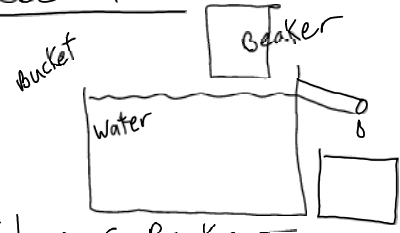



Dec 14




Volume of Beaker



Area of bottom = πr^2
 $= \pi 3^2$
 $= 9\pi = 28.26 \text{ cm}^2$

Volume = height \times area of bottom
 $= 8 \text{ cm} \times 28.26 \text{ cm}^2$
 $= 226.08 \text{ cm}^3$

Water
 $1 \text{ ml} = 1 \text{ cm}^3 = 1 \text{ g}$
 mass of water displaced



226.08 ml
 cm^3
 g

Weight of Beaker
 69 g

Displacement mass - 226.08 g
 but subtract weight of Beaker
 69 g

$226.08 \text{ g} - 69 \text{ g} = \text{Payload}$
 157.08 g

Beaker = 69 g
 whole lift = 226.08 g
 $\frac{69}{226.08} \times 100\% = 30.52\%$

$8 \text{ cm} \times .305 = 2.44 \text{ cm}$

1. Find the volume of your container using math

Volume = 226 cm³ $8 \times \pi \times 3^2 = 226 \text{ cm}^3$

This is also the displacement mass of the container...

$1 \text{ cm}^3 = 1 \text{ mL} = 1 \text{g}$ (of water)

2. Find the possible payload

Mass of container = 69 g

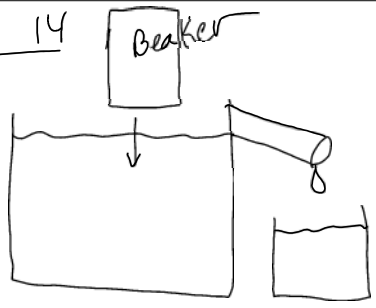
Possible Payload = Displacement mass - container weight
 $226 - 69$

Possible Payload = 157 g

3. Test it


How much did the "Boat" actually hold? 145 g (error in height)

Dec 14



Beaker is a cylinder

volume = area of bottom
 x
 height



diameter = 6 cm

Area = πr^2
 = $\pi 9$
 = 28.27 cm^2

height = 8 cm

Volume = $8 \text{ cm} \times 28.27 \text{ cm}^2$
 = 226.16 cm^3

For water
 $1 \text{ cm}^3 = 1 \text{ mL} = 1 \text{g}$

Beaker 226g of volume
weight is 69g

Payload = displacement mass
minus
Beaker's Mass
= $226 - 69g = 157g$

