MIDTERM EXAM

Name of the Group _____

Member   _____
Member   _____
Member   _____
Member   _____

Notes:

1. This is an open book and open notes exam.

2. Your group must show work and explain the answer in order to receive credit.

3. The exam carries 100 points.

4. The points assigned to each problem are indicated at the end of that problem. Use them to plan your time. You have 75 minutes to finish.

5. The exam has 6 problems. Make sure your copy has all of them.

Age-at-inauguration. The table bellow gives the age of inauguration for 35 American Presidents.

President	Age at Inaug.	President	Age at Inaug.	President	Age at Inaug.	President	Age at Inaug.
Washington	57	J.Adams	61	Jefferson	57	Madison	57
Monroe	58	J.Q. Adams	57	Jackson	61	Van Buren	54
W.H. Harrison	68	Tyler	51	Polk	49	Taylor	64
Fillmore	50	Pierce	48	Buchanan	65	Lincoln	52
A. Johnson	56	Grant	46	Hayes	54	Garfield	49
Arthur	50	Cleveland	47	B. Harrison	55	McKinley	54
T. Roosevelt	42	Taft	51	Wilson	56	Harding	55
Coolidge	51	Hoover	54	Truman	60	Eisenhower	62
Kennedy	43	L. Johnson	55				

Find the **five-number-summary** for the age-at-inauguration data. [15pts]

Sweepstakes. Jason went to his mailbox one afternoon and discovered that he had been chosen as semifinalist in the Publishing Clearing House Sweepstakes. This entitled him to enter the grand prize drawing for $ 1 million dollars!!! Being a bit sceptical, Jason sat down with his calculator and statistics knowledge to figure out how much money he could expect to win if he played. The letter provided the following prize breakdown:

1	Supremo Grand Prize	$ 1 million
5	Spectacular First Prizes	$ 1,000
25	Swell Second Prizes	$ 100
50	Thrilling Third Prizes	$ 10

If 250,000 other people have also been selected as semifinalists, how much money could Jason approximately expect to win if he entered. What is the variance of his possible gain. [15 pts]

LC50. The Environment Protection Agency has collected data on the LC50 (concentration killing 50% of the test animals in a specified time interval) measurements for certain chemicals likely to be found in freshwater rivers and lakes. For a certain species of fish, the LC50 measurements for DDT in 5 experiments yielded the following: 13, 9, 21, 19. (Measurements are in parts per million). Assuming such LC50 measurements to be normally distributed, estimate the true mean of LC50 for DDT with confidence level 98%. [20 pts]

Budbowl. Immediately after watching the Superbowl a viewer poll was taken. It was found that 40 % of the viewers could not recall the winner of the Budbowl and another half of those could not remember the final score of the game. 60% of the viewers had total recall. If 10 people are randomly selected from a large number viewers of the game, what is the probability that at least 8 of them cannot recall who won the Budbowl? (by the way the answers are Bud and 55-10). [20 pts]

Clearance. The height if trucks on the interstate I-40 is approximately normally distributed with mean 10 ft and standard deviation 1.5 ft. Design the minimal clearance D, at an overpass under construction so that the probability that the truck will clear is 0.999. [15 pts]

Joy and Jeffrey. Joy and Jeffrey flip a coin every morning to see who buys the coffee. What is the probability that Jeffrey will buy coffee more than 135 days out of 250 working days in a year. Assume the coin is fair. [15 pts]