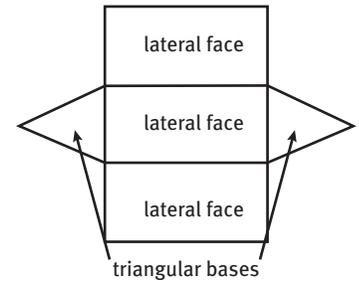


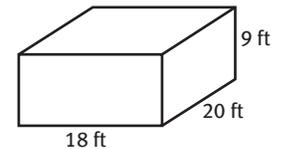
Lateral Area v. Surface Area

Real-world problems may require calculating surface area or lateral area of three-dimensional figures. Visualizing and modeling can be helpful approaches. For example, modeling a triangular prism as a net makes it easier to see that the prism consists of three rectangular lateral faces and two triangular bases. To find the **surface area** of the solid, add the areas of all polygons in the net, including both the bases and the lateral faces. To find the **lateral area** of the solid, find the sum of the areas of only the lateral faces.



EXAMPLE

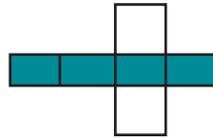
Brandon is painting the outside of his storage garage. The storage garage is in the shape of a rectangular prism as shown. How many square feet of the garage will Brandon need to cover with paint?



Step 1: Interpret the problem.

Brandon needs to know how much paint it will take to cover the sides of his storage garage. He needs to know the lateral area.

Step 2: Sketch a net of the rectangular prism.
Shade the polygons that will be painted.



Step 3: Identify the polygons and the measures needed to find the area.

2 rectangles with
 $b = 18$ feet
 $h = 9$ feet

2 rectangles with
 $b = 20$ feet
 $h = 9$ feet

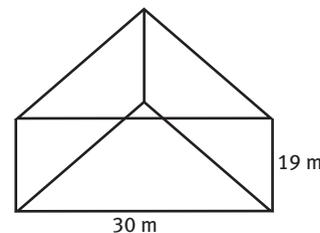
Step 4: Find the sum of the areas of the lateral faces.

Lateral Area of the Rectangular Prism
 $= 2bh + 2bh = 2(18)(9) + 2(20)(9) = 684$

Solution: Brandon will need enough paint to cover 684 square feet.

GUIDED PRACTICE

Kim has designed a museum for her architecture firm. The museum is in the shape of a prism with an equilateral triangular base. The sides of the museum will be covered with aluminum panels. How many square meters of aluminum panels will be needed to cover the sides of the museum?



Step 1: Interpret the problem.

Step 2: Sketch a net of the triangular prism.
Shade the polygons that will be covered.

Lateral Area v. Surface Area (continued)

Step 3: Identify the polygons and the measures needed to find the area.

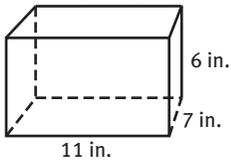
Step 4: Find the sum of the areas of the polygons.

Solution:

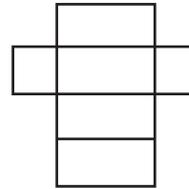
PRACTICE

Determine whether each real-world problem calls for finding lateral area or total surface area. Then, shade the parts of the net needed to find the lateral area or total surface area and calculate the needed area.

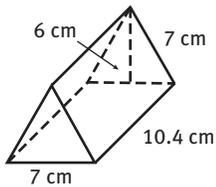
1. Logan is covering an entire prism-shaped box with red felt. How many square inches of felt should he buy?



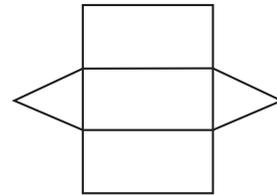
(circle one) lateral area or surface area



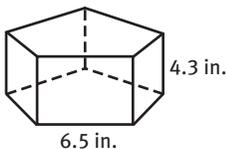
2. A crayon factory now makes triangular prism-shaped crayons that come in a triangular prism-shaped box. The product label must fit around the all sides of the box. How many square centimeters is the label?



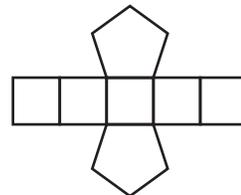
(circle one) lateral area or surface area



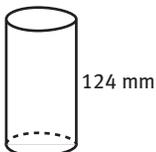
3. Carla is building a three-dimensional model of the Pentagon. She wants to cover the exterior walls of the model with gray construction paper. How much does she need?



(circle one) lateral area or surface area



4. Ana is designing a new paper label in order to repurpose a can of soup into a piggy bank. If the circumference of the can is 150 mm, how much paper does she need?



(circle one) lateral area or surface area

