Problem Solving with Area, Surface Area, and Volume

Example 1: A garden has an area of $24m^2$ and is built against an existing stone wall that is 7.2m wide. What will be the length of the garden?

7.2

$A = 24m^2$

$A = l \times w$

$\frac{24}{7.2} = \frac{l \times 7.2}{7.2}$

$3.\bar{3} = l$

The length is about 3.3m.

Example 2: A circular wading pool has an area of $50ft^2$. What is the perimeter of the pool?

$A = \pi r^2$

$\frac{50}{\pi} = \frac{\pi r^2}{\pi}$

$15.92 = r^2$

$\sqrt{15.92} = r$

$3.98 \div r$

$C = 2\pi r$

$= 2\pi(3.98)$

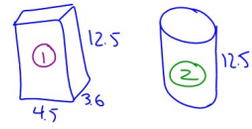
$= 25.007$

$\div 25ft.$

$A = 50ft^2$

Example 3: A juice box measures 4.5cm x 3.6cm x 12.5cm.

A can containing the same amount of juice has the same height. What are the dimensions of the can?



$V_{①} = A_{base} \times h$

$= (l \times w) \times h$

$= (4.5 \times 3.6) \times 12.5$

$= 202.5$

$V_{②} = A_{base} \times h$

$V_{②} = \pi r^2 \times h$

$\frac{202.5}{12.5} = \frac{\pi r^2 \times 12.5}{12.5}$

$\frac{16.2}{\pi} = \frac{\pi r^2}{\pi}$

$5.16 = r^2$

$2.27 = r$

$d = 2.27 \times 2$

$= 4.54$

∴ The can is 12.5cm tall and 4.54cm wide.

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