

Title: Music Mania

Brief Overview:

Students will demonstrate their abilities to organize and interpret data about their classmates' music preferences and their willingness to pay for a concert. With a given budget, the students will use a scale drawing to show how they would remodel a concert hall including the area of the stage and seating arrangements chosen. The results of the survey given will be represented graphically. They will provide written support for a stage style, and a seating arrangement will accompany the finished project.

Links to NCTM 2000 Standards:

- **Mathematics as Problem Solving, Reasoning and Proof, Communication, Connections, and Representation**

These five process standards are threads that integrate throughout the unit, although they may not be specifically addressed in the unit. They emphasize the need to help students develop the processes that are the major means for doing mathematics, thinking about mathematics, understanding mathematics, and communicating mathematics.

Students will demonstrate their ability to formulate a survey to find out music preferences and cost of ticket prices for a concert. They will decide which combination of stage and seating arrangements will best suit their needs in the concert hall. A written summary of the reasoning for choosing the combinations of stage, seating, and ticket prices for their building will support their graphed representations.

- **Number and Operation**

Students will demonstrate their ability to convert actual size measurements to a given scale measurement. Students will use a budget to furnish their concert hall and find marketable ticket prices.

- **Patterns, Functions and Algebra**

Students will use simple algebra to purchase seating arrangements, stage and sell tickets for each event. They will arrange seating and stage configuration in their concert hall to accommodate the chosen audience.

- **Geometry and Spatial Sense**

Students will demonstrate their understanding of finding area of regular and irregular shapes. They will use spatial reasoning to construct a scale model of a concert hall from a choice of three stage and seating arrangements. Students will create and interpret graphed representations of data.

- **Measurement**

Students will demonstrate their ability to use the appropriate tools to find measurements.

- **Data Analysis, Statistics and Probability**

Students will use the data from given survey to determine the music preferences, hall configurations, and a reasonable, but profitable ticket price.

Grade/Level:

Grades 7 or 8

Duration/Length:

Depending on class size and ability, the entire unit should be completed in five class sessions of forty five minutes.

Prerequisite Knowledge:

Students should have working knowledge of the following skills:

- Estimating, rounding, and place value
- Finding area of regular and irregular shapes
- Building and interpreting graphs
- Converting and creating scale drawings

Student Outcomes:

Students will:

- demonstrate their knowledge of data collection, interpretation, and organization.
- demonstrate their knowledge of calculating area of regular and irregular figures.
- demonstrate their knowledge of selecting, building, and interpreting graphs.
- demonstrate their knowledge of scale conversions.
- demonstrate their knowledge of money management through a budget.

Materials/Resources/Printed Materials:

- Rulers with centimeters
- Scale drawings of concert hall, stage choices, dance floor choices, and chair choices
- Music Mania overview and Start-off questions
- Spreadsheet/data sheet

Development/Procedures:**• Day One:**

The teacher opens with a discussion of graphs (reading, interpreting, and why some graphs are better choices for particular data as opposed to others). Follow with a brief discussion of music preferences, concert pavilions, and the overall look of the building the concert was held in. Pass out the Music Mania Worksheet and have the students answer the first three questions of Part I. After a few minutes allow the students to group with two to four other students near them and discuss their answers and complete the next question. Break the groups up after about six to ten minutes and have the students start work on the survey questions in Part II.

• Day Two:

Spend a few minutes discussing the student results, graphs, and thoughts of the most popular music types and possible ticket prices. Then introduce the stage selections, three seating choices, dance floor options, and the building (from Part III). The students should spend their time figuring out the area of each space and drawing the pictures to scale (may lead into Day Three).

• Day Three:

Open with a discussion of what their budget is, their chosen ticket prices, and what combinations of hall options are possible with their budget. The students are to use the spreadsheet (from Part IV) to come to final decisions about seating arrangements, what stage choice, and what ticket price they will charge.

- **Day Four:**

The students should have completed or be close to being done with their budgets and their scale drawings in their buildings. As they finish with their budgets and scale drawings, have them figure out how much money, at their chosen ticket price, they would generate if their seats sold out. Next, have them answer what portion of their total money spent, they would make up, if they sold their hall out for the opening night. (Part V)

- **Day Five:**

Give the students a limited amount of time (depending on the class size) to present their concert halls. ** Use a sounding timer to help the students monitor their time.

Performance Assessment:

Each student will be required as a part of a final project to turn in the following:

- A graphical representation of the survey results (the top three music choices and the amount most willing to be paid)
- An accurate scale drawing of the stage, seating arrangements, and dance floor(s)
- A budget showing total cost for supply purchases, ticket prices, profit.
- An accurate record of area for stages, dance floors, and concert hall

Extension/Follow Up:

- Students can construct a three dimensional model to scale of their concert hall.
- Students also might be asked to calculate the area of the spaces not taken up by the stage, dance floor, and chair configurations.

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MUSIC MANIA

Overview: You have just found out that you have the opportunity to start a new business. Since you have a great ear for music, you decided to open a concert hall. A building has been donated and you have a budget of \$70,000 to remodel the building to suit your needs. To get started, let's take a moment to find out what we know about concerts...

Part I

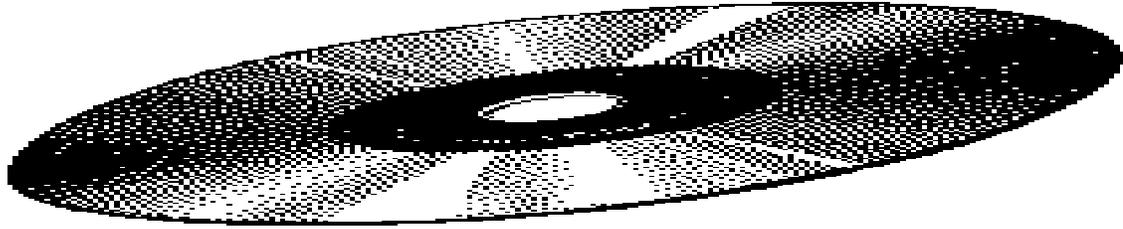
- 1) What type of music do you listen to? _____
- 2) Have you ever been to a concert before? If so which ones?

- 3) Individually make a list of things you would need for your concert hall.

**** Now let's get with our groups and discuss the types of concerts we have been to and our likes and dislikes.****

- 4) Share your findings with your group and create a list of 10 items you feel are the most important. Place your items below in order of most to least important.

1	_____	6	_____
2	_____	7	_____
3	_____	8	_____
4	_____	9	_____
5	_____	10	_____



Part II

Just like in the music industry, we have a lot to do so let's start with the type of music we would like to have performed at our hall. We need to realize that not all people like the same music. Some things we need to find out are the type of music people like to listen to and how much they are willing to pay to go to a concert. Let's take a look at a survey that was given to 500 people at a nearby mall.

MUSIC SURVEY

MUSIC CHOICE	PEOPLE	THE MOST PEOPLE ARE WILLING TO PAY PER CATEGORY			
		\$10 - \$20	\$21 - \$30	\$31 - \$40	\$41 and Up
ROCK	148	15	40	75	18
RAP	148	30	70	43	5
COUNTRY	78	8	20	40	10
R & B	105	5	60	30	10
OTHER	21	0	0	6	15

Using the survey above, you need to:

- 1) Make a graphical representation of your data.
- 2) Answer the following questions:
 - a) How many people were surveyed?

 - b) What is the most popular type of music?

 - c) Is there a major difference in the preference of music and the amount of money people are willing to pay?

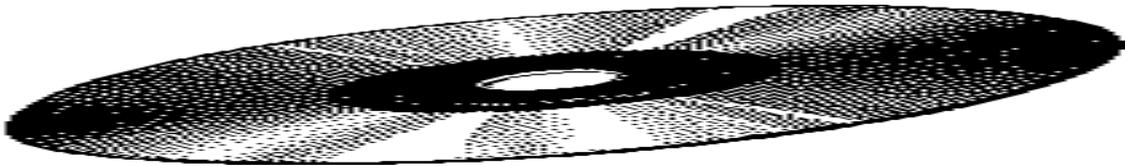
 - d) In the most popular category, which price range are most people willing to pay in order to go to the concert?

 - e) Based on your findings, what type of music would you want performed at the concert hall and explain your answer? Cite information from your graph and the survey to support your answer.

f) How much would you charge per person? Based on the survey, how much money do you think you would make?

g) Make a list of music groups you would like to have perform for opening night.

Keep all of this information in mind as you decide how you want your concert hall set up.

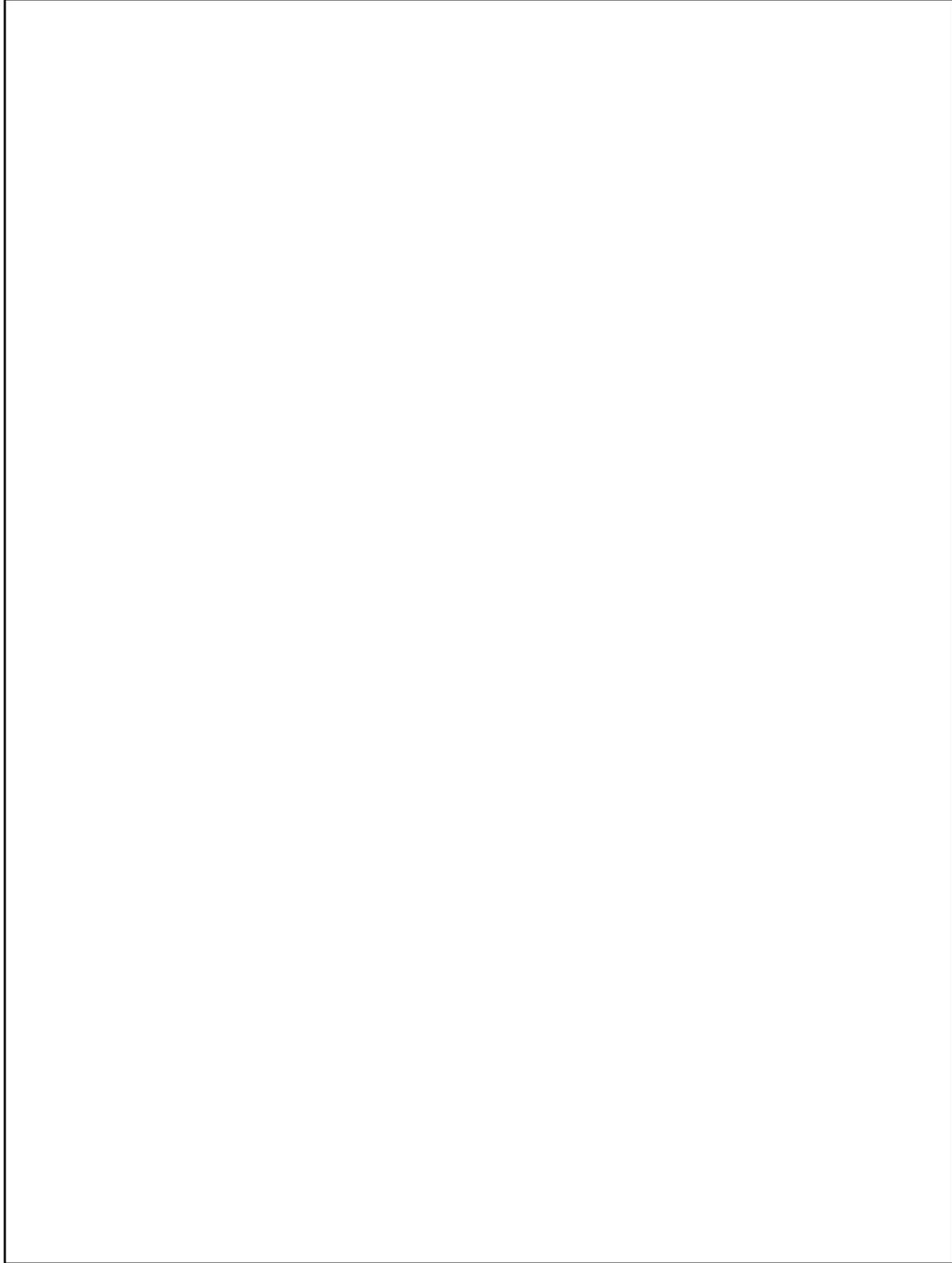


Part III

Now that we know what kind of music we want, let's start with how we want our concert hall set up. Look at the basic format of our hall. We need to fit the stage, seats, and aisles into our building. Before we start to pick and choose, with your group, do the following:

- a) figure out the surface area you have to work with. (Refer to the scale drawing of the concert hall.)
- b) figure out how much space each stage, type of seating and dance floor will take up.

Scale Drawing of the Concert Hall



Scale 1 cm = 5 m

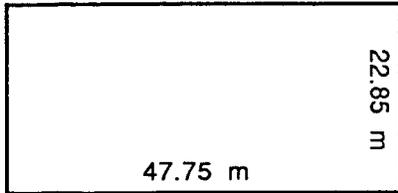
Dimensions of the actual concert hall _____

Area of actual concert hall _____

Stages to Choose From

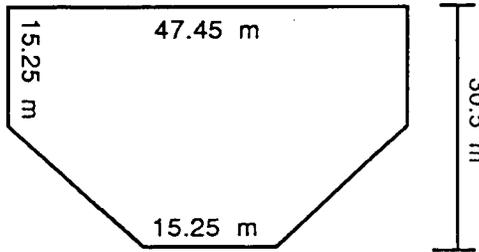
You have 3 different styles of stages to choose from, they are listed below along with their actual dimensions.

THE BOX'EM IN STAGE: (Not drawn to scale) **Price \$8,437.50**



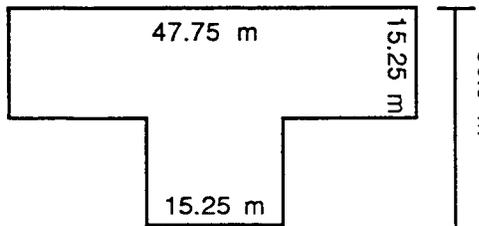
Area of the Box'em In Stage

THE HEXAFLIP STAGE: (Not drawn to scale) **Price \$8,987.50**



Area of the Hexaflip Stage

THE KAT WALK STAGE: (Not drawn to Scale) **Price \$7,500.00**



Area of the Kat Walk Stage

Chairs R Us

You have 3 different types of chairs to choose from for your concert hall. They are listed below along with their actual sizes.

THE COMFORT EASE: Price \$175.00. Order 10 or more \$160.00 each.
Single row of 12 connected chairs
Actual Dimensions: 8.4 m x 1.5 m

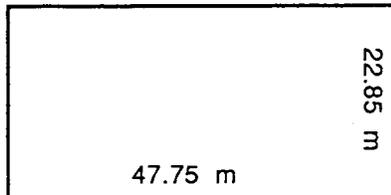
THE RELAX'EM: Price \$200.00. Order 10 or more \$185.00 each
Single row of 24 connected chairs
Actual Dimensions: 16.8 m x 1.5 m

THE STADIUM GROUP: Price \$325.
Sold as a set only of 6 rows of 24 seats each
Actual Dimensions: 16.8 m x 7.5 m

You Want a Dance Floor?

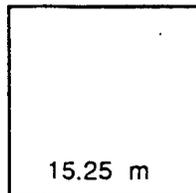
You have two to choose from, and here they are and their actual sizes.

ALL IN ONE FLOOR: (Not drawn to Scale) Price \$2,000



Area of dance floor

SQUARE DANCE FLOOR: (Not drawn to Scale) Price \$3,000



Area of dance floor

Part IV

Before we start drawing, let's start to budget what we might want in our concert hall. In your finished project you need at least a stage, chairs, and aisles. The dance floor is preference only. You may set up a spreadsheet or a data table to help figure out how much you can afford.

Items	Quantity	Price	Total
Stage 1			
Stage 2			
Stage 3			
Chair 1			
Chair 2			
Chair 3			
Dance Floor 1			
Dance Floor 2			
TOTAL COST			

Part V

Now you have enough information to finalize your scale drawing. Please remember you need to include stage, seating, five meter aisles, and a dance floor (if you choose). Your final project must include a scale drawing of the concert hall, a written budget, and a write-up. The write-up must include the following:

- 1) a description of why you chose the stage, seating, and extras.
- 2) the amount you will charge per ticket in order to make a profit.
- 3) how much money you are planning to make from opening night.
- 4) who will perform opening night.
- 5) what type of music will be featured at your hall along with a statistical support of your choice.

Rubric for Music Mania

SCALE DRAWING

- 4-All items are drawn to scale and measurements are listed on the drawing.
- 3-One item is not drawn to scale or not all measurements are listed on the drawing.
- 2-Two items are not drawn to scale and or measurements are missing on the drawing.
- 1-Attempt has been made to draw stage, chairs, and aisles to scale.

SPREADSHEET OR DATA TABLE

- 3-All items in the table are correctly calculated and labeled.
- 2-Up to two items are incorrectly calculated and missing labels.
- 1-Over two items are incorrectly calculated and missing labels.

WRITTEN RESPONSE

- 4-All questions are answered and supported.
- 3-One question is missing in their write-up, or questions are answered but not supported.
- 2-Two questions are missing in their write-up and support is missing.
- 1-Attempted answer to questions and support is missing or lacking in information.