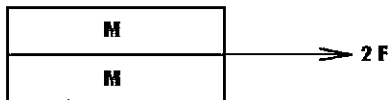## Chapter 5 Questions

____ 1.   When the net force on an object of constant mass is doubled, the acceleration of the object is:
a) doubled   b) halved   c) unchanged   d) zero

____ 2.   Calculate the net force on this object
a) 0 N   b) 2 N   c) 4 N   d) 6 N   e) 8N

____ 3.   This arrangement produces an   What acceleration will be produced by this
acceleration of 1 m/s/s.   arrangement?

a) 1 m/s/s   b) 2 m/s/s   c) 4 m/s/s   d) 0.5 m/s/s

____ 4.   In referring to how much matter a body contains, we use the term:
a) volume   b) mass   c) weight

____ 5.   A net force greater than zero:
a)   sometimes produces uniform velocity
b)   always produces an acceleration
c)   is needed to keep an object at rest
d)   all of these

____ 6.   Which one(s) of these can occur when the net force on an object is zero?
a)   speeding up
b)   slowing down
c)   constant speed in a straight line
d)   rest
e)   constant speed in a circle

____ 7.   The symbol Δ means:
a) sum of   b) change in   c) product of   d) quotient of

8.   In **Chapter 2** we defined acceleration as a *change in velocity with time*. Write the equation for this.

9.   In **Chapter 5** we learned to express acceleration with an equation that tells how acceleration is produced. Write the equation for this.

____ 10.   Two persons with the same mass of 60 kg are riding in a car at 30 m/s. The driver brakes suddenly. The driver is wearing a seat belt and is brought to stop in 0.2 second while the passenger is brought to stop by the dashboard in 0.02 second.

____ Which person has the greater deceleration?   a) driver   b) passenger   c) both the same

____ Which person experiences the greater force? a) driver   b) passenger   c) both the same

Calculate the force exerted by the dashboard on the passenger

_____ 11.	On which one(s) of the following does air resistance depend?
a) mass b) weight c) speed d) shape

_____ 12.	Dimwood hits a ping pong ball straight up into the air. At what point is the air resistance on the ball the greatest?
a) as the ball leaves his hand b) half-way to the top c) at the top

_____ 13.	A parachutist and her parachute together weigh 600 N. When she has reached terminal velocity, the net force on her is:
a) more than 600 N b) less than 600 N but not zero, c) 600 N d) zero

_____ 14.	A tennis ball and a solid steel ball of the same size are dropped at the same time. On which ball is the force of gravity greater?
a) tennis ball b) steel ball c) same for both

_____ 15.	In the absence of air resistance, which ball will have the greater acceleration when dropped?
a) tennis ball b) steel ball c) same for both

_____ 16.	If air resistance is considered, which ball will reach terminal velocity first?
a) tennis ball b) steel ball c) same for both

17.	Esmerelda falls from a high-flying stationary helicopter. Before she opens her parachute:
_____ her velocity: a) increases b) decreases c) remains constant
_____ her air resistance: a) increases b) decreases c) remains constant
_____ her acceleration: a) increases b) decreases c) remains constant

_____ 18.	Dinglewood drops a coin inside a tube from which the air has been evacuated. As the coin falls the velocity increases and its acceleration:
a) increases b) decreases c) remains the same

19.	Calculate the acceleration if you push with a 20.0 N horizontal force on a 2.0 kg block on a horizontal friction-free table.

20.	Calculate the acceleration if you push with a 20 N horizontal force on a 2.0 kg block on a horizontal table where the frictional force is 4.0 N.

21.	Your car, mass 1000 kg, stalls and has to be pushed off the road. Assume no friction.
a.	How much force must be applied to make the car accelerate at 1.0 m/s/s?

b.	How fast will the car be going if this force is applied for 8.0 s?

c.	If the moving car experiences a constant frictional force of 500 N, how much force needs to be applied to achieve the same acceleration as in Part a? (Hint: It's the net force that produces the acceleration.)

22.	A toy with a mass of 1.0 kg has an engine which can exert 50 N of thrust. The air resistance is 2.0 N. What is the maximum acceleration the rocket can attain?

23.	A 3.0 kg block of wood on a horizontal frictionless surface is accelerated by a 1.0 kg mass attached to the string. What is the acceleration of the system (both masses)?
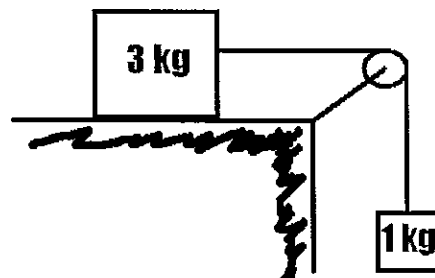

Chapter 6 Questions

True/False
_____ 24.	When one object exerts a force on another object, the second object always exerts a force on the first.
_____ 25.	A rocket ship is pushed forward by the exhaust gases.
_____ 26.	In order to make a cart move forward, a horse must pull harder on the cart than the cart pulls on the horse.
_____ 27.	A bicycle and a car have a head-on collision. The force of impact is greater on the bicycle.
_____ 28.	A car moves along a road because the friction between the tires and road causes a forward reaction force on the tires.
_____ 29.	Action and reaction forces are equal and opposite and therefore cancel each other.

Multiple Choice
_____ 30.	Dinglewood pushes against a large crate with a force of 50. N and it moves with constant speed across the floor. What is the force of the crate on Dingle?
	a) more than 50 N	b) 50 N	c) less than 50 N

_____ 31.	Dinglewood then pushes a smaller crate with a force of 50 N and it begins to accelerate across the floor. What is the force of the crate on Dingle?
	a) more than 50 N	b) 50 N	c) less than 50 N

_____ 32.	A ball is dropped. While the ball is in the air, the action force is the pull of the earth on the ball. What is the reaction force?
	a)	air resistance acting on the ball
	b)	the ball pulling on the earth
	c)	the acceleration of the ball
	d)	there is no reaction force in this case

_____ 33.	A compact car and a truck are traveling toward each other with equal speeds. They collide and stop.
	a.	the force of the car on the truck is greater than the force of the truck on the car
	b.	the force of the truck on the car is greater than the force of the car on the truck
	c.	the force is the same on both car and truck

_____ 34.	Same situation as question 33. The deceleration of the truck is:
	a.	larger than the deceleration of the car
	b.	smaller than the deceleration of the car
	c.	the same as deceleration of the car

_____ 35. Assume that the car in question 33 is parked and the truck rams into it. What about the forces now?
- a. the force of the car on the truck is greater than the force of the truck on the car
- b. the force of the truck on the car is greater than the force of the car on the truck
- c. the force is the same on both car and truck

_____ 36. A woman weighing 500 N sits on the floor. She exerts a force on the floor of:
a) 500 N   b) more than 500 N   c) less than 500 N

_____ 37. The force that floor exerts on the woman in question 36 is:
a) 500 N   b) more than 500 N   c) less than 500 N

_____ 38. Force always occur in
a) pairs   b) as single quantities   c) only when something is moving   d) none of these

_____ 39. When a football is kicked the action and reaction forces do not cancel out because:
- a) they are not truly equal and opposite
- b) they are equal and opposite, but do not act at the same time
- c) they are equal and opposite and act on different objects
- d) the kicker's force on the ball is larger than the ball's force on the kicker

_____ 40. A net force acting on an object will produce:
a) constant speed   b) acceleration   c) both   d) neither

41. Predict the reading of the spring balances in each case.
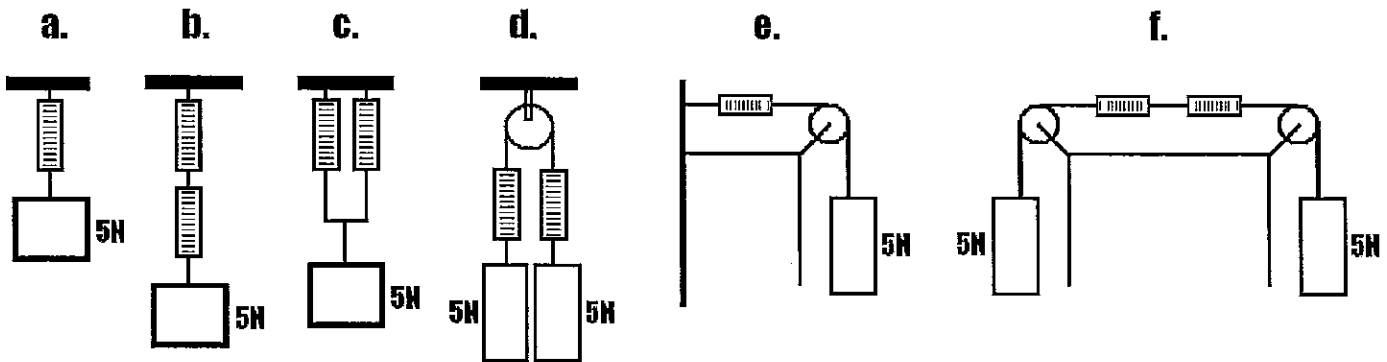
42. Chrissypoo and Zachypoo are two friends attempting to move a giant crate of Gatorade from one side of a frozen pond to another (SEE PIC at RIGHT).

a. Calculate the *resultant force* of the crate.
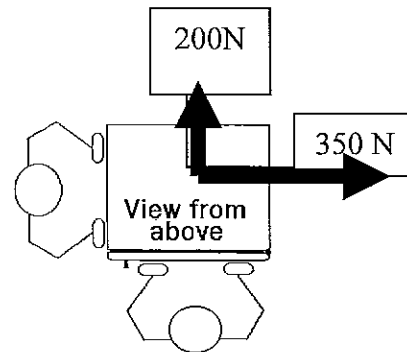
b. If the crate has a mass of 110 kg, what is its acceleration?

43. An object is shot into the air and takes the following path below. Draw out the force of gravity vectors at each one second interval on this object's parabola.