



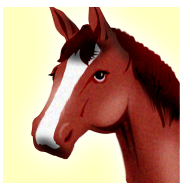
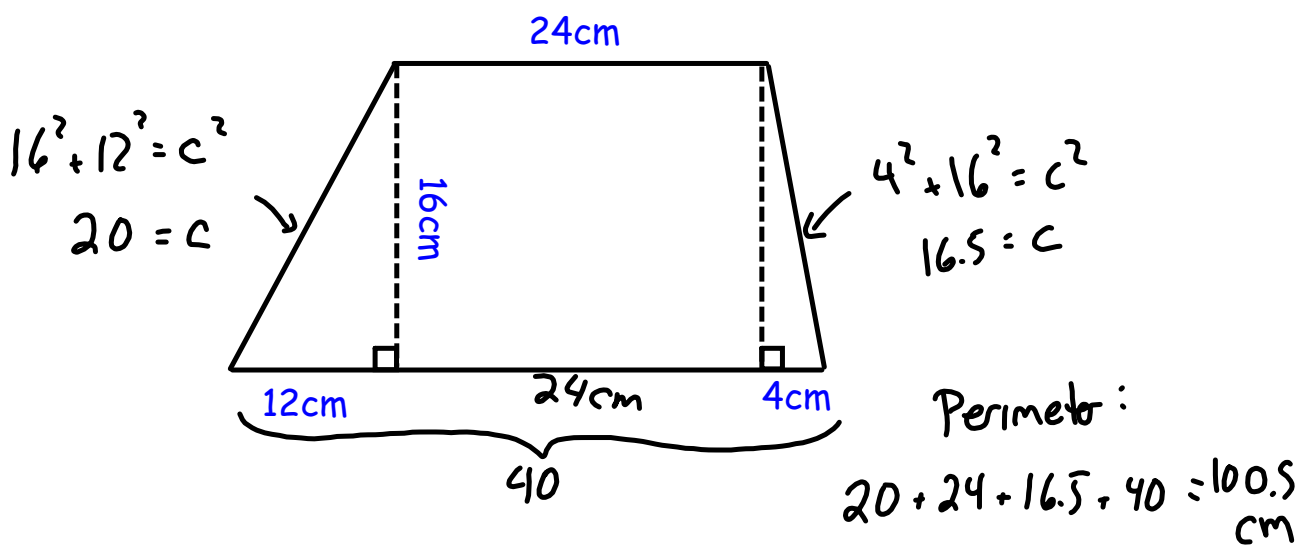
8 - Measurement Relationships

8.2 - Perimeter and Area of Composite Figures



8.2 Perimeter and Area of Composite Figures

Example 1. Determine the area of the following figure. Then, determine the perimeter. Round your answer to the nearest centimeter.



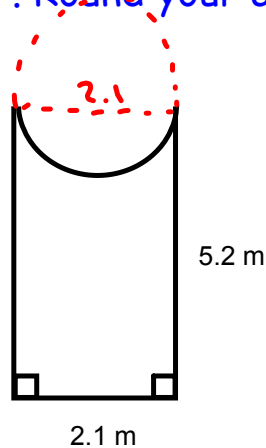
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Example 2. Determine the area of the following figure. Then, determine the perimeter. Round your answer to the nearest centimeter.

Area :

$$A_{\text{rect}} - A_{\text{semicircle}}$$

$$\begin{aligned} A_{\text{rect}} &= b \times h \\ &= 2.1 \times 5.2 \\ &= 10.9 \text{ m}^2 \end{aligned}$$



$$A_{\text{semi}} = \frac{A_{\text{circle}}}{2}$$

$$A = \frac{\pi r^2}{2} \quad r = \frac{2.1}{2} = 1.05 \text{ m}$$

$$\begin{aligned} A &= \frac{\pi (1.05)^2}{2} \\ &= 1.73 \end{aligned}$$

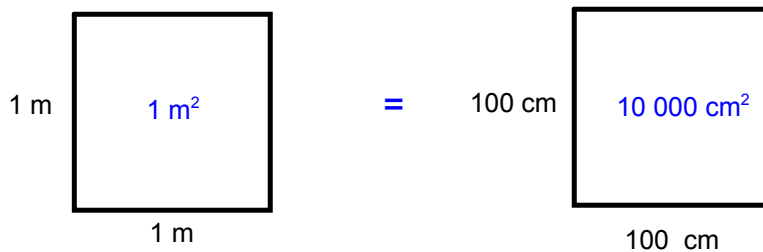
$$\begin{aligned} \therefore \text{area shape} &= 10.9 - 1.73 \\ &= 9.17 \text{ m}^2 \end{aligned}$$

Area Conversions:

When we convert area in one unit to area in another, we have to be careful about our conversion factor!

We know that 1 meter = 100 cm and might be tempted to think that $1 \text{ m}^2 = 100 \text{ cm}^2$. But that's not right!

Consider:



So we see that $1 \text{ m}^2 = 10\,000 \text{ cm}^2$.

The rule:

For area conversions, the length conversion factor is squared.

| Ex | <u>Length conversion</u> | <u>Area conversion</u> | |
|-----------|---------------------------------|---|---|
| | 1 m = 100 cm | $1 \text{ m}^2 = 100^2 \text{ cm}^2$ | or $1 \text{ m}^2 = 10\,000 \text{ cm}^2$ |
| | 1 km = 1000 m | $1 \text{ km}^2 = 1000^2 \text{ m}^2$ | or $1 \text{ km}^2 = 1\,000\,000 \text{ m}^2$ |
| | 1 in = 2.54 cm | $1 \text{ sq in} = 2.54^2 \text{ cm}^2$ | or $1 \text{ sq in} = 6.45 \text{ cm}^2$ |
| | 1 cm = 0.01 m | $1 \text{ cm}^2 = 0.01^2 \text{ m}^2$ | or $1 \text{ cm}^2 = 0.0001 \text{ m}^2$ |



Practice:

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