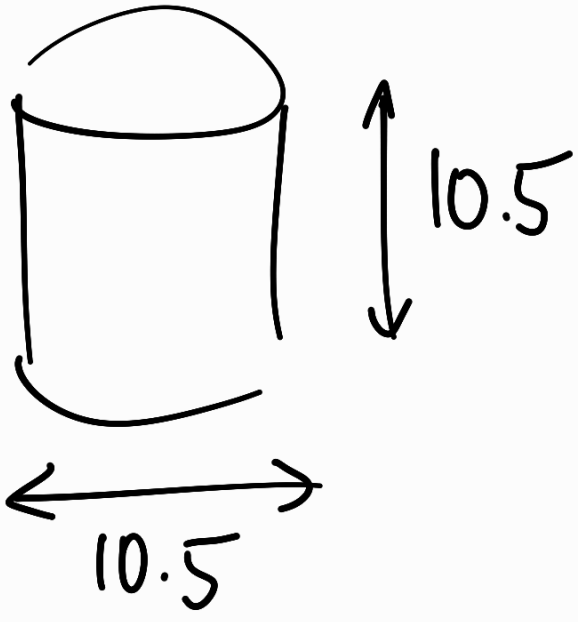
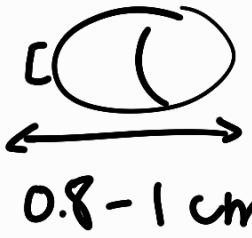
key info

Estimate the # of kernels in jar

After some measurements





for ex

people submitted estimates.

- 1900
- 1824
- 7714

(forgot to ÷ 2

~~r = 10.5~~

one example

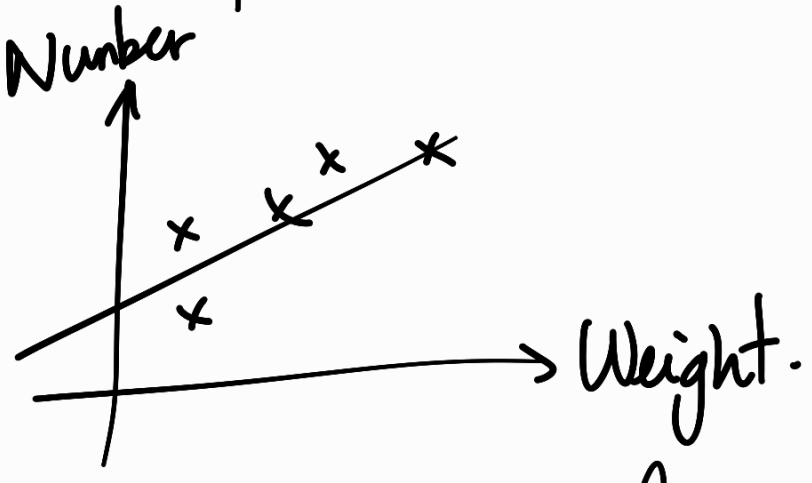
$$\frac{0.4 \times \pi \times 5.25^2 \times 10.5}{\frac{4}{3}\pi \times 0.6 \times 0.5 \times 0.3}$$

corrected.

modelling uneven stacking

ANSWER I FOUND in prep-

weighed batch of 10, 20, 30, 40, 50 each, found correlation



found line of best fit

$$N = 5.7627W + 3.2203$$

total load gave 770g of kernels

↳ $5.762 \times 770 + 3.22 \simeq 4440$

so prepared answer = 4400 (2s.f.)

NOTE :

$$\frac{1900 + 1824 + 7714}{3} \simeq 3813$$

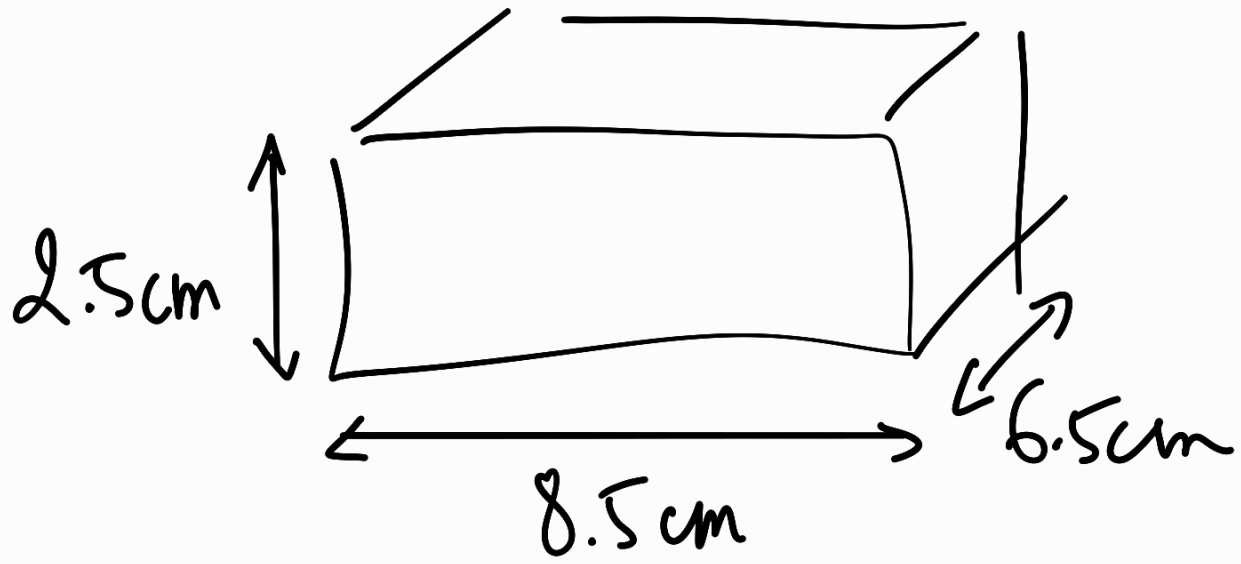
$\Longrightarrow$ closer

Trouble believing my estimate

(↳ AI suggested 5000-6000 from photos)

VERIFICATION

We found a box



$$V_{box} = 2.5 \times 8.5 \times 6.5 = 138.125 \text{ cm}^3$$

filled it with kernels (counted!!)

↳ 660 kernels (maybe space for a couple more!)

av vol of kernel $\frac{138.125}{660} = 0.209 \text{ cm}^3$

using Cylinder

$$\hookrightarrow \#\text{kernels} = \frac{V_{cyl}}{V_{kernel}}$$

$$= \frac{\pi \times 5.25^2 \times 10.5}{0.209} = 4350$$

$$\underline{\approx} \ \underline{\underline{4400}} \ (2\text{s.f.})\ !!$$