

### Pre-Conceptions

Students typically have many pre-conceived notions regarding concepts in Physics. It has always proven useful to bring these ideas to the forefront of your mind and to make an effort to evaluate their correctness. The following statements pertain in one way or another to common notions regarding central concepts of this unit. Identify each statement as being either true (T) or false (F).

#### Force and Motion - What Do You Believe?

The following statements pertain in one way or another to common notions regarding force and motion. Identify each statement as being either true (T) or false (F).

- | <b>T or F?</b> | <b>Statement</b>   |
|----------------|--|
| _____          | 1. A force is required to keep an object moving in a given direction.  |
| _____          | 2. An upward moving object must be experiencing (or at least usually does experience) an upward force.   |
| _____          | 3. A rightward moving object must be experiencing (or at least usually does experience) a rightward force.   |
| _____          | 4. A ball is moving upwards and rightwards towards its peak. The ball experiences a force that is directed upwards and rightwards.   |
| _____          | 5. If a person throws a ball with his hand, then the force of the hand upon the ball is experienced by the ball for at least a little while after the ball leaves the hand.    |
| _____          | 6. A cannonball is shot from a cannon at a very high speed. The force of the explosion will be experienced by the cannonball for several seconds (or at least a little while). |
| _____          | 7. If an object is at rest, then there are no forces acting upon the object.   |

#### Mass and Weight - What Do You Believe?

The following statements pertain in one way or another to common notions regarding mass and weight. Identify each statement as being either true (T) or false (F).

- | <b>T or F?</b> | <b>Statement</b>   |
|----------------|--|
| _____          | 1. Objects do NOT weigh anything when placed in a vacuum.  |
| _____          | 2. All objects weigh the same amount when placed in a vacuum, regardless of their mass.                                |
| _____          | 3. An object weighs less on the moon than it does on the Earth.  |
| _____          | 4. The mass of an object on the moon is the same as its mass on the Earth.   |
| _____          | 5. A high-speed object (say, moving at 200 mi/hr) will weigh less than the same object when at rest.                   |
| _____          | 6. A high-speed object (say, moving at 200 mi/hr) will possess measurably more mass than the same object when at rest. |
| _____          | 7. Weight is measured in pounds; mass is measured in Newtons.  |
| _____          | 8. A free-falling object still has weight.   |
| _____          | 9. Weight is the result of air pressure exerted upon an object.  |