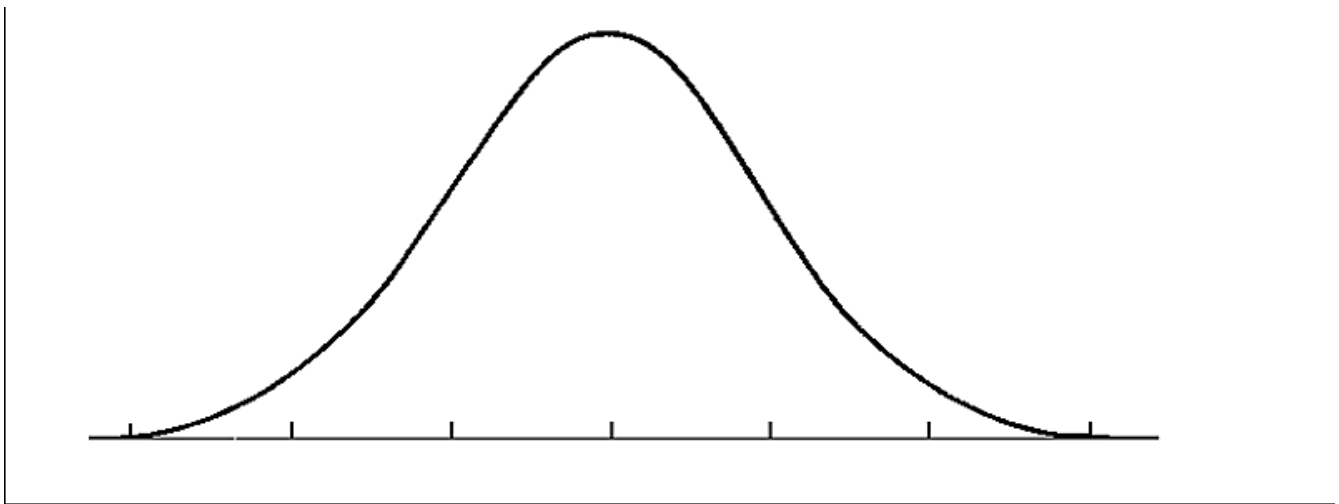


M414 – Chapter 3
Worksheet 3 - Empirical Rule and Normal Distribution

Name _____
Date _____ Period _____

In a normal distribution, what percent of the values lie:

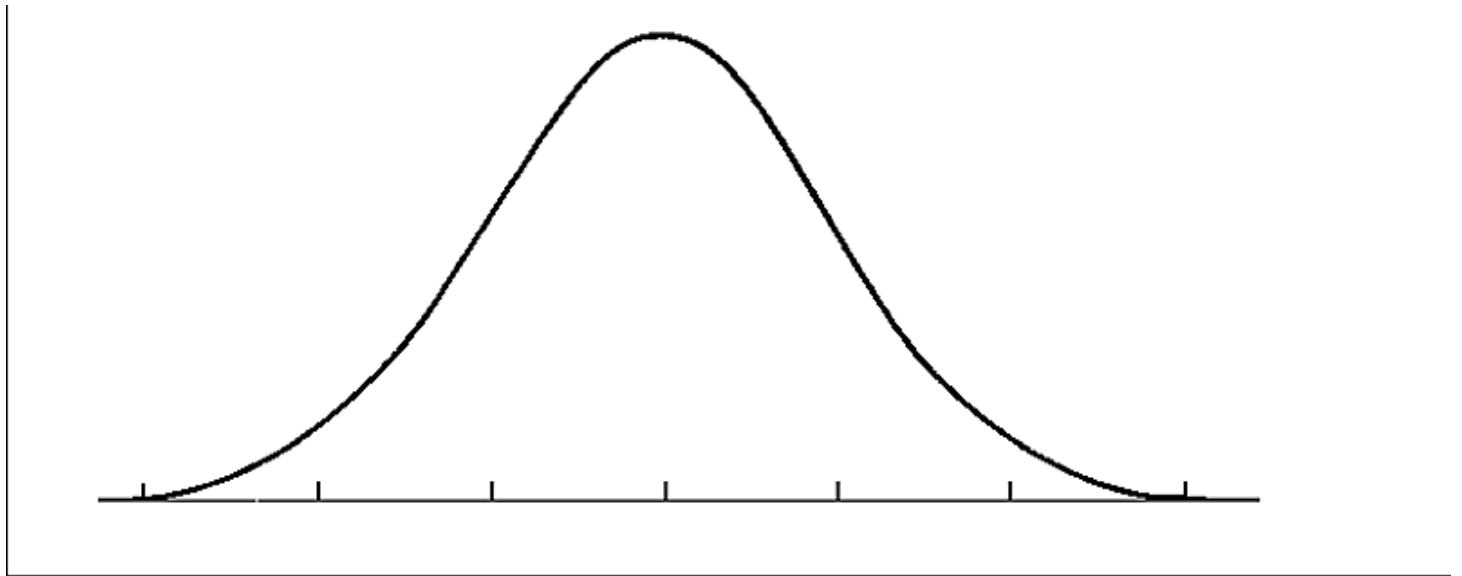
1. below the mean? _____
2. above the mean? _____
3. within one standard deviation of the mean? _____
4. within two standard deviations of the mean? _____
5. within three standard deviations of the mean? _____
6. **2000 freshmen at State University took a biology test. The scores were distributed normally with a mean of 70 and a standard deviation of 5. Label the mean and three standard deviations from the mean.**



Answer the following questions based on the data:

- a) What percentage of scores are between scores 65 and 75?
- b) What percentage of scores are between scores 60 and 70?
- c) What percentage of scores are between scores 60 and 85?
- d) What percentage of scores is less than a score of 55?
- e) What percentage of scores is greater than a score of 80?
- f) Approximately how many biology students scored between 60 and 70?
- g) Approximately how many biology students scored between 55 and 60?

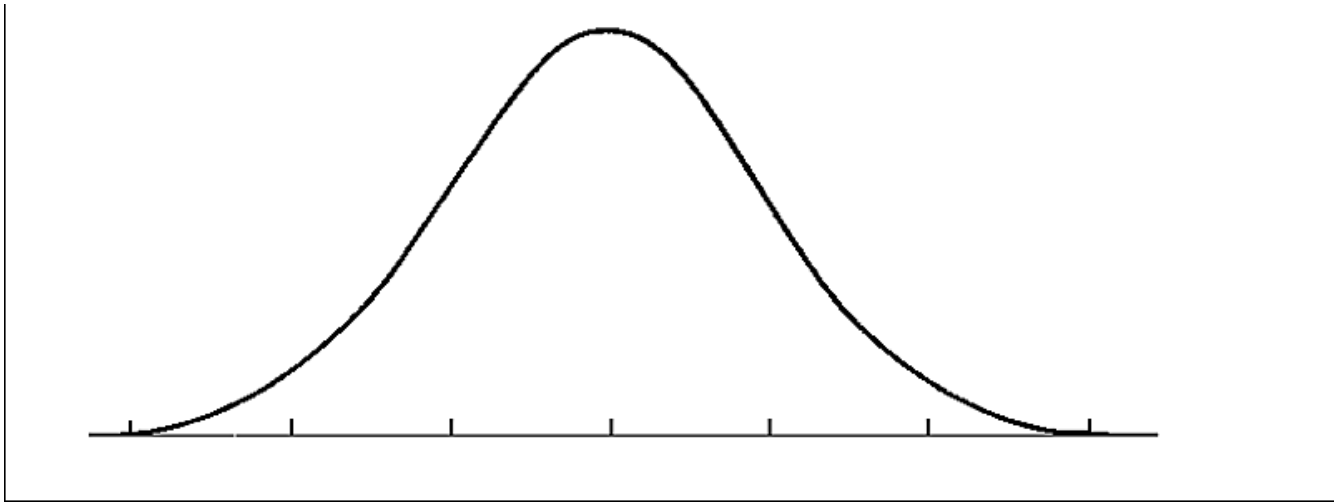
7. 500 juniors at Central High School took the ACT last year. The scores were distributed normally with a mean of 24 and a standard deviation of 4. Label the mean and three standard deviations from the mean.



Answer the following questions based on the data:

- What percentage of scores are between scores 20 and 28?
- What percentage of scores are between scores 16 and 32?
- What percentage of scores are between scores 16 and 28?
- What percentage of scores is less than a score of 12?
- What percentage of scores is greater than a score of 24?
- Approximately how many juniors scored between 24 and 28?
- Approximately how many juniors scored between 20 and 28?
- Approximately how many juniors scored between 24 and 32?
- Approximately how many juniors scored between 16 and 20?
- Approximately how many juniors scored higher than 32?

8. 500 freshmen at Schaumburg High School took an algebra test. The scores were distributed normally with a mean of 75 and a standard deviation of 7. Label the mean and three standard deviations from the mean.



Answer the following questions based on the data:

- What percentage of scores are between scores 61 and 82?
- What percentage of scores are between scores 75 and 82?
- What percentage of scores are between scores 61 and 89?
- What percentage of scores is less than a score of 61?
- What percentage of scores is greater than a score of 96?
- Approximately how many algebra students scored between 61 and 89?
- Approximately how many algebra students scored between 68 and 82?
- Approximately how many algebra students scored between 61 and 75?
- Approximately how many algebra students scored between 89 and 96?
- Approximately how many algebra students scored higher than 89?