(e)** 0.06

10. Consider the Minitab Output from **Question #9** above. Given that the person randomly selected is male, find the probability that he does heavy exercise.

(a) 0.3421 **(b)** 0.5454 **(c)** 0.06 **(d)** 0.11 **(e)** 0.12

11. The emergency room at a small hospital treats an average of 7 children on Sunday nights. If the number of children treated follows a Poisson distribution, find the probability that there will be at least 2 children treated on a Sunday night.

(a) 0.9704 **(b)** 0.0296 **(c)** 0.9927 **(d)** 0.0073 **(e)** 0.0223

12. On average, 75% of patients admitted to the hospital have extended health insurance. If 12 patients are admitted to the hospital, what is the probability that at least 10 of them will have extended health insurance?

(a) 0.3907 **(b)** 0.2323 **(c)** 0.6093 **(d)** 0.1584 **(e)** 0.8416

13. IQs are known to be normally distributed with mean 100 and standard deviation 15. If a sample of 55 people is randomly selected, find the probability that the sample mean IQ will be between 95 and 102.

(a) 0.2053 **(b)** 0.1703 **(c)** 0.8321 **(d)** 0.1679 **(e)** 0.8297

14. IQs are known to be normally distributed with mean 100 and standard deviation 15. Fill in the blank. Only 10% of people have an IQ more than _____ (round to the nearest whole number).

(a) 103 **(b)** 65 **(c)** 135 **(d)** 119 **(e)** 97

15. In order to estimate the average weight gained during pregnancy a researcher samples 60 mothers and produces the following 95% confidence interval, (26.73, 33.73). Find a 99% confidence interval for the average weight gained during pregnancy for the same data set.

(a) (25.62, 34.84) **(b)** (26.07, 34.39) **(c)** (24.62, 33.84)
(d) (17.52, 35.94) **(e)** (16.52, 34.94)

16. If z is a standard normal random variable and $P(z_1 \leq z \leq 2.34) = 0.6923$

(a) 0.41 **(b)** 0.15 **(c)** -0.53 **(d)** -1.16 **(e)** -0.04

17. The following data shows the number of hours that 12 hospital patients slept following the administration of a certain anesthetic. Find a 90% confidence interval for the average hours slept following the administration of the anesthetic for the sampled population.

7,10,12,4,8,7,3,8,5,9,6,11

(a) (6.1995, 8.8005) **(b)** (6.0759, 8.9241) **(c)** (6.4192, 8.5808)
(d) (6.4247, 8.5753) **(e)** (6.0867, 8.9133)

18. Consider the following Minitab output based on systolic blood pressure (mmHg) measurements of 20 patients undergoing therapy for hypertension. How many patients undergoing therapy for hypertension should be sampled if we want to estimate the mean systolic blood pressure accurate to within 5 mmHg with 95% confidence.

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3
SYSTOLIC	20	0	154.25	5.07	22.67	99.00	142.25	154.00	175.50

(a) 79 **(b)** 91 **(c)** 62 **(d)** 56 **(e)** 72

19. In a survey of women between the ages of 20 and 40, it was found that 88 out of 200 women take prenatal vitamins. Find a 90% confidence interval for the true proportion in the sampled population of women between the ages of 20 and 40 who take prenatal vitamins.

(a) (0.4421, 0.5579) **(b)** (0.3951, 0.4849) **(c)** (0.5021, 0.6179)
(d) (0.5151, 0.6049) **(e)** (0.3821, 0.4979)

20. Suppose we want to estimate the proportion of workers in a certain factory that smoke. If no prior information about this proportion is known, how many workers should be sampled accurate to within 10% with 95% confidence.

(a) 96 **(b)** 97 **(c)** 67 **(d)** 68 **(e)** 193

BE SURE THAT YOU HAVE CORRECTLY FILLED OUT THE BUBBLES CORRESPONDING TO YOUR STUDENT NUMBER AND THE VERSION NUMBER OF YOUR TEST IN THE CORRECT PLACES ON THE COMPUTER CARD.