

Quiz.

1. Work is ____.
 - a) power over time
 - b) energy over time
 - c) force times distance

2. Power is the rate at which ____.
 - a) momentum changes
 - b) work is done
 - c) speed increases

3. Energy is ____.
 - a) force times distance
 - b) power over time
 - c) the ability to do work.

4. The concept of energy input equaling energy output is called ____.
 - a) conservation of energy
 - b) conservation of momentum
 - c) conservation of power

5. The work done on an object equals the
 - a) change in power of the object
 - b) change in kinetic energy of the object
 - c) change in momentum of the object

6. A ball at the top of a flight of stairs has more ____ and less ____ than at the bottom of the stairs.
 - a) kinetic energy, potential energy
 - b) potential energy, kinetic energy

7. There are ____ types of renewable energy that are being used worldwide.
 - a) five
 - b) three
 - c) seven
 - d) at least ten

8. Why aren't perfectly efficient (perpetual motion) machines possible?
 - a) they are, according to conservation of energy
 - b) frictionless surfaces and perfect vacuums are not attainable

9. What kinds of "machines" have the highest efficiency?
- a) those that do the most work
 - b) those with the cheapest fuel
 - c) those with the least opportunity for dissipative forces to rob energy (friction, air resistance, ...)

Answer Key.

1. c)

If force is applied to an object, but it does not move, then no work is done.

2. b)

The units of power are the units of work per units of time. It requires more power to do a job quickly than to do the same job slowly.

3. c)

Energy is the ability to produce a change, and work produces that change.

4. a)

Energy cannot be created nor destroyed; it can only be transformed from one form into another.

5. b)

This is the definition of the work-energy theorem.

6. b)

Potential energy depends on position, while kinetic energy depends on speed.

7. d)

It is important to explore alternate energy sources for our planet and our economy.

8. b)

Perpetual motion is impossible for our current understanding of physics, but we do not understand everything yet... We must always test "surety" as true scientists. Don't let anything you "learn" stop you from discovering the unknown!

9. c)

Efficiency is the ratio of useful work output to useful work input.