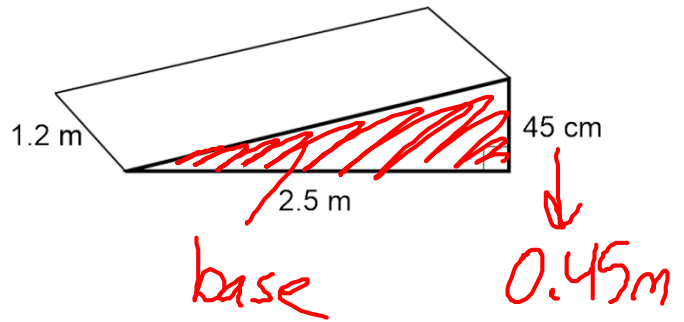


## Problem Solving with Volume

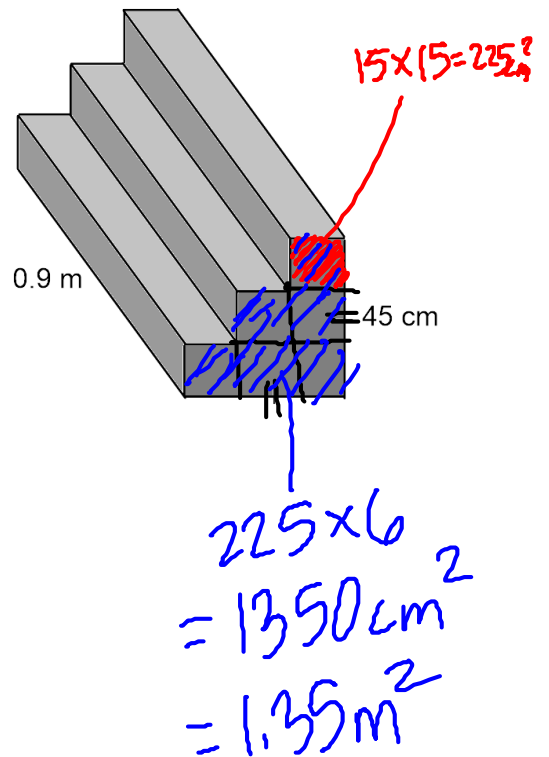
- Determine the volume of concrete needed to construct the ramp shown, to the nearest tenth of a cubic metre.

$$\begin{aligned}
 V &= \text{area base} \times \text{height} \\
 &= \frac{2.5 \times 0.45}{2} \times 1.2 \\
 &= 0.675 \text{ m}^3
 \end{aligned}$$



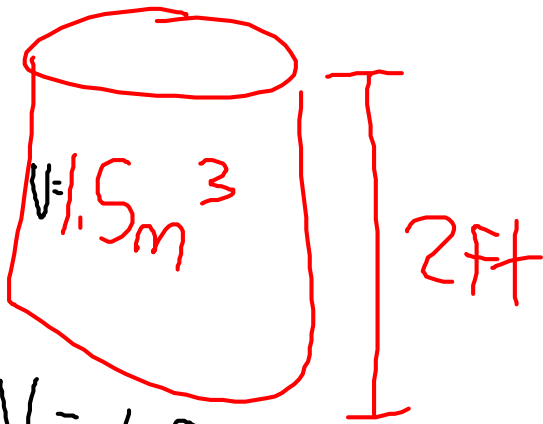
- Determine the volume, to two decimal places, of concrete needed to construct this staircase.

$$\begin{aligned}
 V &= \text{area base} \times \text{height} \\
 &= 1.35 \text{ m}^2 \times 0.9 \text{ m} \\
 &= 1.215 \text{ m}^3
 \end{aligned}$$



3. A cylindrical container is to be planted with flowers. The container is to be 2 feet high, and must hold  $1.5 \text{ m}^3$  of soil. What is the minimum diameter, to the nearest centimeter?

Draw a diagram and use your unit conversion sheets from yesterday to help you get started!



$$2 \text{ ft} = ? \text{ m}$$

$$1 \text{ ft} = 0.3048 \text{ m}$$

$\times 2 \downarrow$                        $\times 2 \downarrow$

$$2 \text{ ft} = 0.6096$$

$$V = 1.5$$

$$h = 0.6096$$

$$V_{\text{cyl}} = \pi r^2 h$$

$$\frac{1.5}{\pi} = \frac{\pi r^2 \cdot 0.6096}{\pi}$$

$$\frac{0.477}{0.6096} = \frac{r^2 \times 0.6096}{0.6096}$$

$$\sqrt{0.782} = \sqrt{r^2}$$

$$0.885 = r$$

$$r = 88.5 \text{ cm}$$

$\therefore$  Diameter is 177 cm