

Unit Title: Math & Social Studies Mingle

Grade Level: 5

Subject Area: Math & Social Studies

Duration/Length/Number of class periods: 3 Project-Based Learning Sessions

Description: This is a 3-part project-based learning session designed to integrate math and social studies into projects that should take approximately 2 hours each. The lessons are to be completed after the study of each of the standards as culminating activities.

Project-Based Learning Session 1

MN SS Standard 5.4.4.15.1

North America was populated by indigenous nations that had developed a wide range of social structures, political systems and economic activities, and whose extensive trade networks extended across the continent. (Before European Contact)

MN Math Standard 5.3.1.1

Describe and classify three-dimensional figures including cubes, prisms and pyramids by the number of edges, faces or vertices as well as the types of faces.

Project-Based Learning Session 2

MN SS Standard 5.3.1.1.1

Create and use various kinds of maps, including overlaying thematic maps, of places in the North American colonies; incorporate the “TODALS” map basics, as well as points, lines and colored areas to display spatial information. For example: “TODALS” map basics—title, orientation, date, author, legend/ key and scale. Spatial information—cities, roads, boundaries, bodies of water, regions.

MN Math Standard 5.2.1.2

Use a rule or table to represent ordered pairs of positive integers and graph these ordered pairs on a coordinate system.

Project-Based Learning Session 3

MN SS Standard 5.2.2.2.1

Describe various uses of income and discuss advantages and disadvantages of each. For example: Uses of income—spend, save, pay taxes, contribute to others. Advantages of saving—earning interest and having enough money later to make a big purchase. Disadvantage—getting fewer goods and services now.

MN Math Standard 5.1.1.1

Divide multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms

What Enduring Understandings are desired?

Global societies are diverse, creating varied perspectives, contributions, and challenges.

Geometry and spatial sense offer ways to interpret and reflect on our physical environment.

Operations create relationships between numbers.

Decisions concerning the allocation and use of economic resources impact individuals and groups.

Measurement describes the attributes of objects and events.

What Essential Questions will be considered?

Project-Based Learning Session 1: Essential Question: How did indigenous North Americans use math in their culture?

Learn about Pictographs, Petroglyphs, Calendars, and making connections to math concepts. Create a symbol or group of symbols using geometric concepts/ideas to represent our current culture.

Project-Based Learning Session 2: Essential Question: How has a map in the late 1700s changed from today's map of that same area?

Create a map of one of the 13 colonies. Use x,y coordinates to accurately draw and label a map. Create an overlay of the map area as it currently appears today.

Project-Based Learning Session 3: Essential Question: Why is it important to budget money throughout the month?

Create a monthly budget based on a set income. Include cost of home payments, property taxes, contributing to savings accounts, grocery costs, gas costs, phone bill, internet cost, activities costs, etc.

Students will know / be able to:

Session 1: Identify the ways Indigenous people used math in their culture prior to colonization of North America. Create symbols representing our current culture.

Session 2: Create a two-layer map using the coordinate plane system (x,y) from colonial times and the current year.
 Session 3: Identify reasons why budgeting is important and create a monthly budget for a family.

Description	Formative Units must include at least one of each formative, summative, introductory activity and learning activity. Check the appropriate box; one per row.	Summative	Introductory Activity	Learning Activity	Student Technology Used	Teacher Technology Used	ISTE Standards
Create a symbol or group of symbols using geometric concepts/ideas to represent our current culture.	x				Chromebook	Smart TV	4c
Create a map of one of the 13 colonies. Use x,y coordinates to accurately draw and label a map. Create an overlay of the map area as it currently appears today.			x				6d
Create a monthly budget based on a set income.				x	Chromebook		
Include cost of home payments, property taxes, contributing to savings accounts, grocery costs, gas costs, phone bill, internet cost, activities costs, etc.		x			Calculator, Chromebook, Worksheet		5c
Learn about Pictographs, Petroglyphs, Calendars, and making connections to math concepts.				x	Chromebook	Smart TV	3a

Materials, tools and resources:

Materials: Paper, crayons, colored pencils, markers, protector sleeves, puffy paint/acrylic paint and paintbrushes

Tools: Chromebook

Resources: Internet - Google Safe Search

Session 1 videos:

<https://youtu.be/vccDDt3JmxA> <https://youtu.be/lsXwSe4oEOA>

<https://youtu.be/A5WDs0h7X9s>

<https://youtu.be/V8aCRM9TtIE>

<https://youtu.be/xGdn4lRqQvs>

Session 1 websites:

<https://www.nps.gov/petr/learn/historyculture/>

https://www.ducksters.com/history/native_americans.php

https://www.pngitem.com/middle/oiRTRw_native-american-symbols-meaning-native-american-symbols-hd/

Session 1 Student Checklist and [Rubric](#) for grading

Session 2 Student Checklist and [Rubric](#) for grading

Session 3 [Worksheet](#)

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Additional credit given to:

Day-to-day lesson plan

Project-Based Learning Session 1	Learn about Pictographs, Petroglyphs, Calendars, and making connections to math concepts.	- Show videos (in resources) on petroglyphs and pictographs, Sioux winter count video on calendars - Partner read about petroglyphs and Native American history online (in resources) - Use district provided text to supplement reading
	Create a symbol or group of symbols using geometric concepts/ideas to represent our current culture.	Class discussion questions: - What are important symbols in our current daily lives? - How do symbols connect with things you see and use every day? Give instructions for students: - Create a symbol that represents something in your family, school, or public. Complete a sketch first, then add color and details. - Go over rubric with students for expectations and use the rubric for grading. (in resources)
Project-Based Learning Session 2	Create a map of one of the 13 colonies. Use x,y coordinates to accurately draw and label map. Create an overlay of the map area as it currently appears today.	- Read about the 13 colonies. - Students choose a colony to draw. - Using grid paper, create an x,y coordinate chart to draw a 1:1 proportional drawing of the chosen colony. Teachers can create their own grids for students and have this prepared ahead of time. See example. - On the first map, students should sketch the original city(ies) in the

		colony on the map. Include landforms, ocean, etc. on the original map. - On the clear paper sleeves, students use a permanent marker to draw man-made things on a map of the same colony/current state. Examples of things to draw on the overlay can be highway systems, stores, cities, and other man-made things. - Go over expectations for the map drawing project using the checklist and rubric (in resources)
Project-Based Learning Session 3	Create a monthly budget based on a set income. Include cost of home payments, property taxes, contributing to savings accounts, grocery costs, gas costs, phone bill, internet cost, activities costs, etc.	- Students research jobs and use median pay for Minnesota for that chosen career. - Students post in Padlet their chosen career and what the yearly salary is. - Divide the pay by 12 months, resulting in a monthly budget. - Students create monthly spending allowances based on their income and their costs using a worksheet. (in resources)