



San Francisco Opera's Puccini's *MADAMA BUTTERFLY*

Curriculum Connections

California Content Standards
Kindergarten through Grade 12

MATHEMATICS

ATTRIBUTES

Comparisons in Madama Butterfly

Sorting and Classifying: What characters belong together, which don't, and why? Ex: Butterfly and Suzuki are women, Pinkerton and Sharpless are men. Pinkerton and Sharpless are American, Butterfly and Suzuki are Japanese.

MEASUREMENT

Use of Standard Units of Measurement in Story & Set Design.

2D & 3D Dimensions: Area, Perimeter, Volume, Scale, Proportion, Ratio.

- Create a set for *Madama Butterfly* to scale.
- Prepare the tea ceremony (with measurements) for the wedding celebration.

Weight: Physical, Metaphorical, Balance.

Time: Passage of time (real & theatrical time), times of day (morning, afternoon and night; yesterday, today, tomorrow; time of everyday events such as dinner & bed time), estimation, reading time, age of characters.

How long would it have taken for Pinkerton to travel to America from Japan, and back again?

Research Puccini's and the librettist's salaries for *Madama Butterfly*. What is the proportion of one to another?

What currency was used during Puccini's day? How much was it worth compared to today's money?

How much would Butterfly have made as geisha, if anything?

How much did the average worker make in Japan during this time?

How much would Pinkerton have had to pay for his contract for Butterfly and the house?

If you were Pinkerton, how much would it have cost to run your household? Create a budget for his household, taking into account all expenses.

Estimate how many people are in large ensemble scenes. Taking into account all the people on stage, how much would such a scene cost, in Puccini's time and now?

Count the number of people who need to be paid when putting on an opera; use cast and company listings in the program to calculate.

GEOMETRY

As found Madama Butterfly's character, costume & set design.

Identification of Shapes, Repetition & Pattern, Rhythm & Symmetry.

Planes (Square, Rectangle, Triangle, Circle) & 3D (Cube, Pyramid, Sphere).

Positive & Negative Space, Interior & Exterior Space.

Calculate area of opera stages today vs. opera stages during Puccini's time.

Calculate area of Butterfly's house. What was the size of a typical Japanese house like Butterfly's? What would have been the proportions of a room?

Create a scale model of a shoji screen; calculate the area of each square and the area of the entire screen.

Build a scale model of Butterfly's house. Take proportions into account.

NUMBER SENSE

Counting using the production elements and music of Madama Butterfly.

Formulas & calculations: Addition, subtraction, multiplication, division.

More, less, or same as.

Concept of zero (absences, disappearances. Ex. rests/silence in music.

Ordering & sequencing.

Recognizing and creating numerical patterns. Ex. beats, ABA pattern in music.

Survey taking: tallying and graphing.

Predictions.

ACTIVITIES

Create a timeline of events from when Perry landed in Japan, to the time of the opera.

Research remonetizing formula; how do economists determine how much money was worth then vs. now?

Calculate how many yards of fabric are used for a geisha's kimono and obi. How much is used for a very popular geisha, how much for one who isn't so popular?

Design a kimono for Butterfly with symmetrical or asymmetrical patterns.

Create origami patterns for Butterfly's kimono.

Create a paper/ribbon wig for Madama Butterfly. How much paper/ribbon do you need to use to create your wig design?