HW 8 is due on Monday, March 21. Quiz 6 covers homework 7. **Two pages: problems A)- G)**

A) A Gallop poll found that 51% of people in the sample said "Yes" when asked "Would you like to lose Weight?" Gallop announced "For results based on the total sample of national adults, one can say with 95% confidence that the margin of sampling error is ± 3 percentage points."

a) What is the 95% confidence interval for the percent of all adults who want to lose weight?

b) What does it mean to say we have 95% confidence in this interval?

comment: 95% CI is estimate ± margin of error. See p. 362.

B) A student reads that a 95% confidence interval for the mean NAEP quantitative score for men of ages 21 to 25 is 267.8 to 276.2. Asked to explain the meaning of this interval, the student says "95% of all young men have scores between 267.8 and 276.2." Is the student right? Justify your answer.

comment: Estimators for the mean are not estimators for individuals.

C) 14.5b Below are the IQ scores of 31 7th grade girls in a Midwest school district. Treat the 31 girls as a SRS of all 7th grade girls in the school district. Suppose the standard deviation of IQ scores in this population is known to be $\sigma = 15$. Give a 99% confidence interval for the mean score in the population.

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114   100   104    89   102    91   114   114   103   105
108   130   120   132   111   128   118   119    86    72
111   103    74   112   107   103    98    96   112   112    93
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comment: You need to compute the sample mean using p. 40. Follow Example 14.3 on p. 366.

D) High school students who take the SAT mathematics exam a second time generally score higher than on their 1st try. The change in score has a normal distribution with standard deviation $\sigma = 50$. A random sample of 1000 students gains an average of $\overline{x} = 22$ on the 2nd try.

a) Give a 95% confidence interval for the mean score gain μ in the population of all students.

b) What are the margins of error for 90%, 95% and 99% confidence? How does increasing the confidence level affect the margin of error of a confidence interval?

comment: Margin of error is defined on p. 362. Also see p. 366. For b), make a table with headers level, Z*, and m.

E) How large a sample of school girls in HW problem C) would be needed to estimate the mean IQ score μ within ±5 points with 99% confidence?

comment: Use formula on p. 405. Do not forget to round up. Margin of error = m = half the CI length. Get σ from problem C).

F) A poll on women's issues interviewed 1025 women and 472 men randomly selected from the United States, excluding Alaska and Hawaii. The poll announced a margin of error of ± 3 percentage points for 95% confidence in conclusions about women. The margin of error for results concerning men was ± 4 percentage points. Why is this larger than the margin of error for women?

comment: Recall that bigger samples are more accurate.

YOU NEED TO KNOW HOW TO READ MINITAB OUTPUT FOR EXAMS.

The computer lab is open 12:30 - 4:30 MTuWTh 12:30 - 5:30 F.
From 8:30-12:30 you can get the lab opened by me or Diane who is
in the main Math Office Neckers 360. Certain hours are reserved,
check at the door.

G) Minitab problem. Double click on the "shortcut to math programs icon."
   After a window opens, double click on the icon marked "Student Minitab."
   After Minitab opens move the cursor to "File" in the NW corner. Drag
   down "Open Worksheet." Double click on the icon "Student."
   (On some computes you can go directly to the next step.) A window will
   appear. Double click on Age.mtw. Click on "OK." These steps represent
   steps 1) - 4) on the last Minitab HW. On the menu, move your cursor to
   "Stat". Drag down "Basic Statistics" then "1 Sample Z."
   Stat>Basic Statistics>1 Sample Z. A window will appear. Double click on
   "DAgeF" to get it in variable (hit Select if this does not work). Beside the
Sigma label, enter "15"   and then click on "OK". This will produce a 95% CI.
What is it? Include your output. To print output, go to "File"
and drag down "Print Session Window." Then click ''OK".