

NORMAL DISTRIBUTION [Part 2]

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 27,000 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 \$12625 AND \$130,000?
 - d) What percentage of the workers earn less than \$12,125?

- 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 46 AND 82?
 - b) How many students scored between 70 AND 94?

- 7 Find the middle term for $(2xy + 3)^8$.
- 8 Find the middle term for $(x^3y - 3)^{10}$.
- 9 Solve: $2 \ln(x+1) - \ln(x-3) = \ln 3 - \ln 2$.
- 10 Solve: $\log_3(2x-5) - \log_3(x+2) = \log_3(5x-1)$