Energy and Efficiency Comprehension Worksheet Name: KEY Date:

Energy is the ability to do work. Work is done when a force moves an object. Both energy and work are measured in joules (J). The law of conservation states that energy cannot be created or destroyed, only transferred and transformed. An energy transfer is when energy is moved from one object to another e.g. when kicking a ball, the kinetic energy from your leg is transferred into the ball. An energy transformation is when energy changes from one type to another e.g. a lightbulb transforms electrical energy into thermal (heat) and radiant (light) energy.

Whenever energy is transformed, it will into at least 2 types of energy. The energy we wanted to make in an energy transformation is termed 'useful' energy. The energy we did not want to make in an energy transformation is called 'waste' energy. For example; a lightbulb produces both light and thermal energy. The light is the energy we want to create, so light is the useful energy. We did not want to create thermal energy, so that is the waste energy.

Efficiency is a measure (as a percentage) of how much useful energy is made in a transformation, compared to how much waste energy is made. In an efficient energy transformation, very little waste energy is made.

1. What is energy?

ABILITY TO DO WORK

2. When is work done?

WHEN A FORCE MOVES AN OBJECT

3. What unit is energy measured in?

JOULES

4. What does the law of conservation of energy state?

ENERGY CANNOT BE CREATED OR DESTROYED, ONLY TRANSFERED OR TRANSFORMED

5. What is an energy transfer?

WHEN ENERGY IS MOVED FROM ONE OBJECT TO ANOTHER

6. Give TWO examples of an energy transfer?

7. What is an energy transformation?

WHEN ENERGY CHANGES FROM ONE TYPE TO ANOTHER

8. Give TWO examples of an energy transformation?

9. What is 'useful' energy?

THE ENERGY WE WANT TO CREATE

10. What is 'waste' energy?

ENERGY WE DIDNT WANT TO CREATE

11. A fan transforms electrical energy into both heat and kinetic energy.

a) Which is the useful energy?

KINETIC

b) Which is the waste energy?

HEAT

12. What is efficiency?

how well it creates kinetic energy

13. a) An efficient lightbulb would make lots of LIGHT energy

b) An efficient lightbulb would make small amounts of HEAT energy