

## Sound and Light Study Guide

### A. Sound Vocabulary-

- ✓ **sound**- *a form of energy* that travels through a solids, liquids, and gases (in all directions)
- ✓ **sound wave**- An area of bunched-up and spread-out air particles that moves outward in all directions from a vibrating object (*It travels like a Slinky.*)
- ✓ **vibration**- The back and forth motion of an object
- ✓ **frequency**- The number of times a sound source vibrates in one second
- ✓ **pitch**- The highness or lowness of a sound as determined by its frequency (more frequency, higher pitch: squeaky voice, flute; less frequency, low pitch: deep voice, tuba)
- ✓ **volume**- How loud or quiet a sound is (high volume-shouting; low volume-whispering)
- ✓ **amplitude**- The energy in a sound wave (more amplitude, means louder volume; less amplitude, means quieter volume)
- ✓ **wavelength**- The distance from one are of squeezed particles to the next are of squeezed particle

### B. Be able to *explain* the following:

1. What are the three characteristics scientists use to describe sound?

wavelength, frequency, and amplitude (see definitions above)

2. What medium does sound travel the fastest through?

Sound travels the fastest through solids and the slowest through gases (air).

3. What is sound like in outer space?

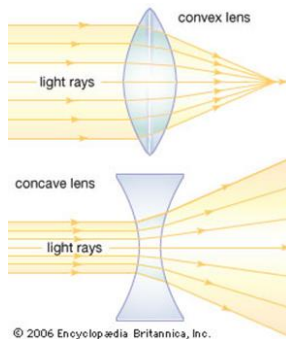
There is no medium in outer space to travel through, therefore there is no sound!

4. Why do you hear your voice echo in the gym when you scream, but not in our classroom?

The sound waves are absorbed by the carpet and other materials in our classroom.  
The sound waves in the empty gym bounce of the walls and floor.

## C. Light Vocabulary

- ✓ **light**- a form of energy we can see (travels in a straight line)
- ✓ **Reflect** - bounces off an object; sends something back (Light reflects off mirrors.)
- ✓ **Transmit** - to let (light) pass through (Light transmits through windows.)
- ✓ **Absorb** – all light is taken in (Light is absorbed by a brick wall.)
- ✓ **refract** – light bends as it passes through one material to another (That is why the pencil appeared to bend when we put it in a glass of water.)
- ✓ **Convex lens** - a lens that is thicker in the middle than at the edges; objects look larger or closer (magnifying glass)
- ✓ **Concave lens** - lens that is thinner in the middle and thicker on the outer edges; objects look smaller or farther away (peep hole in a door)



- ✓ **Visible Spectrum** - A mixture of light wavelengths that the human eye can detect. (The colors of the rainbow) ROY G. BIV
- ✓ **Prism** - a three-dimensional, triangular object made of clear glass or plastic that can bend light
- ✓ **Opaque** - describes an object you cannot see through and no light passes through – examples: bricks, metal, thick cardboard or fabric
- ✓ **Transparent** - describes an object you can see through clearly – all light passes through – examples: clear, clean glass, clear clean plastics, clear clean plastic wrap
- ✓ **Translucent** - describes an object you can see through, but not clearly - some light passes through – examples: wax paper, foggy glass or plastics, thin paper, thin fabric

## **D. Be able to explain the following:**

1. Why does a black car feel hotter than a white car?

Black absorbs almost all of the different-colored light rays and reflects no light rays. After it has been absorbed, it turns into heat. White, on the other hand, reflects all of the colors and absorbs almost nothing.

2. Why does the grass look green?

It is absorbing all colors of light, but reflecting green.

3. Draw the colors of the visible spectrum as they would appear refracting through a prism.

**Hint:** Put on your prism glasses and look at the light!

## **E. Practice Light and Sound Quizlets.**