

Looking Ahead

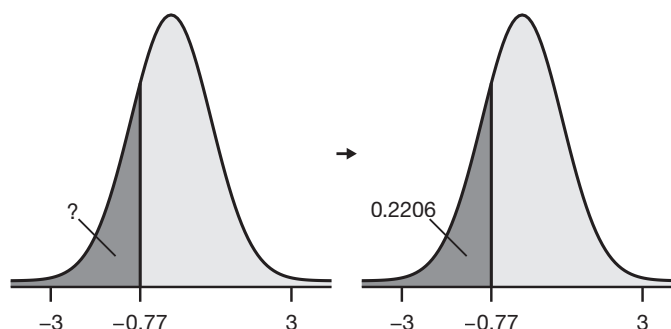
A thorough understanding of the concept of area with simple polygons will help you in determining the area under the standard normal curve, as is shown in the following example.

Example Preview

Find the area under the standard normal curve to the left of $z = -0.77$.

Solution

A graphical representation of the problem is shown below. In order to find the desired area, which is labeled with a question mark, we will need to find the area under the standard normal curve from negative infinity to $z = -0.77$. Using technology or the standard normal distribution table we find this area to be 0.2206.



$$P(z < -0.77) = P(-\infty < z < -0.77) = 0.2206$$

6.R.1 Exercises

Concept Check

True/False. Determine whether each statement is true or false. If a statement is false, explain how it can be changed so the statement will be true. (**Note:** There may be more than one acceptable change.)

- The $(b + c)$ in the trapezoid area formula represents the sum of the lengths of the base and the corners.
- The height of a triangle is the distance between the base and the vertex opposite the base.
- The area formula for a triangle is $A = a + b + c$.
- The area formula for a trapezoid is $A = \frac{1}{2}h(b + c)$.

Practice

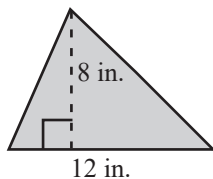
Calculate the area of each figure described.

5. A square with sides of length 9 ft.

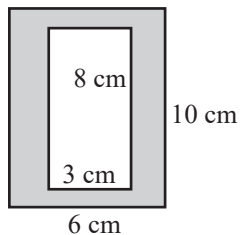
6. A parallelogram with height 2.3 ft and base 11.9 ft.

Calculate the shaded area of each figure.

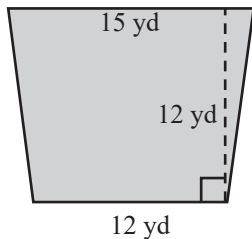
7.



9.



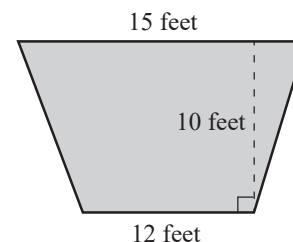
8.



Applications

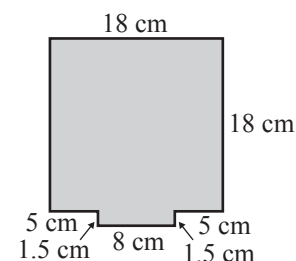
Solve.

10. **Construction:** The main stage at a theater is in the shape of a trapezoid. The owner of the theater is planning to install a new specially designed flooring system on the stage. The stage is 12 feet wide in the front and 15 feet wide in the back. The stage is 10 feet deep. How much flooring will the manager need?

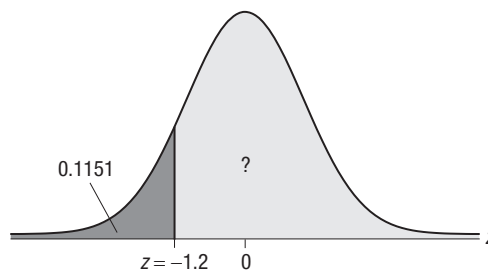


11. **Technology:** A square electronics circuit board is 18 centimeters on each side. On the center of one of the edges is an 8 by 1.5 centimeter rectangular lip for plugging in.

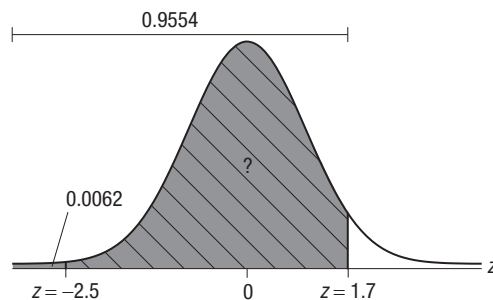
- What is the total perimeter of the circuit board, including the lip?
- What is the area of the circuit board?



12. **Area Under the Standard Normal Curve:** For a standard normal curve, the total area under the curve and above the x -axis is 1. If the area under the curve and to the left of $z = -1.2$ is approximately 0.1151, what is the area under the curve and to the right of $z = -1.2$?



13. **Area Under the Standard Normal Curve:** For a standard normal curve, the area under the curve and to the left of $z = -2.5$ is approximately 0.0062 and the area under the curve and to the left of 1.7 is approximately 0.9554. Find the area under the curve and between -2.5 and 1.7.



Writing & Thinking

14. Explain why square units are used for labeling areas. Give two examples each of metric area labels and US customary area labels.
15. Explain what the value of $(b + c)$ represents in the formula for the area of a trapezoid.