UNIT

1

Unit 1 Project

***Mathematics 10,* page 140**

Suggested Timing

60–90 min

Blackline Masters

Master 1 Project Rubric
BLM U1–3 Unit 1 Project Final Report

Mathematical Processes

✓ Communication (C)
✓ Connections (CN)
✓ Mental Math and Estimation (ME)
✓ Problem Solving (PS)
✓ Reasoning (R)
✓ Technology (T)
✓ Visualization (V)

General Outcome

Develop spatial sense and proportional reasoning.

Specific Outcomes

M1 Solve problems that involve linear measurement, using:
- SI and imperial units of measure
- estimation strategies
- measurement strategies.

M2 Apply proportional reasoning to problems that involve conversions between SI and imperial units of measure.

M3 Solve problems, using SI and imperial units, that involve the surface area and volume of 3-D objects, including:
- right cones
- right cylinders
- right prisms
- right pyramids
- spheres.

M4 Develop and apply the primary trigonometric ratios (sine, cosine, tangent) to solve problems that involve right triangles.

General Outcome

Develop algebraic reasoning and number sense.

Specific Outcome

AN3 Demonstrate an understanding of powers with integral and rational exponents.

Planning Notes

Start the class by asking students to brainstorm what changes might occur in the music industry during their lifetime. You may wish to introduce this by outlining the changes that have occurred since you were a teenager.

List and post ideas from the the brainstorming session. Then, explain that students will complete their unit project by visualizing what will happen next in the music industry. Review the expectations for the presentation outlined under Unit Connections on page 140 in the student resource. Clarify with the class that the final part of the project involves the following:
- providing details about a future advancement in music distribution, including a description of the equipment, dimensions, and volume (in SI and imperial units)
- explaining how this equipment would allow people to access music

Emphasize that students are being encouraged to use their imagination to come up with ideas, and then to use the mathematics skills they have acquired to describe the advancement and how it might work.

Suggest that students review the contents of their project portfolio and ensure that they have completed all the required components for their final report or presentation.

Meeting Student Needs

Gifted

- *The Brain that Changes Itself* by Norman Doidge, M.D. (Penguin Books, 2007) outlines many of the techniques researchers use to study the brain. Challenge students to consider which ones could be adapted for music distribution and how they might be used.

Assessment	Supporting Learning
Assessment *of* Learning	
Unit 1 Project This unit project gives students an opportunity to apply and demonstrate the concepts, skills, and proccesses learned in Unit 1. **Master 1 Project Rubric** provides a holistic descriptor that will assist you in assessing student work on the Unit 1 project.	• You may wish to have students use **BLM U1–3 Unit 1 Project Final Report**, which provides a checklist for students to identify where in their project they demonstrate the concepts, skills, and processes explored in Unit 1. • Reviewing **Master 1 Project Rubric** with students will help clarify the expectations and the scoring. It is recommended to review the scoring rubric at the beginning of the unit, as well as intermittently throughout the unit to refresh students about the project assessment.

The Specific Level Notes below provide suggestions for using **Master 1 Project Rubric** to assess student work on the Unit 1 project.

Score/Level	Specific Level Notes
5 (Standard of Excellence)	• provides a complete and correct response with clear and concise communication; may include a minor error that does not affect the understanding of the overall project; may include weak communication in no more than one calculation
4 (Above Acceptable)	Provides *one* of the following: • a complete response to all parts of the project, with missing justification in at most two calculations; includes good communication that addresses how the various changes have affected the music industry • a complete response with one error that is carried through correctly, (i.e., uses a diameter in the calculation of area of a circle or solves for the lengths of sides of multiple right triangles correctly, but uses the measures in an incorrect trigonometric ratio); includes good communication that addresses how the various changes have affected the music industry • a response which correctly addresses all parts of the project but is difficult to follow and lacks organization; does not provide support for the recommendations or conclusions; includes good communication that addresses how the various changes have affected the music industry
3 (Meets Acceptable)	Demonstrates *one* of the following: • makes initial correct start to all sections of the project • correctly completes basic measurement estimates and calculations in SI and imperial systems; completes surface area and volume calculations with some errors; demonstrates a basic understanding of trigonometry by correctly solving for the sides of right triangles and generally setting up the trigonometric ratios correctly; includes good communication with some connections • provides answers to all questions without supporting work or justification
2 (Below Acceptable)	• makes initial starts to various sections of the project; provides some correct links • makes some correct estimates and reasonable measurements in one or both measurement systems • demonstrates the ability to find diameters and perimeter with relative accuracy; further calculations have some errors • attempts surface area and volume calculations with some errors • attempts trigonometric ratio calculations, with some or limited success • includes some communication
1 (Beginning)	• makes initial starts to various sections of the project but is unable to carry through or link concepts together • has difficulty estimating in one or both measurement systems • includes responses that are basic and limited to only one measurement system • demonstrates the ability to find diameter and perimeter with some accuracy; includes numerous errors in further calculations • attempts surface area and volume calculations, but makes numerous errors • may attempt trigonometric calculations, with little or no success • includes little or no communication