It's Mining Time!

Death Valley National Park

Mining Unit: It's Mining Time Lesson Plan
55 minutes

Essential Question: What impact did mining have in Death Valley?

Standard(s):
California History Social Science Content Standards:
3.3.3 Trace why their community was established, how individuals and families contributed to its founding and development, and how the community has changed over time, drawing on maps, photographs, oral histories, letters, newspapers, and other primary sources.
3.5.1 Describe the ways in which local producers have used and are using natural resources, human resources, and capital resources to produce goods and services in the past and the present.

Nevada History Social Science Content Standards:
SS.3.22. Explain how human settlements and movements relate to a location's physical geography and natural resources.

Common Core Mathematics Standards: Operations & Algebraic Thinking
3.OA.C.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.
3.OA.D.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.[3]
3.MD.B.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two- step "how many more" and "how many less" problems using information presented in scaled bar graphs.

Objectives:
Students will be able to:
• Articulate and analyze the impacts of the boom and bust period of the Death Valley mining operations.
• Create and calculate one and two-step word problems based on a Death Valley mining timeline.

Overview:
This lesson is part of a cross-curricular mining unit focused on the impacts of miners on the Death Valley community and environment. This is the third lesson in the unit which provides students opportunities to explore the true meaning of a boom and bust mining operation. Students will practice basic math operations while examining a Death Valley mining timeline.

This lesson highlights eight mining camps or ghost towns in and directly adjacent to Death Valley National Park. The history of this area indicates many more mining adventures than are indicated in this lesson. The towns in this lesson were chosen due to their size, importance, and uniqueness. Be sure to check out 'Death Valley Mining Town Facts' in the materials section for more background and fun information about each of the towns in this lesson.

Teacher Background Information:

Unit Background: Since the 1848 discovery of gold in California, Death Valley experienced over 140 years of boom and bust mining. From the 1880s to the early 1900s, mining was limited and sporadic in the Death Valley region. In the mid-1900s, open pit and strip mines became popular. Legislation and Death Valley's changing status to a national monument and then a national park put an end to most mining activity. Billie Mine was the last active mine which closed its doors in 2005.

Towns popped up and disappeared just as quickly around Death Valley based on where mining claims were somewhat successful. Populations in these towns ranged from 400 to 10,000 people. Some were simple tent camps while others had infrastructure and accommodations like saloons and hotels. Rhyolite, Skidoo, Greenwater, Harrisburg, and Chloride City were examples of these bustling temporary towns that are now infamous ghost town sites.

Lesson Background: Enter any of these mining camps now and you will truly experience a ghost town. A camp may have remnants of a few buildings, litter of town scraps, or it could just be an empty grass field. People rushed to an area as soon as rumors hit that ore was found. This also worked the other way. People quickly left an area when the ore stopped, news was better elsewhere, or supplies were scarce. You could usually tell how well a town was "booming" by main street. Tents were an indication of a new town or uncertainty. Simple log cabins were a sign of progression. Businesses would prop a quick sign on a log cabin to indicate the merchandise or service inside. This allowed businesses to change quickly. What was a retail store one day could be a newspaper shop the next. A camp with a post office typically meant you were in a meaningful town. The townspeople had to apply for a post office, and it wasn't always granted. Even if it was, when the post office closed, so did your town. Few mining camps were made of permanent building materials, thus why there aren't many structures left today. The materials for tents and simple log cabins could be taken down, moved, and rebuilt quickly in order to keep up with the movement of profitable ore. If there were signs the mines were about to "bust", it was best to pick up and move to get in on the next mining camp before that ore was gone too.

Materials:

- Pre-work: "Our Local Town" -Teacher researches and records the year their local town was discovered and officially established. Also, record the year popular businesses opened (and closed) in the town. Create a timeline of the local town on long butcher paper or on a computer program. (See example)
- Death Valley mining event cards (Power Point). Cut out the cards before class. Optional: Laminate the cards for annual or multi-class use.
- Death Valley mining event cards (Microsoft Word). This is an alternate activity for students to work on the timeline at their own tables.
- Death Valley mining event timeline answers.
- Death Valley mining word problems worksheet. Optional: Laminate worksheets and pass out one per group.
- Death Valley mining word problems answer key.
- Individual student math journals
- Pencils
- Tape
- Optional: Calculators

Lesson Hook:

1. Display the local town's timeline (teacher created for pre-work) on the board.
2. Ask questions related to the timeline. Questions should include:
   a. What are your observations about our town based on this timeline?
   b. How long has our town been established?
   c. From the information on this timeline, which business has operated the longest? How long? Which business has operated the shortest? How short?
   d. What are the pros and cons to working with a business that has operated a long time? A short time?

      e.   Why do you think *this* business stayed open for so long in this town? Why do you think *this* business closed so quickly in this town?

3. The goal of the questions is to spark a discussion about why and how towns exist, develop, and die-out. This discussion can take many forms. Follow the lead of your students.

Procedure:

1. Create a large horizontal line across the board under the first one.
2. Place the first and last Death Valley mining event cards on the timeline.
3. Pass out the other event cards to students.
4. Students take turns placing their event card appropriately on the board's timeline.
5. Ask questions about the timeline using the words boom and bust. (ie: When was the boom time for the Rhyolite town? When did Skidoo bust? Why do you think there was so much boom and bust in mining operations? What do you notice about the post offices established in these mining towns?)
6. Ask students to get out their math journals.
7. Divide the students into small collaboration groups.
8. Pass out a math word problem sheet based on the Death Valley mining event cards and a copy of the 'Our Local Town' timeline to each group.
9. Groups should work together to determine how to solve the problem and come up with a solution in their math journals.
10. Come back together to discuss the impact of the answers to their math problems. (ie: What is the longest amount of time a Death Valley mining camp was active? What is the shortest? Who would want to be a child in the longest/shortest camp? Why?)

Extension Questions or Activity:

- Instruct groups to come up with their own math word problems based on the timelines. Groups write the problem on an index card and pass it to another group. Keep passing the cards around the groups until everyone has tried each problem.
- Creative Writing: Read stories about the [Death Valley Ghost Towns](). Instruct students to create their own short story about a fictitious mining town that went through an exciting boom and bust period.
- This is the third lesson in the [Death Valley National Park Mining Unit](). The first lesson explains a mining stamp mill and the second lesson describes the different people who made up the mining communities.

Support for Struggling Learners:

- Work the problems together as a class.
- Read each word problem together. Decide as a class which information is needed. Take those event cards off the timeline and tape on a different section of the board. Cover extra information from those event cards with sticky notes. This way, students only focus on what is needed for that specific math word problem.

Vocabulary:

- Boom – (as related to mining) a fast settlement and development of a town
- Bust – (as related to mining) a failure or a business depression
- Math Operation – a process such as addition, subtraction, multiplication, and division
- Timeline – a table listing important events in order during a period of history

Assessment:

Group Work Rubric:

	4	3	2	1
Group Cooperation	All members work well together all the time; assist others when needed.	Members work well together most of the time.	Members work well together some of the time. Some teacher intervention needed.	Teacher intervention needed often to help group cooperate.
Group On-Task	Team is on task all the time. Does not need any teacher reminders.	Team is on task most of the time. Does not need any teacher reminders.	Team is on task some of the time. Needs teacher reminders.	Team needs frequent teacher reminders to get on task.
Timeline	Team gathered all the appropriate information from the timeline for the word problems.	Team gathered most of the appropriate information from the timeline for the word problems.	Team gathered some of the appropriate information from the timeline for the word problems.	Team did not gather any appropriate information from the timeline for the word problems.
Math Accuracy	Team answered at least 8 math problems correctly. Team also attempted to create their own word problems from the timeline.	Team answered at least 6 math problems correctly.	Team answered at least 4 math problems correctly.	Team answered less than 4 math problems correctly.

References:

- Lengner, K.L (2017). *Death Valley Region and Chronological & Pictorial History Books I & II.*
- Beldon, L.B & DeDecker, M. (2000). *Death Valley to Yosemite: Frontier Mining Camps & Ghost Towns: The Med, The Women, Their Mines & Stories.*
- Death Valley National Park. (2015). Death Valley Ghost Towns.
- Western Mining History. (2020). California Mining Towns.