
Task #1

You pedal your 75-kg bike with a force of 423 Newtons. You accelerate at a rate of 1.8 m/s^2 . What is the force of friction? Ignore Air Resistance

Solution: 288 N

Task #2

Before opening her parachute, a 57-kg skydiver experiences 457 N of air drag. What is the magnitude of her downward acceleration?



Solution: $F_{NET} = 101.6 \text{ N}$; $a = 1.78 \text{ m/s}^2$;

Extension: A few moments later, she reaches terminal velocity, which means she is no longer accelerating. What is the air drag force at terminal velocity?

Task #3

A piano is lifted by a crane with a force of 12,500 N. It accelerates at a rate of 1.3 m/s^2 . What is the mass of the piano?

Solution: 1126.1 kg
