

6.2 Areas of Decomposable solids

Unfamiliar Solids can be broken down into simpler solids so that their area and volume can be calculated more easily.



1

When you have a decomposable solid:

1. Separate and identify the solids involved.
2. Write the formulas for all the areas involved.
3. Calculate them and add them together.
4. Watch out for hidden bases whose areas should not be included.



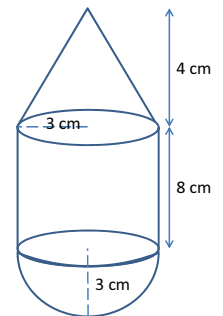
2

BASIC FORMULAS

| SOLIDS | LATERAL AREA | TOTAL AREA |
|------------------------|-----------------------------------|---|
| RIGHT PRISMS | $A_{LAT} = P_B \cdot h$ | $A_{TOT} = A_{LAT} + 2A_B$ |
| RIGHT CYLINDERS | $A_{LAT} = 2\pi rh$ $= \pi dh$ | $A_{TOT} = 2\pi rh + 2\pi r^2$ $= \pi dh + 2\pi r^2$ |
| RIGHT REGULAR PYRAMIDS | $A_{LAT} = \frac{P_b s}{2}$ | $A_{TOT} = A_{LAT} + A_b$ |
| RIGHT CONES | $A_{LAT} = \pi rs$ | $A_{TOT} = \pi rs + \pi r^2$ |
| SPHERES | $A_{LAT} = A_{TOT} = 4\pi r^2$ | |
| HEMISPHERE | $A_{LAT} = 2\pi r^2$ | $A_{TOT} = 3\pi r^2$ |

3

Ex 2: Activity 1 page 187



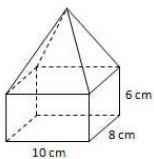
Note the hidden bases between the cone, cylinder, and the hemisphere.

4

Ex 1:

The solid shown below consists of a rectangular base pyramid joined to a rectangular base prism. The height of each lateral surface of the pyramid is 12 cm, and the prism's dimensions are 10 cm by 8 cm and a height of 6 cm. Find the total surface area.

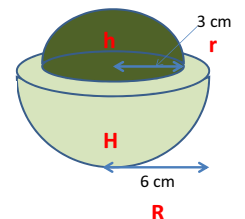
Note the hidden base between the pyramid and the prism.



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Ex 3: p. 189 # 8

A hemisphere is placed on the flat surface of another hemisphere. What is, rounded to the nearest unit, the total area of this solid?



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