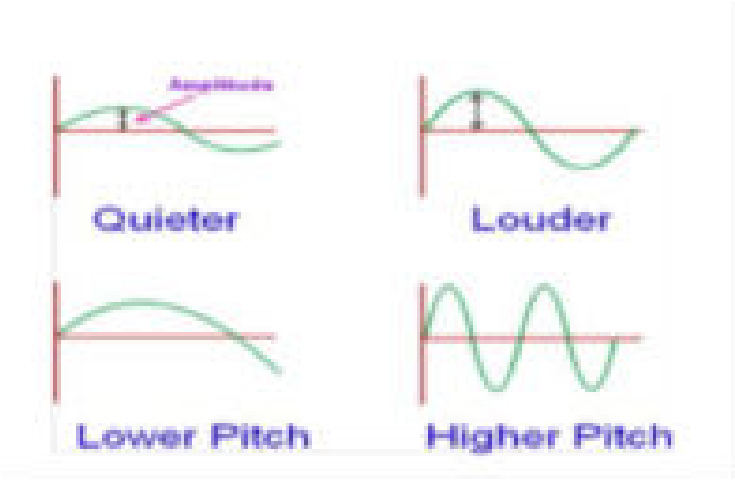
Science and Experiments (Level 3)

Assessment Questions

Sounding It Out

1. True or false: pitch, loudness, and density are characteristics of sound. Explain.
2. Define pitch. Give an example of a low pitch sound. Give an example of a high pitch sound.
3. Define the meter or the beat of a song.
4. Choose one of these graphs and explain it.



5. Write a rhyme with each of the following schemes:
    a. AA-BB
    b. AAAA
    c. ABAB
6. Explain the difference between sound traveling by air and sound traveling through solids.
7. Explain the reasons why you like your favorite songs using some of the following concepts: rhyme, lyrics, pitch, meter, beat, etc.
8. Explain why sound travels through the walkie talkies.

Shadow Play

1. Name four sources of light. Classify them into natural and artificial.
2. How are rainbows formed?
    a. When sunlight passes through raindrops.

    b. When it rains heavily.
    c. When the sun shines brightly.
3. Give two examples of opaque, transparent, and translucent objects .
4. List two differences between a translucent and opaque object using an example for each.
5. How are shadows formed?
    a. When someone stands in front of a light source with her back to a wall.
    b. When someone stands behind a light source facing a wall.
6. Can we see a shadow in the dark? Why or why not?
7. How can we make the size of the shadow of a toy bigger?
8. True or false: sunlight contains all the colors of the rainbow.

Acids and Bases

1. Can you name a natural indicator and explain how it changes color with acids?
2. What is salt? How is it different from acids and bases?
3. What is pH?
4. What is the result of a neutralization reaction?
5. What is a common property of bases?
    a. They taste sour.
    b. They turn blue litmus paper red.
    c. They turn red litmus paper blue.
    d. They react with metals to produce hydrogen gas.
6. True or False: Vinegar (acetic acid) is an example of a base.
7. True or False: Sodium chloride is an example of a salt.
8. How can you test if a liquid is acidic or basic using a natural indicator?
9. How can you use lemon juice to tell if a substance is acidic or basic?

Luminous Spaces

1. How does light travel? Explain with an example.
2. How does a plane mirror reflect light?
3. What happens to the direction of light when it hits a plane mirror?
4. What are some everyday uses of plane mirrors?

5. What is the difference between convex and concave mirrors?
6. Compare the images formed by a plane mirror and a concave mirror.
7. What are some applications of convex mirrors? What are some applications of concave mirrors?
8. Why do side-view mirrors in cars often have a warning that objects are closer than they appear?
9. How does a flashlight use both concave and plane mirrors?
10. Can you explain why a magnifying glass can both start a fire and make small objects look bigger?
11. How do eyeglasses help people see better?
12. Why does a spoon show an inverted image when looked at from the concave side?
13. Why does a spoon show an inverted image when looked at from the concave side?

Find Your Voice

1. What is sound, and how is it produced?
2. How do vibrations create sound?
3. What is the difference between loudness and pitch?
4. Describe the parts of the human ear and their role in hearing.
5. What is amplitude, and how does it affect the sound we hear?
6. What is frequency, and how does it relate to pitch?
7. Explain how the vocal cords produce sound in humans.
8. How do different materials and shapes affect the sound produced by musical instruments?
9. Why is it important to protect our ears from loud sounds?
10. Imagine you are in a large hall. Describe how the sound of your voice would change if the hall were empty versus filled with people. Why does this happen?
11. Can you think of any animals that use sound to communicate over long distances? How do they produce these sounds, and why are they effective for long-distance communication?
12. What is an example of a percussion instrument, and how does it produce sound?

Can’t Believe My Eyes

1. What is the difference between reflection and refraction?
2. What are the main parts of the human eye and their functions?
3. What is lateral inversion?
4. Why do we see different colors when white light passes through a prism?
5. How can you create a simple optical illusion using a piece of paper and a glass of water?
6. What are some practical applications of understanding reflection and refraction in daily life?
7. How can optical illusions help us understand the relationship between our eyes and brain?
8. Why do objects appear bent when viewed through water?
9. How do lenses correct vision problems like nearsightedness or farsightedness?