



A COMPOSER'S PROBLEM

Did you ever wonder how composers or songwriters come up with their ideas? Where does their music come from? How are they able to make so many melodies go together so well? What holds it all together?

Some songwriters seem to have no idea. They say, "The song just came to me one day," as if they didn't have anything to do with it—they simply heard the song in their head, and all they had to do was write it down. Some composers of symphonic music also say the same thing: that they just hear the music in their head and write it down. Beethoven did this when he was deaf!

As it turns out, not all composers and songwriters are so lucky. Many of them struggle to write music that makes sense and will connect with people emotionally. But what if a composer gets stuck? As you might imagine, this actually happens a lot in real life to creative artists—it is called *writer's block*. Writer's block is when artists aren't inspired and when nothing they write seems to fit or connect well with what they have already written. They're stuck. Can some kind of system or formula help artists get past their writer's block?

There is hope for musicians and composers with writer's block. They can use certain techniques to write music that will work, even if it doesn't

come from some mysterious inspiration. Musicians can think through their knowledge of music theory for help. It may surprise you to know that one technique many composers have used throughout history, and still use, is similar to what you are studying in math class! That's right, mathematics formulas can be used to create good music—even to make musical compositions.

What about those lucky musicians who simply hear music in their heads and write it down? How is that music, created from pure inspiration, different from the music created by theory or formulas? When we look at "inspired" music closely and try to figure out why it works so well, we find that it has some of the same features that our mathematics formula music has! You could say that the mathematical organization of the music is one of the reasons why it is nice to listen to. Amazingly, some composers use mathematical organization without even realizing it.

It seems that no matter where music comes from—whether from mysterious inspiration or from formulas and equations—it has a structure to it that makes it work, a structure that lies in the heart of mathematics. In this activity we are going to use this idea to help a struggling composer overcome writer's block.