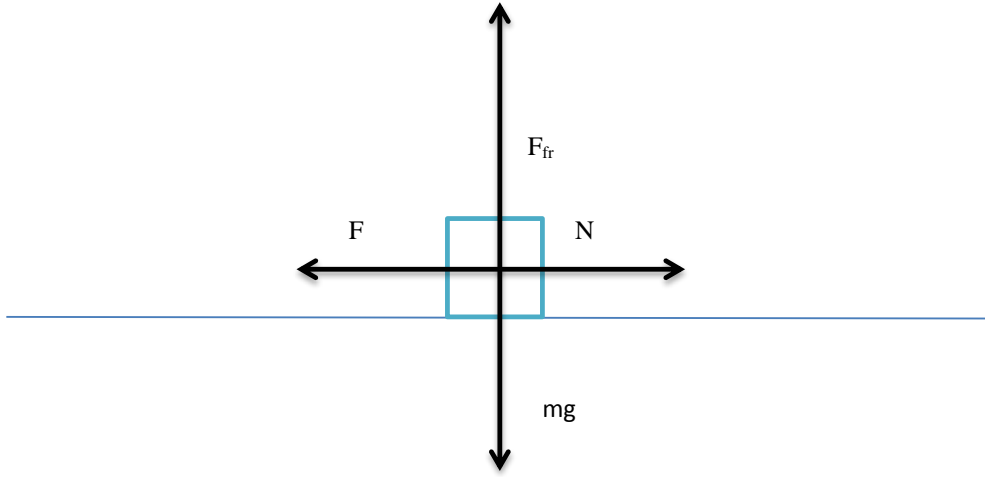A man of mass 50kg is climbing on pole with acceleration of 2m/s square. If coefficient of friction between his hand and pole is 0.4 then the horizontal force with which man is pressing the pole is?

g=10

Where F − horizontal force with which man is pressing the pole, N − normal force

Friction force between the pole and his hand would have to be acting against the motion of the hand, therefore, upward.

Newton's second law of motion can be expressed in equation form as follows:

$$\sum \vec{F} = m\vec{a}$$

$$OY: \qquad F_{fr} - mg = ma$$

Friction force equals: $F_{fr} = k * N = k * F$, where k - coefficient of friction

$$k * F - mg = ma$$

$$F = \frac{m(a+g)}{k} = \frac{50\ kg * (2 + 10)\frac{m}{s^2}}{0.4} = 1500\ N$$

Answer: $1500\ N$