Raue, Brian

DUE Mon, Sep 16, 2013 at 20:00

1. [1pt]
In the course material you were directed to a online video review of Newton's laws (http://www.youtube.com/watch?v=NYVMimL0BPQ). In that video they explained why a hammer falls to the ground faster than a feather. The reason is...

A) Baloney, they hit at the same time.
B) The direction of the air resistance force on a hammer is up while it is down for a feather.
C) The force due to air resistance on the feather is almost as big as the the force due to gravity.
D) The hammer is heavier than the feather.

See video at time 8:20

Correct, computer gets: CD

2. [1pt]
A freely falling body experiences (include all letters that apply—for example, AB or AC—or None)

A) no horizontal acceleration  
B) no acceleration  
C) no motion  
D) constant downward acceleration

Wrong  

Of course

Correct, computer gets: AD

3. [1pt]
A ball is thrown straight up with a speed of 16 m/s. At the top of its flight, how fast is it moving?

A) Can't be determined.
B) 0  
C) 16 m/s  
D) -16 m/s

Answer: B  
Submit All Answers

4. [1pt]
A ball is thrown straight upward and then returns to the earth. Let's discuss the motion of the ball after it has left the throwers hand. During this motion

A) the acceleration always points upward.
B) the acceleration changes direction from upward to downward.
C) the acceleration changes direction from downward to upward.
D) the acceleration always points downward.

Always

Answer:  
Submit All Answers

5. [1pt]
A steel ball rolling rapidly along a tabletop rolls off the edge and falls to the floor. At the exact instant that the steel ball rolls off the edge, a second, wooden ball is dropped from the same height. Which ball, if either, reaches the floor first?

A) The heavier ball reaches the floor first.
B) Both balls reach the floor at the same time.
C) The wooden ball reaches the floor first.
D) The steel ball reaches the floor first.

This guy

http://capa.fiu.edu/capa-bin/teacher/capasbin  
Page 1 of 4
6. [1 pt]
What is the acceleration of a projectile at the top of its flight?

Answer: $-9.8 \text{ m/s}^2$  
Submit All Answers

7. [1 pt]
A ball is thrown upward with initial velocity of 17.0 m/s. How long is the ball in the air?

Answer: $3.5 \text{ s}$  
Submit All Answers

8. [1 pt]
What is the greatest height reached by the ball?

Answer: $14.7 \text{ m}$  
Submit All Answers

9. [1 pt]
A ball is dropped over the edge of a building and hits the ground 1.4 s later. How tall is the building?

Answer: $9.6 \text{ m}$  
Submit All Answers

10. [1 pt]
For the previous problem, what was the ball's speed when it hit the ground?

Answer: $13.7 \text{ m/s}$  
Submit All Answers

11. [1 pt]
For the previous problem, what was the ball's average speed as it fell?

Answer: $6.9 \text{ m/s}$  
Submit All Answers

12. [1 pt]
Caught without a map again, Hayley lands her spacecraft on an unknown planet. Visibility is poor but she finds someone on a local communications channel and asks for directions to Earth. "You're already on Earth," is the reply, "Wait there and I'll be right over." Hayley is suspicious, however, so she drops a ball from the top of her ship, 17.1 m above the surface of the planet. It takes 3.90 s to reach the ground. What is the acceleration due to gravity on this planet?

Answer: $2.25 \text{ m/s}^2$  
Submit All Answers

13. [1 pt]
A ball rolls off a table with a horizontal velocity of 4.00 m/s. If it takes 0.37 s to reach the floor, how high above the floor is the tabletop?

Answer: $0.67 \text{ m}$  
Submit All Answers

14. [1 pt]
How far from the table does the ball land?

Answer: $1.48 \text{ m}$  
Submit All Answers

15. [1 pt]
A projectile is fired with an initial velocity of 48.4 m/s at 57.0° above horizontal. At the projectile's highest point, what is its velocity?

Answer: $26.4 \text{ m/s}$  
Submit All Answers

16. [1 pt]
What is its acceleration?

Answer: $-9.8 \text{ m/s}^2$  
Submit All Answers

17. [1 pt]
How far does it travel in the horizontal direction?

Answer: $2.16 \text{ m}$  
Submit All Answers

18. [1 pt]
The acceleration due to gravity on the moon is approximately one-sixth the gravitational acceleration near the earth's surface. If a rock is
transported from the earth to the moon, will either its mass or its
weight change in the process?

A) The mass of the rock will be one-sixth. The weight stays the same.
B) The mass will stay the same, the weight will be less. 
C) The answer depends on whether there is air resistance or not.
D) F=ma. Therefore, if acceleration is one-sixth, the mass has to be six times as large.

Answer: B

19. [1 pt]
A 231-lb man sits in a tall chair so that his feet don't touch the ground. What is the force of the chair on the man? Enter the correct letter or "none".

A) There is no force exerted on the man by the chair.
B) 231 x g
C) 231 lb 
D) 231/g kg

Answer: C

20. [1 pt]
A 4.40-kg object is pulled along a frictionless horizontal surface by a horizontal force of 12.0 N. If the object is at rest t=0, how fast is it moving after 3.10 s?

Answer: 

21. [1 pt]
How far does it travel during this time?

Answer: 

22. [1 pt]
Two forces, one of 50 N and the other of 30 N, act in opposite directions on a box as shown in the diagram. What is the mass of the box if its acceleration is 3.10 m/s²?

Answer: 

Copyright © The McGraw-Hill Companies, Inc. Permission required for reproduction or display.

23. [1 pt]
A person stands on a scale inside an elevator at rest on the ground floor. The scale reads 203 lb. What is the person's mass?

Answer: 

24. [1 pt]
As the elevator begins to accelerate upward at a rate of 2.0 m/s², the scale reads (enter correct letter or "None")

A) 162 lb 
B) 244 lb
C) 406 lb
D) 203 lb

Answer: 

25. [1 pt]
After the elevator has reached a steady speed of 5 m/s, the scale reads (enter correct letter or "None")

A) 1015 lb 

Goes back to 203 lb
26. [1pt]
A 2.7-kg block being pulled across a table by a horizontal force of 80 N also experiences a frictional force of 5.0 N. What is the acceleration of the block?

Answer: $28 \text{ m/s}^2$  

27. [1pt]
What is the coefficient of kinetic friction for this case?

Answer: 0.19

28. [1pt]
Newton's Third Law of Motion says: Forces always come in pairs: when one object exerts a force on a second object, the second exerts an equal and opposite force on the first.
If you push horizontally against a wall (action) this second force (reaction) is

A) the frictional force of the carpet against the soles of your shoes.
B) the gravitational force.
C) directed vertically down.
D) the force that the floor exerts on the wall.
E) the force that the wall exerts on your hand.

Answer: E

29. [1pt]
The Earth is bound in its orbit by the gravitational attraction of the Sun. Does the sun exert a larger force on the earth than that exerted on the sun by the earth?

A) Yes, because the sun has much more mass.
B) The sun does not exert any force on the earth because otherwise people would fall off.
C) No, both forces are the same in magnitude.
D) Yes, but only in the summer.

Answer: C

30. [1pt]
You accelerate your car starting from rest. While your car is increasing its speed, the frictional force acting from the road on the tires

A) is directed forward, in direction of the motion.
B) has nothing to do with the acceleration of the car.
C) is directed vertically up.
D) is directed backward, opposing the motion.

Answer: A

31. [1pt]
The coefficient of static friction between the tires of a car and the road is $\mu_s = 0.410$. If the only force acting on the car in the horizontal direction is the force of static friction exerted by the road, what is the magnitude of the maximum acceleration of the car?

Answer: $4.0 \text{ m/s}^2$