Answer on Question #69799 - Physics / Mechanics - Relativity

Question

A 70kg person in sea is being lifted by a helicopter with the halp of a rope which can bear a maximum tension 100kg at with what maximum acceleration the helicopter should rise so that th a rope may not break

Solution

Maximum tension that we could add to a rope (because of the acceleration) is 30 kg. Or (in Newtons) it is F = 300N.

Newton's Second Law says $F = ma$ (here $F = 300N$ – force, $m = 70\ kg$ – mass and a – acceleration).

For maximum acceleration we have $a = \frac{F}{m} = \frac{300N}{70\ kg} = 4\frac{2}{7}\frac{\text{m}}{\text{s}^2} \approx 4.28\ \text{m/s}^2$

Answer

$$a = 4\frac{2}{7}\frac{\text{m}}{\text{s}^2} \approx 4.28\ \text{m/s}^2$$