Question 1
A person with a mass of 100 kg is standing on a scale in an elevator. What value in Newtons will the scale record when the elevator is stationary? [N]

Now assume that the elevator is accelerating upward at 2.0 m/s². What will the scale record at this time, in Newtons? [N]

Now assume that the elevator is accelerating downward at 2.0 m/s². What will the scale record at this time, in Newtons? [N]

Now assume that the elevator is moving upward at a constant velocity of 3.0 m/s. What will the scale record at this time, in Newtons? [N]

Now assume that the elevator is moving downward at a constant velocity of 3.0 m/s. What will the scale record at this time, in Newtons? [N]

Question 2
Two forces (total) are exerted on a 3.0 kg object. One of the forces acts toward the right (positive) and has a value of 6.0 N. If the object's acceleration is 1.0 m/s², what is the size and direction of the other force?
The size of the force is [N] and its direction is [°]

Question 3
Given the graph of acceleration versus time, please indicate the graph that is best representation of force versus time. Assume that the object has a mass of 4.0 kg.

[Graph options]
Choice A
Choice B
Choice C
Choice D (none of the above)

Mark 1.00 out of 1.00

Correct
3 carts are lined up as shown below and they are connected to each other by a light weight wire. Assume that the positive direction is toward the right. The first cart has a mass of 30 kg, the second, a mass of 20 kg, and the third has a mass of 10 kg. Assume that friction is negligible. If the wire from the first cart is pulled with a force of 120 N, what will be the acceleration of each of the 3 carts?

Cart 1's acceleration: m/s²
Cart 2's acceleration: m/s²
Cart 3's acceleration: m/s²
Question 5
A 3.0 kg object on a flat surface is pushed with a force of 6.0 Newtons and is moving at a constant velocity.

Is friction acting on the object?  

What is the size of the normal force acting on the object from the flat surface? N

Assuming that friction is acting, what is the size of the friction force? N

Assuming friction is acting, what is the coefficient of kinetic friction?

Check

Also, determine the tension force on the wire between Cart 1 and Cart 2.

The force of the wire from Cart 2 onto Cart 1 is N

The force of the wire from Cart 1 onto Cart 2 is N

The force of the wire from Cart 3 onto Cart 2 is N

The force of the wire from Cart 2 onto Cart 3 is N

Check
The attached document (also pasted below) shows a number of different free body diagrams. Please select the diagram that most closely corresponds to each of the situations described. Note that some choices may be used more than once and some may not be used at all.

Which diagram could represent an object in freefall in a vacuum?  

Which diagram could represent an object in freefall, but in which air resistance is playing a growing role as the object continues to speed up in its fall?  

Which diagram(s) could represent an object moving with a constant velocity?  

Which diagram could represent an object experiencing kinetic friction, but still accelerating?  

Which diagram could represent an object experiencing kinetic friction, but moving with a constant velocity?  

Which diagram could represent an object experiencing static friction?  

Which diagram could represent an object accelerating on a flat surface, but experiencing no friction?  

Which diagram could represent a skydiver falling, but at the moment her chute opens?  

Which diagram could represent a skydiver falling, but at the moment she lands?  

Check