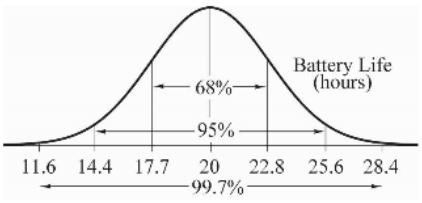
Day 8 Homework Answers

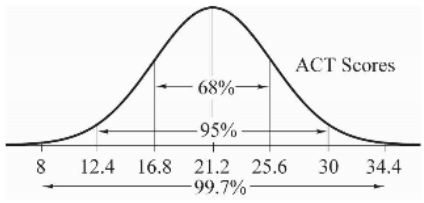
Statistics Chapter 5: Normal Practice 1 – KEY

Sketch Normal models like the one above for the following examples

1. The life of batteries in hours: N(20, 2.8)

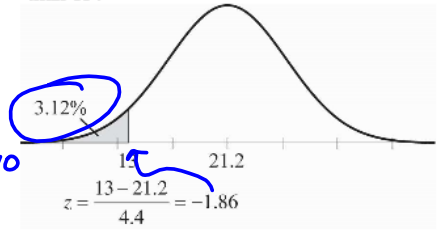


2. ACT scores at a certain college: N(21.2, 4.4)

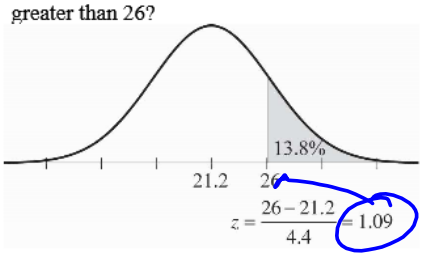


Use the Normal model from question 2 to sketch, label, and shade normal models. Then use `Normalcdf(z_left, z_right)` on your calculator to find the percent requested.

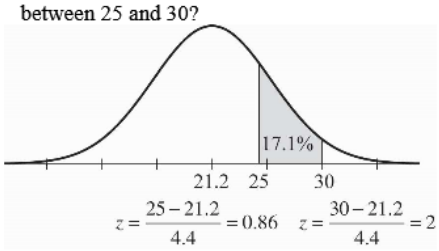
3. What percent of students have ACT scores less than 13?



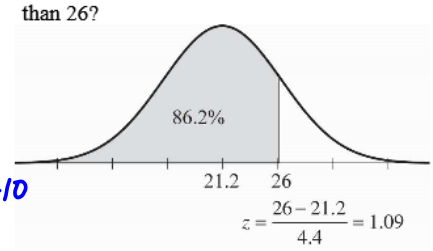
4. What percent of students have ACT scores greater than 26?



5. What percent of students have ACT scores between 25 and 30?



6. What percent of students have ACT scores less than 26?

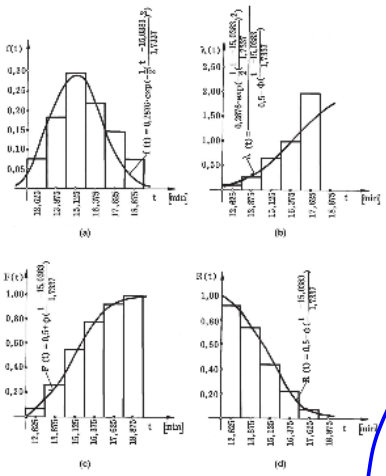


7. What were the scores of the highest scoring 16% of the students? (Hint: Draw a picture and think about the 68-95-99.7 rule.) How about the lowest scoring 2.5% of the students?

According to the Normal model, the highest scoring 16% of students scored 25.6 or higher, and the lowest scoring 2.5% of students scored 12.4 or lower..

Statistics Chapter 5: Performance Task

Role: **University Teaching Assistant**
Audience: **Professor**
Format: **Written Report**
Topic: **Normal Models**



A Normal model can be a useful tool for interpreting what data have to say - sometimes. You have a job as one of several teaching assistants for a statistics professor who wants to help her students understand the Normal model. She is interested in finding some everyday contexts that students could explore in a project using a Normal Model. Your task here is to check the appropriateness of a Normal model for data you collect or create. There are three phases in completing this task:

1. **Collect data.**
You need a data set with ~~30~~ 50+ values. Find something you are interested in. Use existing data, or create some yourself. Need an idea?
   - Put 10 pennies in a glass, put your hand over the top, shake well, then dump them out on a table and count the number that came up heads.
   - Roll two dice and record the total.
   - Deal cards from a well-shuffled deck one at a time. Count the number of cards you have to turn over until you find an ace.
   - Use some data from another class – a science experiment, perhaps.
   - Look something up in an almanac. For example, there are lots of tables of data about states - crime rates, population density, median income, etc.
   - Use some sports statistics – number of wins for baseball teams, scores in a golf tournament, weights of players on a football team, etc.
   - Find something on the Internet – www.census.gov for example.

2. **Describe the data.**
Write a brief but thorough description of your data. Start with the W's, and remember to include visual, numerical, and verbal descriptions.

3. **Check the Normal model.**
Use the mean and standard deviation of your data to create a Normal model. Compare what this model describes (visually, using the standard deviation, 68-95-99.7 rule, etc) to the distribution of the data you collected and explain why you think the model is or is not useful to describe the context you explored.