VII. Discussion Questions

1. What is the conversion required to calculate the force in dynes for a corresponding mass in grams?

$$1\,dyne = \frac{1\,gm\ x\ 981\,cm}{s^2} \qquad \text{just as} \qquad 1\,newton = \frac{1\,kg\ x\ 9.81\,m}{s^2}$$

2. What is the conversion required to convert centimeters to meters?

$$1\,cm\ x \frac{1\,m}{100\,cm} = 0.01\,m = 10^{-2}\ m$$

3. Show the calculations necessary to convert 1,000,000 dyne cm to N m

$$1{,}000{,}000\ dyne\ cm\ x \frac{1\,N}{10^5\ dynes}\ x \frac{1\,m}{100\,cm} = 0.1\,N\ m = 10^{-1}\ N\ m$$

4. Assuming that the beam is massless, how much *weight* (not mass) in dynes is the beam supporting?

$$(500\ g + 1{,}000\ g)(981\,cm/s^2) = 1{,}471{,}500\ dynes = 1.47\ x\ 10^6\ dynes$$

or

$$(0.500\ kg + 1.000\ kg)(9.81\,m/s^2) = 14.715\ newtons = 1.47\ x\ 10^1\ newtons$$

5. Other than mathematical errors, what could account for the differences between the calculated and experimental values of τ_C?

Measurement errors, unlevel bar.