

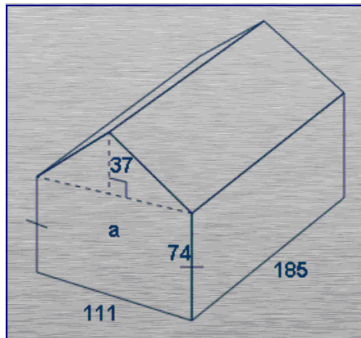


GRADE 11 Measurement

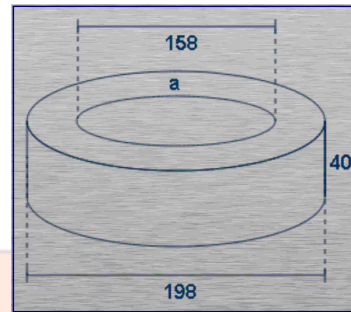
11.7 Volume

1. Calculate the volume of the following shapes.

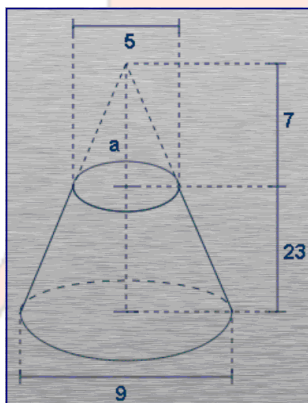
(a)



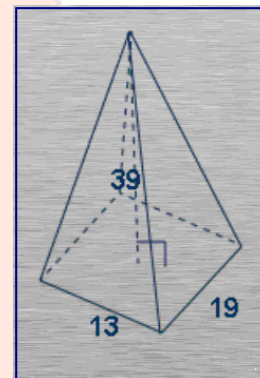
(b)



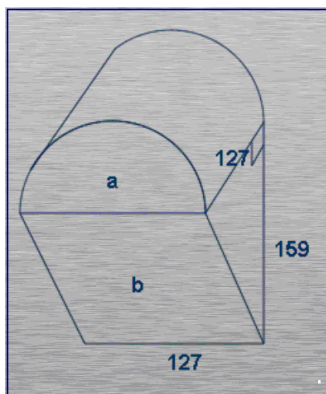
(c)



(d)



(e)





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MEMO

1. Calculate the volume of the following shapes. [9.5.3.4; 9.5.4.1; 9.5.3.5]

(a) Volume = Area of the base \times height
 $= [(74 \times 111) + (\frac{1}{2} \times 111 \times 37)] \times 185$
 $= 1\,899\,487.5 \text{ units}^3$

(b) Area of the base = $\pi R^2 - \pi r^2$
 $= \pi \left(\frac{198}{2}\right)^2 - \pi \left(\frac{158}{2}\right)^2$
 $= 11\,184.06985 \text{ units}^2$

Volume = Area of the base \times height
 $= 11\,184.06985 \times 40$
 $= 447\,362.79 \text{ units}^3$

(c) Volume of cone (a) = $\frac{1}{3} \pi r^2 h$
 $= \frac{1}{3} \pi (2.5)^2 \cdot (7)$
 $= 45.814892 \text{ units}^3$

Volume of cone = $\frac{1}{3} \pi r^2 h$
 $= \frac{1}{3} \pi (4.5)^2 \cdot (30)$
 $= 636.1725124 \text{ units}^3$

Volume of the object = $636.1725124 - 45.814892$
 $= 590.36 \text{ units}^3$

(d) Volume of a pyramid = $\frac{1}{3} (\text{Area of the base}) \times \text{height}$
 $= \frac{1}{3} (13 \times 19) \times 39$
 $= 3\,211 \text{ units}^3$



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(e) Volume (a) = $\frac{1}{2}\pi r^2 h$
= $\frac{1}{2} \times \pi \times \left(\frac{127}{2}\right)^2 \times 127$
= 804 398.1231 units³

Volume (b) = $\frac{1}{2}(\text{base} \times \text{height}) \times \text{Height}$
= $\frac{1}{2}(127 \times 159) \times 127$
= 1 282 255.5 units³

Total Volume = Volume (a) + Volume (b)
= 2 086 653.62 units³

