Statistics & Probability   **Normal Distribution-68-95-99.7 Rule**
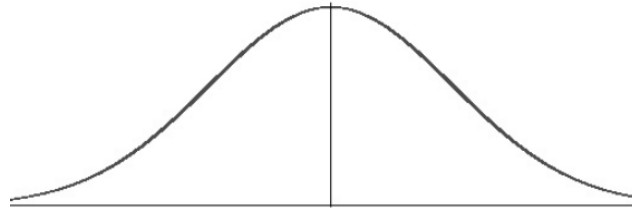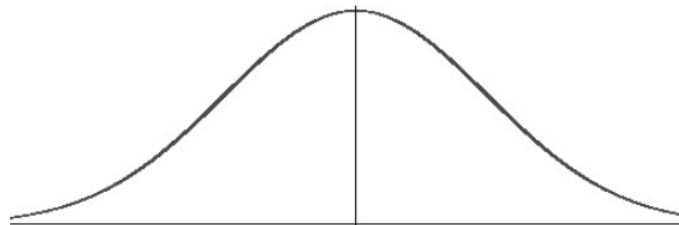
Name_____Date_____Period_____

For each question, assume a Normal Distribution. Construct a normal distribution curve and label the horizontal axis. Then answer each question.

1.   **A line up for tickets to a local concert had an average (mean) waiting time of 20 minutes with a standard deviation of 4 minutes**
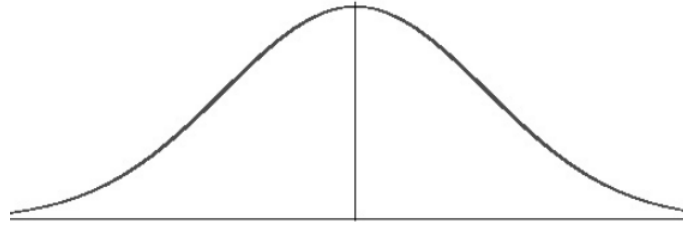
a)   **What percentage of the people in line waited for more than 28 minutes?**

b)   **If 2000 ticket buyers were in line, how many of them would expect to wait for less than 16 minutes?**

2.   **In an Oreo factory, the mean mass of a cookie is given as 40 g. For quality control, the standard deviation is 2 g.**
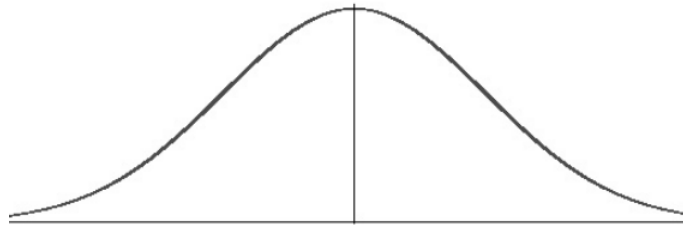
a)   **If 10,000 cookies were produced, how many cookies are within 2 g of the mean?**

b)   **Cookies are rejected if they weigh more than 44 g or less than 36 g.**
        How many cookies would you expect to be rejected in a sample of 10,000 cookies?

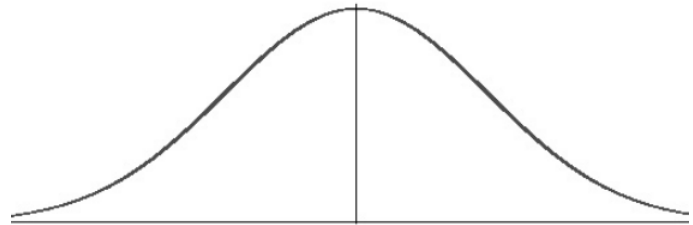3.   The speeds of cars on the highway have a mean of 95 km/h with a standard deviation of 5 km/h.

a)   What percentage of cars averaged less than 85 km/h?

b)   If a police car stopped cars that were going more than 105 km/h, how many cars would they stop if there were 8000 cars on the highway?

4.   The mean life of a battery is 50 hours with a standard deviation of 6 hours. The manufacturer advertises that they will replace all batteries that last less than 38 hours.

a)   If 50,000 batteries were produced, how many would they expect to replace?

5.   A bottle of fruit punch contains at least 473 ml. The machine that fills the bottles is set so that the mean volume is 477 ml.

a)   What percent of the bottles are under-filled if the standard deviation is 2 ml?

b)   What percent of the bottles are under-filled if the standard deviation is 4 ml?