BuildMath

Volume of a Pile

One worked example, with the maths behind each result - follow it in the app and check it by hand.

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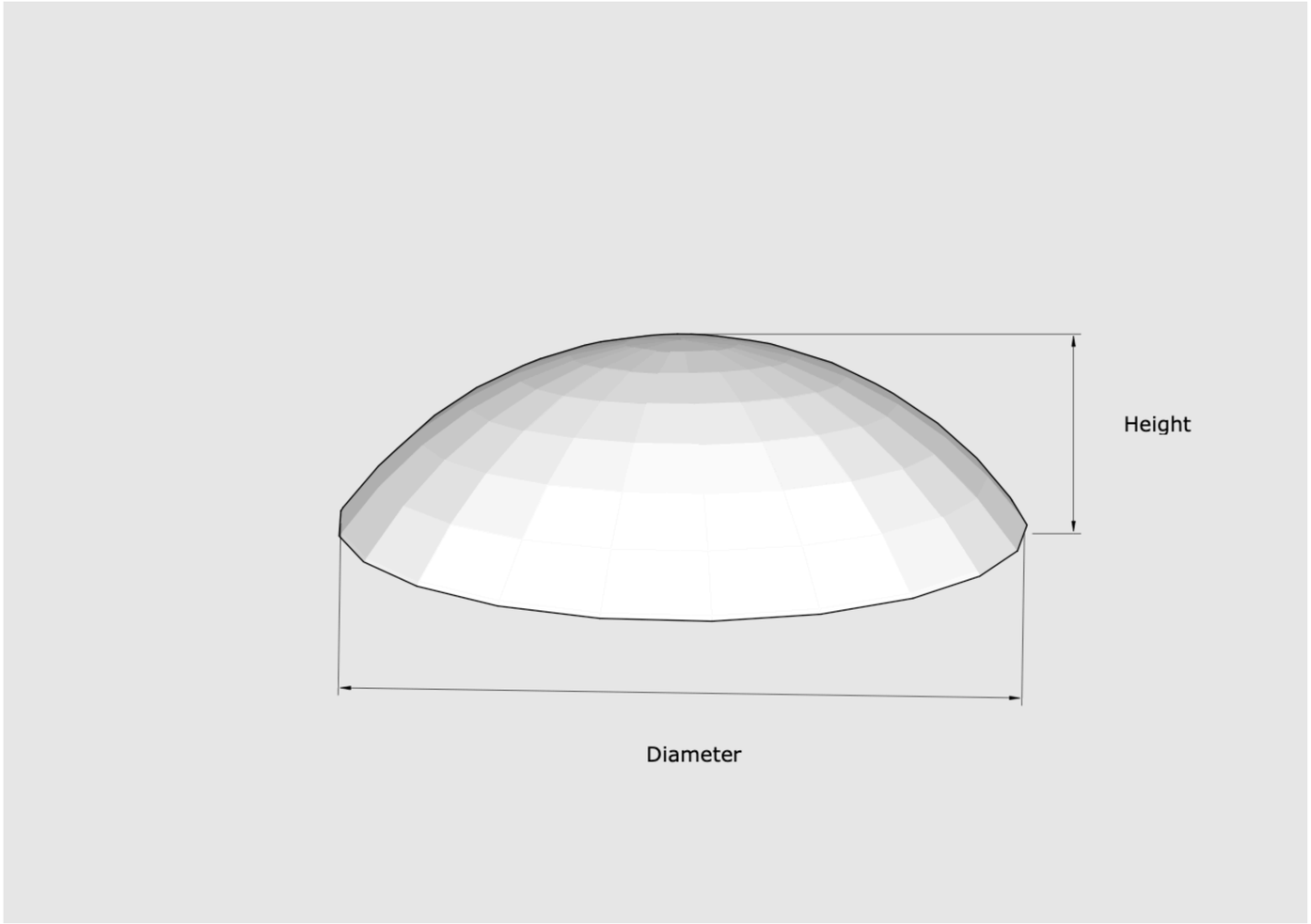


Volume of a Pile gives the volume of a heap, mound or ridge from its length, width and height, and how much it packs down to.

Sizing a skip for a pile of rubbish is one use; base course left on site and spoil to take away work the same way.



Heap = π ÷ 12 × length × width × height



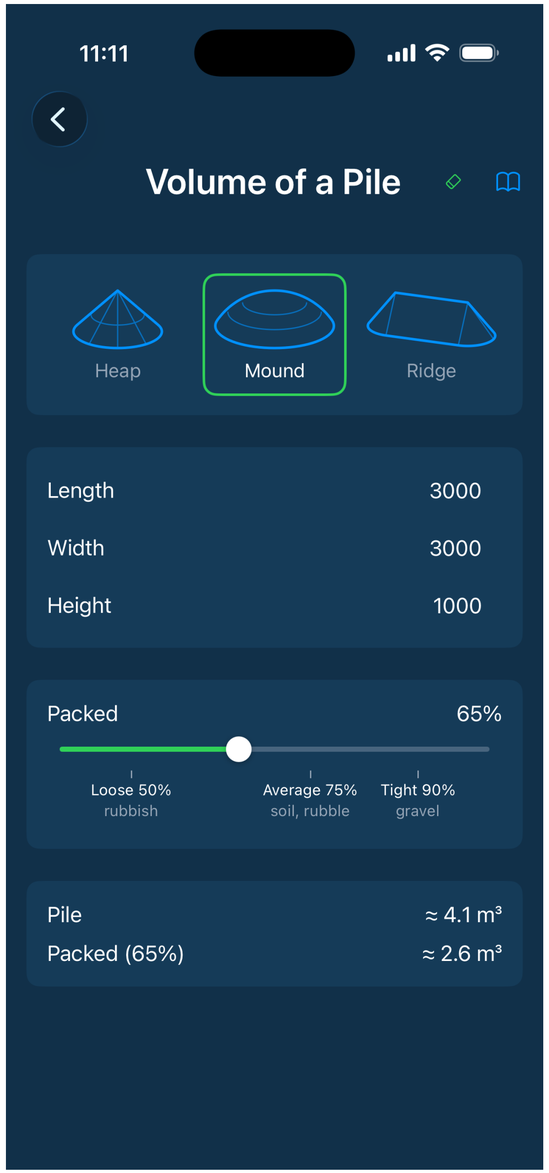
Mound = π ÷ 6 × height ×
(3 × half length × half width + height²)



Ridge = ½ × width × height × (length – width)
+ π ÷ 12 × width² × height

Note:
Piles are never a perfect shape - the result is an estimate.

Inputs - Results



Choose the shape
Heap - tipped from a bucket or bag, pointy top.
Mound - spread out, rounded top. This example is a mound.
Ridge - dumped from a truck, long with a ridge along the top.

Enter the values
Length 3000, Width 3000 - across the base. Same length and width for a round pile.
Height 1000 - at the top.

The pile
A mound is a dome:
$\pi \div 6 \times 1000 \times (3 \times 1500 \times 1500 + 1000^2)$
$= \pi \div 6 \times 1000 \times 7{,}750{,}000 = 4{,}057{,}890{,}511\ mm^3 \approx 4.1\ m^3$

Packed
Estimate how much the pile will pack down - here, to about two thirds, so set Packed to 65%:
$4.06 \times 65\% \approx 2.6\ m^3$ - the size of skip to order.

Entering values: see Build Math - the basics.