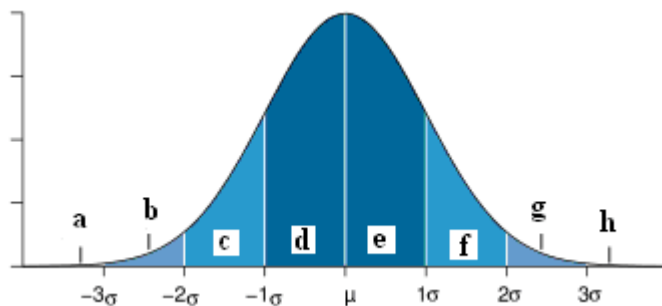




The ghost of the man depicted on this Deutsche Mark (Johann Carl Friedrich Gauss, the discoverer of the normal distribution) will haunt you forever unless you answer the questions that follow.

1.



What is “ $\mu$ ”, and what does it represent? What is “ $\sigma$ ”, and what does it represent? Assuming that this curve represents a normal distribution, what percentage of the population is represented by each letter? If somebody tells you that s/he is a genius because her intelligence test score falls at  $1\sigma$ , what would you tell him/her, and why?

2. Remember when we first passed out to you those bags of M&M goodness?
  - A) Provide a histogram (with a normal curve superimposed) of the number of blue M&Ms per package. Does the distribution appear to be normal? Why or why not?
  - B) If we had thrown away all of the M&M bags that were in the top 10% and lowest 10% in terms of number of blue M&Ms, which M&M bags would we have thrown out? Identify each bag by its case number. (Hint: Use SPSS and the procedures that were demonstrated in lab.)
3. The Mars corporation is very concerned with this number-of-blue-M&Ms-per-bag business. What percentage of the normally distributed bags fall between:
  - A) Plenty of blue: a z-score of 0.26 and a z-score of 1.9?
  - B) Too few blue: a z-score of -2.85 and a z-score of -0.55?
  - C) A range of blue: a z-score of 2.4 and a z-score of -0.71?(Hint: Use Table D.10 in your textbook)
4. Extra Credit for 1 Point: Describe the SPSS procedure that one would use to find the z-scores represented by a column of percentile ranks.