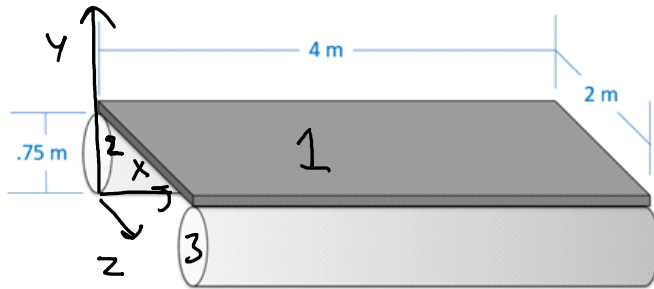


Question 2

A floating raft consists of a rectangular aluminum platform (assume negligible thickness) with a mass of 60 kg, on top of two plastic cylinders, each with a mass of 40 kg. Given the dimensions below, determine the location of the center of mass for the raft.



Shape	mass (kg)	$\bar{x}$ (m)	$\bar{y}$ (m)	$\bar{z}$ (m)
1	60	2	.75	1
2	40	2	.375	0
3	40	2	.375	2

$$x_G = 2 \text{ m (all } \bar{x} \text{ at 2)}$$

$$y_G = \frac{(60)(.75) + (40)(.375) + (40)(.375)}{60 + 40 + 40} = .536 \text{ m}$$

$$z_G = \frac{(60)(1) + (40)(0) + (40)(2)}{60 + 40 + 40} = 1 \text{ m}$$

Center of mass at

$$(2, .536, 1) \text{ m}$$