2D Equilibrium of a Body II
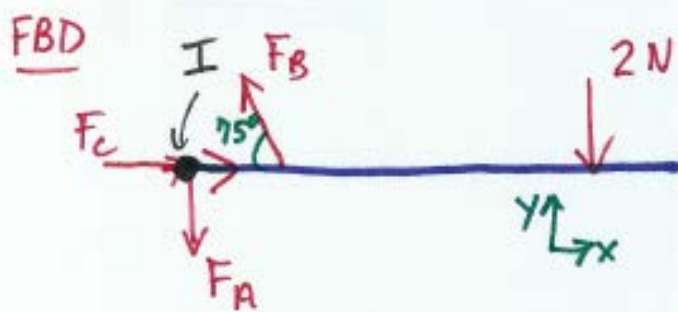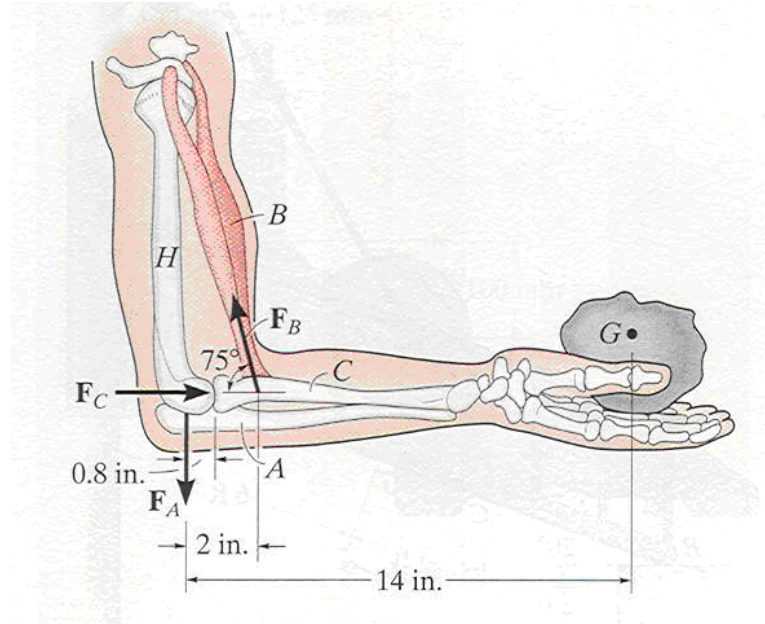
When holding the 205 gram (2.01 N) stone in equilibrium, the humerus H, assumed to be smooth, exerts normal forces F_C and F_A on the radius C and the ulna A as shown. Determine these forces and the force F_B that the biceps B exerts on the radius for equilibrium. The stone has a center of mass at G. Neglect the weight of the arm.

FBD

NON CONCURRENT

3 EQNS

3 UNKS

☺

$$\zeta \Sigma M_I = 0$$
$$-2'' F_B \sin 75° + 14''(2N) = 0 \qquad F_B = 14.49 \text{ N } 75°$$

$$\text{↿} \Sigma F_y = 0$$
$$F_B \sin 75° - F_A - 2N = 0 \qquad F_A = 12 \text{ N } ↓$$

$$\rightarrow \Sigma F_x = 0$$
$$-F_B \cos 75° + F_C = 0 \qquad F_C = 3.75 \text{ N } \rightarrow$$