



Music as Code

Computer Science Concepts

- Sequence
- Repeat loops
- Creating algorithm
- Abstraction**
- Generalisation**

Maths Concepts

- Decimal Fractions

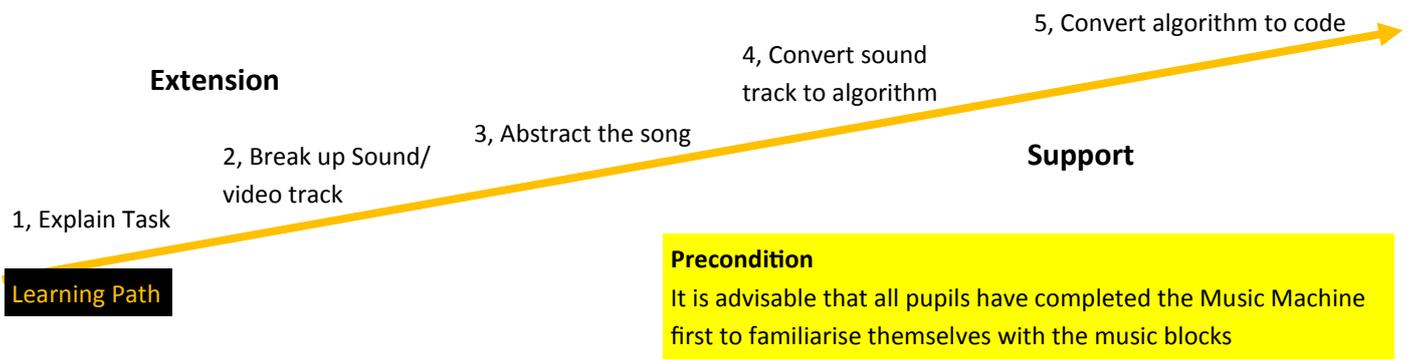
Program Aim Can pupils convert a music track into code using abstraction to help?

Computer Science

Abstraction is the skill of reducing complexity by hiding irrelevant detail and focussing on the most important element.

Generalisation is adapting a solution that solved one problem to solve another

Differentiation and Assessment for Learning At the beginning of each session the *learning intention sheet* is shared and the learning journey expanded through success criteria. Pupils feed their progress back to the teacher through annotating this sheet with smiley faces at the end of each lesson. Teachers can also annotate the sheet to indicate those who need more or less help in future lessons. These extra resources can be found on the code-it.co.uk website.



1, Explain Task

Explain that their task is to convert music they can listen to into an algorithm and then convert the algorithm into a program.

2, Break up Sound/Video Track

Play this sound track either on You Tube

<https://www.youtube.com/watch?v=P6n0Y2RyeWE> or

<http://www.wordsforlife.org.uk/songs/baa-baa-black-sheep> A video is preferable as it has more elements for pupils to identify. Ask pupils to work in pairs to identify all the elements on the track. Collect and list all the elements that they identify (accept visual elements as well)



Scratch Music Score P2

3, Abstract the song

Remind them of the main task **music to algorithm to code**

Explain that we can use abstraction to help us do this.

Show the **Abstraction Definition PDF**

Can they work in pairs to **identify all the elements that won't help them program this as musical notes in Scratch** and **what elements are the most important?**

You are looking for high and low notes as important (pitch) and how long the notes last for. Most classes will get the pitch but not all will get the length of notes.

The rest video, words, percussion etc is irrelevant

Abstraction

Reduce complexity by hiding irrelevant detail and focussing on the most important element.

Irrelevant Detail not helpful to program this as notes in Scratch	Most Important Elements that will help us program this as notes in Scratch

4, Convert sound track to algorithm

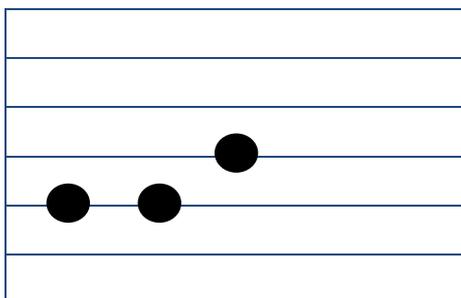
Explain that it would be really useful to have a sound track that hasn't got all this irrelevant detail.

Download this basic Baa Baa Black Sheep Midi file here

<http://ingeb.org/songs/baabaabl.mid>

You will need quick time installed to play it.

Ask pupils if they can think of a good way to record the pitch and length of notes on their whiteboard. To make a Baa Baa Black Sheep Algorithm. Dots on lines will do but accept any idea that differentiates pitch.



Shazam

An app like Shazam, which seeks to identify music, looks at pitch changes and length of notes before comparing it against its existing database of tracks to find the music.



Play the sound track lots of times to allow pupils to create an algorithm of the music.

5, Convert Algorithm to Code

You may need to remind pupils of the keyboard on the Scratch note.

Sticking to the white notes is also best. If it doesn't sound right pupils can always start from a different note although they will need to adjust all of the notes accordingly.

You could also generalise using this method to code other songs

