

# Jamming with Pythagoras

**Music frees the spirit, feeds the mind and improves your math.** *By Ronni Rowland and James Cole*

**P**ut Pythagoras and Jimi Hendrix in the same room, and one can only imagine their conversation. The mathematician famous for his  $a^2 + b^2 = c^2$  theorem would talk about his 500BC study of the musical scale and the ratios between the lengths of vibrating strings. (Imagine plucking a guitar string while lightly holding it at a point along its length.) The innovative guitarist famous for sound distortion would give a little nod and proceed to blow him away with a wah-wah pedal.

Regardless of time and space, music is the voice of the world. From classical orches-

tras to modern rock and metal, music has recorded changes in society, especially in youth culture. Linked to numerous benefits, music blends science and art, and for teens, this means an opportunity to expand their minds and explore their identity.

## Infinite possibilities

Music fosters a range of math skills, such as patterning and sequencing. According to a 2012 article *The Patterns of Music*, "music keeps children engaged in a mathematical activity for long periods of time." Anthony Smith, musician/instructor at JZ School, has observed the connection between music and math firsthand in his teen students.

"I predict many of my students are going to be engineers because of their current courses in school and the probing questions they ask about the science and math of music," Smith says. "These kids are asking for deep mathematical solutions to what they are playing."

Himself a math and science guy with a degree in chemistry, Smith has spent more than one music lesson with a curious student, deriving problems about wavelengths and frequencies on the board.

Studies not only show a positive relationship between music and math proficiency, but other valuable skills too. In the NY Times article *Is Music the Key to Success?*, Joanne Lipman interviews high achievers in diverse fields from politics to technology, and finds that they all share a strong background in music. Their musical training sharpens qualities like "collaboration, creativity, discipline and the capacity to reconcile conflicting ideas". It even develops "the power to focus on the present and the future simultaneously".

For kids in Shanghai, perhaps one of the most important aspects of music is that it provides them with an anchor and a voice.

## Universal language

"For expat kids who speak many languages and come from all over the world, music provides a common language for communication," says Smith. "Music gives them a group to belong to in this new, sometimes intimidating, environment."

Smith's students are split evenly between expats and Chinese nationals. Whereas expat kids wrestle with questions of identity in a new physical space, music gives local kids an outlet to exploring identity in a different way.

"Many of my local students are hopping off the track from what is traditionally expected by their families and society. They are asking questions, speaking out, and their creativity inside is in many ways being exercised for the first time," explains Smith. "Music allows them to 'play with the paint' - and compose."



