MATHEMATICAL SKILLS

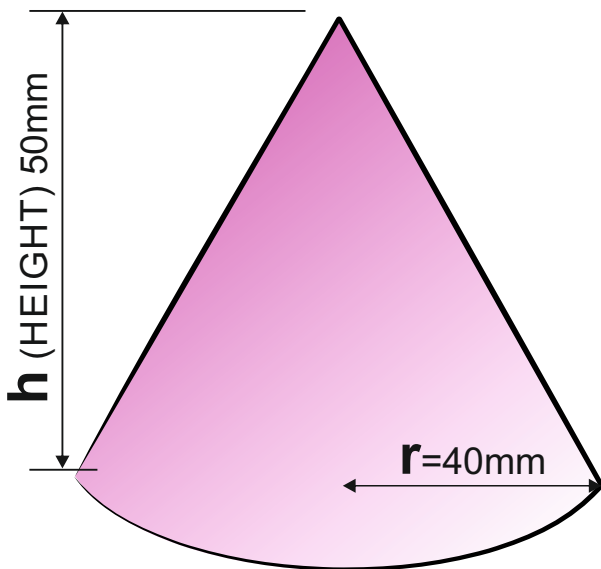# VOLUME OF A CONE

DESIGN AND TECHNOLOGY

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ETC...

HOW TO CALCULATE THE VOLUME OF A CONE

DEFINITION: A cone has one surface with a circular base. The vertex is directly above the centre of the circular base.

FORMULA

$$v = 1/3\ \pi r^2 h$$

the same as $v = \dfrac{\pi r^2 h}{3}$

pi (π) is 3.14

If the height (h) is 50mm and the radius is 40mm

Then:

$$v = 1/3\ \pi r^2 h$$

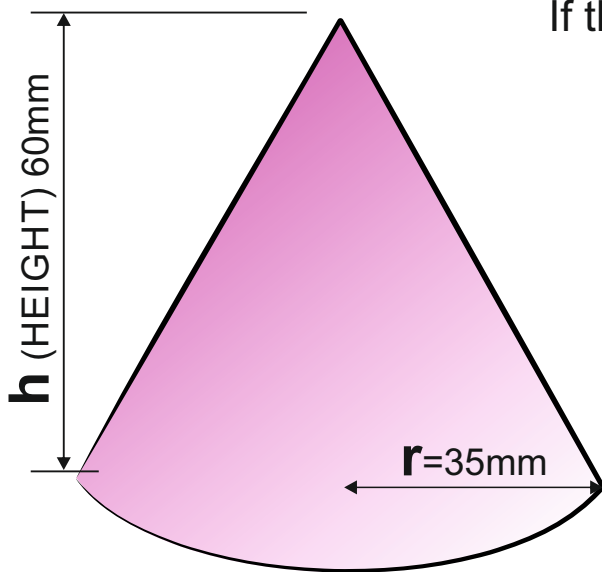$$v = \frac{1}{3} \times 3.14 \times (40 \times 40) \times 50$$

$$v = \frac{1}{3} \times 251200$$

$$v = \frac{251200}{3} = 83733.33 \text{mm}^3$$

$v = 1/3\ \pi r^2 h$

Using the formula opposite, calculate the volumes of the following cones. (pi (π) is 3.14)
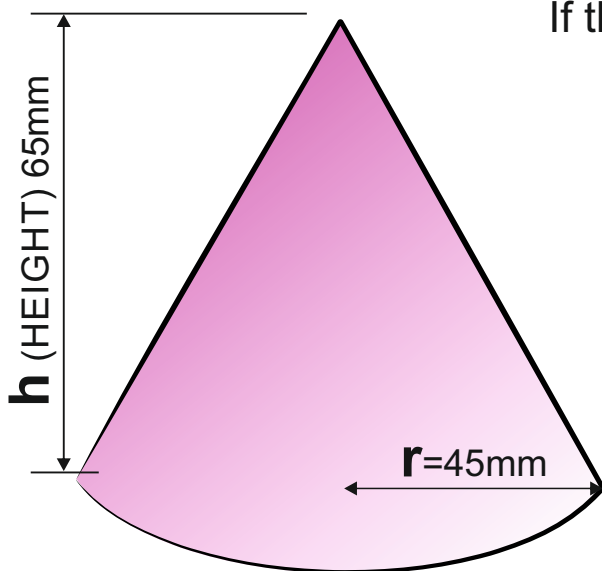
If the height (h) is 60mm and the radius is 35mm

$v = 1/3\ \pi r^2 h$

$v = \dfrac{1}{3} \times 3.14 \times (35 \times 35) \times 60$

$v = \dfrac{1}{3} \times 3.14 \times (1225) \times 60$

$v = \dfrac{1}{3} \times 230790$

$v = \dfrac{230790}{3} = 76930\text{mm}^3$
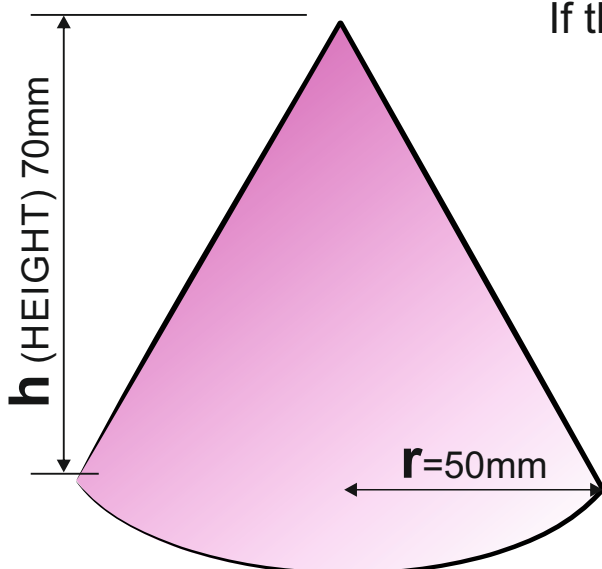

If the height (h) is 65mm and the radius is 45mm

$v = 1/3\ \pi r^2 h$

$v = \dfrac{1}{3} \times 3.14 \times (45 \times 45) \times 65$

$v = \dfrac{1}{3} \times 3.14 \times (2025) \times 65$

$v = \dfrac{1}{3} \times 413302.5$

$v = \dfrac{413302.5}{3} = 137767.5\text{mm}^3$

If the height (h) is 70mm and the radius is 50mm

$v = 1/3\ \pi r^2 h$

$v = \dfrac{1}{3} \times 3.14 \times (50 \times 50) \times 70$
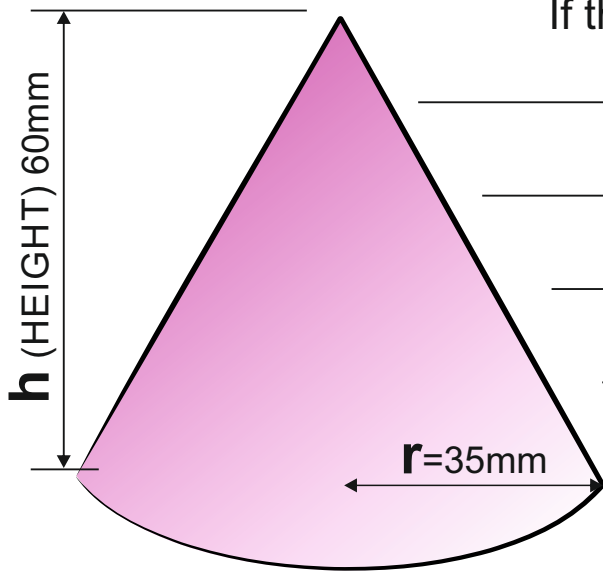
$v = \dfrac{1}{3} \times 3.14 \times (2500) \times 70$

$v = \dfrac{1}{3} \times 549500$
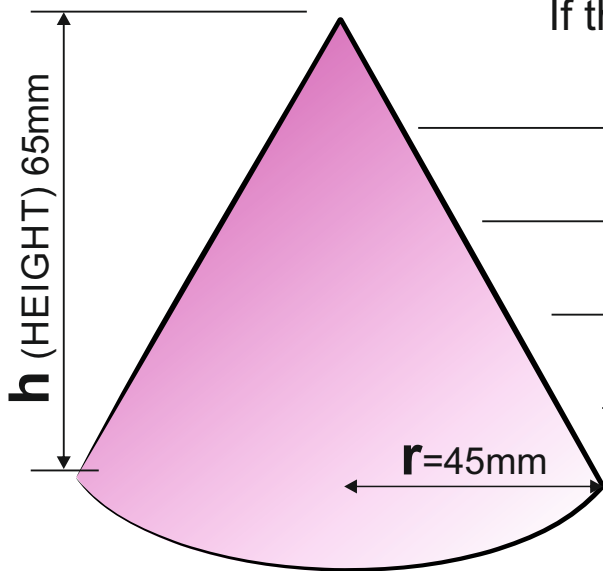
$v = \dfrac{549500}{3} = 183166.66\text{mm}^3$

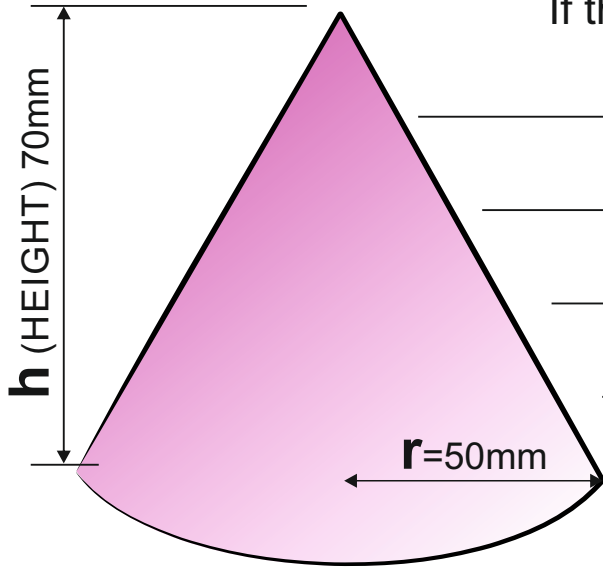# EXAMINATION QUESTIONS - VOLUME OF A CONE

$v = 1/3 \ \pi r^2 h$

Using the formula opposite, calculate the volumes of the following cones. (pi (π) is 3.14)

If the height (h) is 60mm and the radius is 35mm

h (HEIGHT) 60mm

r=35mm

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_____

_____

_____

_____

If the height (h) is 65mm and the radius is 45mm

h (HEIGHT) 65mm

r=45mm

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_____

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_____

If the height (h) is 70mm and the radius is 50mm

h (HEIGHT) 70mm

r=50mm

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