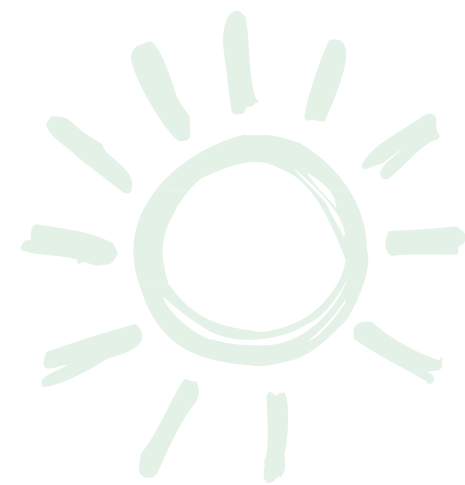




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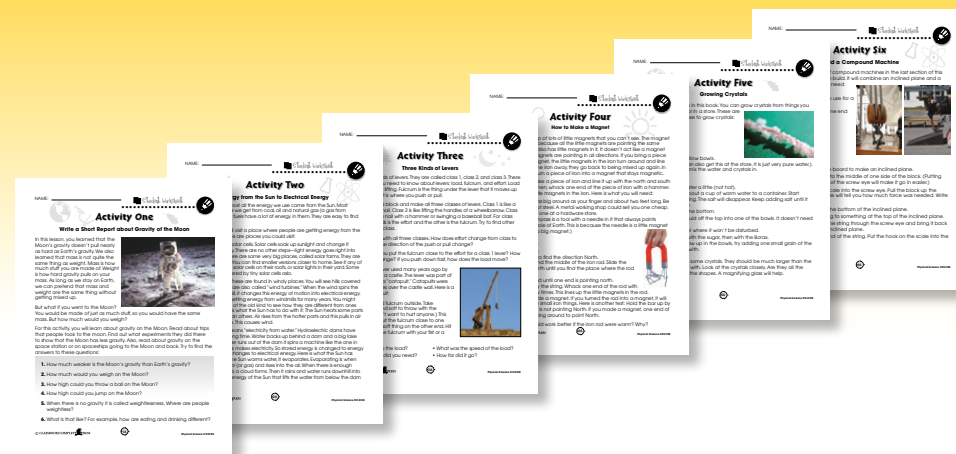
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Energy

1. Circle **T** if the sentence is True or **F** if it is False.

- T F** a) The kind of energy the Sun sends to Earth is called energy of motion.
- T F** b) We get energy from an apple when we eat it.
- T F** c) Some animals get energy when they eat other animals.
- T F** d) Energy is a kind of force.
- T F** e) Plants store energy. Animals don't.

2. Put a check mark (✓) next to the answer that is the most right.

a) What is energy?

- A Force.
- B Power.
- C Very high speed.
- D What is needed to change things.

b) What kind of energy travels from the Sun to the Earth?

- A light
- B food energy
- C stored energy
- D energy of motion

c) Food energy is a kind of _____ energy.

- A heat
- B light
- C motion
- D stored



Energy



Energy is like happiness. It's hard to say what it is, but you know when you've got it. People say that energy is what you need to change things. But let's wait until we have looked at all the kinds of energy. That is the best way to get a feel for what energy is.

We need a lot of energy here on Earth. We need energy to get up in the morning. We need it to cook breakfast. We need it to travel to school. You may be surprised to learn that almost all of the energy we use came from just one place—the Sun! The Sun sends energy to Earth in the form of **light energy**.



These are called **solar cells**. The Sun beats down on them. They take in energy from the Sun. They change this into **electricity**.

get comes from what is stored in the animal. The animal got it from eating plants.



The plant stores energy from the sun. The bug gets energy when it eats the plant. The frog gets energy when it eats the bug.

When light energy meets the ground, some of it changes into **heat energy**. That is how Earth stays warm enough for us to live here. Some of the light energy is also changed into **food energy** by green plants. This is a kind of **stored energy**. It is stored in plants until we eat them. Then, we have energy to do things. If we eat meat, the energy we



Energy



1. Circle **T** if the sentence is True or **F** if it is False.

- T F** a) A falling leaf has energy of motion.
- T F** b) Food energy is energy of motion.
- T F** c) Light energy can change into heat energy.
- T F** d) A bird in the sky has energy of motion but not stored energy.
- T F** e) Coal has stored energy.

2. Five energy changes are shown. Put the changes in order from **1** to **5**.

- a) A man gets energy by eating meat from the cow.
- b) Light travels from the Sun to the Earth.
- c) The man uses energy stored in his body to run.
- d) Grass changes light into stored energy.
- e) A cow eats the grass.



Energy



3. Answer the questions in full sentences.

- a) A raindrop falls from the sky into a lake. The stored energy and energy of motion changes as the drop falls. Explain how.

- b) Explain what keeps the Earth warm enough for us to live here.

Extension & Application

4. a) Find a place where stored energy is changing into energy of motion. Look for the place around your house or outside. Tell about the change.

- b) Find a place where energy of motion is changing into stored energy. Look for the place around your house or outside. Tell about the change.

Measuring the Speed of Sound and Distance of Lightning

Speed of Sound:

Have you heard an echo? We hear an echo when sound bounces off something in the distance. Work with a friend. This is what you will need:

- A stopwatch.
- Something tall, hard, and flat near a big empty space. The tall flat thing could be a wall of your school. The empty space could be a playing field.
- A tape measure or meter stick to measure the distance to the wall.
- Two flat, smooth blocks of wood about the size of bricks.

This is what you do:

- Clap the blocks together and listen for the echo.
- One person will clap the blocks. The other person will measure the time from the clap to the echo.
- Find the speed of sound. (Distance there and back ÷ Time)

How Far Away Was the Lightning?

If the echo study is hard to do, try this. In this study you will find out how far away a lightning bolt struck. This is what you will need:

- A stopwatch.
- A thunderstorm.
- A dry, safe place to watch the storm.

The light from a lightning bolt travels very fast. It is too fast to measure easily. For this study, you can pretend that the light took no time at all to get to you. The thunderclap happens at the same time as the lightning. The sound takes longer to reach you—long enough to measure the time. It takes the sound of thunder about 5 seconds to travel 1 mile (1.6 km). This is what you do:

1. Hold the stopwatch, and be ready to click it.
2. When you see a lightning flash, click the watch button.
3. When you hear the thunder, click it again. The time on the watch will be how long it took the sound to reach you.



Crossword Puzzle!

Across

1. The head of an axe is one.
5. Make one with a board and a block.
9. Not static electricity—the other kind.
11. A ramp is an _____ plane.
13. Sound _____ come from a ringing bell.
15. It has mass and takes up space.
16. Some of the Sun's energy changes into _____ energy.

Down

2. Some are positive and some are negative.
3. It keeps you from floating off into space.
4. The color of grass is an example of this.
6. This simple machine has a lever that spins all the way around.
7. When light bounces, it is called a _____.
8. This simple machine is like a long ramp going in a circle.
10. The kind of force that makes something change how it is moving.
12. A push or a pull.
14. Light and heat are kinds of _____.

Word List

- | | | |
|---------------------|------------|----------------|
| current electricity | inclined | unbalanced |
| electric charge | lever | waves |
| energy | matter | wedge |
| force | properties | wheel and axle |
| gravity | reflection | |
| heat | screw | |



Comprehension Quiz

Part A

Circle **T** if the sentence is TRUE or **F** if it is FALSE.

- T F 1) Gravity only pulls on things sitting on the ground.
- T F 2) If something is moving in a straight line without changing speed, the forces on it are balanced.
- T F 3) Light is a kind of energy.
- T F 4) We cannot see sound waves.
- T F 5) Light travels faster than sound.
- T F 6) Lightning is a kind of current electricity.
- T F 7) Particles in ice can change places with each other.

Part B

Put a check mark (✓) next to the answer that is the most right.

a) Which two simple machines could you make with just a board and a brick?

- A A pulley and a lever.
- B A lever and an inclined plane.
- C An inclined plane and a screw.
- D A screw and a wheel and axle.

b) What do we know about the forces acting on something that is falling without changing its speed?

- A No forces are acting on it.
- B Only gravity is acting on it.
- C There is no force of air resistance.
- D The forces acting on it are balanced.

Coal Formation Timeline



Plants died in swamps.



Plants were covered by water and dirt.



Heat and weight turned plants into coal.

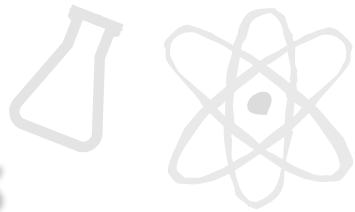
300 million years ago

100 million years ago

Over millions of years



Simple Machines



1. Circle **T** if the sentence is True or **F** if it is False.

- T** **F** a) A small car is a simple machine.
- T** **F** b) A ball is a simple machine.
- T** **F** c) A hammer is a simple machine.
- T** **F** d) We can sit back and watch while a simple machine does our work.
- T** **F** e) Simple machines make work easier.

2. Put a check mark (✓) next to the answer that is the most right.

a) Which is a simple machine?

- A a rope
- B a wedge
- C eye glasses
- D an electric fan

b) All of these are simple machines, except _____.

- A a pulley
- B a screw
- C a fence
- D an inclined plane

c) What kind of simple machine is an oar that is used to row a boat?

- A a lever
- B a wedge
- C a wheel and axle
- D an inclined plane

1.

- a) **F**
- b) **F**
- c) **T**
- d) **F**
- e) **T**

A knife is a wedge.

1.

B

3.

a) A wedge is two inclined planes back to back.

b) A simple machine has the advantage that it increases force. A simple machine has the disadvantage that the force must be done over a long distance.

2.

a) B

b) C

c) A

34

36

2.

- a) **T**
- b) **T**
- c) **F**
- d) **F**
- e) **T**

37

4.

Drawings will vary.

38



EASY MARKING ANSWER KEY