Name _____   Date _____

1. Find the total volume of the figures and record your solution strategy.
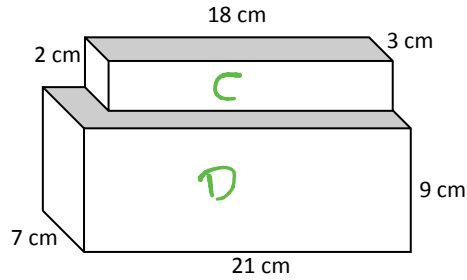
    a.   b.

13 in · A · 2 in · 4 in · B · 2 in · 5 in

18 cm · 3 cm · 2 cm · C · D · 9 cm · 7 cm · 21 cm

Volume: **72 in^3**

Volume: _____

Solution Strategy:

$\text{Volume of A} = 13\text{ in} \times 2\text{ in} \times 2\text{ in} = 52 \text{ in}^3$

$\text{Volume of B} = 2\text{ in} \times 5\text{ in} \times 2\text{ in} = 20 \text{ in}^3$

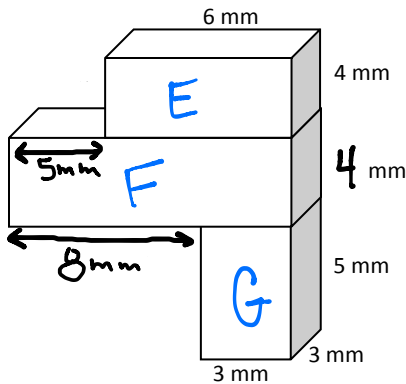$\text{Total} = 52\text{ in}^3 + 20\text{ in}^3 = 72\text{ in}^3$

Solution Strategy:

$\text{Volume of C} = 2\text{ cm} \times 18\text{ cm} \times 3\text{ cm} = 108 \text{ cm}^3$

$\text{Volume of D} = 7\text{ cm} \times 21\text{ cm} \times 9\text{ cm} = 1,323 \text{ cm}^3$

$\text{Total} = 108\text{ cm}^3 + 1,323\text{ cm}^3 = 1,431\text{ cm}^3$
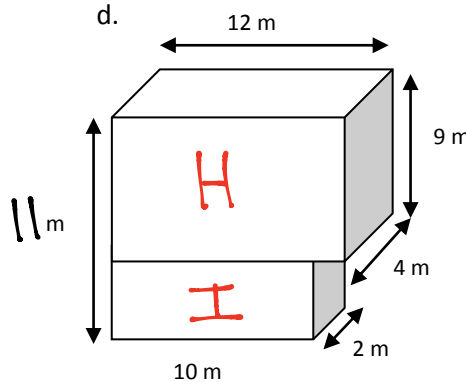
    c.   d.

6 mm · E · 4 mm · 5mm · F · 4 mm · 8mm · G · 5 mm · 3 mm · 3 mm

12 m · 9 m · H · 11 m · I · 4 m · 10 m · 2 m

$V_H = 12\text{m} \times 9\text{m} \times 4\text{m} = 432 \text{ m}^3$

$V_I = 10\text{m} \times 2\text{m} \times 2\text{m} = 40 \text{ m}^3$

Volume: **$72\text{ mm}^3 + 132\text{ mm}^3 + 45\text{ mm}^3 = 249 \text{ mm}^3$**

Volume: **$432\text{ m}^3 + 40\text{ m}^3 = 472 \text{ m}^3$**

Solution Strategy:

$V_E = 3\text{ mm} \times 4\text{ mm} \times 6\text{ mm} = 72\text{ mm}^3$

$V_F = 11\text{ mm} \times 3\text{ mm} \times 4\text{ mm} = 132\text{ mm}^3$

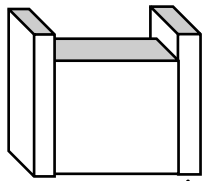$V_G = 3\text{ mm} \times 3\text{ mm} \times 5\text{ mm} = 45\text{ mm}^3$

Solution Strategy:

$15\text{m} - 9\text{m}$ gives the height of I.

2. A planting box (pictured below) is made of two sizes of rectangular prisms. One type of prism measures 3 inches by 6 inches by 14 inches. The other type measures 15 inches by 5 inches by 10 inches. What is total volume of three such boxes?

Left and Right sides : $(3\,in \times 6\,in \times 14\,in) + (3\,in \times 6\,in \times 14\,in)$

$= 252\ in^3 + 252\ in^3$

$= 504\ in^3$

Middle : $15\,in \times 5\,in \times 10\,in$

$= 750\ in^3$
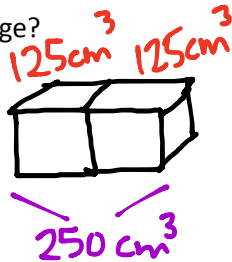
$$\begin{array}{r} 750\ in^3 \\ +\ \ 504\ in^3 \\ \hline 1254\ in^3 \end{array}$$
is volume of one box

$1254 \times 3 = 3762$

Total volume = 3,762 in^3

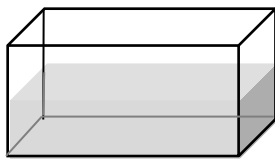3. The combined volume of two identical cubes is 250 cubic centimeters. What is the measure of one cube's edge?

$125cm^3$ $125cm^3$

$250\ cm^3$

$5\,cm \times 5\,cm \times 5\,cm = 125\,cm^3$

The edge of one cube is 5 cm long.

4. A fish tank has a base area of 45 cm^2 and is filled with water to a depth of 12 cm. If the height of the tank is 25 cm, how much more water will be needed to fill the tank to the brim?

$V_{water} = 45\,cm^2 \times 12\,cm$

$= 540\ cm^3$

$V_{tank} = 45\ cm^2 \times 25\,cm$
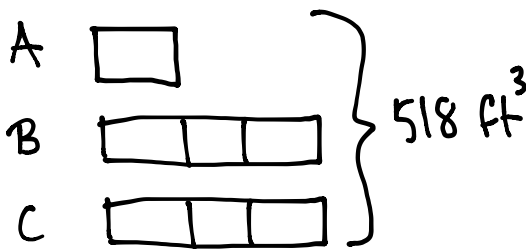
$= 1,125\ cm^3$

$$\begin{array}{r} 1\,\overset{0\ 1}{\cancel{1}}25\ cm^3 \\ -\ \ 540 \\ \hline 585\ cm^3 \end{array}$$

585 cm^3 more water is needed.

5. Three rectangular prisms have a combined volume of 518 cubic feet. Prism A has one-third the volume of Prism B, and Prisms B and C have equal volume. What is the volume of each prism?

A

B

C

$\left. \right\}$ 518 ft^3

7 units = 518 ft^3

÷7   ÷7

1 unit = 518 ÷ 7

$= 74\ ft^3$

A = **74 ft^3**

B = $74 \times 3 = $ **222 ft^3**

C = **222 ft^3**

COMMON CORE

Lesson 6:   Find the total volume of solid figures composed of two non-overlapping rectangular prisms.
Date: 1/10/14

engage^{ny} **5.B.39**