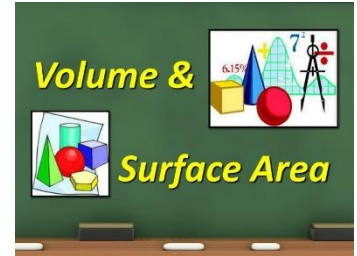


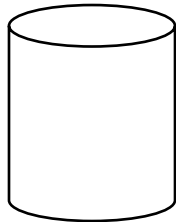


Grade 9 - Mathematics  
Surface Area and Volume 3  
Memo



Work out the surface area and volume of cylinder

1.



$$r = 3\text{m}$$

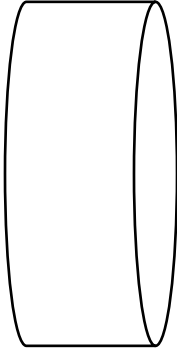
$$h = 5\text{m}$$

$$\begin{aligned} SA &= 2(\pi r^2) + (2\pi r \times H) \\ &= 2[3,14 \times (3\text{m})^2] + (2 \times 3,14 \times 3\text{m} \times 5\text{m}) \\ &= 2(3,14 \times 9\text{m}^2) + (6,28 \times 15\text{m}^2) \\ &= (2 \times 28,26\text{m}^2) + 94,2\text{m}^2 \\ &= 56,52 + 94,2\text{m}^2 \\ &= 150,72\text{m}^2 \end{aligned}$$

$$\begin{aligned} V &= \pi r^2 \times H \\ &= 3,14 \times (3\text{m})^2 \times 5\text{m} \\ &= 3,14 \times 9\text{m}^2 \times 5\text{m} \\ &= 28,26\text{m}^2 \times 5\text{m} \\ &= 141,3\text{m}^3 \end{aligned}$$



2.



$$r = 14\text{cm}$$

$$h = 6\text{cm}$$

$$\begin{aligned} SA &= 2(\pi r^2) + (2\pi r \times H) \\ &= 2[3,14 \times (14\text{cm})^2] + (2 \times 3,14 \times 14\text{cm} \times 6\text{cm}) \\ &= 2(3,14 \times 196\text{cm}^2) + (6,28 \times 96\text{cm}^2) \\ &= (2 \times 615,44\text{cm}^2) + 602,88\text{cm}^2 \\ &= 1230,88\text{cm}^2 + 602,88\text{cm}^2 \\ &= 1833,76\text{cm}^2 \end{aligned}$$

$$\begin{aligned} V &= \pi r^2 \times H \\ &= 3,14 \times (14\text{cm})^2 \times 6\text{cm} \\ &= 3,14 \times 196\text{cm}^2 \times 6\text{cm} \\ &= 615,44\text{cm}^2 \times 6\text{cm} \\ &= 3692,64\text{cm}^3 \end{aligned}$$



3.



$$r = 0,5\text{mm}$$

$$h = 12\text{mm}$$

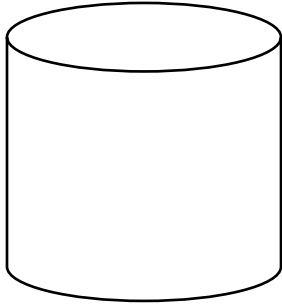
$$\begin{aligned} SA &= 2(\pi r^2) + (2\pi r \times H) \\ &= 2[3,14 \times (0,5\text{mm})^2] + (2 \times 3,14 \times 0,5\text{mm} \times 12\text{mm}) \\ &= 2(3,14 \times 0,25\text{mm}^2) + (6,28 \times 6\text{mm}^2) \\ &= (2 \times 0,785\text{mm}^2) + 37,68\text{mm}^2 \\ &= 1,57\text{mm}^2 + 602,88\text{mm}^2 \\ &= 604,45\text{mm}^2 \end{aligned}$$

$$\begin{aligned} V &= \pi r^2 \times H \\ &= 3,14 \times (0,5\text{mm})^2 \times 12\text{mm} \\ &= 3,14 \times 0,25\text{mm}^2 \times 12\text{mm} \\ &= 0,785\text{mm}^2 \times 12\text{mm} \\ &= 9,42\text{mm}^3 \end{aligned}$$



# WorksheetCloud

4.



Circumference = 45cm

h = 60cm

$$2\pi r = 45\text{cm}$$

$$\pi r = 45 \div 2$$

$$\pi r = 22,5$$

$$r = 22,5 \div 3,14$$

$$r = 7,166\text{cm}$$

$$SA = 2(\pi r^2) + (2\pi r \times H)$$

$$= 2[3,14 \times (7,166\text{cm})^2] + (2 \times 3,14 \times 7,166\text{cm} \times 60\text{cm})$$

$$= 2(3,14 \times 51,352\text{cm}^2) + (6,28 \times 429,96\text{cm}^2)$$

$$= 2(161,245\text{cm}^2) + 2700,149\text{cm}^2$$

$$= 322,49\text{cm}^2 + 270,149\text{cm}^2$$

$$= 592,639\text{cm}^2$$

$$V = \pi r^2 \times H$$

$$= 3,14 \times (7,166\text{cm})^2 \times 60\text{cm}$$

$$= 3,14 \times 51,352\text{cm}^2 \times 60\text{cm}$$

$$= 161,245\text{cm}^2 \times 60\text{cm}$$

$$= 9674,7\text{cm}^3$$