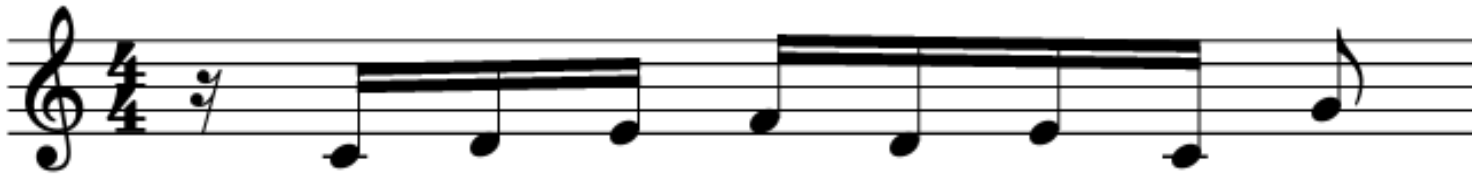
Musical Maths: Patterns in Sound

Let's investigate how composers use mathematical patterns in music!

J.S. Bach: Invention No.1 in C major BWV 772

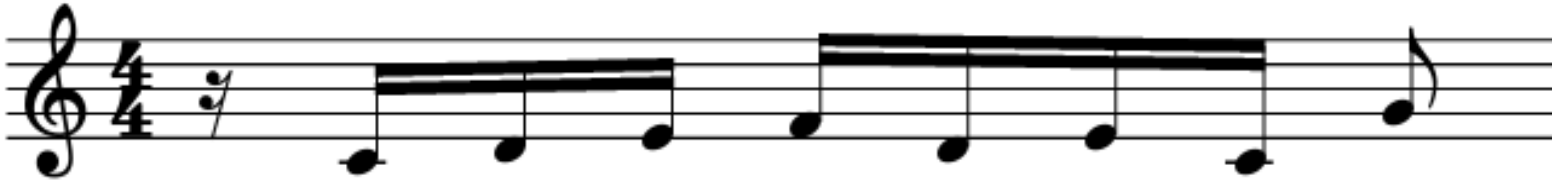


Rehearse and perform the above motif on an instrument.

Explore the intervals heard in this motif, is there a pattern?

How many times do you hear this motif in the first 8 bars?

AUDIO 0'00" – 0'30"



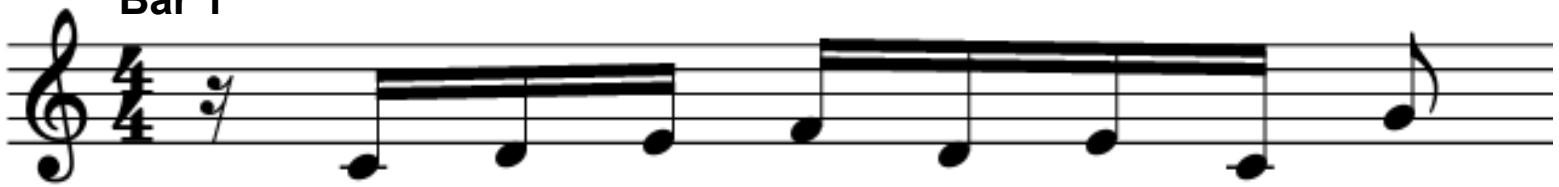
AUDIO 0'00" – 0'30"

Listen again to the first 8 bars and select the correct statement below:

- *The motif is heard twice on the right hand of the piano while the left hand plays a different melody.*
- *The motif is introduced in the right hand. The left hand then copies it while the right hand continues, so the two hands overlap. Soon after, the motif comes back in the right hand.*
- *The motif is played first on the left hand of the piano then the right hand plays the motif in unison with the left hand.*

Compositional Technique 1

Bar 1



AUDIO bar 1 0'00" – 0'06"

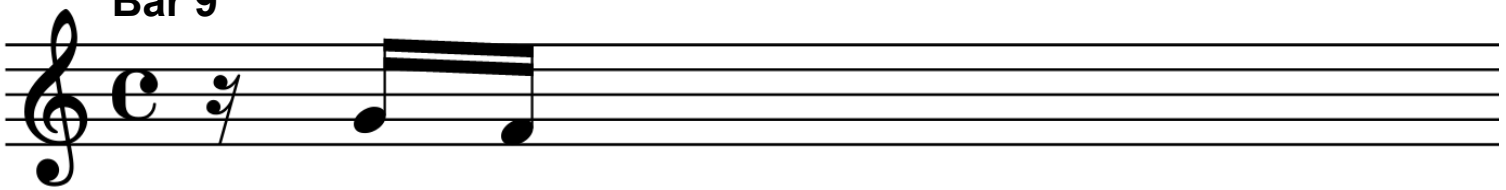
AUDIO bar 9 0'30" – 0'34"

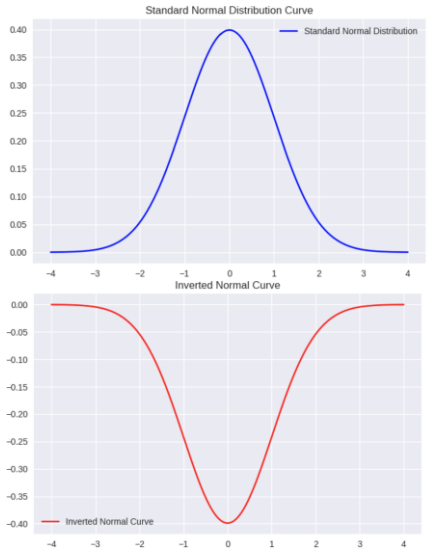
Experiment on your instrument until you can play this version of bar 1.

In bar 9, we hear the motif again, name and explain the compositional technique as heard in this bar.

Complete the missing notes for bar 9 on the stave below.

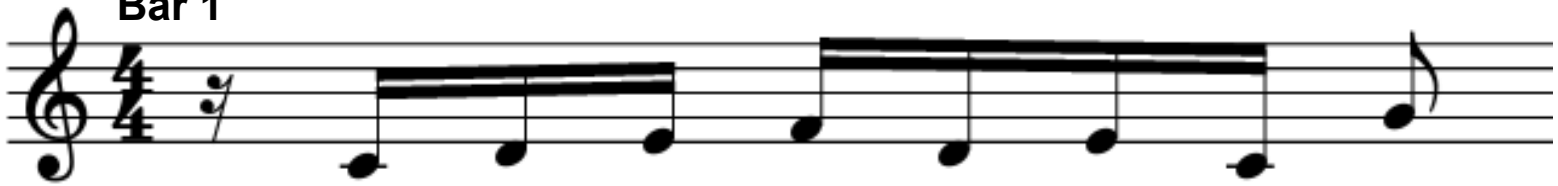
Bar 9





Compositional Technique 2

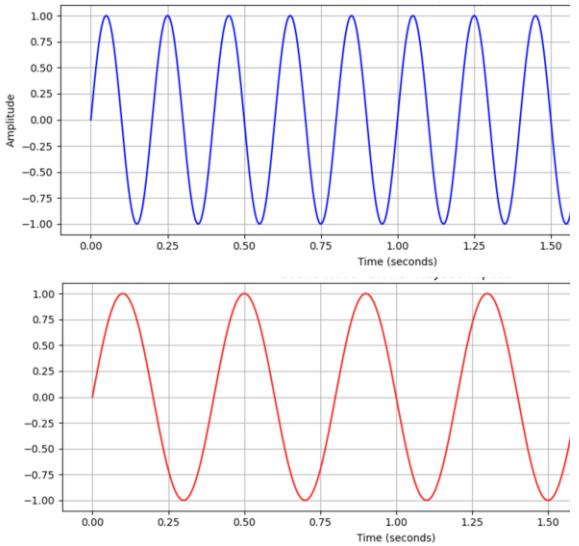
Bar 1



AUDIO bar 1 0'00" – 0'06"

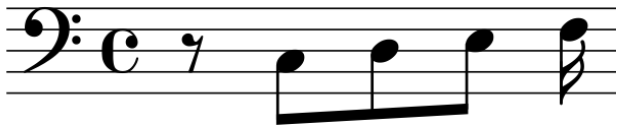
Listen again to bar 1, and then listen to bar 21.

Identify the compositional technique Bach uses in bar 21, by comparing the opening notes in both bars.



Take a look at the written score for bar 21, and describe the compositional technique.

Bar 21



AUDIO bar 21 1'11" – 1'16"

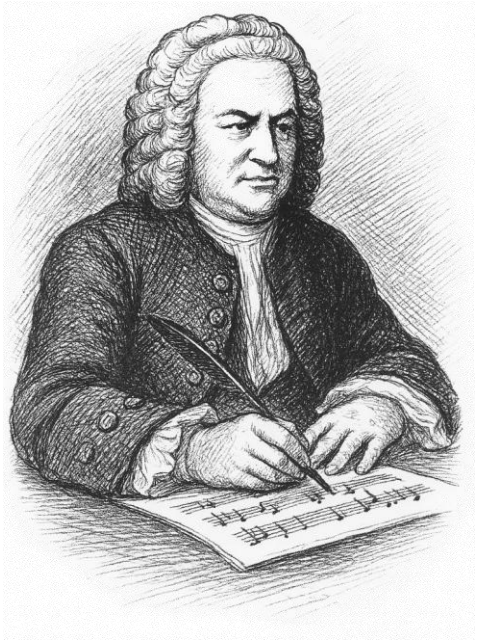
Check out this VIDEO to further support you analysing this music.

Composing Task

Compose a short motif, or take a motif from an existing piece of music.

Apply the same compositional techniques that Bach used in this piece e.g., inversion, augmentation.

Experiment with adding another compositional technique of your choice, for example...
sequence, retrograde, other?



Rehearse and Perform your composition!