

PROB STAT HONORS

Name _____

8.1 – THE NORMAL DISTRIBUTION

1. Suppose your Statistics teacher reports test grades as z -scores, and you got a score of 2.20 on an exam. Write a sentence explaining what that means.
2. After examining a child at his 2-year checkup, the boy's pediatrician said that the z -score for his height relative to American 2-year-olds was -1.88. Write a sentence explaining what that means.
3. The mean score on a Stats exam was 75 points with a standard deviation of 5 points, and Gregor's z -score was -2. How many points did he score?
4. People with z -scores above 2.5 on an IQ test are sometimes classified as geniuses. If IQ scores have a mean of 100 and a standard deviation of 16 points, what IQ score do you need to be considered a genius?

Environmental Protection Agency (EPA) fuel economy estimates for automobile models tested recently predicted a mean of 24.8 mpg and a standard deviation of 6.2 mpg for highway driving. Assume fuel economy follows a normal distribution.

5. In what interval would you expect the central 68% of auto fuel economies to be found?
6. About what percent of autos should get more than 31 mpg?
7. About what percent of cars should get between 31 and 37.2 mpg?
8. Describe the gas mileage of the worst 2.5% of all cars.

Some IQ tests are standardized to a Normal model, with a mean of 100 and a standard deviation of 16.

9. In what interval would you expect the central 95% of IQ scores to be found?
10. About what percent of people should have IQ scores above 116?
11. About what percent of people should have IQ scores between 68 and 84?
12. What range of IQ scores would put you in the top 0.15% of all IQ scores?