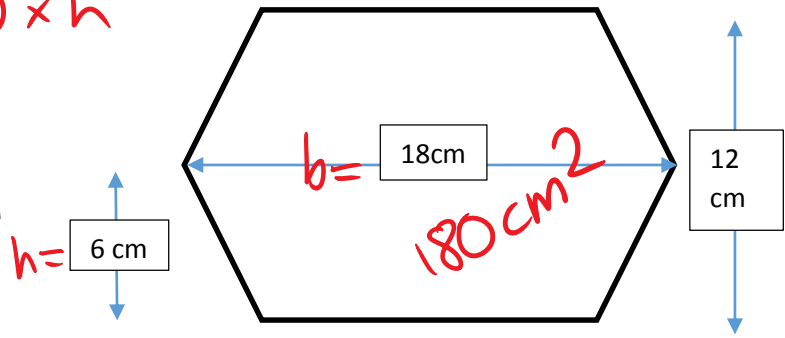


$$\text{Area Trap} = \frac{1}{2}(a+b) \times h$$

Gala Day at Bay High School

Patty is making gift boxes in a hexagon shape.



Find the area of the top of the box.

$$\text{Area} = \frac{1}{2}(12+18) \times 6 = 90 \text{ cm}^2$$

If the box is to be 90 mm deep, then find the volume.

90 mm = 9 cm = h
 $90 \times 2 = 180 \text{ cm}^2$

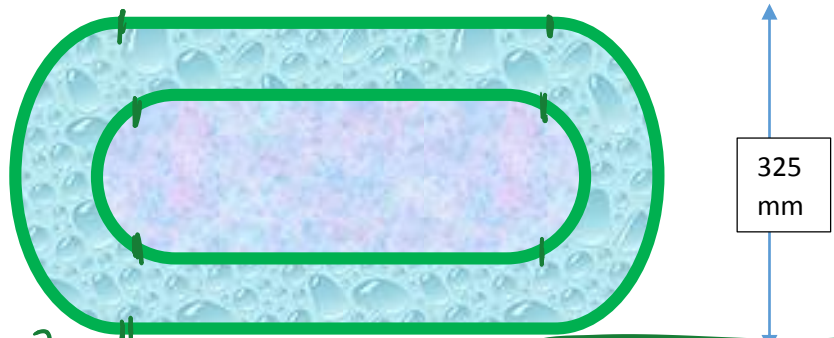
$$V = A \times h = 180 \text{ cm}^2 \times 9 \text{ cm} = 1620 \text{ cm}^3$$

Jess is making table mats. (They have semi-circular ends. Diagram not to scale!) She plans to put gold ribbon around the perimeter.

Calculate the length of ribbon required to go around the outside of her table mat.

$$d = 325$$

$$\begin{aligned} C &= \pi \times d \\ &= \pi \times 325 \\ &= 1021.01 \text{ mm} \end{aligned}$$



$$\begin{aligned} P &= 1021.01 + 160 \times 2 \\ &= 1341.01 \text{ mm} \end{aligned}$$

$$\begin{aligned} C &= \pi \times 225 \\ &= 706.8 \\ P &= 706.8 + 160 \times 2 \\ &= 1026.8 \text{ mm} \end{aligned}$$

She is also putting ribbon 50 mm in from the edge of her table mat. Calculate the length of this piece of ribbon. $\text{new } d = 325 - 100 = 225 \text{ mm}$

If she is to make 20 table mats, how much ribbon will she need altogether?

$$\text{Total Ribbon for 1 mat} = 1026.8 + 1341.01 = 2367.8$$

$$\text{Total for 20 mats} = 2367.8 \times 20 = 47356 \text{ mm}$$

If it takes her 1 minute to glue down a metre of ribbon, how long will it take her to glue down all the ribbon on the whole 20 table mats?

$$47356 \text{ mm} \div 1000 = 47.36 \text{ m} \quad 2 \text{ d.p.}$$

It will take her about 47 mins (nearest min) to glue 4!

**The quality of your reasoning and mathematical thinking will determine your overall grade.
(Check that you use the same units for the whole of your calculation.)**