

Name: _____

Date: _____

LIGHT AND SOUND TEST

1. Circle **True** or **False**:

- | | | |
|--|------------------------------------|------------------------------------|
| a) Light is a type of energy. | <input checked="" type="radio"/> T | <input type="radio"/> F |
| b) The colours in a rainbow have a specific order. | <input checked="" type="radio"/> T | <input type="radio"/> F |
| c) Shadows form because light can be absorbed. | <input type="radio"/> T | <input checked="" type="radio"/> F |
| d) Light reflects best off of dark surfaces. | <input type="radio"/> T | <input checked="" type="radio"/> F |
| e) Water can be used as a magnifying lens. | <input checked="" type="radio"/> T | <input type="radio"/> F |
| f) Sound is a type of energy. | <input checked="" type="radio"/> T | <input type="radio"/> F |
| g) An echo is a sound that has reflected. | <input checked="" type="radio"/> T | <input type="radio"/> F |
| h) Sound can move objects. | <input checked="" type="radio"/> T | <input type="radio"/> F |
| i) Sound reflects best off of hard flat surfaces. | <input checked="" type="radio"/> T | <input type="radio"/> F |

2. For each of the statements circle light, sound or both.

- | | | |
|---|--|--|
| a) Travels in waves. | <input checked="" type="radio"/> Light | <input checked="" type="radio"/> Sound |
| b) Can be modified | <input type="radio"/> Light | <input checked="" type="radio"/> Sound |
| c) Can be reflected. | <input checked="" type="radio"/> Light | <input checked="" type="radio"/> Sound |
| d) Can be absorbed. | <input checked="" type="radio"/> Light | <input checked="" type="radio"/> Sound |
| e) Bends when it goes into a different substance. | <input checked="" type="radio"/> Light | <input type="radio"/> Sound |
| f) Caused by vibrations. | <input type="radio"/> Light | <input checked="" type="radio"/> Sound |

3. Label the following as "light sources" or "reflected light."



source



reflected



reflected



source

4. Make a list of three natural light sources and three artificial light sources.

| Natural | Artificial |
|---------|------------|
| sun | light bulb |
| fire | TV |
| ...etc | ...etc |

5. Make a list of three hot light sources and three cool light sources.

| Hot | Cool |
|--------|---------|
| sun | firefly |
| fire | TV |
| ...etc | ...etc |

6. What does a prism do to light?

When white light goes into a prism it causes the light to bend. Each colour bends a different amount and the result is that it shows a rainbow.

7. Why might you recommend to someone that they switch to LED Christmas lights? (Be sure to discuss our experiment, not just prior knowledge.)

In our experiment we measured the temperature change of regular and LED Christmas lights over a 5 minute time span. In that time the regular lights got much hotter, meaning they were wasting electricity making heat. LED lights save electricity, which will save you money, and they are safer because they stay much cooler than incandescent bulbs.

8. What is the difference between "pitch" and "loudness?"

Pitch is how high or low a sound is. For example a flute is high pitched and a tuba is low pitched. Loudness refers to the volume of the sound. For example, a whisper is not loud, but a yell is loud.

9. Describe how the human ear works.

A sound wave is channelled into the ear by the outer ear. The wave then travels down the ear canal where it contacts the eardrum. When it contacts the eardrum, it causes the eardrum to vibrate. The vibrations are transferred to three tiny bones in your middle ear. The bones then send the signal to the liquid filled, shell-shaped, cochlea in your inner ear. The cochlea has many hairs attached to nerves that interpret the sound and send it to your brain.

10. Make a list of things that use light or sound to work. (Not things that produce light or sound.)

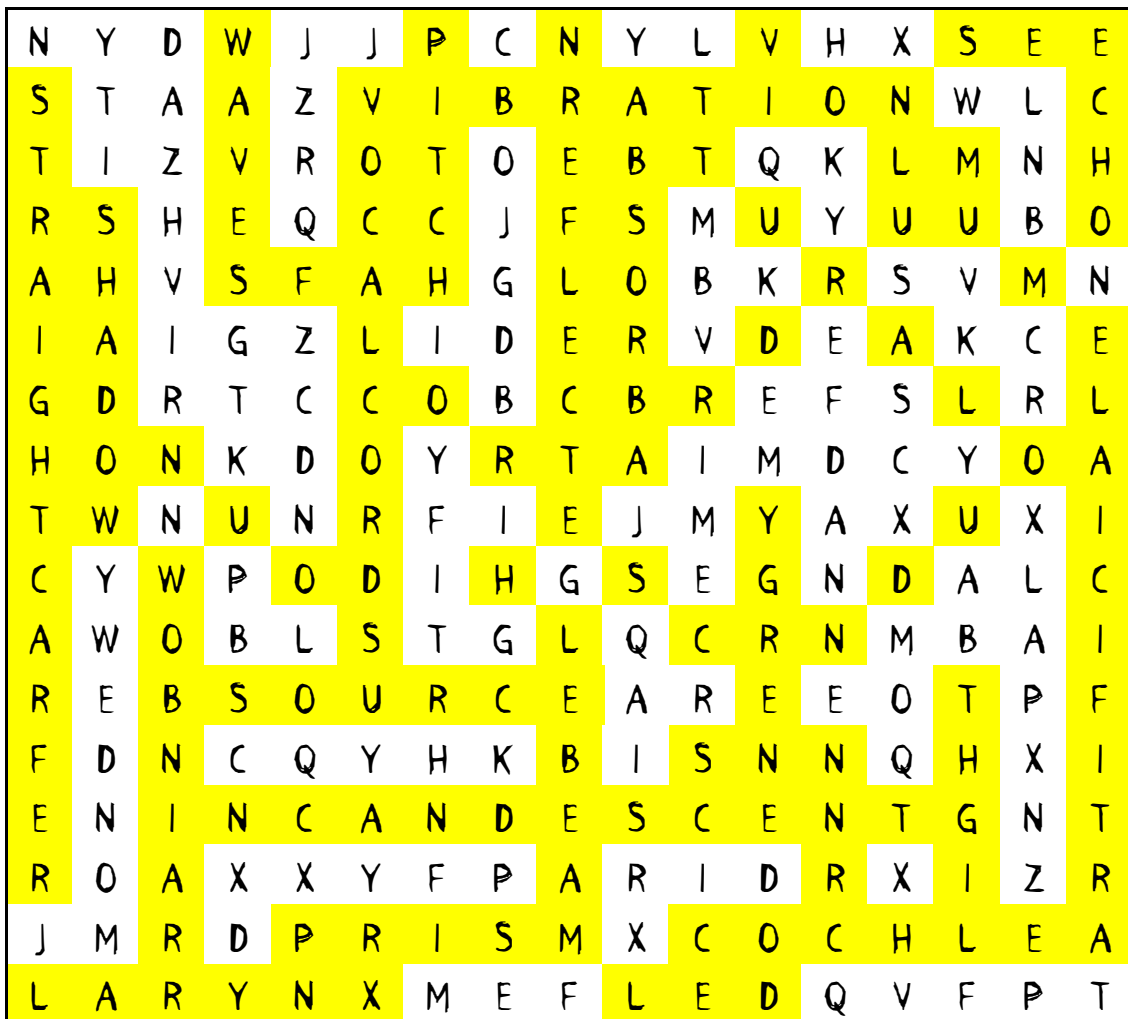
Light - DVD Player, Video Game Systems, automatic Doors, Barcode Scanner, Motion Sensors, Fibre Optics, Solar Panels, etc

Sound - Ultrasound, Voice Activated Controls, Touch-Tone Phone, etc

11. Choose one human invention that uses light or sound to keep us safe. Explain how light or sound is used in this invention, and how it works to keep us safe.

Many possible answers.

LIGHT AND SOUND



- | | | |
|--------------|----------|-------------|
| Absorb | Larynx | Refract |
| Artificial | Laser | See |
| Beam | LED | Shadow |
| Cochlea | Light | Sound |
| Ear Drum | Loudness | Source |
| Echo | Natural | Straight |
| Energy | Pitch | Vibration |
| Florescent | Prism | Vocal Cords |
| Hear | Rainbow | Volume |
| Incandescent | Reflect | Waves |