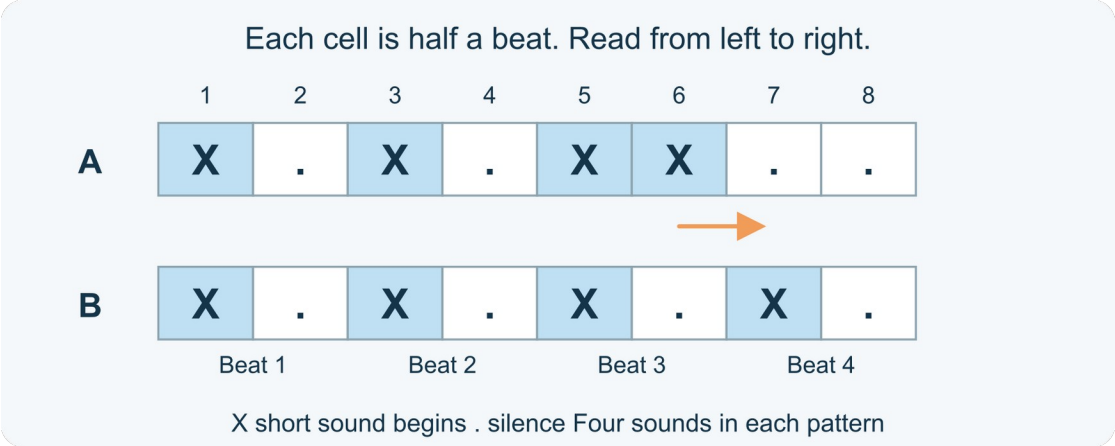
Remix an eight cell rhythm

Can two rhythms have the same length and number of sounds but different patterns?

Read an original visual rhythm, move one sound and explain the change. Sound-making is entirely optional.

Make | 10-20 minutes, or one silent comparison | Paper and a pen or pencil, A finger for silent tracing; no instrument or audio app needed

Start here Draw eight equal boxes in a row. Each box represents half a beat, so all eight fill four beats. Write A as X . X . X X . .



Four beats, four sounds, different timing

1 Set a clear legend

Read left to right. X means one short sound begins at the start of that half-beat cell; a dot means silence for that cell. There are no held notes in this little notation. You can simply point to each cell without making sound.

2 Read the first pattern

Number the cells 1 to 8. In A, sounds begin in cells 1, 3, 5 and 6. Count four sound beginnings across eight half-beat cells. The total duration is four beats.

3 Move one sound

Copy A as B, then move the X from cell 6 to cell 7. B is X . X . X . X . Keep the cell length and reading pace the same. Compare by tracing; gentle tapping is optional.

4 Explain what changed

Both patterns contain four sound beginnings and last four beats under this legend. The timing differs because one sound starts later. Keep, redraw or change the pattern; there is no performance test.

Original pattern comparison

These two short patterns were written for this activity. They do not reproduce a song or report a listener study. One cell is half a beat, and a dot is silence.

• A: X . X . X X . . - sound beginnings in cells 1, 3, 5 and 6.

• B: X . X . X . X . - sound beginnings in cells 1, 3, 5 and 7.

• Each has four sound beginnings and eight half-beat cells: four beats. Only the sound in cell 6 moved, to cell 7.

What this example can show Equal duration and equal sound count do not make the rhythms identical. No particular mood, listener preference or musical ability follows from this comparison.

A different way

Read the numbered cells silently, trace the example or dictate where an X should move. Keeping a steady performed beat is unnecessary.

If you want to go further

Write a new legend in which one larger box lasts a whole beat. Show how two half-beat cells fit inside it, without silently changing the original pattern's duration.

Something to notice

What stayed the same even though the rhythm changed?

Read or explore more

Horizon topic Music

https://launchhorizonhq.com/learn/music/

Horizon topic Rhythm Metre

https://launchhorizonhq.com/learn/rhythm-metre/

Horizon topic Musical Variation

https://launchhorizonhq.com/learn/musical-variation/

The Open University, OpenLearn Repetition, contrast and variation

https://www.open.edu/openlearn/mod/oucontent/view.php?id=139369&section=3.1

MIT OpenCourseWare Basic Musical Terms Definitions

https://ocw.mit.edu/courses/21m-011-introduction-to-western-music-fall-2024/pages/week-1-basic-musical-terms-definitions/

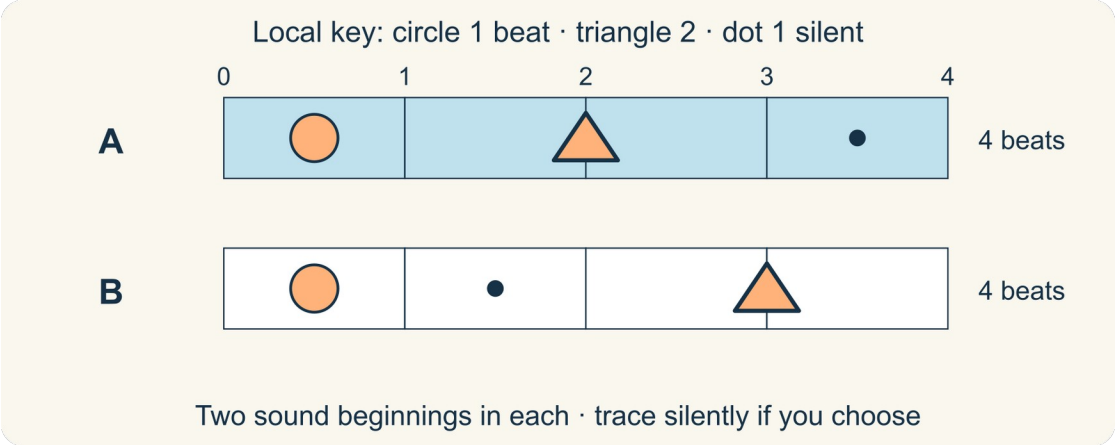
Write a graphic score legend

What must a reader know before a symbol becomes a musical instruction?

Give three symbols exact time meanings, then check whether someone could follow your score without guessing. Listening or making a sound is optional.

Make | 15–25 minutes, or one comparison | Paper and a pen or pencil, The supplied model; no purchase, account or internet connection needed

Start here Copy the symbols ○, △ and ·. Give ○ one beat of sound, △ two beats of sound, and · one beat of silence.



A local key gives exact timing

1 Write a complete key

Read left to right. A symbol begins when the previous one ends. Both sound symbols can use the same imagined quiet tone; pitch and loudness are not specified by their shapes.

2 Trace the supplied score

Read ○ △ ·. Mark boundaries at beats 0, 1, 3 and 4: circle from 0 to 1, triangle from 1 to 3, then silence from 3 to 4. No performance is needed.

3 Change one instruction

Try ○ · △ using the same key. It still lasts four beats, but the silence moves to 1–2 and the triangle now lasts 2–4. Explain the difference by pointing, drawing or writing.

4 Check what remains open

Choose one detail your key leaves free, such as the imagined sound. If exact agreement matters, add one instruction and check the score again.

One key two four beat scores

This is an original local notation, not a standard musical convention.

• A: ◯ △ · means sound for 1 beat, sound for 2 beats, then silence for 1 beat: 1 + 2 + 1 = 4. It has two sound beginnings.

• B: ◯ · △ also totals 4 beats. Its silent beat falls earlier, so equal total duration does not mean identical timing.

• A reader can trace either score silently. The key does not claim that a triangle always has this meaning in other music.

What this example can show A precise timing key need not specify every sound quality. Our diagrams do not record an actual performance.

A different way

Use only a circle and a dot, or point through the supplied trace while someone writes the beat boundaries. Silent comparison is a complete activity.

If you want to go further

Add a symbol lasting half a beat. Write a new score totalling four beats and show the addition before claiming it fits.

Something to notice

Which information came from my key, and which detail did I leave for a reader to choose?

Read or explore more

Horizon topic Graphic Scores

https://launchhorizonhq.com/learn/graphic-scores/

Horizon topic Musical Form

https://launchhorizonhq.com/learn/musical-form/

Horizon topic Music

https://launchhorizonhq.com/learn/music/

The Open University, OpenLearn Week 1: Understanding the principles of musical scores

https://www.open.edu/openlearn/mod/oucontent/view.php?id=26857&printable=1&section=3

MIT OpenCourseWare Week 1: Basic Musical Terms Definitions

https://ocw.mit.edu/courses/21m-011-introduction-to-western-music-fall-2024/pages/week-1-basic-musical-terms-definitions/

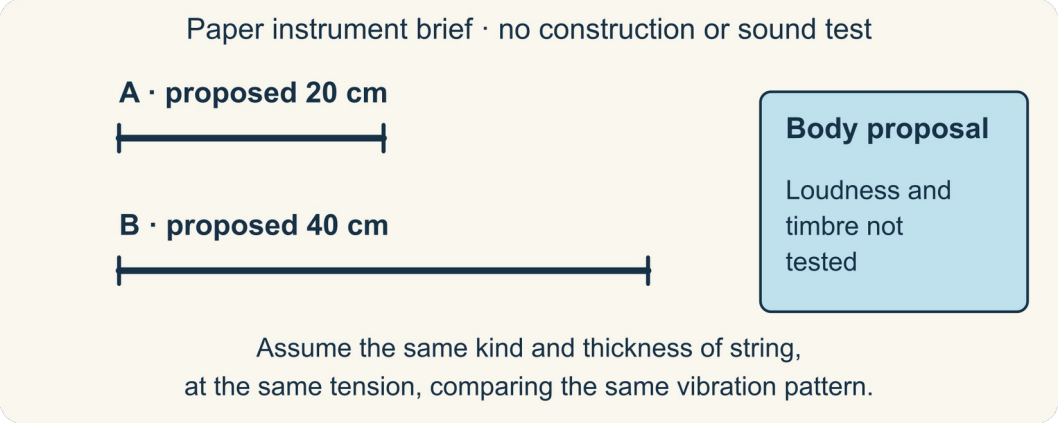
An imagined instrument on paper

Which design choices would need checking before claiming a particular sound?

Sketch a possible string instrument and label an aim, a prediction and the evidence still missing. The entire investigation stays on paper.

Explore | 15-25 minutes, or one comparison | Paper and a pen or pencil, The supplied sketch; no string, tool, instrument or sound needed

Start here Draw two imaginary strings: A has a 20 cm vibrating length and B a 40 cm vibrating length. Label them as the same kind and thickness of string, at the same tension, comparing the same vibration pattern.



Length is one variable, not a sound recording

1 Label the proposal

Sketch the strings beside a possible resonating body. State an aim, such as making two contrasting pitches. The 20 cm and 40 cm are proposed dimensions, not a measuring or building instruction.

2 Make a conditional prediction

For a simple comparison, assume the same kind and thickness of string, at the same tension, comparing the same vibration pattern. With only vibrating length different, expect the longer string to give a lower pitch. Keep the phrase “if the other conditions stay the same”.

3 Separate three sound questions

Pitch concerns how high or low a sound seems. Loudness and timbre are different questions. A longer string or bigger drawn box does not by itself prove a louder or particular-coloured sound.

4 Write a checking plan

List what an actual controlled comparison would have to hold fixed: string kind, thickness, tension and vibration pattern. Plan to change only vibrating length and observe the resulting pitch. You can finish with this paper plan; do not build or tension strings for this activity.

An instrument brief not an invented test result

Two proposed lengths differ by a factor of 2: 40 / 20 = 2. No instrument was constructed.

• Aim: two contrasting pitches. Assume uniform strings of the same kind and thickness, giving the same mass per centimetre, at the same tension and with the same vibration pattern. With only vibrating length different, B would have the lower pitch.

• A body might couple string vibration into surrounding air, but this drawing supplies no loudness measurement. “Twice as long” does not mean “twice as loud”.

• Next evidence needed: a controlled record of vibrating length, string kind and thickness, tension, vibration pattern and resulting sound. The exact pitch and timbre remain unknown.

What this example can show Real strings, bodies and playing methods interact. The sketch is not a guarantee that a proposed instrument will work.

A different way

Annotate the supplied drawing with “aim”, “prediction” and “not yet known”, or ask someone to scribe those labels. No sound or instrument is required.

If you want to go further

Propose changing one body feature while leaving the strings unchanged. Identify which new comparison would be needed before attributing a difference to that feature.

Something to notice

Have I described a design intention as though it were something I actually heard or tested?

Read or explore more

Horizon topic Instrument Design

https://launchhorizonhq.com/learn/instrument-design/

Horizon topic Instruments Acoustics

https://launchhorizonhq.com/learn/instruments-acoustics/

Horizon topic Musical Texture

https://launchhorizonhq.com/learn/musical-texture/

UNSW Sydney, Music Acoustics How does a guitar work?

https://newt.phys.unsw.edu.au/music/guitar/guitarintro.html

UNSW Sydney, Physclips Pitch, loudness and timbre

https://www.animations.physics.unsw.edu.au/jw/sound-pitch-loudness-timbre.htm