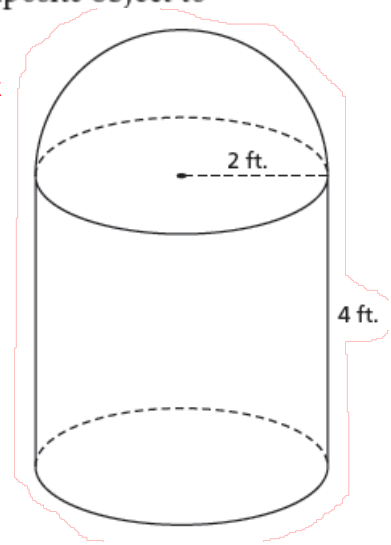
Determining the Surface Area of a Composite Object

To calculate the surface area of a composite object, the first step is to determine the faces that comprise the surface area. Then calculate the sum of the areas of these faces.

EXAMPLE #1: Determine the surface area of this composite object to the nearest square foot.



SOLUTION

See answer sheet on my desk

Write on board

(Erase to reveal)

The surface area of the composite object is approximately 88 square feet.

Sphere

$SA = 4\pi r^2$

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

$SA = 50.265\,ft^2$

$\downarrow$ $\frac{1}{2}$ SA

Cylinder

$SA = \cancel{2\pi r^2} + 2\pi rh$

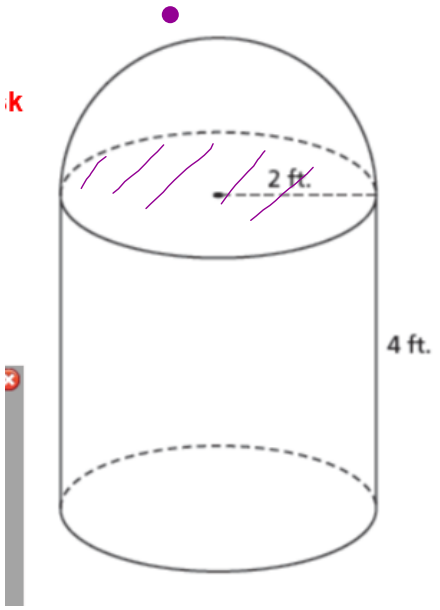
$SA = \pi r^2 + 2\pi rh$

$= \pi (2\,ft)^2 + 2\pi (2\,ft)(4\,ft)$

$= 62.8\,ft^2$

$T_{SA} = 25.13\,ft^2 + 62.8\,ft^2$

$= 88\,ft^2$



Cylinder

$SA = \cancel{2}\pi r^2 + 2\pi rh$

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

$SA = 4\pi + 16\pi$

$SA = 20\pi$

$SA = 62.8\ ft^2$

$SA = 4\pi r^2$

$\frac{1}{2} SA = 2\pi r^2$

$= 2\pi(2)^2$

$= 2\pi(4)$

$= 8\pi$

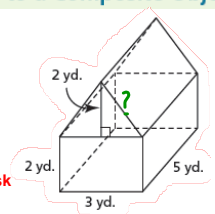
$= 25.13\ ft^2$

$TSA = 25.13\ ft^2 + 62.8\ ft^2$

$87.97\ ft^2$

EXAMPLE #2: Solving a Problem Related to a Composite Object

A cabane à sucre is a composite object formed by a rectangular prism with a right triangular prism as its roof. Determine the surface area of the cabane à sucre in square yards.



SOLUTION (Erase to reveal)

See answer sheet on my desk

Write on board

Rect prism

bottom: 3yd × 5yd

$A_1 = b \times h$
$= 15 yd^2$

side/side: 2yd × 5yd

$A_2 = b \times h$
$A_2 = 10 yd^2$

$2A_2 = 20 yd^2$

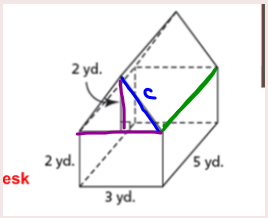
front/back: 2yd × 3yd

$A_3 = b \times h$
$A_3 = 6 yd^2$

$2A_3 = 12 yd^2$

1.7 Solving Problems Involving Objects

$TSA = A_1 + 2A_2 + 2A_3$
$= 15 + 20 + 12$
$= 47 yd^2$

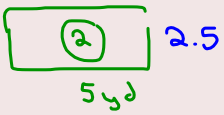


esk

$c = \sqrt{2^2 + 1.5^2}$

$c = 2.5$

Tri prism



$A_\triangle = \frac{b \times h}{2}$

$A_\triangle = \frac{3 \times 2}{2}$

$A_\triangle = 3 yd^2$

$2A_\triangle = 6 yd^2$

$A_\square = b \times h$
$= 5yd \times 2.5yd$

$A_\square = 12.5 yd^2$

$2A_\square = 25 yd^2$

$TSA_2 = 6 yd^2 + 25 yd^2$
$= 31 yd^2$

SO

$TSA_1 + TSA_2 = 47 yd^2 + 31 yd^2$
$= 78 yd^2$

HOMEWORK...

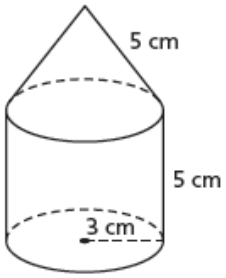
Worksheet - Finding Surface Area of a Composite Object.docx

Worksheet is on front counter and should look like this . Have them do all questions

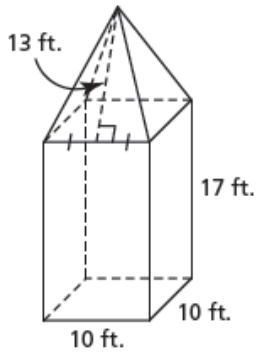
HOMEWORK...

#1. Determine the surface area of each composite object to the nearest square unit.

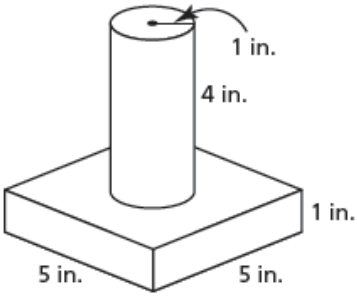
a) right cylinder and right cone



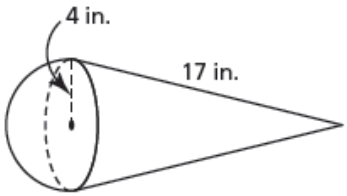
b) right square prism and right square pyramid



c) right square prism and right cylinder



d) right cone and hemisphere



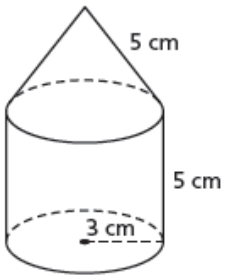
Solutions...

#1. a) 170 cm^2 b) 1040 $ft.^2$
c) 95 $in.^2$ d) 314 $in.^2$

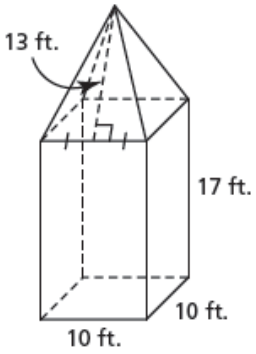
HOMEWORK...

#1. Determine the surface area of each composite object to the nearest square unit.

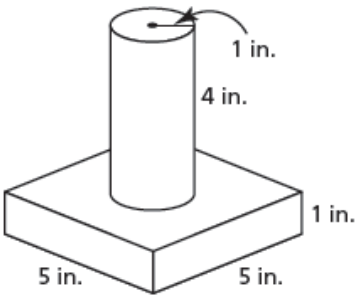
a) right cylinder and right cone



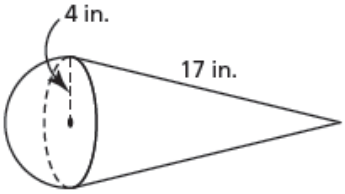
b) right square prism and right square pyramid



c) right square prism and right cylinder



d) right cone and hemisphere



Solutions...

#1. a) 170 cm^2 b) 1040 $ft.^2$
c) 95 $in.^2$ d) 314 $in.^2$

Attachments

Practice - Converting Measurements.pdf

Worksheet - Finding Surface Area of a Composite Object.docx