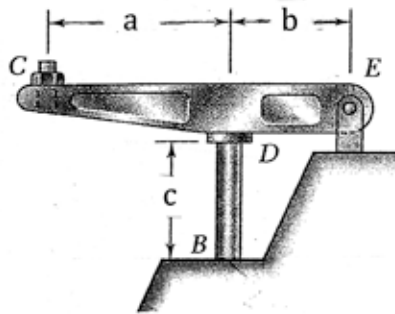Quiz # 2

ESM2204 Spring 2011

Instructor: R.D. Kriz

The rigid bar CDE is attached and rotates around a pin at E, and rests on a brass cylinder at D. If only the brass rod BD, with a coefficient of thermal expansion, α, is subjected to a temperature increase of ΔT, what is the deflection at C.

1) $\alpha \Delta T\, c\, a / b$

2) $\alpha \Delta T\, b\, a / c$

3) $\alpha \Delta T\, c\, (a+b) / b$

4) $\alpha \Delta T\, c\, (a+b) / b$

$$\frac{\delta_c}{a+b} = \frac{\delta_d}{b}$$

$$\delta_c = \frac{a+b}{b}\,\delta_d$$

$$\delta_d = \Delta T \alpha c$$

$$\boxed{\delta_c = \Delta T \alpha\, \frac{c}{b}\,(a+b)}$$