

# Tuning Forks Lab Investigation

Problem: How can we use tuning forks to investigate the different properties of sound?

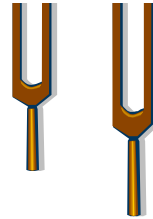
Materials (per group):

2 tuning forks with matching frequencies

1 tuning fork with a different frequency

bottom of shoe

large tray with 1" water



Procedure and Observations: Take turns performing each of the tests below and record your observations. Gently strike the tuning forks against the bottom of your shoe with just enough force to start them vibrating.

## 1. Hearing Sound Vibrations:

**Strike the prongs of one tuning fork against the bottom of your shoe and then hold the fork close to your ear.**

What do you hear? \_\_\_\_\_

What happens when you touch the prongs of the fork? \_\_\_\_\_

Why? \_\_\_\_\_

## 2. Intensity of Sound Vibrations:

**Strike the prongs of one tuning fork gently against the bottom of your shoe and then hold the fork close to your ear. Strike the same tuning fork a little harder and listen.**

How do the sounds differ? \_\_\_\_\_

Why? \_\_\_\_\_

## 3. Frequencies:

**Strike the prongs of two matching size tuning forks at the same time & listen to both.**

What do you notice about the two sounds? \_\_\_\_\_

**Strike the prongs of two different size tuning forks at the same time & listen to both.**

What do you notice about the two sounds? \_\_\_\_\_

What do you think the numbers on the tuning forks mean? \_\_\_\_\_

#### 4. Doppler Effect:

**Strike a tuning fork and hold it at an arm's length in front of you. Rapidly bring the tuning fork toward your ear then away again.**

How does the pitch of the sound change as the tuning fork approaches your ear?

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How does the pitch of the sound change as the tuning fork is moved away from your ear?

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#### 5. Resonance:

**Strike a tuning fork and bring it within a few centimeters of the other tuning fork with the same frequency. Then bring the second tuning fork near your ear and listen closely.**

What do you hear? \_\_\_\_\_

Explain why this happens. \_\_\_\_\_

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**Repeat step 5 with two tuning forks having different frequencies.**

How are the results different? \_\_\_\_\_

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#### 6. Interference:

**Strike a tuning fork and bring one of the prongs to within 2 or 3 cm of your ear. Slowly rotate the tuning fork completely.**

Describe any change in the loudness of the sound: \_\_\_\_\_

#### 7. Energy Transfer:

**Strike the tuning fork and touch the surface of the water in the tray with only one prong.**

What happens to the water? Describe what you see. \_\_\_\_\_

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Where does the energy start?

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What pattern does the energy travel in?

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**Strike the tuning fork again and touch the surface of the water with both prongs.**

What happens to the water? Describe what you see. \_\_\_\_\_

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Where does the energy start?

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What pattern does the energy travel in?

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