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.
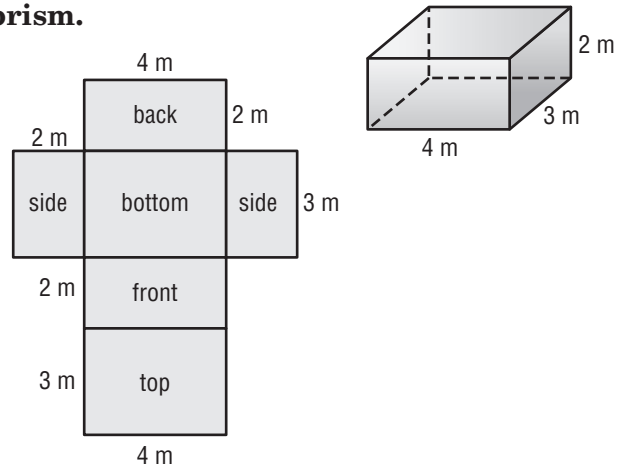>
> $S.A. = 2\ell w + 2\ell h + 2wh$

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.

$S.A. = 2\ell w + 2\ell h + 2wh$

$= 2(4 \cdot 3) + 2(4 \cdot 2) + 2(3 \cdot 2)$

$= 24 + 16 + 12$

$= 52$

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

Exercises

Find the surface area of each prism.

1.

SA: 52 sq cm

3 cm

3 cm   7 cm

$3 \times 3 = 9$

$3 \times 7 = 21$

$7 \times 3 = 21$

2.

2 in.   10 in.

8 in.   SA: 116 sq in

$2 \times 8 = 16$

$8 \times 10 = 80$

$2 \times 10 = 20$

3.

0.7 ft

3 ft

SA: 20.23 sq ft   4.9 ft

$4.9 \times 3 = 14.7$

$4.9 \times 0.7 = 3.43$

$3 \times 0.7 = 2.1$

4.

17 mm

8 mm

9 mm

15 mm

SA: 480 sq mm

$9 \times 17 = 153$

$9 \times 15 = 135$

$9 \times 8 = 72$

$8 \times 15 / 2 \times 2 = 120$