

CONCEPTUAL PHYSICS ALIVE! VIDEO QUESTION SET

Newton's First Law

In this lecture, Paul Hewitt discusses the principle of inertia and the consequences of that principle. Read the following questions before the presentation begins. Answer them while the presentation is in progress. [45 minutes]

1. According to Aristotle, if something moved (that didn't ordinarily move), that's because there was

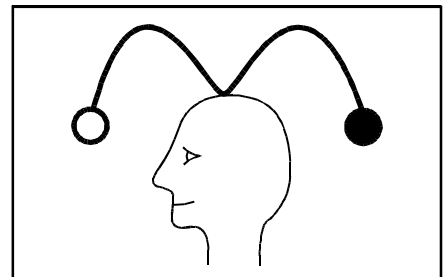
2. After Galileo and Newton, it was understood that if no force acted on an object

- A. at rest, it would remain at rest.**
- B. in motion, it would remain in motion.**
- C. both of these**
- D. none of these**

3. To say that something moves in a straight line path with steady speed is to say that it moves with constant

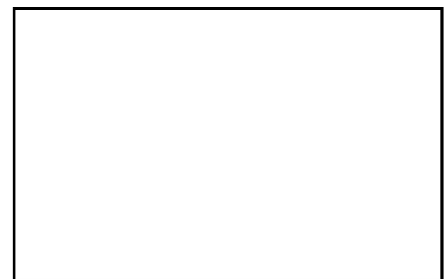
_____.

4. Hewitt dons a "crown" with two blobs of clay as shown in the diagram to the right. What happens when he turns around (before the crown falls off his head)? Draw the result in the empty box to the right.



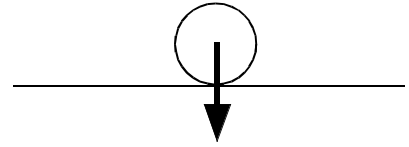
5. A block of wood rests on a tablecloth. Hewitt pulls abruptly on the tablecloth to demonstrate

- A. skepticism (Newton's Zeroth Law).**
- B. inertia (Newton's First Law).**
- C. acceleration (Newton's Second Law).**
- D. interaction (Newton's Third Law).**



6. After Hewitt sets the metal cylinder in motion (rolling across the table), what pushes the cylinder to keep it moving?

7. There is a downward gravitational force acting on a cylinder. What balances this force to make the net force on the cylinder equal to zero?

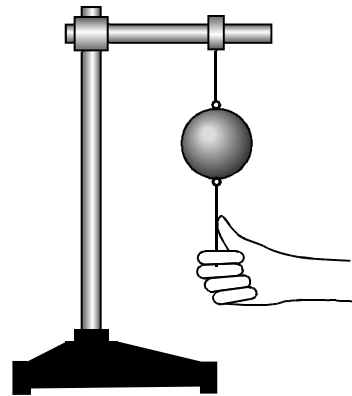


8. If no net force acts on an object, the object will not _____.

9. True or false: In terms of inertia, a big Cadillac is better for transporting fresh eggs than a small VW Bug.

10. A metal ball is suspended by a string. An identical string hangs from the ball. Hewitt pulls the bottom string. Under what conditions will the top string break?

- A. a fast pull
- B. a slow pull
- C. any pull
- D. under no conditions

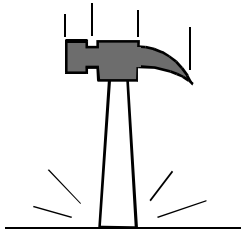


11. What protects Hewitt from injury during the anvil/mallet stunt?

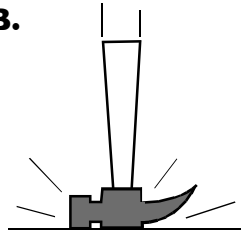
- A. the weight of the anvil
- B. the mass of the anvil
- C. the heaviness of the mallet
- D. the inertia of the mallet

12. The best way to tighten the hammer head and handle is to strike it in which manner?

A.



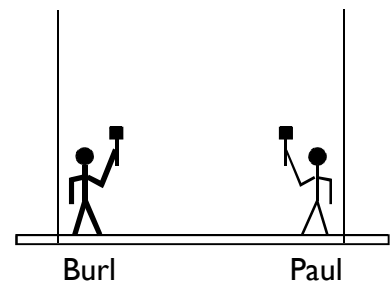
B.



C. Both methods work equally well.

13. When Burl and Paul painted signs, the rope under greater tension was

- A. Burl's.
- B. Paul's.
- C. same for both



14. Hewitt's weight is 150 lbs. He stands on two bathroom scales. One scale reads 100 lbs. The other scale must read _____ lbs.

CONCEPTUAL PHYSICS ALIVE! VIDEO QUESTION SET

Newton's First Law

In this lecture, Paul Hewitt discusses the principle of inertia and the consequences of that principle. Read the following questions before the presentation begins. Answer them while the presentation is in progress. [45 minutes]

1. Early scholars explained the sustained motion of cannonballs and arrows as the result of force exerted by

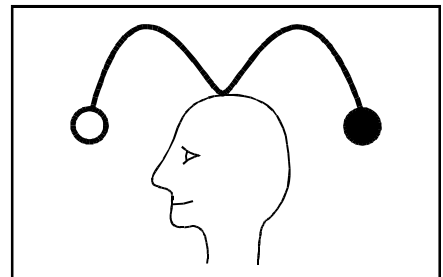
- A. æther.
- B. spirits.
- C. *vis inertia*.
- D. air.
- E. impetus.
- F. Zeus.

2. If an object moves and no force acts on it, it will

- A. slow down until it comes to a stop.
- B. move with constant speed.
- C. move in a straight line path.
- D. both B and C

3. The Law of Inertia is also known as

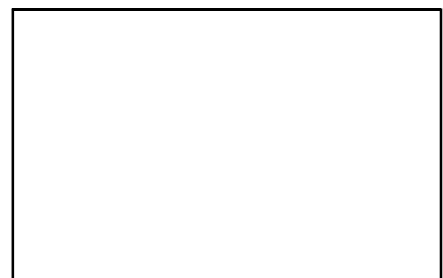
4. Hewitt dons a “crown” with two blobs of clay as shown in the diagram to the right. What happens when he turns around (before the crown falls off his head)? Draw the result in the empty box to the right.



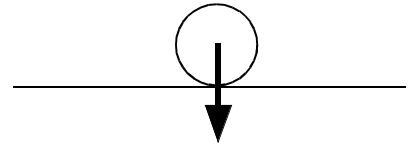
5. A block of wood rests on a tablecloth. Hewitt pulls abruptly on the tablecloth to demonstrate

- A. skepticism (Newton's Zeroth Law).
- B. inertia (Newton's First Law).
- C. acceleration (Newton's Second Law).
- D. interaction (Newton's Third Law).

6. After Hewitt sets the metal cylinder in motion (rolling across the table), what pushes the cylinder to keep it moving?



7. There is a downward gravitational force acting on cylinder. What balances this force to make the net force on the cylinder equal to zero?



8. The Italian word for *inertia* translates to the English word for

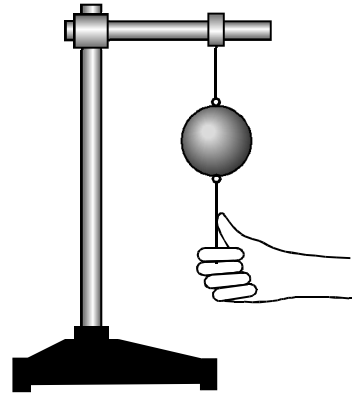
A. motion. B. rest. C. weight.
D. apathy. E. laziness. F. sloth.

9. Barf bags are needed most in

A. small planes. B. large planes.

10. A metal ball is suspended by a string. An identical string hangs from the ball. Hewitt pulls the bottom string. Under what conditions will the bottom string break?

A. a fast pull
B. a slow pull
C. any pull
D. under no conditions



11. What protects Hewitt from injury during the anvil/mallet stunt?

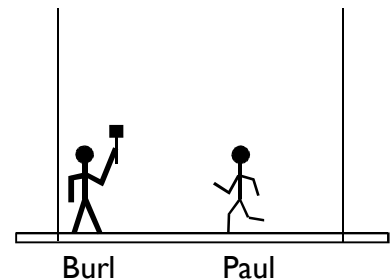
A. the weight of the anvil B. the mass of the anvil
C. the heaviness of the mallet D. the inertia of the mallet

12. You are taller

A. when you first get out of bed in the morning.
B. before you go to bed at night.
C. your height doesn't change within a single day.

13. As Paul walks toward Burl, the tension in Paul's rope

A. increases.
B. decreases.
C. remains constant.



14. Hewitt's weight is 150 lbs. He stands on two bathroom scales. One scale reads 100 lbs. The other scale must read _____ lbs.