



Curriculum Descriptions

WINTER Trimester

2010

(CORE CLASSES ONLY)

8th Grade MATH Winter/Spring 2010

Summary: Geometry & Data Analysis

Mathematical experiences will focus on the “big ideas” of geometry—shape, location, transformations, visualization and how geometric models can be used to solve algebraic problems. Students will create a variety of geometric models to derive formulas for area, surface area, and volume. They will apply their understanding during fieldwork by constructing scaled cross-section drawings of geologic formations, using a variety of measurement tools and problem-solving strategies. Students will use a variety of geometric models (including 2- and 3-D shapes, algebra tiles, coordinate graphs) to represent algebraic expressions, factor polynomials and explore and estimate square roots. Students will analyze data by collecting, organizing, representing, interpreting, and making predictions about data sets.

Students will compile a portfolio of evidence that they are meeting the following learning targets.

Learning Targets that Remain Consistent from Trimester to Trimester

I can...

- 1) Use precise mathematical vocabulary.
- 2) Explain my thinking. This may include solving problems in more than one way and explaining/teaching others how I connect my thinking to work through “real” problems and solve them.
- 3) Show Habits of Work (HOW) for Participation: I show good attending skills to participate fully in whole-class, group/partner, and private work time. I respond to questions appropriately, share my ideas, listen to others’ ideas, and compromise.
- 4) Show HOW for Responsibility: I advocate for what I need to learn. I complete my work on time and turn it in.
- 5) Show HOW for Determination: I accomplish high quality work and challenge myself to embrace adversity and uncertainty in order to reach proficiency or better on my learning targets.

Learning Targets Specific to Geometry & Data Analysis Standards

I can...

- 6) Analyze 2- and 3-dimensional spaces and figures by using distance and angle and develop mathematical arguments about geometric relationships. Use spatial reasoning to solve problems.
- 7) Use models to explore the validity of the Pythagorean Theorem, and use it to find missing lengths.
- 8) Use properties of angles to find missing side and angles, and to solve problems including determining similar or congruence of triangles. Prove sum of angles of triangles is 180 degrees; quadrilaterals: 360.
- 9) Use models and referents to explore and estimate square roots.
- 10) Organize and display data (histograms, scatter plots, whisker plots) to pose and answer questions.
- 11) Interpret and analyze displays of data and descriptive statistics.

Major Projects/Products

Fieldwork: scaled cross-section drawings of Geologic formations & other modeling work

3-D shape nets: derive and use formulas
Algebra tiles to model polynomial factoring

Problems of the Week (POW’s)

Anchor Texts & Resources

Great Source/Houghton Mifflin’s *Math on Call*.
Glencoe’s *Impact Mathematics: Course 3*
Oregon Math Leadership Institute’s *Geometry*
Algebra: *Structure and Method: Book 1*
NCTM’s *Navigating through Geometry in Grades 6-8*
GeoModels & algebra tiles

A Geologic Exploration of Central Oregon and Northern California -

8th Grade Science Strand, 2nd Trimester

Guiding Questions

1. What causes the land to look the way it does?
2. What can the rocks and landforms in an area tell about the geologic processes that happened in the past?
3. How is geologic research conducted?

Anchor Texts & Resources

"Beyond Sagebrush" by Darrin Furry; "Fire Mountains of the West" by Steven L. Harris; "An Everyday History of Somewhere" by Ray Raphael; various geology textbooks and other field guides for Central Oregon and Northern California

Summary of Expedition

Student's work in science will fit into one of three phases: Pre-Trip, Trip, and Post-Trip. During the pre-trip phase, students will be building background knowledge in the area of geology. We will focus on plate tectonics, the rock cycle, volcanoes, and the tools that shape the surface of the earth (volcanic activity, wind, water, ice, and gravity). After gaining some background knowledge in each of these areas, students will choose one area in which to become an expert. They will further research their chosen area and prepare a Building Background Knowledge activity for the rest of the class. Each student will also design a field research question and investigation. During the trip phase of the expedition, students will work with a teacher and/or an expert to attempt to answer their field research question. In addition, we will be conducting fieldwork to deepen our knowledge of the science content covered at school. In the post-trip phase of the expedition, students will reflect on their fieldwork, synthesize all that they have learned in the classroom and the field, and share their

Classroom Learning Content

We will compare and contrast the landforms in the area around Bend with Northern California. What forces are responsible for shaping the land in these two areas? What rocks are present in the different areas? How can we use evidence that we find today to infer what geological processes have been at work in the past?

OR State Standards

- Describe the evidence for and the development of the theory of plate tectonics
- Explain the rock cycle in terms of constructive (crustal deformation, volcanic eruption, and sediment deposition) and destructive (weathering and erosion) forces in land formation
- Identify the processes that result in different kinds of landforms
- Design a scientific investigation to answer questions or test hypotheses

Major Projects/Products

- 1) Building Background Knowledge activity for other 8th graders
- 2) Research Question and investigation
- 3) Post-Trip Synthesis

Fieldwork Experiences

Pre-Trip Phase: Lava Butte fieldwork
Trip-Phase: Various fieldwork opportunities
Post -Trip Phase: Possible follow-up local fieldwork

8th Grade Humanities –Trimester 2

“A Mystery of Cultures”

During the pre-trip phase of the 8th grade travel study in Humanities, students will build background knowledge in several branches of anthropology: archeology, cultural anthropology, and sociology. We will focus on the different people who have influenced the area, and the current issues surrounding these. Students will also learn economic concepts through undertaking a fundraising effort to help pay for the trip and build ownership. As we get closer to the trip students will design individual research and prepare a Building Background Knowledge activity for the class. Each student will also design a field research question and investigation to be implemented during the trip phase.

Overall Guiding Questions

- Why is the past important? Why do we care?
- What if my beliefs are different from your beliefs?
- How do humans cope with adversity past and present?

Content Areas

ANTHROPOLOGY

- Archaeology
- Cultural Anthropology
- Social Anthropology

In-Depth Investigation: “Importance of the Past”

Summary

Students develop skills of scientific methods in archaeology through exploration activities, analyzing, interpreting and documenting information. They learn the relevance of observation, context, descriptive names and avoiding ethnocentrism and use these to understand the importance of the past.

Main Concepts

- Importance of the Past
- Scientific Methods
- Stewardship
- Ethnocentrism

In-Depth Investigation: “What if my beliefs are different from your beliefs?”

Summary

Students learn about the people and cultures of the area: their historical context; cultural identities; and interrelations. A second focus is on the interaction between the people and the place. We will investigate the current and historical issues of the area and how the different perspectives affect both people and place.

Main Concepts

- Historic Context
- Cultural Diversity
- Tradition vs. modernism
- Interrelations
- Current Issues

Texts

- Motel of Mysteries
- Coast Redwood: A Natural and Cultural History
- An Everyday History of Somewhere

Partial Reference Texts & Authors

- Ray Raphael
- Internet resources
- Humboldt County Newspapers