

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.

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

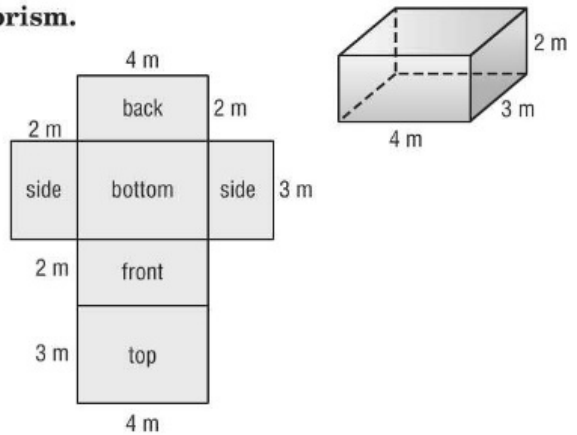
Example

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.

1.
 Handwritten calculations: $9 \times 2 = 18$, $21 \times 2 = 42$, $21 \times 2 = 42$, 102 .
 SURFACE AREA 102 cm^2

2.
 Handwritten calculations: 9 cm^2 (front+back), 21 cm^2 (top+bottom), 21 cm^2 (2 sides).
 SURFACE AREA 40.46 ft^2

3.
 Handwritten calculations: SURFACE AREA = 232 in^2 , $8 \times 2 = 16 \text{ in}^2$ (front+back), $16 \times 2 = 32 \text{ in}^2$ (top+bottom), $8 \times 10 = 80 \text{ in}^2$, $80 \times 2 = 160 \text{ in}^2$ (sides right+left), $20 + 20 = 40 \text{ in}^2$.

4.
 Handwritten calculations: $3 \times 0.7 = 2.1$, $4.9 \times 3 = 14.7$, $4.9 \times 0.7 = 3.43$.
 SURFACE AREA 40.46 ft^2

Handwritten calculations for exercise 4: $8 \times 15 = 60$, $17 \times 9 = 153$, $9 \times 8 = 72$, $15 \times 9 = 135$.
 $60 + 60 + 153 + 72 + 135 = 480$

$$2.1 + 14.7 + 3.43 = 20.23 \quad 20.23 \times 2 = 40.46$$