AFm - DAY 2

Act. #77

NORMAL DISTRIBUTION

For each question, construct a normal distribution curve and label the horizontal axis. Then answer each question.

1. The mean life of a tire is 30,000 km. The standard deviation is 2000 km.
   a) What percent falls within one standard deviation of the mean?
   b) What percent falls between 26,000 and 30,000 km?
   c) What percent falls between 31,000 km AND 26,000 km?
   d) What percent is greater than 25,000 km?

2. The shelf life of a particular dairy product is normally distributed with a mean of 12 days and a standard deviation of 3 days.
   a) About what percent of the products last between 9 and 15 days?
   b) About what percent of the products last between 12 and 15 days?
   c) About what percent of the products last 6 days or less?
   d) About what percent of the products last 15 or more days?

3. 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?

4. The monthly income of 5,000 workers at the Microsoft plant are distributed normally. Suppose the mean monthly income is $1,250 and the standard deviation is $250.
   a) How many workers earn more than $1500 per month?
   b) How many workers earn less than $750 per month?
   c) What percentage of the workers earn between 2 STANDARD Deviations?
   d) What percentage of the workers earn less than $1375.00?

5. 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?

6. A grading scale is set up for 1000 students' test scores. It is assumed that the scores are normally distributed with a mean score of 76 and a standard deviation of 12.
   a) What percent SCORED between 64 AND 82?
   b) How MANY students SCORED between 52 AND 94?

7. Solve: $\log_3(5x+4) = 2$

8. Solve: $5\ln(x+2) = 15$

9. Solve: $2\ln(x+1) - \ln(x-3) = \ln 3 - \ln 2$.

10. Solve: $\log_3(2x-5) - \log_3(x+2) = \log_3(5x-1)$