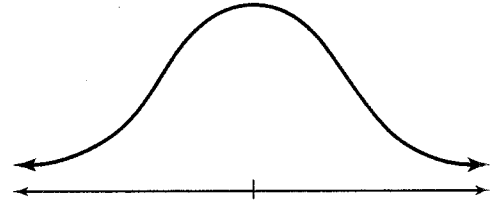# Study Guide

Integration: Statistics
The Normal Distribution

One way to analyze data is to consider
the frequency with which each value
occurs. Often this is done on a bar graph
called a **histogram.** Often the frequency
distributions are shown by curves of
many different shapes. A curve that is
bell-shaped and symmetric indicates a
normal distribution.

Normal Distribution Properties
1. The graph is maximized at the mean.
2. About 68% of the items are within one standard deviation from the mean. Of the 68%, 34% are greater than the mean and 34% are less than the mean.
3. About 95% of the items are within two standard deviations from the mean. Of the 95%, 47.5% are greater than the mean and 47.5% are less than the mean.
4. About 99% of the items are within three standard deviations from the mean. Of the 99%, 49.5% are greater than the mean and 49.5% are less than the mean.

*The number of hours that students studied for final exams was
normally distributed. Of the 200 students surveyed, the mean number
of hours they studied was 12 hours. The standard deviation was 3 hours.*

1. Make the curve to represent the frequency distribution.

2. Of the 200 students surveyed, how many studied less than 9 hours?

3. Of the 200 students surveyed, how many studied between 9 and 15 hours?

4. Of the 200 students surveyed, how many studied at least 3 hours?

5. What percentage of the students studied 3 hours or less?

6. What percentage of the students studied at least 9 hours?

7. How many students studied less than 12 hours?