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## Homework: 2-2

- Note: Composite Objects

Much like composite shapes, composite objects are three dimensional structures made from two or more simple structures or shapes. For example, many houses can be dissected into a triangular prism placed on top of a rectangular prism base. These two simple shapes together make the structure known as your home.

When discussing composite objects, we will be calculating volume and surface areas. In order to make these calculations, we will break the shapes into smaller easily defined shapes and then add or subtract the necessary portions just as we did when calculating composite areas. For example, calculate the volume and surface of the shape provided.

*Fill in all missing measures...
Height of the triangle $3.4-2.3=1.1 \mathrm{~m}$
Hypotenuse side of triangle using Pythagorean theorem:

$$
\begin{aligned}
& 1.1^{2}+1.4^{2}=x^{2} \\
& x=1.8 m
\end{aligned}
$$

Volume of the composite object: **define your base shape**
$A_{b}=A_{\text {triangle }}+A_{\text {rec tan gle }}$
$A_{b}=\frac{1}{2} \times 2.8 \times 1.1+2.3 \times 2.8$
$=1.54+6.44$
$=7.98 \mathrm{~m}^{2}$
$V=A_{b} h$
$V=7.98 \times 3.9$
$V=31.122 m^{3}$

MAP 4C
Surface Area of composite object:

$$
\begin{aligned}
& P_{b}=1.8+1.8+2.3+2.8+2.3 \\
& =11 \mathrm{~m} \\
& S A=2 A_{b}+P_{b} h \\
& S A=2(31.122)+11 \times 3.9 \\
& S A=62.244+42.9 \\
& S A=105.1 \mathrm{~m}^{2}
\end{aligned}
$$

- Homework: 2-3 Composite Objects
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Lesson: 2-3 Composite Objects

1. Many object containers are made from cardboard. A fruit drink is sold in a package that contains 10 drink boxes. The dimensions of the shipping container are $9.0 \mathrm{~cm} \times 28.5 \mathrm{~cm} \times 14.5 \mathrm{~cm}$.
a) Determine the surface area of cardboard needed for the shipping container.
(2)
b) Each drink box uses about $340 \mathrm{~cm}^{2}$. How much material is used for 10 drink boxes?
(1)
c) Each drink box contains 200 mL of juice. What is the total amount of drink carried in the shipping container?
(1)
2. A section of eave trough is shaped as a triangular prism. The triangular face is a right triangle with a base 3 inches and height of 5 inches. The trough runs the length of the house and is 60 feet long. **there is no top on the trough**
a) Determine the amount of sheet metal required to build the trough.
(4)

b) Determine the volume of the trough in cubic inches.
(4)
c) A cubic inch is about 0.00433 gallons. 1 gallon is about $4.546 L$ About how many litres can the trough hold?
(4)
$\qquad$
3. Joshua if calculating the volume and surface area of a quarter cylinder as shown.
a) Calculate the object's volume.
(3)
b) Calculate the object's surface area.

(4)
4. Two different mailboxes are shown, one wooden, one made out of sheet metal.

a) Which mailbox has the greater volume? Show your work.
(5)
b) Which mailbox has the smaller surface area? Show your work.
(5)
