

Lesson 6 Reteach

Surface Area of Prisms

The sum of the areas of all the surfaces, or faces, of a three-dimensional shape is the **surface area**. The surface area S.A. of a rectangular prism with length l , width w , and height h is the sum of the areas of its faces.

$$S.A. = 2lw + 2lh + 2wh$$

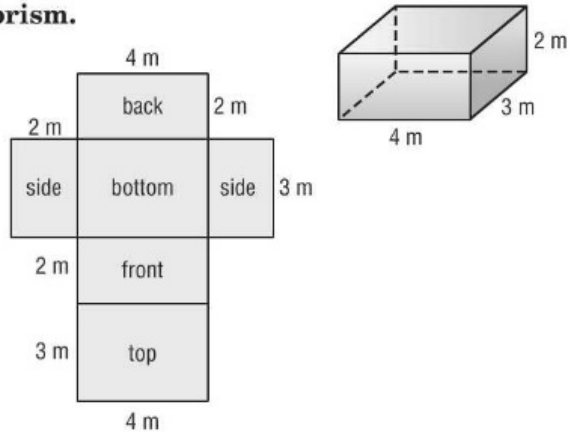
Example

Find the surface area of the rectangular prism.

Faces	Area
top and bottom	$2(4 \cdot 3) = 24$
front and back	$2(4 \cdot 2) = 16$
two sides	$2(2 \cdot 3) = 12$
sum of the areas	$24 + 16 + 12 = 52$

Alternatively, replace l with 4, w with 3, and h with 2 in the formula for surface area.

$$\begin{aligned}
 S.A. &= 2lw + 2lh + 2wh \\
 &= 2(4 \cdot 3) + 2(4 \cdot 2) + 2(3 \cdot 2) \\
 &= 24 + 16 + 12 \\
 &= 52
 \end{aligned}$$



So, the surface area of the rectangular prism is 52 square meters.

Exercises

Find the surface area of each prism.

Copyright © The McGraw-Hill Companies, Inc. Permission is granted to reproduce for classroom use.

$$\begin{array}{r}
 9 \\
 21 \\
 \hline
 21 \\
 51 \\
 \hline
 51 \times 2 = 102
 \end{array}$$

1.
 $9 \times 2 = 18$
 $21 \times 2 = 42$
 $21 \times 2 = 42$
 $\hline 102$
 SURFACE AREA 102 cm^2

2.
 FRONT + BACK 9 cm^2
 TOP + BOTTOM 21 cm^2
 2 SIDES 21 cm^2

3.
 SURFACE AREA = 232 in^2
 FRONT + BACK $8 \times 2 = 16 \text{ in}^2$
 $16 \times 2 = 32 \text{ in}^2$
 TOP + BOTTOM $8 \times 10 = 80 \text{ in}^2$
 $80 \times 2 = 160 \text{ in}^2$
 SIDES RIGHT + LEFT $2 \times 10 = 20 \text{ in}^2$
 $20 + 20 = 40 \text{ in}^2$

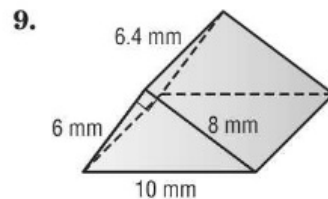
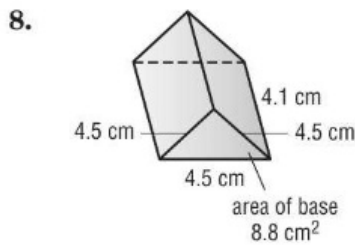
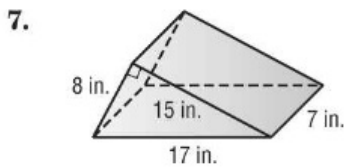
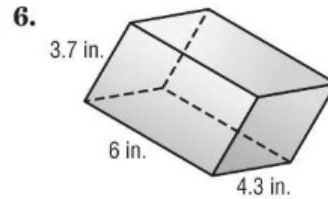
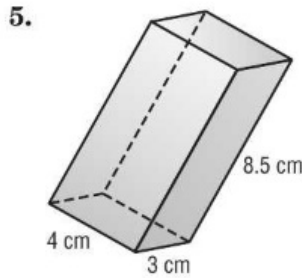
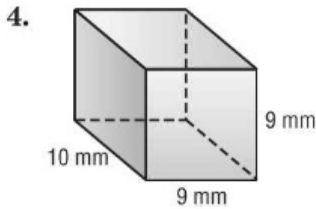
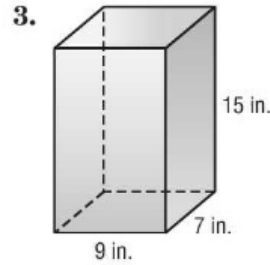
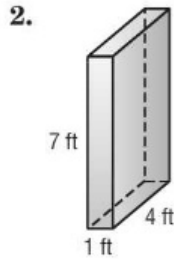
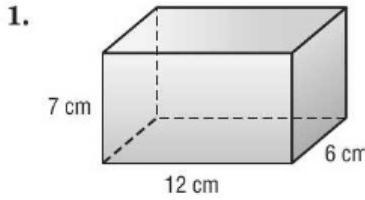
3.
 SURFACE AREA 102 cm^2

4.
 SURFACE AREA = 232 in^2

Lesson 6 Skills Practice

Surface Area of Prisms

Find the surface area of each prism. Round to the nearest tenth if necessary.



10. Find the surface area of a rectangular prism that has a length of 8 inches, a width of 3 inches, and a height of 6 inches.
11. Find the surface area of a triangular prism. The sides of the right triangular base measure 9 centimeters, 12 centimeters and 15 centimeters. The height of the prism is 20 centimeters.

Copyright © The McGraw-Hill Companies, Inc. Permission is granted to reproduce for classroom use.