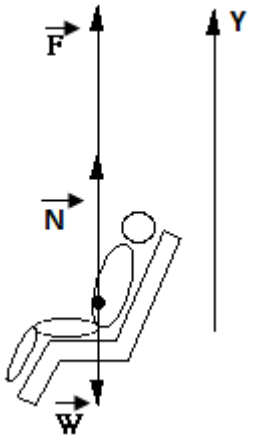
Answer on question #61573, Physics, Mechanic, Relativity

What is the effective weight of a person of mass 60 kg carried vertically up in a rocket with an acceleration of 2g? Draw a properly labeled free-body diagram.

Solution:



Write Newton's second law in the vector form

$$\vec{F} = \vec{N} + \vec{W}$$

The equation will look like in the projection on the axis of +Y

$$ma = N - mg$$

$$N = ma + mg$$

Where, *a= 2g*

$$N = 2mg + mg$$

Finally,

$$N = 3mg = 3 \cdot 60\ kg \cdot 9.8\frac{m}{s^2} = 1764\ N$$

Answer: 1764 N