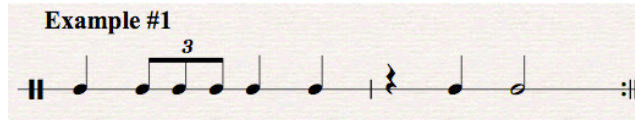


Rhythm Exercises On SuperCollider

Name: _____

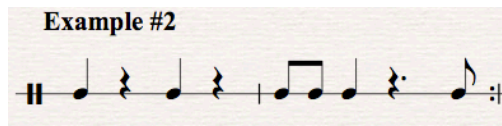
Translate the rhythm into a sequence of durations.

In **Example #1**, the first measure begins with a quarter note (duration 1), three triplets (durations 0.33333), and quarter note. Note the fourth quarter note has a duration of 2, due to the quarter rest in the second measure. The sequence ends with a quarter note (duration 1) and a half note (duration 2). The 15 outside the brackets tells the computer to repeat the sequence 15 times. The sum of the numbers in the sequence rounds to 8.



Pseq([1, 0.33, 0.33, 0.33, 1, 2, 1, 2], 15);

In the first measure of **Example #2**, the quarter notes have durations of 2, since they are separated by quarter rests. Each eighth note has a duration of 0.5. The quarter note in the second measure has a duration of 2.5, since the quarter note is worth 1, and the rest is worth 1.5. The sequence concludes with an eighth note that lasts 0.5. The sum of the numbers in the sequence equals 8.



Pseq([2, 2, 0.5, 0.5, 2.5, 0.5], 15);

Refer to **Example #3** in “Music and Mathematics.scd.” Highlight both the ~tambourine and ~drum Pbinds, and hear what they sound like played at the same time. You should hear this rhythm.

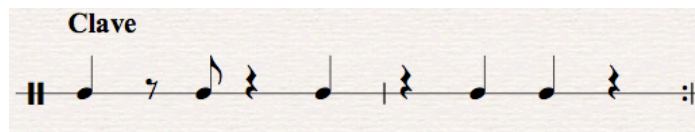


Try on your own

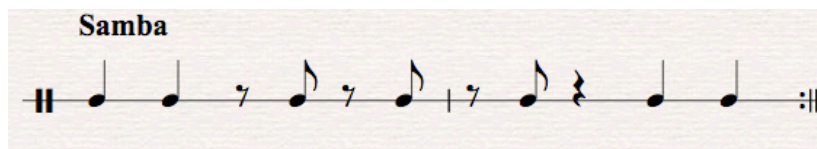
1.) Translate this sequence into Western notation.

0.5, 0.5, 1, 1, 0.25, 0.25, 0.5,
1.5, 0.5, 1, 0.25, 0.25, 0.5

2.) Translate this drumming pattern into code.



3.) Translate this drumming pattern into code.



4.) Translate both drumming patterns into code, and play them simultaneously.

The image shows two staves labeled "Bossa Nova". The top staff is labeled "Drum 1" and the bottom staff is labeled "Drum 2". Both staves have a double bar line at the beginning and end. Drum 1 has a quarter note, a quarter note, a quarter note, a quarter note, a quarter note, a quarter note, and a quarter note. Drum 2 has a quarter note, a quarter note, an eighth rest, a quarter note, an eighth rest, a quarter note, a quarter rest, a quarter note, and a quarter note.

5.) In #4, the rhythm you heard as a result of both rhythms being played at the same time is called a crossrhythm. Combine two numeric rhythmic sequences into a single numeric sequence.

6.) By default, notes with durations of 1 last one second. However, you can change the tempo. Study the code in **Example #4**. Currently, the tempo is set to 144 beats per minute. Change the numerator to another number. What happens to the speed to the playback?

Access your creative thinking

- 7.) Write a piece by typing in numbers for rhythms, and playing it back. Type the rhythmic values inside the brackets []. Don't forget to separate each number with a comma! The number at the end tells us the number of times we repeat the rhythm. Take advantage of the playback feature. If you don't like what you hear, experiment with numbers until you do.
- 8.) Write two rhythmic sequences to be played simultaneously.
- 9.) Write three rhythmic sequences to be played simultaneously, and use a different tempo.
- 10.) Study one of the PBind examples. You'll see "\bufnum," followed by a letter. That letter indicates the recording sample. At the top of "Music and Mathematics.scd" is a library of audio samples, lettered a through f. Experiment by changing the letters in \bufnum line of one of your compositions.
- 11.) Refer to "Music and Mathematics Appendix.scd." Take one of the sixteen Latin drumming examples and change the rhythms and audio samples to make it your own.

Reflecting on Mathematics

- 12.) If we wanted to create a song using the same rhythms but twice as fast, how would we change the numbers in the PBind? Assume we cannot use the TempoClock.
- 13.) What roles do addition, multiplication, and division play in rhythm?
- 14.) Is dividing a rhythm in half, and then dividing that note into thirds the same as dividing a note in thirds, and then dividing the resulting notes into halves? Give an example explaining why.