MATH 132 SPRING 2001 - CERTAIN

EX. 2

Math 132 Exam II Certain April 11, 2001 Name_____

1.(35 points) Consider the histogram below. The data are salaries of single mothers who have children in a particular day-care center. Use the histogram to answer the questions.

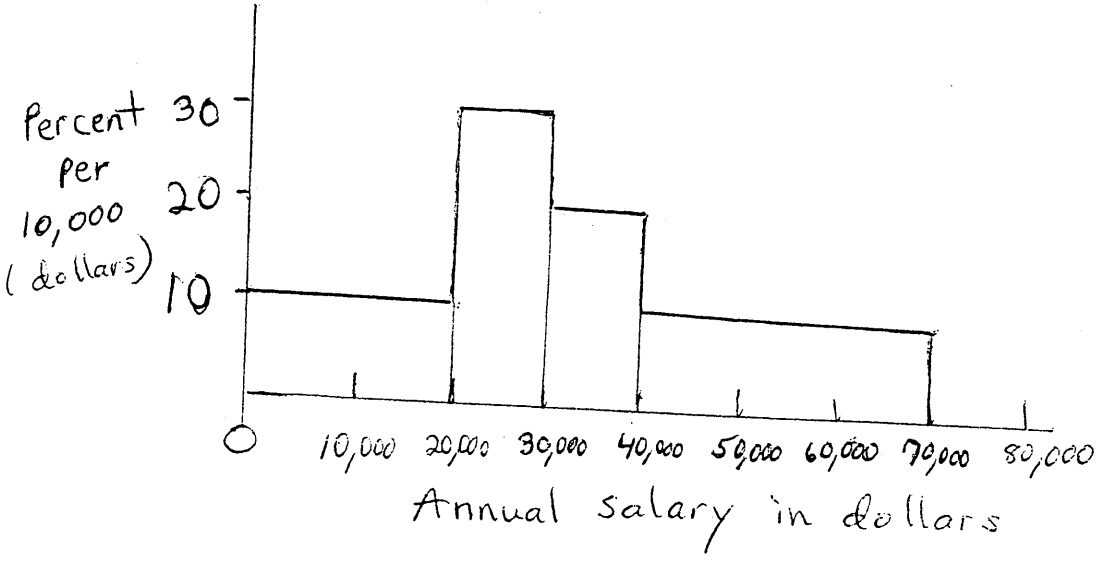
A. What percent of the mothers make between $30,000 and $40,000? _____

B. What percent of the mothers make between $40,000 and $50,000? _____

C. What is the median salary of this group of mothers? _____

D. Estimate the mean salary, showing how you calculate it.

E. Suppose the day-care center asks each mother to contribute ½ of 1% (.005) of her salary to a fund used for school lunches. If there are 150 mothers, estimate how much total money there will be in the fund if each mother contributes as suggested.



2. (30 points) A. Calculate the mean of the set A (hint: it's a whole number):

A = {8, 8, 8, 8, 9, 9, 7, 6, 6, 1, 1, 1, 1, 1, 1}.

Mean = _____

Let S_A represent the standard deviation of A.

Could S_A be as much as 4? Explain why it could be, or why it couldn't be.

B. What is the mean of the set B ?

B = {108, 108, 108, 108, 109, 109, 107, 106, 106, 101, 101, 101, 101, 101, 101}

Mean = _____

What is the standard deviation of B, in terms of S_A? _____

C. What is the mean of set C?

C = {24, 24, 24, 24, 27, 27, 21, 18, 18, 3, 3, 3, 3, 3, 3}

Mean = _____

Choose one of the following: the standard deviation of C is

_____ equal to S_A

_____ 3 S_A

_____ 9 S_A

3. (35 points) Suppose mice are being timed as they run through a maze. The times form a normal distribution with a mean of 55 seconds and a standard deviation of 12 seconds.

A. What is the probability a mouse will run the maze in less than 40 seconds?

B. What is the probability a mouse will take 76 seconds or longer to run the maze?

C. What percent of times fall between 40 and 76 seconds?

D. Suppose Richard and Lisa each have a pet mouse, and each mouse runs the maze.

What is the probability both mice finish in less than 40 seconds?

What is the probability one does and one doesn't?

What is the probability both mice take 40 seconds or longer to finish?

F. A new researcher is looking at the times of his group of 12 mice. He notices that one mouse had a time of 82 seconds. He thinks perhaps his group of mice are housed too close to the heat vent and it's making them lethargic. How unusual is it in a group of 12 mice that at least one would have a maze time of 82 seconds or more?