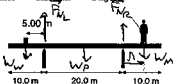


Name: \_\_\_\_\_

Social Security #: \_\_\_\_\_

TA (circle one): Chen Freier Jan Keller Laicher Razaghi Stigers

An 700.0 N fisherman is walking toward the edge of a 200 N plank as shown. He has placed a can of worms weighing 75.0 N on the left side of the plank as indicated in the drawing. The plank is the horizontal section in the drawing.



- A. Identify all the forces the plank feels before it begins to tip. Draw a free body diagram.

- B. As the fisherman nears the point on the plank where it begins to tip, how do the upward forces the supports exert on the plank change?

$F_{NL}$  DECREASES WHILE  $F_{NR}$  INCREASES UNTIL  
 $F_{NL} = 0$  AT MOMENT OF TIPPING

- C. How far a distance, as measured from the center of the right support, can he walk before the plank begins to tip? CALL THIS DISTANCE  $r$ . AT TIPPING LOCATION  $F_{NR} = 700N + 200N + 75N = 975N$   
 SR PIVOT POINT AT RIGHT SUPPORT.

$$\sum \tau_{NET} = 0 = W_w \tau_w + W_p \tau_p - W_m r$$

$$r = \frac{(75N)(25m) + (200N)(10m)}{700N}$$

$$r = 5.54m$$