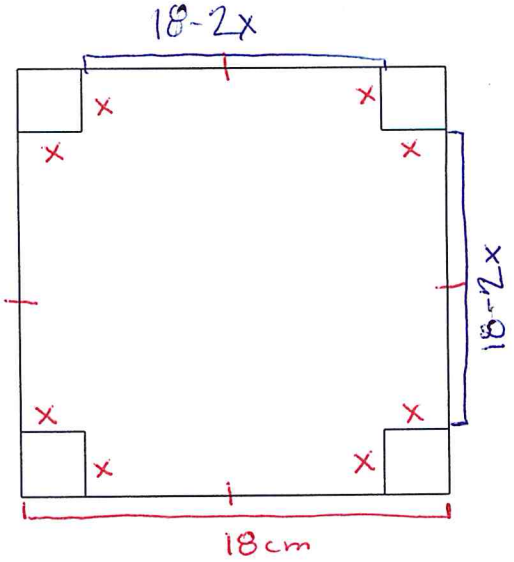


Example A rectangular box without lid is to be made from a square cardboard of sides $18\,\text{cm}$ by cutting equal squares from each corner and then folding up the sides. Find the length of the side of the square that must be cut off if the volume of the box is to be maximized. What is the maximum volume?

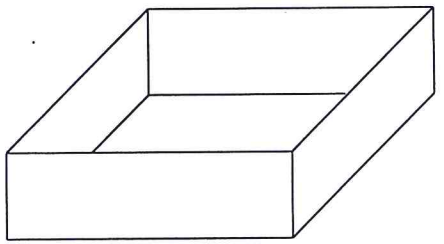
$V = (\text{length})(\text{width})(\text{height})$

$V = (18-2x)(18-2x)(x)$ ← maximize

Graph $V = (18-2x)^2 x$

Find the maximum using the CALC menu

Note: $0 \le x \le 9$ because cutting more than 9cm is not possible



Maximum of $432\,\text{cm}^3$ when 3cm is cut from each corner.