

Answer on question #69296, Physics / Other

Question Andy and Bob are carrying Chuck on a horizontal board 4.8 meters long which weighs 18 N. Chuck's mass is 70 kg and he sits 0.3 meters from Andy. The force that Andy exerts upwards is ? N.

Solution Force from board is 9 N, as it uniformly acts on Andy and Bob. The force from Chuck is inversely proportional to distance:

$$\frac{F_a}{F_b} = \frac{d_b}{d_a}$$

$$F_a + F_b = mg = 70 \cdot 9.8 = 686 \text{ N}$$

From this we find

$$F_a = 643.125 \text{ N}$$

Hence, Andy exerts upwards

$$9 + 643.125 = 652.125 \text{ N}$$