



The diameters for the layers of a cake are...

top = 14 cm

middle = 20 cm

bottom = 26 cm

If the height of each layer is 10 cm how much icing is needed to cover the entire cake.

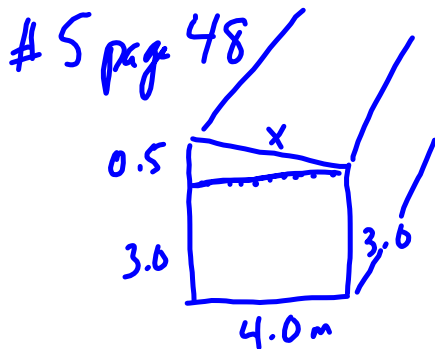
$$\begin{aligned}
 \text{S.A. top} &= 2\pi r^2 + 2\pi r h \\
 \text{overlap } 98\pi & \leftarrow \dots = 2\pi(7)^2 + 2\pi(7)(10) \\
 &= 98\pi + 140\pi \\
 &= 238\pi
 \end{aligned}$$

$$\begin{aligned}
 \text{S.A. (middle)} &= 2\pi r^2 + 2\pi r h \\
 \text{overlap } 200\pi & \leftarrow \dots = 2\pi(10)^2 + 2\pi(10)(10) \\
 &= 200\pi + 200\pi \\
 &= 400\pi
 \end{aligned}$$

$$\begin{aligned}
 \text{S.A. (bottom)} &= 2\pi r^2 + 2\pi r h \\
 &= 2\pi(13)^2 + 2\pi(13)(10) \\
 &= 338\pi + 260\pi \\
 &= 598\pi
 \end{aligned}$$

Total Surface Area

$$\begin{aligned}
 &= 238\pi + 400\pi + 598\pi - 200\pi - 98\pi \\
 &= 938\pi \\
 &= 2946.81 \text{ cm}^2
 \end{aligned}$$

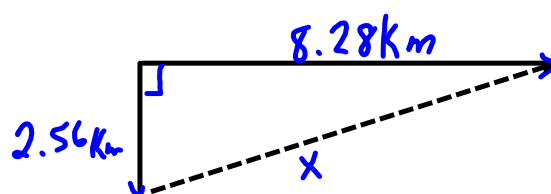


$$\begin{aligned} x^2 &= (0.5)^2 + (4.0)^2 \\ &= 0.25 + 16 \\ &= 16.25 \\ x &= \sqrt{16.25} \end{aligned}$$

$$S.A. = (4.03)(6) + (3)(6) + \left[ \frac{(4)(0.5)}{2} \right] \times 2 + (3)(4) \times 2 - (1)(2) - (1)(1)$$

$$\begin{aligned} &= 24.18 + 18 + 2 + 24 - 3 \\ &= 65.18 \end{aligned}$$

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$$\begin{aligned}x^2 &= 2.56^2 + 8.28^2 \\&= 6.5536 + 68.5584 \\&= 75.112 \\x &= \sqrt{75.112} \\&= 8.67 \text{ km.}\end{aligned}$$

Quiz

$$(2)(2)(6) \\ = 24 \text{ cm}^2$$

$$\text{All cubes} \\ = (24)(6) \\ = 144$$

$$\text{Overlap} = (6)(2)(4) \\ = 48 \text{ cm}^2$$

$$\text{Total Surface Area} = 144 - 48 \\ = 96 \text{ cm}^2$$

