

**LESSON
6.3****Challenge Practice***For use with the lesson "Use Normal Distributions"*

- Find a formula that can be used to transform a z -score to an x -value.
Show your work.
- The monthly water and sewer bills in a city are normally distributed with a mean of \$55 and a standard deviation of \$6. Use your formula from Exercise 1 to find the x -values corresponding to z -scores of -0.7 , 3.8 , and 1.1 . What can you conclude?
- In 2005, the mean score on the verbal portion of the SAT for college-bound seniors was 508 with a standard deviation of 113. Assume the test scores are normally distributed.
 - What percent of the SAT verbal scores are less than 590?
 - If 1200 SAT verbal scores are randomly selected, about how many would you expect to be greater than 525?
- The life span of a light bulb is normally distributed with a mean of 3000 hours and a standard deviation of 45 hours. What percent of light bulbs have a life span that is more than 3085 hours? Would it be unusual for a light bulb to have a life span that is more than 3085 hours? *Explain* your reasoning.
- If you are given a probability, you can use the table on page 759 of your textbook to find the corresponding z -score. You can then use the formula from Exercise 1 to find the x -value.
 - Find the z -score that corresponds to a probability of 0.7257.
 - Find the z -score that corresponds to a probability of 0.0179.
 - In an algebra class, the points for the final exam are normally distributed with a mean of 75 and a standard deviation of 7. Grades are to be assigned according to the following rules.

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| (i) The top 10% receive A's. | (ii) The next 20% receive B's. |
| (iii) The middle 40% receive C's. | (iv) The next 20% receive D's. |
| (v) The bottom 10% receive F's. | |

