



**London  
Sinfonietta**  
making new music

**Teacher Resource**

# **COMPOSITION** **CHALLENGES**

**Open up the world of composition and  
invite your students to write music for the  
London Sinfonietta.**

**For KS2 and KS3 (all levels of experience and ability)**

# COMPOSITION CHALLENGES

**Welcome to the London Sinfonietta's Composition Challenges. This series of special commissions for schools invites young people to compose music for us.**

We want to support your students to become composers, develop their creativity, explore different sound worlds and craft interesting and innovative new music. With each challenge we encourage you and your class to think like composers and ask these key questions:

**Why** do I want to create a new piece of music?

**How** can I do this using sound?

**Who** am I creating it for?

I love the sound of the violin,  
I want to show off those  
beautiful sounds for  
other people to enjoy

I want to write music to  
warn people about  
climate change

I want to experiment with sounds  
to invent something that nobody  
has ever heard before

Sitting in the park on a warm,  
sunny day makes me feel  
really happy, I wonder if I  
can recreate that feeling  
using music?

I want to write a piece of music  
that tells the story of my culture  
and where I come from

# COMPOSITION CHALLENGES

**Each challenge consists of three simple steps:**

- 1. Watch the composition challenge film.** This will be your starting point for creative composition. It will introduce your students to how they can compose and invite them to listen, evaluate and discuss what they see and hear.
- 2. Use this teacher resource** to help support practical composing in the classroom.
- 3. Submit your students' compositions to the London Sinfonietta.** We will share their work on our website, perform it or perhaps showcase it in our annual Sound Out Schools Concert. We can also offer live, interactive sessions (online or in person) with our musicians who can give your students feedback on their compositions.

**Submit your compositions to [compositionchallenge@londonsinfonietta.org.uk](mailto:compositionchallenge@londonsinfonietta.org.uk)**

## Curriculum learning

Each challenge will support KS2 and 3 curriculum learning as well as developing young people's wider creative and musical skills. Challenges are focused on composing but also include listening and performing activity. Young people will develop their skills;

- as composers working on their own and with others.
- to understand how music is created and communicated.
- to organise and manipulate ideas within musical structures (including pitch, duration, texture, structure and musical notation).

# COMPOSITION CHALLENGE #2: NUMBERS AND PATTERNS

**SUITABLE FOR:**  
All ages and abilities  
No instruments or notation  
necessary

Create a new piece of music using numbers and number patterns. You can write down your musical ideas or you can record your piece. It can be as simple or complicated as you like!

The **Numbers and Patterns challenge** is inspired by Estonian composer Arvo Pärt and, in particular, his piece *Spiegel im Spiegel* (*mirror in the mirror*) which he wrote in 1978. The piece is for two instruments: violin and piano (although Pärt has made many other versions since for different instruments). The violin plays a long melody that unfolds very slowly and the piano accompanies it with a series of gentle harmonies. This challenge looks at the patterns we can see in the violin melody and suggests ways of using numbers, number lines and patterns to compose music in the classroom.

**Number and Patterns** invites young people to create short compositions inspired by the beauty of numbers and the patterns that they can create. There is no need to use any traditional notation in the compositions and the challenge encourages young people to be imaginative and inventive in the way they compose their piece. Playing with numbers and number patterns that the young people engage with on a daily basis at school will make composing seem less daunting and will consolidate this area of the maths curriculum. It allows young composers a clear and direct way into organising sound.

# COMPOSITION CHALLENGE #2: NUMBERS AND PATTERNS

## GET STARTED

Use our [short film](#) as a starting point for composing a piece inspired by Numbers and Patterns. There is no right or wrong way of doing this – it allows everyone to become a composer and make choices about what they want to create. We suggest you spend at least two or three sessions with your class, developing and trying out ideas before you create your final piece.

Watch the film with your class. Pause it whenever you like to talk about what you are seeing and hearing and encourage observations and comments.

### Discuss *Spiegel im Spiegel*

How does it make them feel? What is the music doing to make them feel that way? Think about some of the musical elements – is it fast or slow? Loud or soft? Where can you hear the highest notes and lowest notes? How would you describe the different sounds of the two instruments?

### Ask your students to make musical decisions

Arvo Pärt has made versions of *Spiegel im Spiegel* for other instruments. What instruments do they think would work well playing this piece? What instrument/s would they choose if they wanted to change the mood? If they were going to write their own piece of music, what instruments would they like to play it?

### Encourage your class to think like composers

What would they like to write music about? It might be about a mood or a place or a memory. It might be inspired by something other than music. This challenge is about patterns. Where else can they see patterns in their life? Do the window frames of the classroom create a pattern, do the markings on the playground make a pattern?

# COMPOSITION CHALLENGE #2: NUMBERS AND PATTERNS

## GET CREATIVE

**This challenge allows you to compose music using number patterns and sequences. You can explore simple patterns or use the challenge as a way to support your maths curriculum and link it to specific modules or topics your class are studying.**

Get your class creating and composing using some of these practical exercises. The idea of this challenge is that anyone can compose using a number line as a starting point.

1. **Mirror Melody**
2. **Harmony**
3. **Highs and Lows**
4. **Silence and Space**

### Need some inspiration?

**Arvo Pärt** *[Cantus in memoriam Benjamin Britten](#)* – another lovely example of Pärt's music and how he uses a single bell and a descending scale played at different speeds to create a beautiful and moving memorial to another composer.

**John Tavener** *[The Lamb](#)* – a piece for choir setting a poem by William Blake where the opening two lines are a mirror of each other.

**Steve Reich** *[Music for Pieces of Wood](#)* – watch this link for a neat visualisation of how different number patterns can be used to create a complicated sounding piece of music with constantly shifting textures.

# COMPOSITION CHALLENGE #2: NUMBERS AND PATTERNS

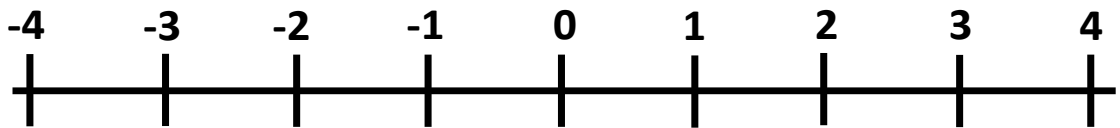
## MIRROR MELODY

You will need:

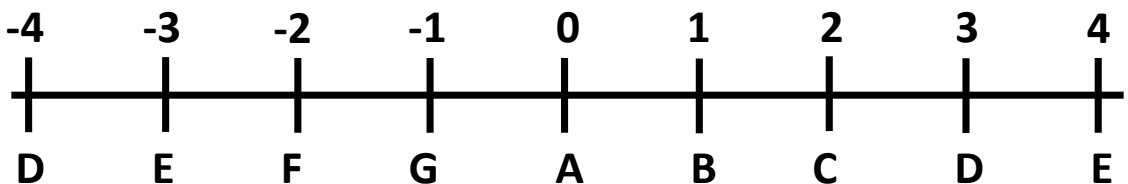
A pencil/pen  
Paper  
A musical instrument (if possible)

Like the violin melody in *Spiegel im Spiegel*, invent a 'mirrored' number pattern where each negative number or combination of negative numbers is mirrored by positive numbers.

- Ask your students to draw a number line from -4 to 4.



- Using the musical scale (the notes A, B, C, D, E, F, G) ask them to choose which note they want to be represented by the number zero on the number line (they can choose whichever note they like).
- Now match the remaining notes to each number (eg. If A = 0, 1 = B, 2 = C etc). Each number then lines up with one musical note.



- Now you can create your own mirror melody using your number line. Start with a negative number sequence (eg. 0, -1, -2, -3), then mirror this with positive numbers (eg. 0, 1, 2, 3).

# MIRROR MELODY CONTINUED

**You will need:**  
A pencil/pen  
Paper  
A musical instrument (if possible)

- Create a series of at least three mirror patterns to make you piece.

0 -1 -2 -3 0 1 2 3

0 -2 -2 -1 0 2 2 1

0 -1 -3 -1 0 1 3 1

- If you have a keyboard/xylophone/tablet available try playing your melody so that you can hear your composition take shape. To begin with, like Arvo Pärt's piece, play slowly.

**Where and when** should you use zero?

Does it sound **different** if you start with **positive** numbers?

**What** happens if you only move by step (i.e to neighbouring notes) or perhaps leap from extreme to extreme?

- When you have your mirror melody think about how fast or slow you would like to play them. What sort of energy do you want your piece to have? The energy of *Spiegel im Spiegel* is gentle and notes of the melody move slowly and patiently. But, you can explore other ways of playing your melody to create different moods.
- Use another number pattern to help you decide how many beats to count on each note.

## Extension:

Extend your number line in both directions or copy your number pattern but move the zero to a different note to extend your mirror melody - how does this sound different? You can even create number spirals that gradually increase or decrease eg. 0, 1, -2, 3, -4 etc



# COMPOSITION CHALLENGE #2:

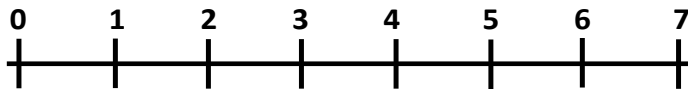
## NUMBERS AND PATTERNS

### HARMONY

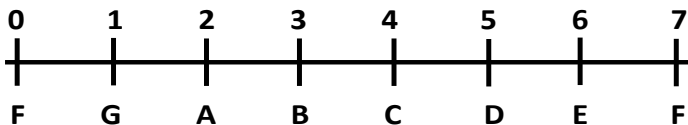
**You will need:**  
A pencil/pen  
paper  
A musical instrument (if possible)

Create some harmony to accompany your melody using number patterns.

- Create a new number line running from 0 – 7.



- Decide which musical note, the zero should represent. It does not have to be the same note as the zero in your melody number line. For example:



- Think of some number patterns you can use with the numbers 0 to 7, for example, even or odd numbers, number bonds or factors.

Even numbers: **0 2 4 6** or odd numbers: **1 3 5 7**

Number bonds for 11:

**4 7**

**5 6**

**2 3 6**

**0 2 3 6**

Factors for 12:

**2 6**

**3 4**

Or all of these together:

**2 3 4 6**

- See if you can compose three different harmonies by playing these numbers together.

# COMPOSITION CHALLENGE #2: NUMBERS AND PATTERNS

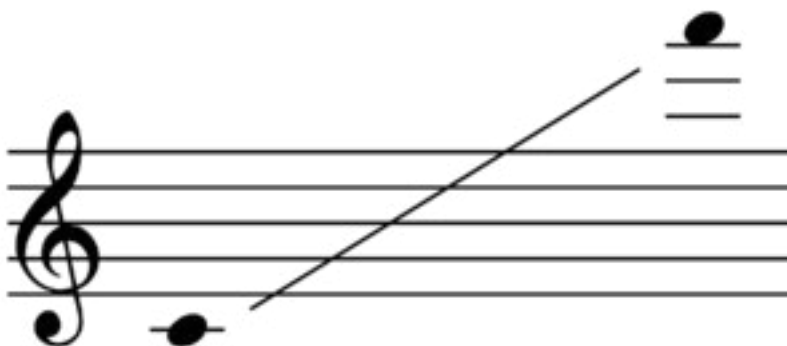
## HIGHS AND LOWS

**You will need:**

A musical instrument (if possible)

In *Spiegel im Spiegel*, the melody and harmony are surrounded by occasional notes that are very high and very low – they decorate the piece and add height and depth to the musical world it lives in.

- Ask your students to find extreme high and low sounds – these could be pitched (on a glockenspiel, a keyboard, a bass guitar) or unpitched (low drum, triangle). They could even be found sound – using objects from around the room. The notes could alternate or you could have two high pitches to every one low pitch, or a mixture. Use a number pattern to work out when to play these.
- The low pitch could play every 7 beats while the high pitch plays every 5 beats (or other numbers of your choice).
- You could use square or prime numbers to determine when your high or low sounds are played during your piece. Start counting slowly from 1 and play only on the square or prime numbers.
- You can play them on or after every time the melody passes through the number 0.



# COMPOSITION CHALLENGE #2: NUMBERS AND PATTERNS

## SILENCE AND SPACE

**You will need:**

A musical instrument (if possible)

**A great way to create a sense of calm in music is to use silence.**

- Ask your students to think about where and when they could use silence to create a sense of calm. If a silence is too short then it has little effect but if it is too long then the spell of the music can be lost. Experiment with different lengths of silence to see what suits your piece best.

For Example:

- Your piece could start and then gently stop and wait in silence before starting again.
- The harmony part could add silence between chords or after a particular chord. How long should this silence last?
- The melody part could use silence to separate phrases.



# COMPOSITION CHALLENGE #2: NUMBERS AND PATTERNS

**You will need:**  
A pencil/pen  
Paper  
A musical instrument (if possible)

## CREATE YOUR PIECE

**Once you have composed your melody and your harmonies you can try putting them together to create your Numbers and Patterns piece.**

You may want to work in pairs to do this effectively so that one person can play the melody and one person can play the harmony. Here are some questions for composers to find answers to (there are many answers to each!):

- How will your piece start – with the melody or the harmony or both together? How does Arvo Pärt start his piece?
- Will you play your harmony as a chord – where all the notes are played at the same time – or will you play it as a broken chord where each note is played in turn? How does Arvo Pärt play his harmonies (listen to the piano part).
- How quickly do your harmonies change – with each note of the melody or every two, three or four notes?
- Which instruments will you use for the melody or the harmony? Will you use any very high or very low notes?
- How loud or soft should you play? What mood do you want your piece to evoke? How loud is *Spiegel im Spiegel*? What mood does this convey?

Composers try many different versions of their own music to create the sound and feeling they want. For all these questions, explore what your piece sounds like to help you decide on an answer. You might try two different versions and then choose the one that you prefer. You could also think about how you might write the piece down – using instructions, letters as well as traditional musical notation. Remember to add written instruction on how to play as well as what to play. You could think about whether the instruments swap roles at all and the instrument playing the melody, then plays the harmony and vice versa.

Once you have composed your piece, send us your score or perform and record it for us to listen to. **We look forward to receiving your compositions!**

Send them to us at [compositionchallenges@londonsinfonietta.org.uk](mailto:compositionchallenges@londonsinfonietta.org.uk) or share them on social media using [#compositionchallenge](https://twitter.com/compositionchallenge) and tag us!

# GLOSSARY

**Composer** someone who writes/imagines/creates music. In Latin, the word means 'one who puts together'.

**Commission** the act of inviting someone to compose a piece of music (and, at professional level, the act of paying the composer to write it).

**Melody** more commonly known as the tune. This is the line of notes that you would sing or play. In a melody, we only hear one note at a time.

**Harmony** two or more notes played together create harmony. Harmony adds depth and background to a piece. It can also add emotion. The most common harmonies have three notes in them but harmonies can become richer and more surprising with more notes.

**Dynamics** a term that relates to volume in music. We can use English words like loud or quiet. Traditionally, we use Italian words for these: *forte* and *piano*.

**Pitch** the musical notes from the lowest to the highest. In science, these terms relate to the frequency of vibration. Low notes have a low number (the unit is hertz or hz) The note we call 'A' which an orchestra traditionally tunes to (the A just above the note middle C on the piano) has a frequency of 440hz i.e. the sound vibrates 440 times a second. Interestingly, if you play an A one octave higher than this, the frequency is exactly double – 880hz.

**Texture** this describes how dense or light a piece of music is. If there are many notes being heard at once, the texture is often described as dense. If the music has fewer instruments or perhaps the notes move more slowly, the texture can be described as lighter. There are many imaginative ways of describing texture in music as there are in visual art or even food.

**Phrase** a musical phrase is akin to a sentence or even a clause in written language. It may be only a few notes long or it may last several bars of music.

**Expressive marking** in music, this is the 'how' not the 'what'. In traditional musical notation, pitch, volume etc are often absolute but the expressive marking will tell the performer what the mood or intention of the note is. Playwrights use this when they give an instruction prior to a line being spoken. Like many musical terms, musicians have traditionally used Italian words (i.e. *dolce* means 'gently') but in modern times, words in the language of the composer are very common.

**Extended technique** a technique of playing your instrument that is in some way unorthodox – using a different part of the instrument to generate the sound or creating a very different sound from what is expected. Lots of modern composers ask for extended techniques and many of them are now very common for instrumentalists to learn. A good example would be for a piano player to lean inside the piano and pluck the strings with their fingers.

# COMPOSITION CHALLENGES

**The London Sinfonietta is one of the world's leading contemporary music ensembles. We focus on performing works by living composers. We often commission composers to write music especially for us.**

**Composition Challenges is part of our Sound Out Schools Programme. For more information please contact us at [compositionchallenge@londonsinfonietta.org.uk](mailto:compositionchallenge@londonsinfonietta.org.uk) or visit our website [www.londonsinfonietta.org.uk](http://www.londonsinfonietta.org.uk)**

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