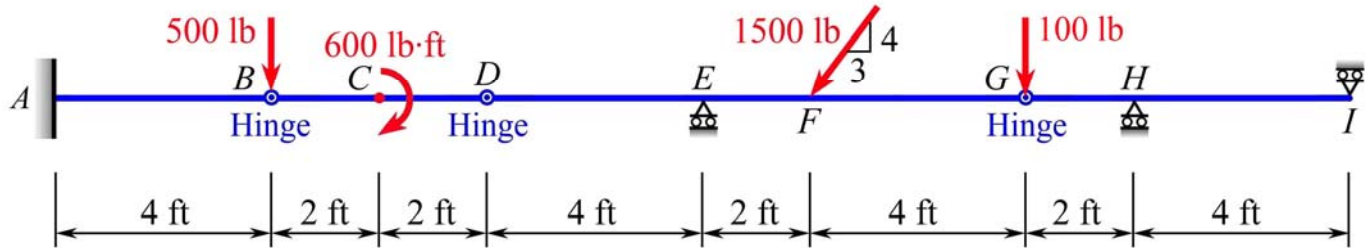


MEEG 2003 Quiz #10.m16.

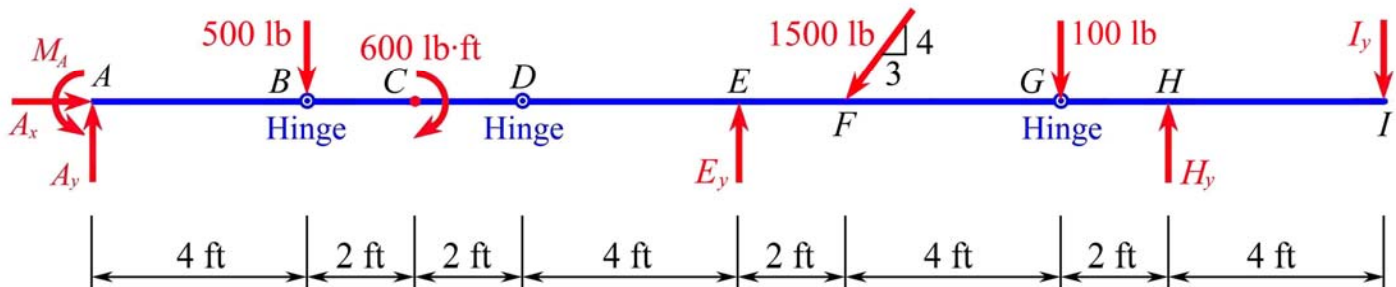
A. (2 points) Define work of a moment on a body.

B. (8 points) Using virtual work method, determine the vertical reaction force H_y at the roller support H of the Gerber beam shown.

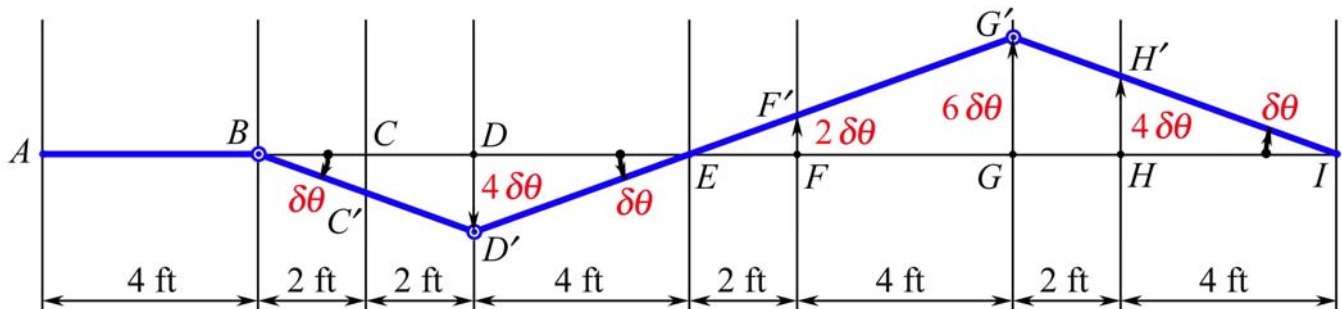


A. **Work of a moment** on a body is equal to the moment on the body times the angular displacement of the body in the direction of the moment. ②

B. *Step 1:* We draw the *FBD* for the beam. ②



B. *Step 2:* We draw the *VDD* for the beam with a **strategy** to involve H_y in the total virtual work done. ③



B. *Step 3:* We set $\delta U = 0$. ③

$$600(\delta\theta) + \frac{4}{5}(1500)(-2\delta\theta) + 100(-6\delta\theta) + H_y(4\delta\theta) = 0$$

$$H_y = 600$$

$$H_y = 600 \text{ lb } \uparrow$$