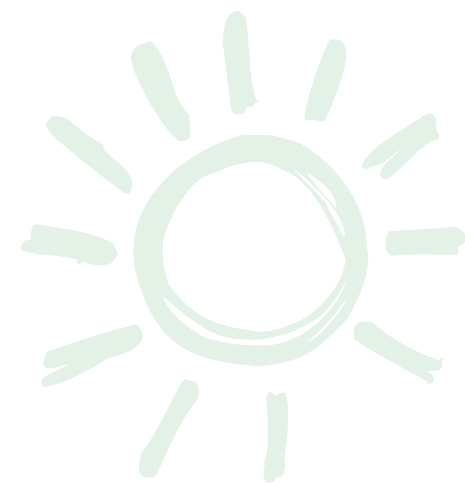




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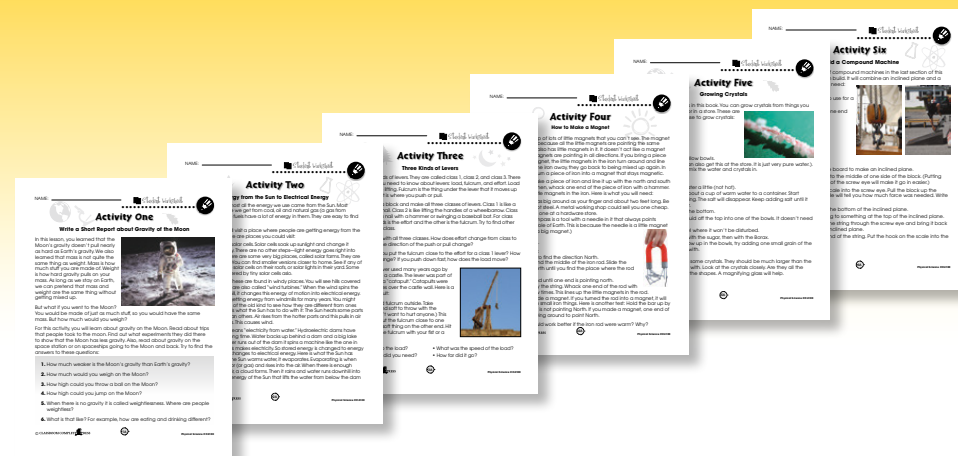
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Light and Sound



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

- T F a) Light travels in waves.
- T F b) Sound travels out from our ears.
- T F c) An apple is red because it reflects red light.
- T F d) If something is vibrating, it must be hot.
- T F e) Sound cannot travel through air.
- T F f) Reflection is a kind of bouncing.
- T F g) Light travels out from our eyes.
- T F h) Sound travels in waves.

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

- a) The height of a wave is called its _____.
- A amplitude
 - B reflection
 - C vibration
 - D wavelength
- b) When light bounces off a mirror, it is called a(n) _____.
- A amplitude
 - B reflection
 - C vibration
 - D wavelength

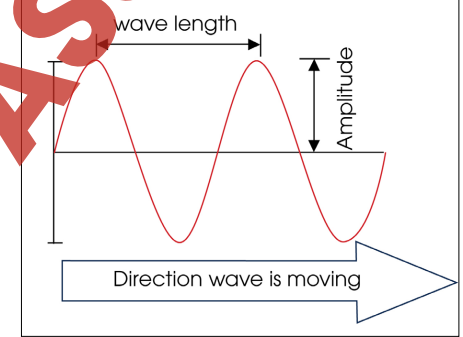


Light and Sound

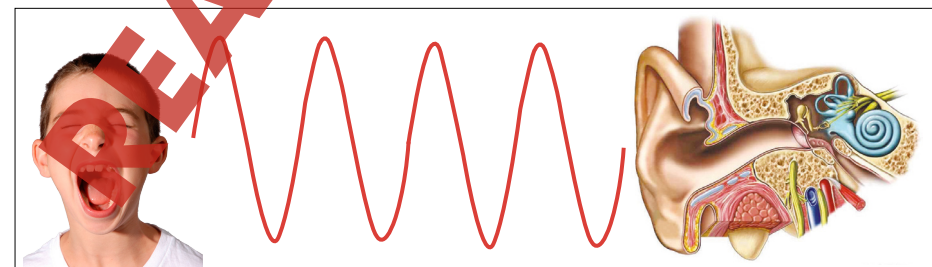
Dropping a pebble in a pond makes **waves**. The bottom picture shows how the waves would look if you were in the pond up to your eyes. This view shows two important things about waves: **amplitude** and **wavelength**. Amplitude is how far the wave rises above the middle of the wave. Wavelength is how far it is between tops of waves.



We can see water waves. There are two other important kinds of waves that we can't see. These are **sound waves** and **light waves**.



Stretch a rubber band as far as you can between your thumbs. Ask someone to pluck the stretched rubber band. You will hear a nice sound. You will also see the rubber band moving back and forth so fast it is just a blur. This back and forth motion is called **vibrating**. This vibration makes the air next to it vibrate too. You can't see the air vibrate because it is made up of little bits too small to see. The vibration in the air spreads out away from the rubber band until it reaches your ears. This makes a little drum in your ear vibrate and you hear the sound. All sounds you hear get to your ears this way.



Light and Sound

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

- a) Light and sound both travel in _____.
- A currents
 - B streams
 - C rays
 - D waves
- b) Which waves shows speeds from slowest to fastest?
- A water, sound, light
 - B sound, water, light
 - C light, sound, water
 - D water, light, sound
- c) What do sound waves and light waves carry from place to place?
- A energy
 - B force
 - C heat
 - D material

2. Use the words below to finish each sentence.

energy vibration sound air light

- a) We can see waves on a lake. We cannot see _____ or _____ waves.
- b) Sound waves travel through the _____ to our ears.
- c) Waves carry _____ from one place to another.
- d) Sound waves are caused by a _____.



Light and Sound

3. Answer the questions in full sentences.

- a) Someone hits a bell and it rings. Explain how you hear the ringing from across the room.
- _____
- _____
- b) Explain what happens to light when it meets each of these things: a window, a mirror, a yellow shirt.
- _____
- _____

Extension & Application

4. Get into groups and use the graphic organizer on page 12. Show how kinds of waves are the same and how they are different. Use the internet to help you.

Make small models of each type with your group. Describe your models below.

- a) Water: _____
- _____
- b) Sound: _____
- _____
- c) Light: _____
- _____



Electric and Magnetic Forces in Action

Part 1. Electric Force

You will see how electric forces push and pull. This is what you will need:

- a roll of clear plastic tape
- a balloon
- something made of wool or a cat

This is what you do:

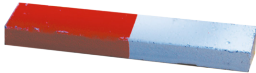
1. Tear off two pieces of tape about as long as your hand. Stick them to a desk or tabletop. Smooth them down. Leave one end free so you can peel them off.
2. Peel one strip of tape off with your right hand. Peel the other strip off with your left hand.
3. Let the strips hang down. Bring them slowly toward each other. Watch what happens.
4. Blow up the balloon and tie it shut.
5. Rub the balloon on the wool or the cat.
6. Try to stick the balloon to the wall or the ceiling.

Which things had the same charge (both positive or both negative)? Which things had different charges (one positive, the other negative)?

Part 2. Magnetic Force

You will see how the same poles on a magnet push each other away. You will also see how different poles pull each other together. This is what you will need:

- three bar magnets—bar magnets look like this:
- a glass or plastic tube that the magnets will just fit into.



This is what you do:

1. Hold the tube up on end. Drop the magnets in one at a time.
2. What do you see? Are any of the magnets "floating"?
3. Try putting the magnets in different ways. Try to find a way that makes the top two magnets float above the others.

What does it mean when the top magnets float? What does it tell you about the magnet poles of the different magnets?



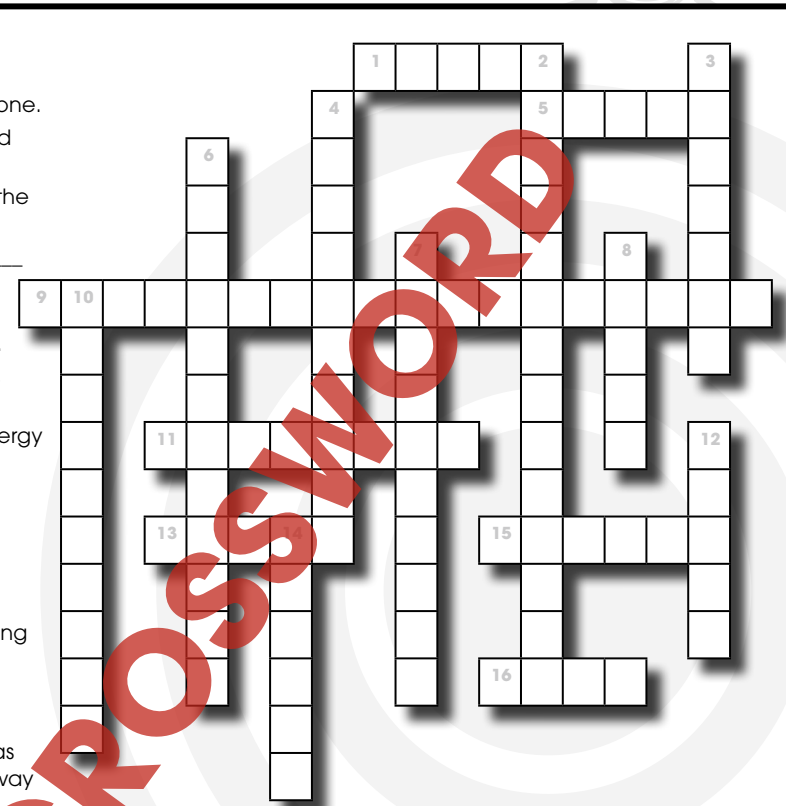
Crossword Puzzle!

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



Comprehension Quiz

Part A

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

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

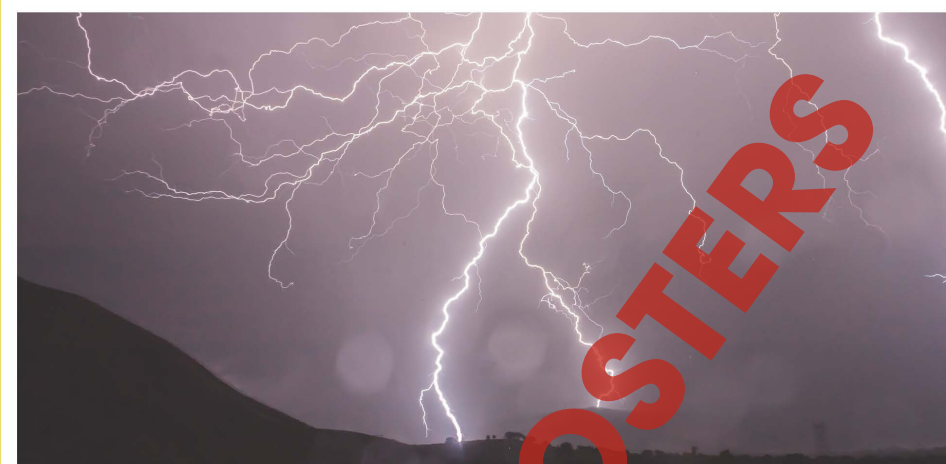
a) Which two simple machines could you make with just a board and a brick?

- 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.

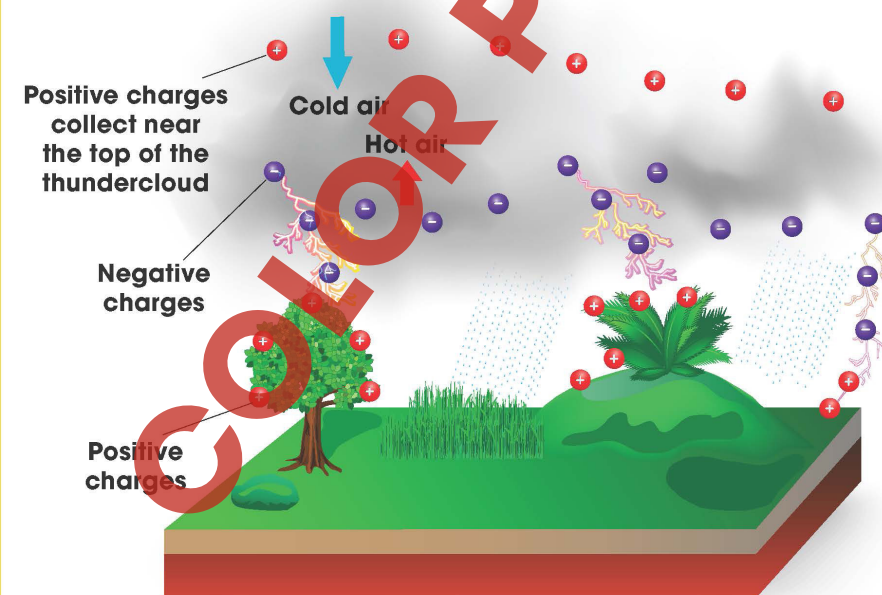
b) What do we know about the forces acting on something that is falling without changing its speed?

- 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.

How Lightning Works



HOW LIGHTNING IS FORMED



NAME: _____

After You Read 



Light and Sound

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

a) Light and sound both travel in _____.

- A currents
- B streams
- C rays
- D waves

b) Which waves shows speeds from slowest to fastest?

- A water, sound, light
- B sound, water, light
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2. Use the words below to finish each sentence.

energy vibration sound air light

a) We can see waves on a lake. We cannot see _____ or _____ waves.

b) Sound waves travel through the _____ to our ears.

c) Waves carry _____ from one place to another.

d) Sound waves are caused by a _____.

1.

a) D

b) A

c) A

3.

a) The bell vibrates. This causes the air around it to vibrate. The vibrations travel through the air and enter our ear. A little drum in our ear vibrates.

b) Light passes through a window. Light bounces off a mirror. Only yellow light bounces off the shirt.

4.

2.

a) sound, light

b) air

c) energy

d) vibration

10

11



EASY MARKING ANSWER KEY

a) Water: (any body of water with waves) move up and down.

b) Sound: (any sound) You can hear it with your ears. Something is vibrating.

c) Light: (any light source) it is bright. It goes in a straight line.