

Producing Patterns of Pitches



Student Data Sheet

1. In this exploration, we will begin by investigating the properties of a piece of colored plastic pipe. After you obtain your pipe, record as many terms as you can that describe your pipe.
2. After completing your observations, pair up with a partner who has a different pipe. Compare and contrast your pipes and list as many similarities and differences between the pipes as you can muster.
3. Next, compare the sounds produced by the pipe by pushing the bottom of it onto the palm of your hand. Describe your observations
4. Compare the sounds of your pipe to the sounds of your partners. Describe how they are similar and different. Use as many sound related terms as possible in your explanation including pitch and volume.
5. Describe the relationship between the pitch of your sound and the length of your pipe.

While vibrating objects, like an alarm clock, might be somewhat stimulating, things get real interesting when these sounds are produced in meaningful patterns. Patterns of vibrations can be interpreted as warnings, music, intelligible language, or gibberish. While the interpretation of these sound patterns may now seem automatic to us, it takes a great deal of our brain's time and energy to understand these wave patterns when we are young. Understanding the patterns of a spoken language is very complex and it becomes even more difficult if we try to master the patterns of a language different than our native tongue.

Music, the art of giving structural forms and rhythmic patterns to sound, provides a design for vibrations that can be created and enjoyed by all cultures- even if you don't speak the language. One set of palm pipes provides us with a complete scale of notes with differing pitches. That's all we need to start making some cool music together.

6. The next challenge for you and your partner is to find six more palm pipe players so that you have a complete musical scale. In color terms that means a white, red, orange, yellow, green, blue, purple, and black pipe. In number terms it means pipes 1-8. Try playing the scale from 1-8 a couple of times (Do-Re-Mi-Fa-So-La-Ti-Do). Try backwards too.
7. Now that you have your band together, it is time to play a few songs. Choose one person (7 or 8 maybe) to direct the rest of you pointing the notes before you play them. Here are a few songs you may recognize. Make sure to exchange pipes since 7 and 8 aren't used in these songs. **If this makes for too much sound in one room – do the songs together as a class.**

Mystery Song 1:

3 2 1 2 3 3 3 2 2 2 3 5 5
3 2 1 2 3 3 3 3 2 2 2 3 1

Mystery Song 2:

1 1 5 5 6 6 5 4 4 3 3 2 2 1
1 1 5 5 6 6 5 4 4 3 3 2 2 1
1 1 5 5 6 6 5 4 4 3 3 2 2 1

Mystery Song 3:

5 6 5 4 3 4 5 2 3 4 3 4 5
5 6 5 4 3 4 5 2 5 3 1

Mystery Song 4:

3 3 4 5 5 4 3 2 1 1 2 3 3 2 2
3 3 4 5 5 4 3 2 1 1 2 3 2 1 1

8. Now it's time to create your own group composition. Try out some combinations as a group and then write the score (pattern of notes) for your favorite composition below. After doing so, each group will play their masterpiece to the class.