

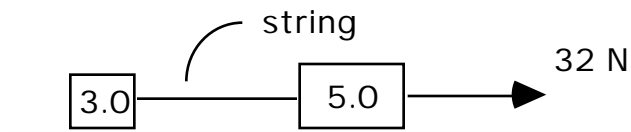
Phys11 Dynamics : Test - 40

- 1) What is dynamics ?
- 2) Write down Newton's three laws.
- 3) A 57 kg box rests on the floor.
 - a) The weight of the box is : _____
 - b) The acceleration of the box is : _____
 - c) The net force on the box is : _____
 - d) The normal force exerted by the floor is : _____
- 4) A 4.7 kg ball falls to Earth.
 - a) The gravitational force is : _____
 - b) The net force is : _____
 - c) The acceleration is : _____
- 5) A 21 kg box on the floor, is pulled at a constant speed with a force of 84 N.
 - a) The force of friction is : _____
 - b) The net force is : _____
 - c) The acceleration is : _____
- 6) A box is pulled with a force of -32 N. The force of friction is +27 N. The mass is 10. kg.
 - a) The net force is : _____
 - b) The acceleration is : _____

7) A 1250 kg elevator is suspended by a cable which can have a maximum tension of 15,000 N.

- a) The weight of the elevator is : _____
- b) If the elevator is not moving the tension in the cable is : _____
- c) If the elevator moves up with a constant speed of 2.0 m/s, find the tension. _____
- d) If the elevator accelerates upward at 1.5 m/s^2 find the tension in the cable. _____
- e) Find the maximum upward acceleration. _____

8)



Two blocks with masses 3.0 kg and 5.0 kg are connected by a string. The system is pulled to the right by a force of 32 N. There is no friction.

- a) Find the acceleration. _____
- b) Find the tension in the string. _____
- c) The force exerted on the 3.0 kg mass is _____
- d) The force exerted on the 5.0 kg mass by the string is _____
- e) The net force on the 5.0 kg mass is _____

Answers :1) It is the study of why things move. 2) #1. If there is no net force on an object, the velocity will remain constant. #2. The net force on an object is equal to the mass multiplied by the acceleration. #3. For every action there is an equal and opposite reaction. 3) -560 N, 0.0 m/s^2 , 0.0 N, +560 N, 4)a) -46 N, b) -46 N, c) -9.8 m/s^2 , 5)a) -84 N,

b) 0.0 N, c) 0.0 m/s², 6)a) -5 N, b) - 0.5 m/s², 7)a) -1.2x10⁴ N, b) 1.2x10⁴ N, c) 1.2x10⁴ N, d) 1.4x10⁴ N, e) 2.2 m/s², 8)a) 4.0 m/s², b) 12 N, c) +12 N, d) -12 N, e) + 20. N.