

Quiz 1 Review

1. ST. PAUL, MN – People who drink wine occasionally may have a lower risk of developing dementia, including Alzheimer's disease, according to a study published in the November 12 issue of *Neurology*, the scientific journal of the American Academy of Neurology.

People who drank wine weekly or monthly were more than two times less likely to develop dementia in the study.

For the study, the researchers identified the drinking patterns for wine, beer and liquor of 1,709 people in Copenhagen in the 1970s and then assessed them for dementia in the 1990s, when they were age 65 or older. Over the two decades, 83 of the participants developed dementia. Their alcohol intake was compared to that of those who did not develop dementia.

One limitation of the study is that eating habits were not assessed, states an accompanying editorial by neurologist John Brust, MD, of Harlem Hospital Center in New York, NY.

"Research suggests that wine drinkers may have better dietary habits than beer and liquor drinkers," Brust said. "There is also evidence that dietary vitamin E may reduce the risk of developing Alzheimer's. These factors were not accounted for in this study.

a) What is the possible cause and effect that the study is looking at?

b) Was this an observational study or a controlled experiment? Explain.

c) Joe says that the last paragraph says that dietary habits are a confounding factor. Explain what this means.

2. According to the US Census Bureau the infant mortality rate in the US in 2005 is 6.5 (per 1000 live births) and in Sweden it is 2.8. Does this mean Sweden does a better job with delivering babies? Explain.

3. JACKSONVILLE, Fla., Nov. 8, 2002 -- Researchers from Mayo Clinic in Jacksonville, Fla., report wearing ionized bracelets for the treatment of muscle and joint pain was no more effective than wearing placebo bracelets in the November 2002 issue of *Mayo Clinic Proceedings*.

Authors of the published study randomly assigned 305 participants to wear an ionized bracelet for 28 days and another 305 participants to wear a placebo bracelet for the same duration.

The study volunteers were men and women 18 and older who had self-reported musculoskeletal pain at the beginning of the study. Neither the researchers nor the participants knew which volunteers wore an ionized bracelet and which wore a placebo bracelet. Bracelets were worn according to the manufacturer's recommendations. Both types of bracelets were identical and were supplied by the manufacturer, QT, Inc. Participants self-reported their pain for each location where they felt it with a score of 1 to 10 before wearing a bracelet. They self-reported their pain again after wearing a bracelet for one day, three days, seven days, 14 days, 21 days and 28 days. Researchers were interested in both the change in the self-reported pain score for the location of greatest pain and the change in the sum of the pain scores for all self-reported painful locations.

Both groups reported significant improvement in pain. However, researchers found no difference in the amount of self-reported pain relief between the group wearing the ionized bracelets and the group wearing the placebo bracelets. The study authors conclude that the equivalent, subjective improvement in pain scores calls into question the true benefit of using an ionized bracelet.

a) What is the possible cause and effect that the study is looking at?

b) Was this an observational study or a controlled experiment? Explain.

c) Was this study double-blind? Explain what this means.

d) What is the placebo effect and why do the researchers conclude that the bracelet doesn't work even though it reduced pain?

4. Researchers want to know if athletes who have had multiple concussions react differently than athletes who have had one concussion. Would they use a controlled experiment here? Explain.

5. A study has found that girls who are thinner are more likely to smoke. Jane says that the girl's self-image is a possible confounding factor. Explain what this means.

6. Find the mean, median, and standard deviation of: 82, 77, 67, 70, 72, and 88.

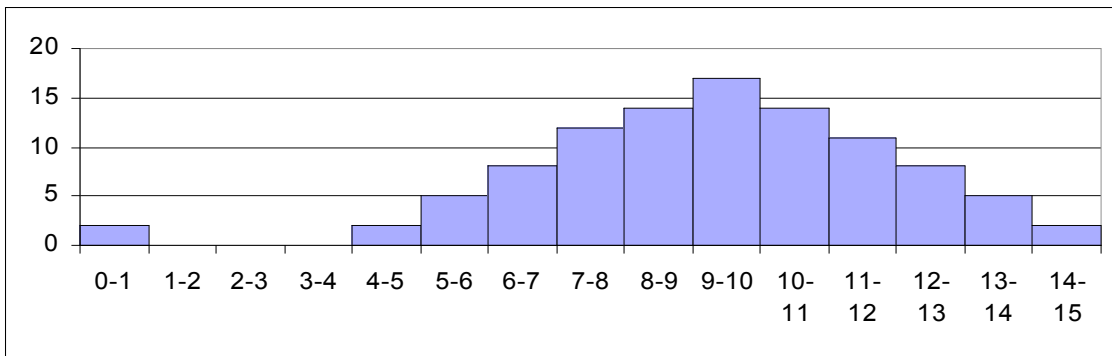
7. a) Fill in the following table (the estimated average life expectancy of the countries of the world in 2004 according to the US Census Bureau):

Life Expect. (years)	Percent of Countries	Height of Histogram
30-40	3.1	
40-50	11.2	
50-60	8	
60-70	21.4	
70-75	23.7	
75-80	27.7	
80-85	4.9	

b) Draw and label the histogram from (a).

c) Estimate the percent of countries whose life expectancy is between 61 and 65.

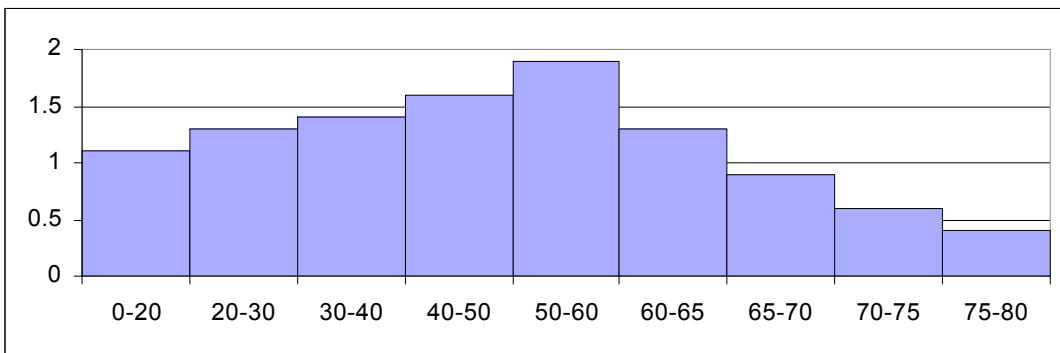
8. For the following:



a) Describe the histogram.

b) Which is bigger, the mean or median?

9. Below is a **poorly drawn histogram** (the heights are: 1.1, 1.3, 1.4, 1.6, 1.9, 1.3, 0.9, 0.6, 0.4).



The average of the 500 numbers that make up the histogram is 38.825 (with a standard deviation of 20.07).

a) Find the percent of numbers between 0 and 40.

b) Is the median more or less than the average? Use your answer to (a) to decide.

c) If 100 numbers were added and they were all 35, what would the new average be? What would happen to the standard deviation (would it increase or decrease)?

10. The following are the life expectancies in 2004 for the 21 countries in northern Africa and the Near East according to the US Census Bureau. Give the five number summary of the data.

61.4, 68.3, 69.7, 70.3, 70.7, 71.6, 72.1, 72.3, 72.7, 72.8, 72.9
73.4, 74.0, 74.7, 75.0, 75.2, 76.3, 76.8, 77.5, 78.1, 79.2

11. Decide what type of variable each of the following is:

a) number of rooms a building has.

b) place of birth.

c) amount of mercury in a lake.

d) teacher evaluation scores (1-5).