

Math B 30 Data Analysis Review

Name: _____

1. The following table represents a test of the number of hours that light bulbs worked before burning out. These were selected at random from a shipment from a supplier. Determine the mean length of time the light bulbs lasted and the standard deviation. (4 marks)

122, 108, 196, 145, 125, 116,
120, 142, 135, 106, 102, 163

a) What is the median length of time the light bulbs lasted?

b) What is the mean life of the light bulbs?

c) What is the standard deviation? Be sure to show all work in calculating the standard deviation.

2. A class of 25 students wrote a math exam. After marking the exams, the teacher discovered that exam results were normally distributed with a mean of 65% and the standard deviation of 10%. (2.5 marks)

a) Draw a normal curve to illustrate the exam results.

b) What percentage of the students who wrote the exam had a score between 55% and 75%?

c) How many students received a mark better than 75%?

- d) If a student was sick the day of the exam, what is the probability that the student will receive a mark of more than 85% when he/she makes up the exam?
3. A buyer for a department store chain is aware that the sizes of men's shoes are normally distributed with a mean size of 10, and a standard deviation of 1.5 sizes. For the chain, he purchases 12,000 pairs of shoes. (3 marks)
- a) Draw a normal curve to represent the sizes of men's shoes.

b) How many pairs of shoes greater than size 13 should he order?

c) How many pairs of shoes less than size 5.5 should he order?

4. A fishing derby on a lake gives first place to the fisherman who obtains the best catch for that lake for the day. Three species are quite commonly caught and it is assumed that the weights of the fish are normally distributed in the lake. Perch have a mean weight of 0.5 kg, with a standard deviation of 0.2 kg; pickerel have a mean weight of 1.4 kg, with a standard deviation of 0.6 kg; and northern pike have a mean weight of 2.3 kg, with a standard deviation of .8 kg. Ali brings in a perch of 0.9 kg, Bob a pickerel of 2.5 kg, and Cheryl a northern pike of 3.9 kg. (4.5 marks)
- a) Determine the z-score of each participant's catch.

b) Who should be awarded first prize? Why?

5. Use the table on page 317 of your text to find the area under the standard normal curve for the given z-scores. (7 marks)

a) $z \geq 1.27$

b) $z \geq -0.85$

c) $-2.1 \leq z \leq 1.3$

d) $-2.45 \leq z \leq -0.35$

6. Assuming a normal distribution for the life of its test batteries, a company has found that its batteries have a mean life of 72 hours, with a standard deviation of 9 hours. (5 marks)

What is the probability that if a battery chosen at random will last:

a) anywhere from 68 to 84 hours?

b) more than 100 hours?

7. The weights for children of age 10 are normally distributed with a mean of 40 kg and standard deviation 8 kg. (5 marks)

a) What is the probability that a 10 year old will weigh less than 25 kg?

b) You are a medical assistant. You weigh a 10 year old boy and find his weight to be 62kg. Use probability to explain to the parent's the abnormality of their son's weight?

