



ACTIVITY & LEARNING PACK

LONDON SINFONIETTA: REPEATING PATTERNS

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LONDON SINFONIETTA

Repeating Patterns

Repeating Patterns is a specially devised concert to guide audiences through the world of minimalist music. If you attended one of our *Repeating Patterns* concerts, you'll enjoy this useful activity and learning pack to continue your exploration at home.

During the concert, we heard presenter Patrick Bailey introduce major composers from the Minimalist movement – including Terry Riley, Steve Reich and Pauline Oliveros. This pack provides a short biography of each composer with a description of the pieces performed. And if you fancy some musical activities or further listening, we've included our suggestions!

Music performed included:

Steve Reich	Pendulum Music
La Monte Young	Composition 1960: #7
Terry Riley	In C (excerpt)
Steve Reich	Clapping Music
Steve Reich	Cello Counterpoint (excerpt)
Philip Glass	Opening from Glassworks
Pauline Oliveros	Earth Ears (excerpt)
Julia Wolfe	East Broadway
Arvo Pärt	Fratres (excerpt)
Michael Nyman	In C Interlude*

*Arranged by Patrick Bailey

Patrick Bailey presenter
Jonathan Morton violin
Tim Gill cello
Clíodna Shanahan piano
David Hockings percussion

London Sinfonietta

The London Sinfonietta's mission is to place the best contemporary classical music at the heart of today's culture; engaging and challenging the public through inspiring performances of the highest standard, and taking risks to develop new work and talent. Founded in 1968, the ensemble's commitment to making new music has seen it commission over 400 works, and premiere many hundreds more.

Resident at Southbank Centre and Artistic Associates at Kings Place, with a busy touring schedule across the UK and abroad, its core 18 Principal Players, represent some of the best solo and ensemble musicians in the world.

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WHAT IS MINIMALISM?

Minimalism is a style of music that came from America in the early 1960s. The term was first applied to visual art, in particular to works which concentrated on one idea as opposed to complex pictures. It is worth looking at some of these works <https://www.tate.org.uk/art/art-terms/m/minimalism>. In music, the term is often applied to compositions which focus on one or two ideas and feature repetition of these ideas. One key concept of a lot of minimalist music is that it takes a different approach to time. In traditional music, pieces have beginning and middle and an end. Once the first notes are played, the music is always heading somewhere. This is most clear in a simple song where there are words – the music, like the language, shapes these words and has moments of emphasis, of tension, of release. In minimalist music, time moves in circles – there is often not a sense of beginning or end. A good comparison is the contemplative, reflective music of gamelan from the far east or the ritual circling of African drumming both of which were prime influences on the early minimalist composers.

With this in mind, a key feature of minimalism is its ostinatos, which are short repeated melodies or rhythms played over and over again. Ostinatos are layered (played on top of each other) and can be altered with the following techniques:

Note addition – where notes are added to a repeated phrase over time

Melodic transformation – when the melody of an ostinato changes over time

Rhythmic transformation – when the rhythm of an ostinato changes over time

Steve Reich is probably the most famous composer of minimalism, with *Music for 18 Musicians*, *Electric Counterpoint* and *Clapping Music* some of his most popular works. Other composers of minimalism include **Philip Glass**, **Terry Riley**, **John Adams**, **Arvo Pärt** and **Michael Nyman**.

STEVE REICH (B. 1936)

Steve Reich was born in 1936 in New York. He was educated at Cornell University and then the prestigious Julliard School. He has worked with many of the key composers of the twentieth century including Berio, Milhaud and Ligeti. The Guardian has described Reich as one of the few composers to have “altered the direction of musical history.” Reich is a pioneer of minimalism, although his music has increasingly deviated from a purely minimalist style. He first got into shift phasing and ever moving patterns which are his trademark through making tape loops and experimenting with canon.

Reich spent time in Ghana studying drumming and the gamelan in Bali, both of which influenced his very important piece *Drumming* first performed by his new ensemble Steve Reich and Musicians, a group which has been performing his music ever since. More recently he has moved on from phase shifting, working with larger and larger ensembles and looking at other music processes such as augmentation of phrases and melodic strands.

He became a close colleague of Terry Riley, another minimalist who combines simple patterns at different times to create shifting patterns and a sort of chance (aleatoric) additional rhythm. One of his early experiments was *It's Gonna Rain* where he used recordings of a sermon to cut and make the piece. His work has been a great influence on many other composers, particularly those in the pop world such as Brian Eno. Composer John Adams commented, “He didn't reinvent the wheel so much as he showed us a new way to ride.”

PENDULUM MUSIC

Pendulum Music involves no traditional instruments, just microphones and speakers. It can also be described as performance art. The piece involves three or four microphones hanging directly above speakers. Musicians will then take the microphones and hold them up, and let them swing over the speakers. As the microphones swing over the speakers, sound is created through the feedback.

Reich was inspired to create this piece when working in New Mexico and swinging a microphone around like a lasso. As the microphone went past the speaker it created a noise. Reich realised that if this sound was recreated with three microphones, it would create a phased piece.

LA MONTE YOUNG (B. 1935)

La Monte Young is an avant-garde composer and regarded as one of the first American minimalist composers. He studied at UCLA and attended summer schools and courses, learning from composers such as Stockhausen. It was whilst attending one of these summer courses at the Darmstadt School that Young came across the music of John Cage, and met David Tudor, Cage's collaborator.

Just a few months later, Young was presenting some of Cage's work on the US west coast, whilst Cage and Tudor would incorporate Young's work into their performances around Europe and America. A year after studying at Darmstadt, Young travelled to New York to study with Cage and Richard Maxfield. It was at this time that Young gave one of New York's first loft concerts at Yoko Ono's loft, and some of the performances from this concert formed part of Young's *Compositions 1960*.

COMPOSITION 1960: #7

Composition 1960: #7 comes from a series of pieces entitled *Compositions 1960*, which includes 14 pieces in total. Each piece comes with its own set of instructions and focus on performance art in various ways. *Composition 1960: #7* consists of just two notes, B and F# with the instruction 'to be held for a long time'. A forty-five-minute performance of the piece was presented by a string trio in New York in 1961. A thirty-nine-minute version for synthesizer and electronic tanbura by The Never Arriving was recorded and released in 2017.



TERRY RILEY (B. 1935)

Terry Riley was a pioneer of the minimalist movement, with his piece *In C* representing a crucial moment in minimalism. Riley was inspired by La Monte Young, and his experimental use of time within compositions. Riley's work has influenced other prominent musicians from various genres of music, including Steve Reich, Philip Glass, John Adams, and The Who. Riley studied Indian Raga vocals with singer Pandit Pran Nath and travelled to India many times to see him.

IN C

In C is an open score piece, which means it can be performed on any instrument. It comprises of 53 separate sections, or phrases, all of which are in the key of C. One instrument plays a constant pulse of Cs to keep tempo whilst the phrases are played. The phrases are then played in order by the other musicians. However, the musicians do not have to start together. Nor do they have to move on to the next phrase together – so the piece unfolds slowly as each musician moves through the phrases at their own pace. For this reason, *In C* has no set duration, and can last for as short or long as the performers wish. Typically the piece lasts between 45 minutes and an hour and a half. The piece ends when all musicians reach phrase 53. In our performance the musicians will play the first twelve phrases only.

STEVE REICH (B. 1936)

CLAPPING MUSIC

Reich wrote *Clapping Music* in 1972 whilst on tour with his band. It is written for two performers and is performed entirely by clapping. So one of the unique things about this piece is that you do not need any instruments, just your hands. After a concert in Brussels, the promoter asked Reich if his band would like to go and hear some flamenco music. They ended up in a club and watched a pair of musicians who by Reich's account were terrible guitarists and singers. However when they started clapping very loudly, Reich and his group, who were mainly percussionists, joined in. After the concert Reich realised that he could use this as the basis for a new work.

The piece is a development of Reich's use of the phasing technique, where two identical rhythms are performed at slightly different speeds. However, in *Clapping Music*, Reich decided that the difficulty of the phasing was too great a contrast with the simplicity of the way of producing the sound. Instead, one performer claps a fixed rhythm, which stays constant throughout the whole piece, whilst the other shifts a beat after a certain amount of repetitions.

Extra information:

- See how *Clapping Music*'s rhythms phase in this video: <https://www.youtube.com/watch?v=lzkOFJMI5i8&t=>
- After watching it live, here's a video of *Clapping Music* being performed: <https://www.youtube.com/watch?v=liYkRarIDfo>
- Have a go at *Clapping Music* yourself! London Sinfonietta has a *Clapping Music* app for iOS. It can be downloaded from the iTunes store for free. Here is Steve Reich talking about our *Clapping Music* App: <https://www.youtube.com/watch?v=7Z23EmPsoto>

CELLO COUNTERPOINT

Cello Counterpoint is scored for eight cellos and can either be performed by a solo cello, with the seven other parts played on a pre-recorded tape, or by a cello octet. Today you'll hear our principal cellist Tim perform an excerpt of it with a tape. A counterpoint is a second melody heard in a piece, different to the main melody but fitting alongside it.

PHILIP GLASS (B. 1937)

Glass was born in Baltimore, and studied at the Julliard School of Music. Whilst Glass is a renowned composer of minimalist music, he prefers to call it 'music with repetitive structures.' Glass moved to New York in 1967 and started his own group the Philip Glass Ensemble, and still performs with them today. Glass has written a variety of pieces, including for chamber ensemble, solo instrument and operas. You might recognise his music, as it's been featured on both *Stranger Things* and *Love Island!*

OPENING FROM GLASSWORKS

Glassworks was written to introduce Glass' music to a more general audience than had been familiar with it up to then. The first movement *Opening* is an example of minimalist music that sounds very simple and beautiful. If you listen closely it has two different rhythms happening at the same time. The music sounds a bit like pop music, and written for a recording studio, however the music is still performed live across the world.

PAULINE OLIVEROS (1932-2016)

Oliveros was an American composer and performer whose work focused on experimental and electronic music. Oliveros was a pioneer in her field, and was a founding member of the famous San Francisco Tape Music Center, and also served as its director. Oliveros is most well known for her music known as 'deep listening', a term coined after she was in a 14ft deep underground room to make a recording.

EARTH EARS

Earth Ears is an improvised piece. The composer has not written any notes or rhythms for the musicians but simply provides some instructions. The musicians invent/improvise a pattern which they repeat (an ostinato). Then by listening to each other they gradually change their pattern. This process can be repeated up to four times. Oliveros says that any instrument or non-instrument can make the sound and be used. The piece can last for up to several hours, but today our musicians will perform a shorter excerpt.

JULIA WOLFE (B. 1958)

Julia Wolfe is an American composer and Professor of Music at New York University. Wolfe composed music for an all-female theatre troupe and then went on to study composition at Yale School of Music encouraged by composers Michael Gordon and David Lang. Following her graduation, in 1987 Wolfe co-formed the famous American new music collective Bang on a Can.

Wolfe's music has been described as having 'an intense physicality and a relentless power that pushes performers to extremes and demands attention from the audience.' Her influences range from folk to rock, as well as classical and blurring the lines between the genres.

EAST BROADWAY

East Broadway is a piece written for an unusual line up of toy piano and tape. The toy piano makes a clanging sound, not unlike a gamelan. The tape part is very electronic sounding and acts as a partner to the toy piano (as opposed to *Cello Counterpoint* where the tape part is a recording of other cellos). *East Broadway* is a very lively, fast-paced piece that mixes fast rhythms and clashing chords.

ARVO PÄRT (B. 1935)

Arvo Pärt is a composer from Estonia, who since 2010 has been the most played living composer in the world. Steve Reich says 'I love his music...he's completely out of step with [what is fashionable] and yet he's enormously popular, which is so inspiring'.

Pärt grew up in Estonia when it was under Soviet rule, and struggled to get his work accepted by the Soviets. Whilst he was a praised composer around the world, his use of 12-tone music, for the first time in Estonia, suggested he was unacceptably susceptible to foreign influence. Another work by Pärt, *Credo*, caused issues when the work had such a 'dangerously' strong impact on the audience that they demanded to hear it again. The work included the Latin text 'Credo in Iesum Christum' meaning 'I believe in Jesus Christ'. Having a religious faith was considered against the Soviet regime and this led to *Credo* being practically banned and Pärt fell out of favour with the Soviet government.

FRATRES

Fratres (Latin for 'brothers') was written in 1977 and is considered one of Pärt's most well-known works. *Fratres* was originally composed as an open score three-part piece, meaning it can be performed by any combination of instruments. Pärt reworked the piece to be written with variations for a solo instrument, such as the violin or cello. Much of Pärt's music follows strict maths rules, which determine the movement of voices, length of the melody and phrases, and time signature alternations. His music is none the less easy to listen to, and *Fratres* has featured in many film and television productions. This pack contains a lesson plan on composing using numbers.

MICHAEL NYMAN (B. 1944)

Nyman is a British composer born in Stratford, London. As well as being a composer, Nyman also works as a regularly performing pianist, musicologist and a librettist. He writes for his band, the Michael Nyman band, and has also written many film scores, through a long time collaboration with filmmaker Peter Greenaway.

IN C INTERLUDE

In C Interlude by Michael Nyman was inspired by Terry Riley's famous ground-breaking open score composition, *In C*. *In C Interlude* was also written open score which means it can be played by any group of instruments, and as many or as few as you like. The piece has five separate parts and no fixed duration.



Arvo Pärt

ACTIVITIES

MINIMALIST TECHNIQUES

NOTE ADDITION

Where notes are added to a repeated phrase over time.

1. Think of a short repeated rhythm or melody (if you have pitched instruments).
This could be done without instruments as simply as: **thigh-slap, thigh-slap, clap**
2. Repeat this rhythm up to eight times and then add one more clap: **thigh-slap, thigh-slap, clap, clap**
3. Repeat this new rhythm eight times.
Then you get to decide - either return to the original rhythm or change again.
If you want to change, then you can add another note OR take one away: **thigh-slap, clap, clap**
4. How many different rhythms can you add?
5. You could divide your group in two (or three or four) groups and get each group to start one after the other. i.e. the second group start the original rhythm just as the first group are changing to the second.
6. If you have pitched instruments to hand - like glockenspiels - choose notes like C D E to start with and then add F (and, in the third part, take away C)

MELODIC AND RHYTHMIC TRANSFORMATION

When the melody or rhythm of an ostinato changes over time.

1. Start again with this rhythm or one of your own: **thigh-slap, thigh-slap, clap**

Alter this rhythm – here are some suggestions

Again, you can add pitches in if you like or play these rhythms on percussion instruments:

Then get the group to decide: how many times to repeat each one? How will the piece finish – simply stop, fade out, end with a bang?

fish and chips sau - sa - ges fish chips and beans

thigh thigh clap thigh thigh clap thigh thigh clap clap

Again, you can add pitches in if you like or play these rhythms on percussion instruments:

How many times to repeat each one?

How will the piece finish – simply stop, fade out, end with a bang?

ARVO PÄRT (B.1935): SPIEGEL IM SPIEGEL

Spiegel im spiegel is translated as 'mirror in the mirror'. The piece was originally written for a single piano and violin in a 'Tinntinabular' style - a term coined by Pärt himself to describe his minimalist, meditative compositions. The melody line is based on a slow ascending melodic line, beginning with a G-A two-note scale, which alternately ascends then descends to A by step. With each subsequent ascent and descent, a note is added to the line, a process which could go on indefinitely.

Listening

This is a fun way to combine learning about maths with music!

Listen to Arvo Pärt's piece *Spiegel im Spiegel* (mirror in the mirror):

<https://www.youtube.com/watch?v=NPW6odUjacU>

You don't have to listen to the whole thing. The first 2-3 minutes would be good. You might get a lot out of listening to a smaller chunk like this twice. The piece has two instruments in this version – a piano and a cello. The piano plays the accompaniment and the cello plays the melody. The melody is composed using a system of positive and negative numbers with 0 as the centre point.

Can you complete this number sequence:

-1 0 1 0 -2 -1 0 2 ??

The answer is: 1 0

Number patterns and melody

To compose our own melodies, we are going to assign a musical note (pitch) to a number. We are going to use a sequence of notes with 0 at the centre and positive and negative numbers either side:

Now create your own sequence of numbers. They could mirror each other with 0 as the axis like this:

0 1 0 -1 0 2 1 0 -2 -1 0

Or, you could start a sequence off and see whether they can complete it. If another way of doing this presents itself, take it. There are many ways of using this series of numbers. You can make it as short or as long as you like as time permits.

My sequence above, **0 1 0 -1 0 2 1 0 -2 -1 0**, looks like this when the notes are used:

Use the pitched instruments in the group to play this melody. They can experiment with the rhythm of the notes – it does not need to be complicated. One note every two beats will sound great. Get them to practice it. Try different combinations of instruments. Arvo Pärt introduces his melody by bringing in only a few notes at a time. So you could also try something like this (using my sequence):

0 1 0
 0 1 0 -1 0
 0 1 0 -1 0 2 1 0 etc

Music from Number Bonds

Now we are going to create a gentle accompaniment, for the unpitched instruments to play, using number bonds. Let's take the number 8. What are our number bonds? 1+7; 6+2, 5+3, 4+4 etc
 Can we also add number bonds with 3 numbers? 3+3+2, 1+3+4 etc

Divide the group into two or three. You can put like-minded instruments together (drums in one, shakers in another) or mix each group up. It can work both ways. Each group needs to choose one of the number bonds. It is a good idea to have at least one two-digit number bond and one three-digit. Imagine we have 6+2, 3+5, 1+3+4.

- Keeping the same speed/tempo as before, each group needs to count their 8 beat cycle, clapping on the 1 of their respective number bonds e.g. 1 2 3 1 2 3 4 5
- When each group has practiced theirs, put them all together by starting one group off and then adding another on top
- As a challenge, the groups could also play on 1 AND on the final number of each group: 1 2 3 1 2 3 4 5
- As we are after a gentle accompaniment, they need to play with a soft dynamic – piano or even pianissimo

ADDITIONAL ACTIVITY

You can make these number bond patterns even more sophisticated by filling out the groups of beats with a rhythm. For 3 + 5, it might look like this:

The image shows two musical staves. The first staff has a treble clef and a series of notes with stems pointing down, corresponding to the number bonds 1, 2, 3, 1, 2, 3, 4, 5. The second staff has a treble clef and a series of notes with stems pointing down, corresponding to the number bonds 'Number bonds three and five equal eight!'.

Putting your composition together

There are some composing decisions to make – most obviously ‘how will your piece start?’. This could be a group discussion. Think creatively about the ending – will the piece stop suddenly or fade out into the distance or another way?

Give it a title, and perform your piece!

MICHAEL NYMAN (B.1944) IN C INTERLUDE

In C Interlude by Michael Nyman was inspired by Terry Riley’s famous ground-breaking open score composition, *In C*. Nyman’s *In C Interlude* was also written open score which means it can be played by any group of instruments, and as many or as few as you like. The piece has five separate parts and no fixed duration.

Listening

Listen to Michael Nyman’s *In C Interlude* <https://www.youtube.com/watch?v=85b1M2R7t0>

Ask some questions:

- What instruments could they hear playing?
- What were they doing differently – how did the piano differ from the clarinet/sax at the start for instance (the piano keeps the pulse of the music, the clarinet/sax are playing the melody).
- Can they hear when a new layer of music starts? (at 1.41 the piano starts adding chords).
- What does this add to the piece and to the listeners’ experience? (it helps the piece to go somewhere – to build, to grow).

Compose your own piece

We are going to compose a piece of music using separate musical elements. In the process, we will learn more about what each element does and how it adds to a composition. We will learn how we can structure our piece using different combinations of these elements.

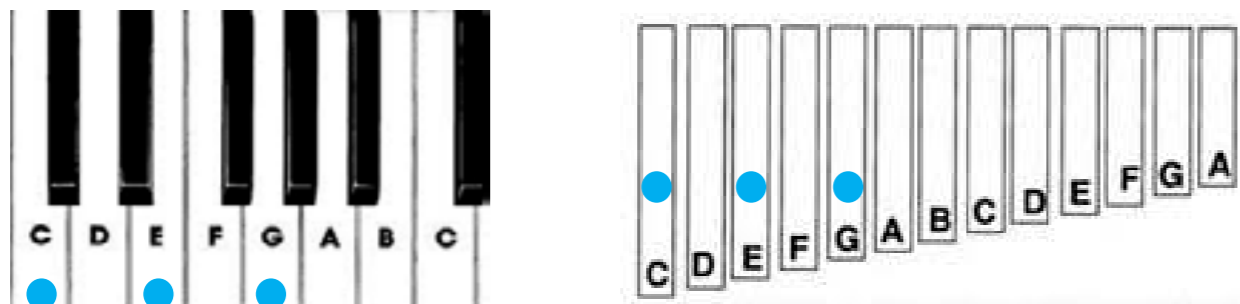
Pulse

Set a steady tempo by counting four beats in and get the group to clap or play four beats back to you. Only four beats though – it is really important that everyone stops together. You may need to do this more than once. Develop this idea by counting four beats, playing four beats, counting four beats, playing four beats so that we hear four beats of music on the instruments alternating with four beats of silence. The group must count actively during the silences. You can do this first by counting the beats out loud and then by counting them only in your head. If any pitched instruments are playing, choose one note for them to use – C is a great choice for this piece.

You can develop it further by changing which instruments play the pulse as you go. You could have one group play four beats and they are answered by another group for instance. Alternatively, one group could play for 16 beats and then another group and so on. One group could play exactly twice as fast for four beats i.e. play eight quavers. The most important thing for this group though is to keep the pulse absolutely steady and regular. Once they feel comfortable with this, ask them to think about the dynamics. How loud or soft should they play? When should they change? Should the change be sudden or gradual. Someone in the group could write all this down.

Harmony

You can use ukuleles and guitars for harmony/chords as well as keyboards and xylophones. Start by finding a chord that everyone can play (C is a good place to start if you have ukuleles). To 'build' a chord on a xylophone or piano start with the named note of the chord (its root). So for the chord of C, take the note C and then this simple pattern will give you the chord: root, miss a note, play a note, miss a note, play a note:



If the chord-playing instruments can find TWO chords that they like that will be enough for the first section. They will need to decide how often they change chord (every four beats? every eight?) – this can be done through trial and error, listening to the results and deciding which one sounds best. So, if the second chord is F (i.e. the notes F, A & C) then this could look like:

C (for four beats); F (for four beats); C (4 beats); F (4 beats) etc.

When the group have learnt this, ask them to think about whether everyone plays all of the time or whether some instruments start and others join. How loud should they play? If time, get the 'harmony' group to practice with the 'pulse' group.

Melody

To create our melody, we are going to use only the white notes of the piano – all the naturals. There are many ways of composing melodies and we are going to concentrate on a 'question and answer' structure. Decide which note you are going to start on – try a few and think which one sounds best. Then, decide whether you are going to go up (i.e. move to the right) from that note or down (move to the left). I suggest moving by step (i.e. to the adjacent note) or by a small jump (leaping over one note). Get the group to choose four notes either going up or down (but don't mix directions here).

I started on E and chose to go up and got this:



The group should practice playing these four notes. You can play them fast, one note per beat, or slower, one note every two beats. As an extension, the group could invent a different rhythm for them. Once you have decided, get the group to practice playing them over (at the same speed as the pulse). Having 'asked the question' with the melody, your answer is simply the same notes but in reverse order. In my case: B A F E.

So the next decision for the group is whether we have two questions then two answers or one question and one answer (or a different pattern entirely). It could be:

EFAB EFAB BAFE BAFE or EFAB BAFE EFAB BAFE

Once the group have learnt this, ask them to think about whether everyone plays all the notes or do some instruments play the 'question' and others play the 'answer'.

Optional: To extend the melody, repeat the same pattern but starting on a different note. I would choose to start on F so my new pattern would be FGBC (CBGF).

Putting your piece together

You can put these three elements together. Decide which starts – pulse, harmony or melody – and which joins next. You can create as complex or as simple a structure as you like. Here is mine:

Pulse (16 counts)
Add harmony (16 counts)
Add melody, play melody twice through
Pulse continues, harmony and melody stop (for 16 beats)
Add harmony and melody at the same time, play melody twice through
Everyone stops together!

Extensions

Counter-melody

In our version of *In C Interlude*, we also had a counter-melody, a second melody that decorates the first one. This can be something for one or two players only. To make their counter melody stand out, start much higher than the main melody and use an instrument(s) that stand out – a flute or a glockenspiel. Finally, move in the opposite direction to the main tune. So for my counter-melody, I would need to move down first. I chose this:

G E C B

Section B – an interruption

Having a section B can take your piece in a new direction and allow you even more interesting structures.

Get the group to choose a new chord – different from the first two. If I had chosen C and F as my first chords, I might choose G for my section B. I would get everyone – pulse, harmony and melody groups – to play a single rhythm on this note/chord. You can invent a rhythm using the name of your group. For example:



Practice and perform your new piece!