



Math + Music Industry Unit - Overview

Grade Range: 5th and 6th Grade

Subjects: Math

Number of Lessons: 5

Estimated Time: 60 - 90 minutes for each lesson

Standards: Common Core

How does the music industry use math? Math is inherent in the music industry. Whether calculating touring costs using algebra, graphing industry data to analyze past, present, and future trends, or solving ratios to determine the depth of fan engagement on social media, math informs and interprets numerous aspects of the music industry. Much of the music industry would not be understood without mathematics.

How does the unit plan bring the music industry into the classroom? In each of the unit's five lessons, students practice math skills within the context of the music industry: recorded music sales, fan engagement, concert schedules, and touring. Utilizing important artists as case studies, students gain a valuable understanding of how fundamental math is to the music industry.

What kinds of skills do students gain by examining the use of math in the music industry? Within the unit's five lessons, students practice plotting data on a coordinate plane, calculating percentages and ratios, and writing and evaluating expressions. Additionally, students analyze their work and practice presenting the conclusions.

How does the unit plan assess mastery of math? Through activities in the unit's five lessons, mastery is determined by individual, paired, and group practice, as well as writing, discussion, and presentation.

In the culminating activity, students demonstrate their comprehensive knowledge of the assigned performance tasks and acquire a valuable understanding of how fundamental math is to the music industry's functionality by creating a data-informed artist "pitch" to a record label. The culminating activity is broken up into 7 parts (1 part per lesson plus a beginning and concluding activity), and is estimated to take 5-6 hours of class or homework time. Not all 7 parts are necessary for the activity, and teachers are welcome to draw upon whatever parts they deem appropriate for their classrooms.



This unit plan encompasses the following TeachRock content:

Lesson 1: Using Graphing to Analyze Music Industry Data

Artists: Whitney Houston

Essential Question: How can graphing be used to analyze music industry data?

Target Standard:

- CCSS.MATH.CONTENT.5.G.A.1: Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).
- CCSS.MATH.CONTENT.5.G.A.2: Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

Lesson 2: Using Ratios to Identify Social Media Engagement

Artists: Beyoncé

Essential Question: How can ratios be used to identify a music artist's social media audience engagement?

Target Standard:

- CCSS.MATH.CONTENT.6.RP.A.1: Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."
- CCSS.MATH.CONTENT.6.RP.A.3.C: Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.

Lesson 3: Utilizing Data to Analyze an Artist's Success

Artists: Grateful Dead

Essential Question: How can data be analyzed and interpreted to better understand a band's success?

Target Standard:

- CCSS.MATH.CONTENT.6.NS.B.3: Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

Lesson 4: Using Algebraic Expressions to Analyze Concert Schedules

Artists: The Beatles/Little Richard

Essential Question: How can writing and evaluating expressions be used to explain the scope of an artist's concert schedule?

Target Standard:

- CCSS.MATH.CONTENT.6.EE.A.2: Write, read, and evaluate expressions in which letters stand for numbers.



Lesson 5: Using Algebra to Calculate Touring Expenses

Artists: Jackson Browne

Essential Question: How can writing and evaluating expressions be used to anticipate a musician's travel expenses when touring?

Target Standard:

- CCSS.MATH.CONTENT.6.RP.A.3: Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.