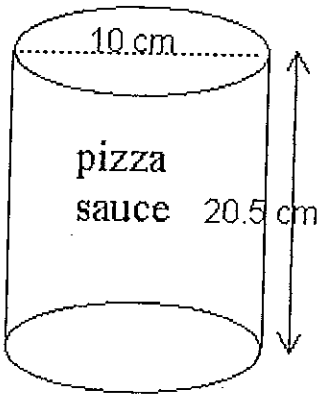
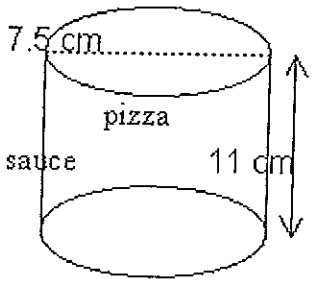
Volume and Surface Area word problems

1. If both of these cans of pizza sauce are cylinders, which is the better buy?

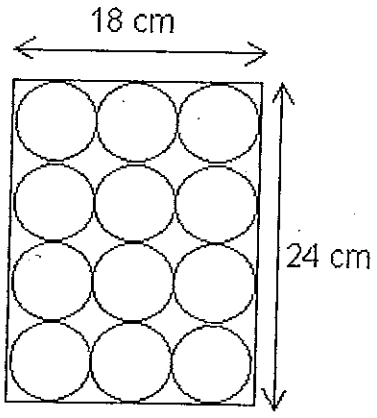


$3.49



$1.09

2. Cans of soup are often packed in boxes as shown below. Calculate the area that is wasted in between all of the cans.



3. A cubic tank with 4.6 M edges is filled with water. How much water will be left in the tank if some is drained off to fill a cylindrical tank with a radius of 2.2 M and a height of 4.6 M?

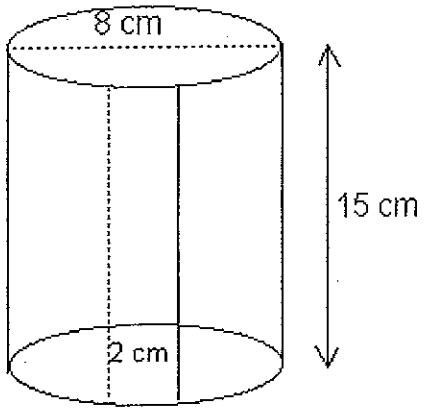
4. How much cat food would fit into a can that has a height of 14.5 CM and a diameter of 9 CM? How much paper (in cm^2)would you need to make the label?

5. A birthday gift is 55 CM, 40 CM wide, and 5 CM high. The sheet of paper you want to use to wrap it measures 75 CM by 100 CM. is the paper large enough to wrap the gift? Explain.

6. What happens to the surface area of a rectangular prism if all three of its dimensions are doubled? Tripled?

7. The volume of a rectangular prism is 24 CM^3. Find two other shapes that have the same volume. What are their dimensions?

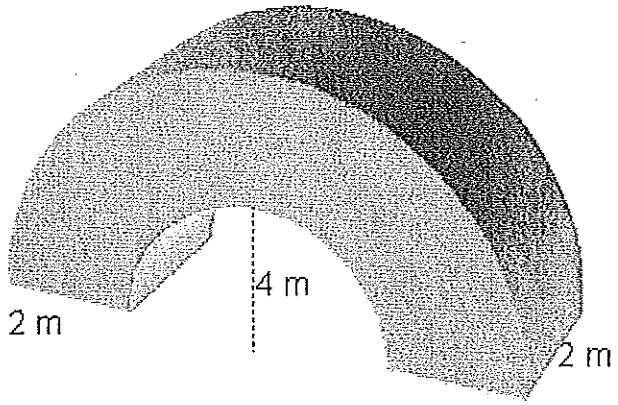
8. A soup can has 2 CM of overlap. Find the surface area of the label.



9. A square pyramid has a base with an area of 40 CM and a volume of 100 CM^3. What is the height of the pyramid?

10. Three identical tennis balls with an 8 CM diameter are s tacked in a cylindrical container. For this container, calculate
    a) volume
    b) surface area

11. What volume of concrete is required to build this footbridge?



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EXCELLENT Job! Check corrections!

Volume and Surface Area word problems.

1 (A) $\pi r^2 = \pi \times 5^2 \times 20.5$
$= 1610\ cm^3$, \$3.49.
$= 2.167701863 \times 10^{-3}$. ✓

(B) $\pi r^2 = \pi \times 3.75^2 \times 11$
$= 486\ cm^3$, \$1.09.
$= 2.242798354 \times 10^{-3}$.

∴ the \$3.49 can is a better buy.

2. Area of box $= 18 \times 24 = 432\ cm^2$. ✓
Area of circles $= \pi \times 3^2 = 28.3\ cm$ (rounded to 1 d.p)
$= 28.3 \times 12$
$= 339.\overset{29}{6}\ cm^2$ ✓
area Box - area circle $= 432 - 339.\overset{29}{6}$
$= 92.4\ cm^2$ ✓
92.71

3. 

$= 4.6 \times 4.6 \times 4.6$
$= 97.3\ cm^3$ (rounded to 1 d.p).

$= \pi r^2 \times h$
$= \pi \times 2.2^2 \times 4.6$
$= 69.9\ cm^3$ (rounded to 1 d.p).
∴ $97.3 - 69.9 = 27.4\ cm^3$.

4. 

$= \pi r^2 h$
$= \pi \times 4.5^2 \times 14.5$
$= 922.5\ cm^3$ (r. to 1 d.p).
∴ $= 922.5$ mL cat food.

$2\pi rh$ ∴ 410 cm^2 of paper would be needed to make
$= 2\pi(4.5)(14.5)$ the label.

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5. $2a+2b+2c$
$= 550 + 4400 + 400$ ✓
$= 5350\ cm^2$ ✓

Area of wrapping paper
$= 75 \times 100\ cm^2$
$= 7500\ cm^2$

∴ The paper is large enough to wrap the gift.
as birthday gift is area is < wrapping paper area.

6. doubled = 4 times. ✓ 1st = $2x2+2xy+2zy$.
2nd = $8x2+8xy+8zy$.
tripled = 9 times. 1st = $2x2+2xy+2zy$
2nd = $18x2+18xy+18zy$.

7. $6 \times 2 \times 2$ ✓ & $3 \times 2 \times 4$. ✓

8. $(d\pi h+2)$ = ans +15
$= 407\ cm^2$. ✓

9. $V_{pyramid} = 40 \times h \times \frac{1}{3}$
$100 = 40 \times h \times \frac{1}{3} \Rightarrow \frac{15}{\frac{40}{2}} = h$
~~$60 = h$~~.
∴ ~~60~~ 7.5 cm is the height.

10. a) $4/3 \times \pi \times 4^3 = 268.1\ cm^3$ (correct to 1 d.p).
b) $25.1 \times 2 = 50.2 + 602.4$.
$= 652.6\ cm^2$.
} Try again to find Vol & Surface area of container!

11. $\frac{1}{2}\pi r^2 \times 2 = \frac{1}{2} \times \pi \times 6^2 \times 2 = 113.1\ m^3$ ✓
$\frac{1}{2}\pi r^2 \times 2 = \frac{1}{2} \times \pi \times 4^2 \times 2 = 50.3\ m^3$ ✓
∴ $113.1 - 50.3 = 62.8\ m^3$ ✓