2, 3, 5, 6, 10 11-2

Name: KEY

Period: _____

Date: _____

Topic: **11-2 Lateral Area and Surface Area of Prisms and Cylinders**

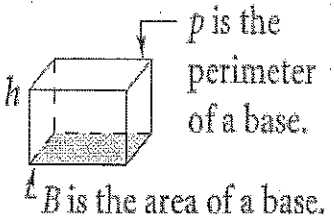
Try this:

Workout space for Ex. a:

Theorem 11-1 Lateral and Surface Areas of a Prism

The lateral area of a right prism is the product of the perimeter of the base and the height.

$$\text{L.A.} = ph \qquad \text{OR} \qquad LA = Ph$$



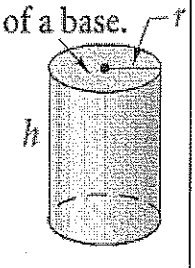
The surface area of a right prism is the sum of the lateral area and the areas of the two bases.

$$\text{S.A.} = \text{L.A.} + 2B \qquad \text{OR} \quad SA = Ph + 2B$$

Theorem 11-2 Lateral and Surface Areas of a Cylinder

The lateral area of a right cylinder is the product of the circumference of the base and the height of the cylinder.

$$\text{L.A.} = 2\pi rh, \text{ or L.A.} = \pi dh$$

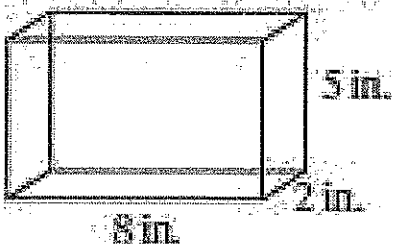


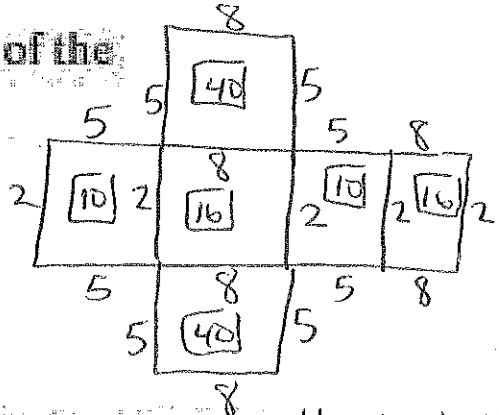
The surface area of a right cylinder is the sum of the lateral area and the areas of the two bases.

$$\text{S.A.} = \text{L.A.} + 2B, \text{ or S.A.} = 2\pi rh + 2\pi r^2$$

$$\text{OR} \quad SA = 2\pi rh + 2\pi r^2$$

a. What is the surface area of the prism shown below?





Draw a net and find the area of each face.

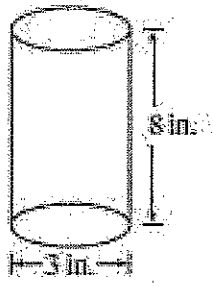
$40+10+16+10+16+40 =$ Total Surface Area $= 132\ in^2$

OR $SA = Ph + 2B$

$= 20(5) + 2(16) = 132\ in^2$

Questions/Main Ideas:

Try this:



What is the approximate surface area of this cylindrical can, including the top and bottom?

$SA = 2\pi rh + 2\pi r^2$

$= 2\pi(1.5)8 + 2\pi(1.5)^2$

$= 24\pi + 4.5\pi$

$= 28.5\pi \text{ in}^2$

Try This:

What is the surface area of a sphere with diameter 4 in.?

$SA = 4\pi r^2$

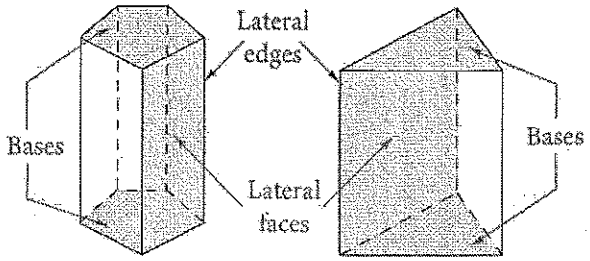
$SA = 4\pi(2)^2$

$= 16\pi \text{ in}^2$

Notes: Cont'd (Lateral/Surface Area)

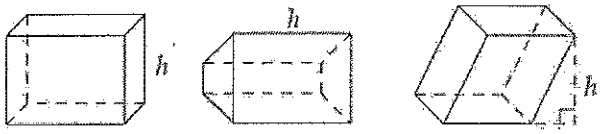
A **prism** is a polyhedron with exactly two congruent, parallel faces, called **bases.** Other faces are **lateral faces.** You name a prism by the shape of its bases.

An **altitude** of a prism is a perpendicular segment that joins the planes of the bases. The **height** h of the prism is the length of an altitude.



Pentagonal prism — Triangular prism

A prism may either be right or oblique.

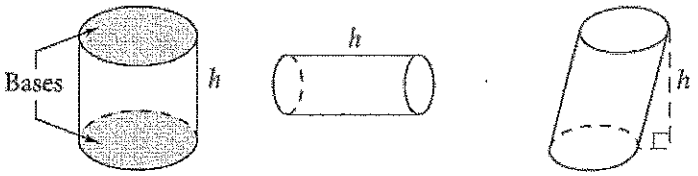


right prisms — **oblique prism**

In a right prism the lateral faces are rectangles and a lateral edge is an altitude. In this book you may assume that a prism is a right prism unless stated or pictured otherwise.

The **lateral area** of a prism is the sum of the areas of the lateral faces. The **surface area** is the sum of the lateral area and the area of the two bases.

Like a prism, a **cylinder** has two congruent parallel **bases.** However, the bases of a cylinder are circles. An **altitude** of a cylinder is a perpendicular segment that joins the planes of the bases. The **height** h of a cylinder is the length of an altitude.



right cylinders — **oblique cylinder**

In this book you may assume that a cylinder is a right cylinder unless stated or pictured otherwise.

To find the area of the curved surface of a cylinder, visualize "unrolling" it. The area of the resulting rectangle is the **lateral area** of the cylinder. The **surface area** of a cylinder is the sum of the lateral area and the areas of the two circular bases. You can find formulas for these areas by looking at a net for a cylinder.