Math + Music Industry Culminating Project: Using Data to Pitch an Artist

Scenario: One of your favorite artists (musician or band) is seeking a record label contract, and you will be representing them to the label. You will be using data to convince the label's representatives that your artist is a good choice to add to their roster.

While it's important to present the artist's background, the majority of your "pitch" to the record label will focus on numeric data. The data will relate to your artist's career: recorded music sales, social media engagement numbers, performances, ticket sales, and touring expenses.

Part 1: Research a Contemporary Artist

In Part 1, you will choose an artist you would like to represent. The artist should be living, and fairly popular. To ensure there is enough information about the artist you chose, make sure that they are represented on the following databases:

- RIAA's Gold and Platinum Record Database: https://www.riaa.com/gold-platinum
- The social media audit site: https://www.speakrj.com/audit
- A touring website: https://www.bandsintown.com (many artists also list tour and concert information on their website)

Once you have chosen an artist that fits the above criteria, answer the following questions:

1. Which artist (musician or band) did you choose? _____

2. How many albums have they released? (Pick an artist with at least 3 album releases.) _____

3. When was the last year that they went on tour? (A "tour" can consist of a series of performances that took place roughly in the span of a year.) _____

Part 2: Graphing Album Sales
(From Lesson: Using Graphing to Analyze Music Industry Data)

In Part 2, you will be graphing the album sales throughout your selected artist's career.

Go to https://www.riaa.com/gold-platinum. Using the Advanced Search feature under the search box, type in the artist you chose. Then, using the drop down menu under "Format," select "Album." This brings up a list of the albums the artist has released. Click the "more details" button on each album. Note how many certified units were sold for each album using the below table. (If your artist released more than five albums, choose only five that cover the span of their career.)

Release Date	Album Name	Units Sold

On the next page, create a line graph below describing your artist's record sales per album. Make sure your graph contains the following:
- A title
- An x-axis label
- A y-axis label
- A marked scale for the y axis
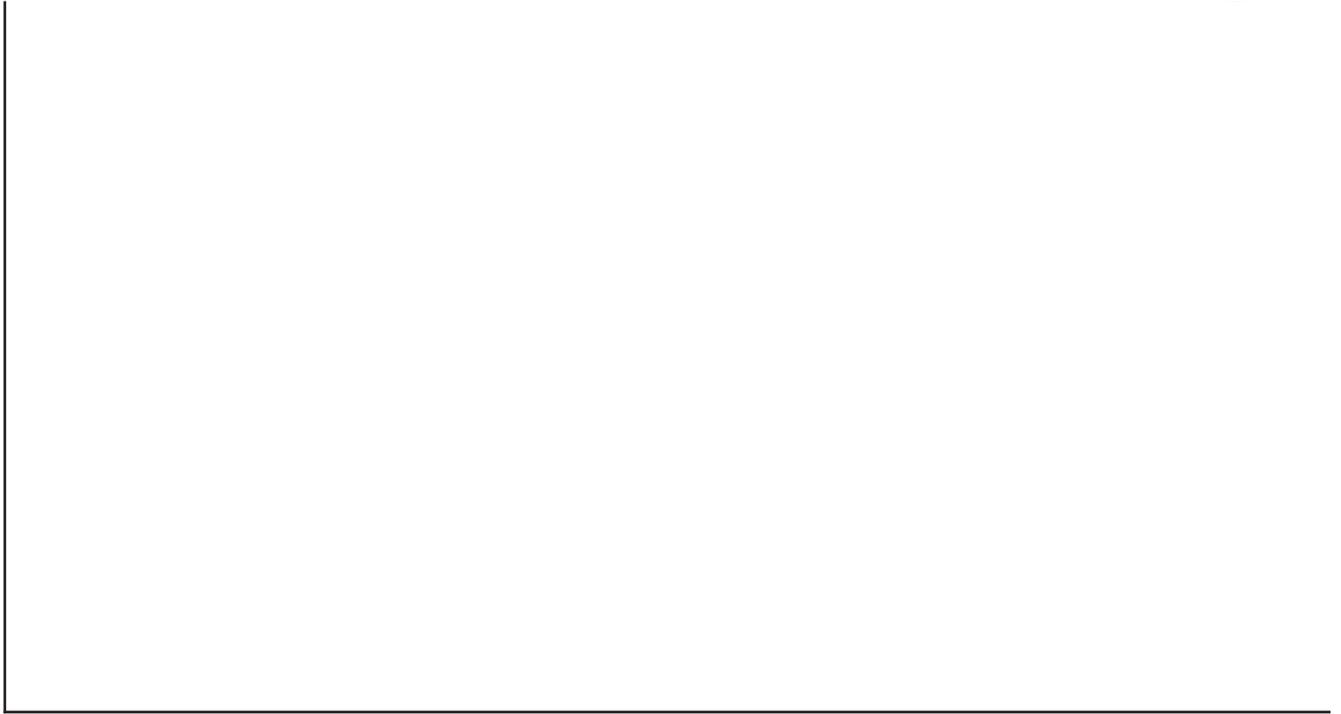
After completing the chart, answer the following questions:

1. What was your artist's highest selling album?_____

2. What was your artist's lowest selling album?_____

3. Would you say your artist has had a "peak" year? If so, when?_____

4. Based on this graph, how would you describe this artist's career? Is their audience growing? Shrinking? Staying the same?_____

_____

Part 3: Analyzing Social Media Engagement
(From Lesson: Using Ratios to Identify Social Media Engagement)

In Part 3, you will be comparing your selected artist's engagement on social media with another figure of comparable stature and popularity.

Go to https://www.speakrj.com/audit, select a social media platform and type in the artist you chose. Using the social media data the webpage provides, answer the following questions:

1. How many followers does your artist currently have? _____

2. What is your artist's average number of likes per post? _____

3. What is your artist's current number of comments per post? _____

4. What is the ratio of **Likes to Followers** for the account? Use the Classic Formula to write this ratio (Likes:Followers).

5. What's the engagement rate of **Likes to Followers** as a percentage? ([Likes/Followers] x 100.)

6. What is the ratio of **Comments to Likes** for the account? Use the Advanced Formula to write this ratio. (Comments:Likes)

7. What's the engagement rate of **Comments to Likes**? ([Comments/Likes] x 100.)

Now look up an artist you see as being comparable in popularity to the artist you chose using that same social media auditor webpage. Then, answer the following questions:

1. How many followers does this artist currently have? _____

2. What is this artist's average number of likes per post? _____

3. What is this artist's current number of comments per post? _____

4. What is the ratio of **Likes to Followers** for the account? Use the Classic Formula to write this ratio (Likes:Followers).

5. What's the engagement rate of **Likes to Followers** as a percentage? ([Likes/Followers] x 100.)

6. What is the ratio of **Comments to Likes** for the account? Use the Advanced Formula to write this ratio. (Comments:Likes)

7. What's the engagement rate of **Comments to Likes**? ([Comments/Likes] x 100.)

Finally, compare the two social media accounts, and answer the following questions:

1. Which account had a greater engagement ratio for Likes to Followers? _____

2. Which account had a greater engagement ratio for Comments to: Likes? _____

Part 4: Calculating Performance Hours
(From Lesson: Using Algebraic Expressions to Analyze Concert Schedules)

In Part 4, you will be estimating how many hours the artist you selected performed in the span of a tour. Before completing the questions, you need to find the following data:

- The tour locations and dates of the artist you chose, either on a webpage like https://www.bandsintown.com or on the artist's official website.

Then, answer the following questions:

1. How many concerts did your artist perform during the tour?_____

2. Assume each concert is 75 minutes long. Write and solve the equation to calculate how many minutes in total the artist played during the tour. Use the variable "C" for concerts, "M" for minutes per concert, and "T" for total minutes performed.

3. Write and solve the equation that calculates how many hours total your artist performed during the tour, using "T" for total minutes performed and "H" for hours.

4. Assume each song performed at a concert was 3.5 minutes long. Write and solve an expression that describes how many songs the artist can perform in a single concert. Let "S" stand for the number of songs played, and "M" stand for the minutes in a concert.

5. What might the hours spent performing reveal about the artist and their career?_____

_____

_____

_____

Part 5: Calculating Ticket Sales
(From Lesson: Using Data to Analyze an Artist's Success)

In Part 5, you will be estimating ticket sales for the artist's most recent tour. To write and solve the below calculations, you need to find the following data:

- The number of concerts your artist performed during the tour (see your answer to question 1 in Part 4).
- The average price for a ticket to one of the concerts (if you cannot find this information, estimate that the average ticket cost was $35.)
- The audience capacity for each concert. Research what kinds of venues your artist played during the tour. To the best of your ability, identify the type of venue your artist played at, and use the numbers in the chart below for your calculations.

> **Types of Venues and Estimated Audience Capacity Numbers**
> Arena: 18,000 audience capacity
> Hall: 6,000
> Theatre: 1,800
> Club: 600

1. Complete the table below. For the first column, convert the percentage in the first column to a decimal. For the second column, multiply the decimal by the number of tickets sold. For the third column, multiply the number of tickets sold by the price per ticket.

% of Tickets Sold	# of Tickets Sold (Percentage • Capacity)	Total $ in Ticket Sales (Ticket Price • # Tickets Sold)
100% = 1.0		
75% = _____		
65% = _____		
45% = _____		

2. Assume a concert sells 75% of the tickets and the venue takes a fee of 30% of total sales. How much money would the venue receive?

3. Assume the opening act takes 20% of the total ticket sales. How much would the opening band receive for a concert that sells 75% of the tickets?

4. How much would your artist receive in ticket sales after the appropriate percentages were paid to the opening act and the venue?

5. Assume your artist makes the same amount of money in ticket sales for each concert they played on the tour. How much money did they make in total? (Remember, you need to know the total amount of concerts your artist played during the tour.)

Part 6: Calculate Mileage and Costs of Tour
(From Lesson: Using Algebraic Expressions to Calculate Touring Costs)

In Part 6, you will be calculating the total cost of transportation for the tour you selected. Using www.distancecalculator.net, type in each city in the order of the tour. For instance, if the artist played in Los Angeles one day and then San Francisco the next day, find the distance between Los Angeles and San Francisco. Then, find the distance between San Francisco and the next city they performed a concert in, and so on. Note all the distances in the table below, and limit your calculations to one week, and keep all destinations within the United States and Canada.

Date and Destination 1	Date and Destination 2	Miles Traveled

After noting the data, answer the following questions:

1. How many total miles did your artist travel during their tour?

2. Assume a coach bus that carries your artist and their crew can travel 5 miles per gallon of gasoline, and that gas costs $3.50. Write and solve an equation that determines the total cost of gasoline for the entire tour. Let "M" equal total miles traveled in the tour, "G" the miles per gallon for the coach bus, "P" the price per gallon of gas, and "C" the total cost in gasoline prices.

3. How much money will the artist make in ticket sales after taking into account the cost of gasoline? (Hint: look at your answer in Part 5, Question 5 to see the total in ticket sales.)

Part 7: Create a Presentation for the Class

In Part 7, you will be creating a narrative about your artist to present to the record label's representatives. To create the narrative, answer the following questions:

1. What does the data in Part 1 say about your artist? _____

_____

_____

2. What does the data in Part 2 say about your artist?_____

_____

_____

3. What does the data in Part 3 say about your artist?_____

_____

_____

4.What does the data in Part 4 say about your artist?_____

_____

_____

5. What does the data in Part 5 say about your artist?_____

_____

_____

6. What does the data in Part 6 say about your artist?_____

_____

_____

7. Out of all the data you accumulated, which do you think would most effectively show your artist's career successes? _____

_____

_____

8. Is there any data that you see as less effective in promoting your artist? Why? How can that data be presented in a positive way?_____

_____

_____

After answering the above questions, begin working on your presentation. It could be put together by hand using a posterboard or tri-fold project board, or digitally with programs like PowerPoint, Keynote, or Google Slides. It can include the following sections:

- General information about your artist.
- A line graph of your artist's album sales.
- Social media engagement of your artist's followers, in comparison to another artist of similar stature or popularity.
- Recent tour information, including the estimated amount of hours performed, ticket sales, and gasoline costs.
- Analysis of your selected artist's strengths and suggestions of areas where they can grow.
- A reflection on the assumptions that were made in the calculations. (For instance, were there any costs to touring that weren't addressed? What about other means of income that weren't considered.)

While developing your presentation, always remember the goal is to persuade the record label representatives that your artist is successful and a good choice for them to add to their roster.