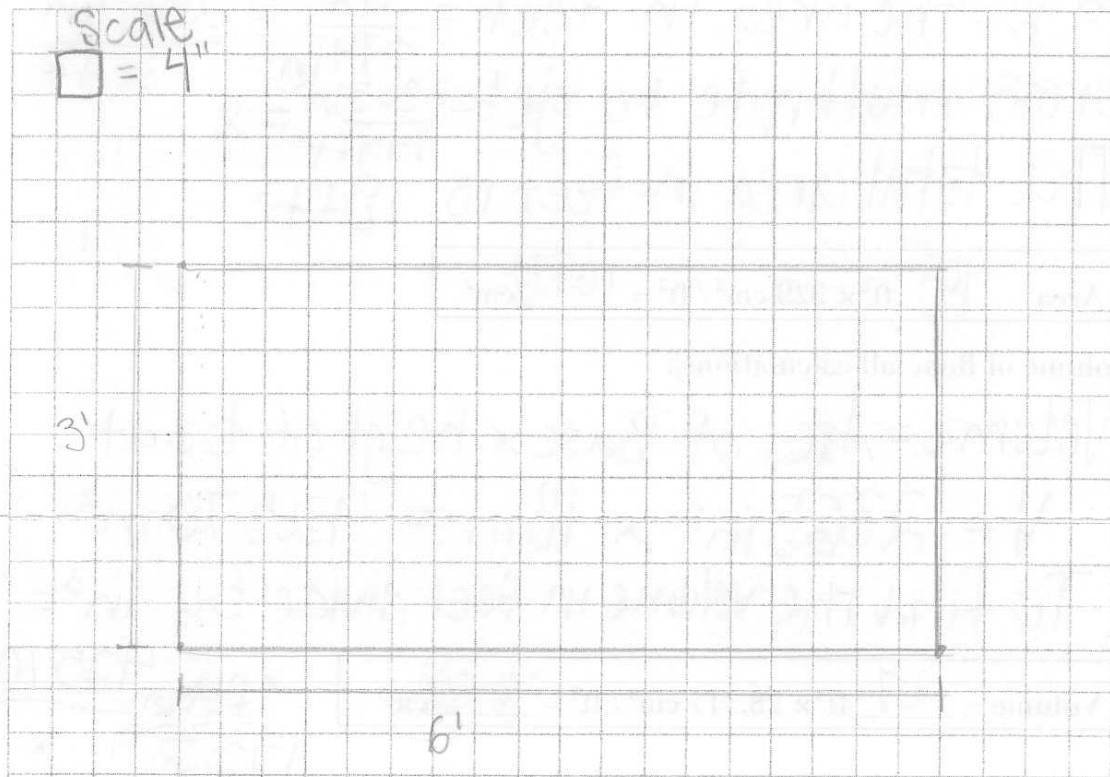


Name: Becca

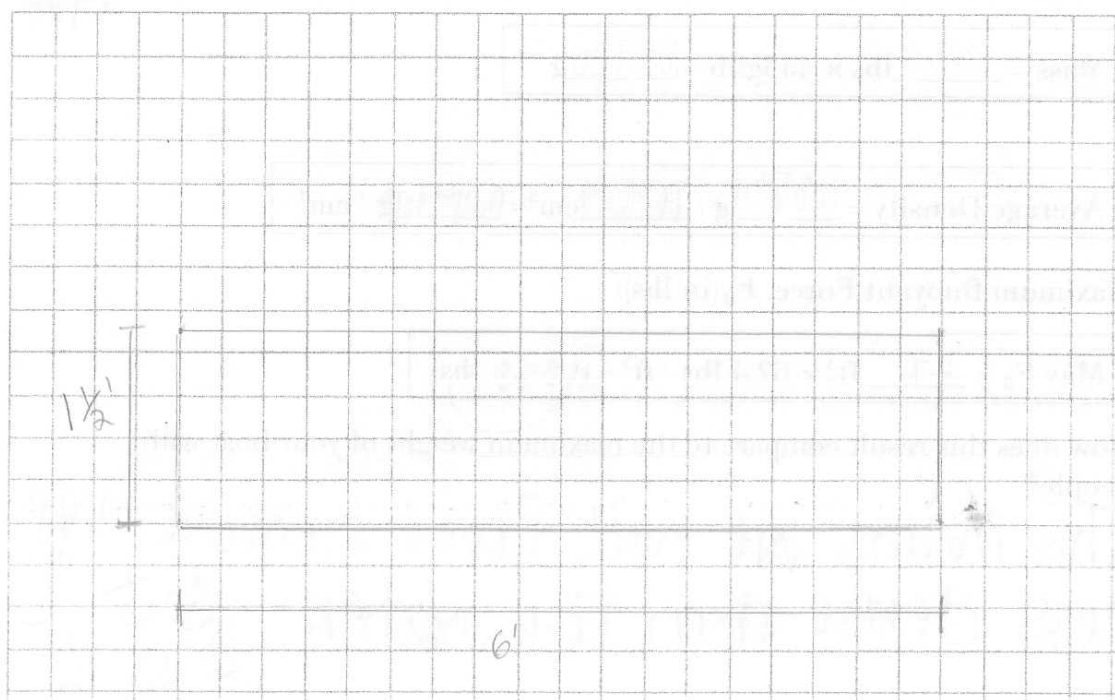


Your Boat: Volume, Average Density, Buoyancy

Top View of Boat (with dimensions):



Side View of Boat (with dimensions):



Name: Becca

Area of Base (all calculations):

The area of the boat is $= A = LW = 36'' \times 72'' = 2592''$
To get the area in feet $= \frac{1\text{ft}}{144\text{in}^2} = \frac{2365\text{in}^2}{144\text{ft}^2} = X$
cross multiple to get $= \frac{2365\text{in}^2}{144\text{ft}^2} = X$
The total area in feet is 18ft^2

$$\text{Area} = \underline{18} \text{ ft}^2 \times 929 \text{ cm}^2 / \text{ft}^2 = \underline{16722} \text{ cm}^2$$

Volume of Boat (all calculations):

Volume = Area of Base \times height of boat

$$V = 2365 \text{ in}^2 \times 18 \text{ in} = 42570 \text{ in}^3$$

To find the volume in feet divide by $\text{in}^3 = 1\text{ft}^3$

$$\text{Volume} = \underline{27} \text{ ft}^3 \times 28,317 \text{ cm}^3 / \text{ft}^3 = \underline{764559} \text{ cm}^3$$

$$\begin{array}{r} 1\text{ft}^3 \\ 1728\text{in}^3 \overline{) 42570\text{in}^3} \\ \underline{1728} \\ 1728 \\ \underline{1728} \\ 1728 \\ \underline{1728} \\ 0 \end{array}$$

$$\frac{42570}{1728} = 24.63541667 \text{ ft}^3$$

Average Density of Boat:

$$\text{Mass} = \underline{240} \text{ lbs} \times 453 \text{ g/lb} = \underline{108720} \text{ g}$$

$$\text{Average Density} = \frac{\underline{108720} \text{ g}}{\underline{764559} \text{ cm}^3} = \underline{0.0142199} \text{ g/cm}^3$$

Maximum Buoyant Force, F_B (in lbs):

$$\text{Max } F_B = \underline{27} \text{ ft}^3 \times 62.4 \text{ lbs/ft}^3 = \underline{1684.8} \text{ lbs}$$

How does this result compare to the maximum weight of your boat with people?

This means we will float because we are less dense than the water.

What about force?