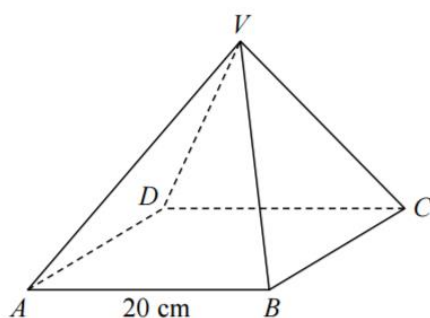


16 $VABCD$ is a solid pyramid.

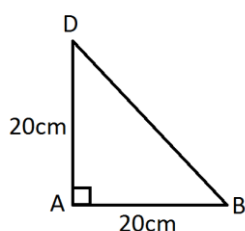


$ABCD$ is a square of side 20 cm.

The angle between any sloping edge and the plane $ABCD$ is 55°

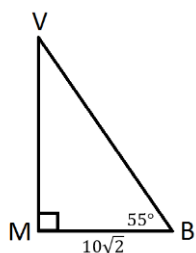
Calculate the surface area of the pyramid.

Give your answer correct to 2 significant figures.



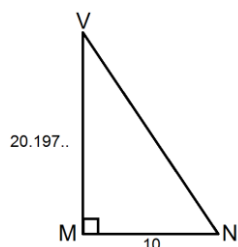
$$\begin{aligned} DB^2 &= 20^2 + 20^2 \\ DB^2 &= 800 \\ DB &= 20\sqrt{2} \end{aligned}$$

Let the midpoint of DB be M . $MB = 10\sqrt{2}$.



$$\begin{aligned} \tan 55 &= \frac{VM}{10\sqrt{2}} \\ VM &= 10\sqrt{2} \tan 55 = 20.197.. \end{aligned}$$

Let N be the midpoint of BC . $MN = 10$.



$$VN = \sqrt{20.197..^2 + 10^2} = 22.537..$$

$$\text{Total surface area} = 20 \times 20 + 4 \times \frac{20 \times 22.537..}{2} = 1301.48..$$

The total surface area, correct to 2 significant figures, is 1300 cm^2 .