LESSON 2
A DAZZLING JOURNEY
How does a gem get to me?

In this lesson, students will find out how a rough gem becomes a polished jewel with a hands-on simulation of mining, cutting, appraising, and selling gems. They will make connections between the natural environment of gems and the industry that gives them value, and discuss the ethical and environmental issues that arise as gems travel from mine to market. (If teaching this lesson in isolation, begin with Show What You Know! activity and videos from Lesson 1.)

TOPICS
The Environment and Industry of Gems

SUBJECT CONNECTIONS
English Language Arts, Science, Economics, History, Social Studies

TIME REQUIRED
One 60-minute class period
(Note: Lesson can be divided into two shorter sessions before Journey of a Gem Simulation activity.)

SUPPLIES
☐ Folder for each student, or blank paper
☐ 2–3 sticky notes per student
☐ Lined paper or student journals

PREPARATION
☐ Copy student handouts (1 per student)
☐ Gather materials for Journey of a Gem Simulation: chocolate chip cookies, paper clips, modeling clay, notecards
☐ Display Rocks, Minerals, and Gems Anchor Chart from Lesson 1 (see Image 1.1 on p. 8)
☐ Review script for Journey of a Gem simulation activity (Appendix D, pp. 44–45)

STUDENT HANDOUTS
• The Journey of a Gem Guide (p. 19)
• From Magma to Me Conclusion (p. 20)

KEY VOCABULARY
mine, gem cutting, appraise, clarity, carat

LEARNING OBJECTIVES
Students will be able to...
• Simulate the journey of a gem “from mine to market”
• Generate hypotheses from prior knowledge
• Retell how a gem gets from the earth to a piece of jewelry

ESSENTIAL QUESTIONS
• How do I interact with gems in my everyday life?
• What is the process for gems to get out of the earth and into a piece of jewelry?
• Why is it important to be honest in business?

DID YOU KNOW?
Alexandrite was discovered in the Ural Mountains of Russia in 1830. That is actually pretty recent for a gem discovery.
LESSON 2: A DAZZLING JOURNEY

WARM-UP (5 MINUTES)

1) GEMS IN MY LIFE
Personal connections make learning relevant! Give students 5 minutes to decorate their Gemology Folders (or a piece of blank paper) with answers to the question: “Where can I see gems in my life?” Students may draw or write words. If they struggle to think of personal ideas, engage the class in a quick brainstorm together. Students share illustrated folders with a small group.

INTRODUCTION (10 MINUTES)

2) FROM MAGMA TO ME HYPOTHESIS (PRE-ASSESSMENT, WRITING PROMPT)
Ask, “How do gems get out of the earth and into a piece of jewelry?” Give students time to think quietly. Write the question on the board.

Distribute lined paper. Explain that a hypothesis is a scientific guess. Scientists make hypotheses to answer questions and they use what they already know to try to come up with answers that makes sense. Give students time to write a hypothesis to answer the question. Encourage creative thinking and emphasize that you do not expect them to know the right answer! Early finishers can draw a diagram.

Ask a few students to share their ideas. Explain that they are about to roll up their sleeves and find out!

TEACHER TIP
A Picture Is Worth a Thousand Gems
Use photos and videos to help students understand the challenging ideas of mining, gem cutting, and international gem markets. Additionally, take photos of the students while they’re working and display them in the room.

Videos
• Gem Mining in Cambodia (1:35)
  GIA.edu/news-research-cambodia-mining-pardieu
• South Sea Cultured Pearl (0:50)
  www.youtube.com/watch?v=UaQJmWhKjKg&list=UUAf_v-BJ2iQf08GuB8Tw

Slide shows
• A Sunstone Odyssey
  GIA.edu/gia-news-research-butte-sunstone
• Emerald Sources of Brazil
  GIA.edu/research-news-brazil-emerald-sources-lucas
LESSON 2: A DAZZLING JOURNEY

MAIN ACTIVITY (30 MINUTES)

3) THE JOURNEY OF A GEM SIMULATION

Have some fun with this guided simulation! As students recreate each step of the "mine to market" process, your enthusiastic narration will add dramatic flair and humor to the activity.

A complete script is available in Appendix D, pp. 44–45.

Get Ready

1) Gather materials: You will distribute materials during the activity, in order to ensure that students pay attention to each step. More advanced students can collect their materials from a central table, as needed.

- Step 1: The Journey of a Gem Guide (p. 19; 1 per student)
- Step 2: chocolate chip cookie (1 per team)
- Step 3: paper clips (2–3 per team)
- Step 4: small piece of modeling clay (1 per student)
- Step 5: diamond rubric included in handout
- Step 6: notecard (1 per team)

Other materials:
- Timer
- Optional prizes

2) Preview your script: A step-by-step script can be found in Appendix D.

3) Make student groups: Divide students into pairs (or let them work independently) and give them a moment to think of a gem-themed team name. While they are thinking, distribute The Journey of a Gem Guide.

DID YOU KNOW?

In ancient times, sailors wore aquamarine to protect themselves from danger or harm at sea. They were engraved with Poseidon or Neptune, the gods of the sea.

Aquamarine

Pearls of Wisdom

Better a diamond with a flaw than a pebble without.
CHINESE PROVERB
LESSON 3: TIME TO SHINE!

REFLECTION & WRAP-UP (15 MINUTES)

4) FROM MAGMA TO ME CONCLUSION
   (POST-ASSESSMENT, WRITING PROMPT)

Distribute *From Magma to Me Conclusion* handout, p. 20. Give students time to respond to the reflection questions. Have students share with a partner or whole group.

5) CIRCLE OF LEARNING

It’s time to come together and reflect on your learning. Ask students to record the three most interesting things they’ve learned on sticky notes, then sit in a circle and share one idea each. Sticky notes can be collected on *Rocks, Minerals, and Gems Anchor Chart* (from Lesson 1) to “anchor” the new learning into students’ minds over the next few lessons.

EXTENSION ACTIVITIES

COMMON CORE READING PASSAGE

The *Mohs Scale of Hardness* handout (*Appendix E*, pp. 46–47) can be assigned for homework, used during Guided Reading, or used as an independent assignment. With a Lexile score of 780, this text is a Common Core “stretch text” for 3rd grade, and appropriate for 4th and 5th grades.

FAMILY INTERVIEW

Students can interview a family member to make connections between learning at school and learning at home. Ask a family member or friend if they have a special piece of jewelry and why it is personally significant to them. Students can work with his or her family to research what the materials are made of and where the jewelry originated.

GEM-OMETRY MATH LABS

Gem cutting is an excellent context for learning about geometry. Make soap gems: use an illustrated chart of gem cuts to measure, plan, and cut glycerin soap into colorful gem shapes. Build a paper gemstone: find and print a template for simple origami shapes, fold with bright paper, then glue together to make bigger gem shapes. Sculpt clay gems: give students time and measurements to build a 3-D multifaceted gem with modeling clay. Use these resources to find multifaceted gem shapes: gemkids.GIA.edu/gem/teacher-guide

PRECIOUS POETRY

Read Kenn Nesbitt’s funny poem “Digging for Diamonds” aloud to the class, and have students recite it or set it to music.

DID YOU KNOW?

In 2010 England’s Prince William gave Kate Middleton a blue sapphire engagement ring. It belonged to his mother, the very famous and beloved Princess Diana.

PEARLS OF WISDOM

I never worry about diets. The only carrots that interest me are the number of carats in a diamond.

MAE WEST
THE JOURNEY OF A GEM GUIDE

1. FIND GEMS
2. BUILD A MINE
3. DO THE MINING
4. CUT THE GEMS
5. APPRAISE/GRADE THE FASHIONED GEMS
6. MARKET SELL THE GEMS
7. REPAIR THE ENVIRONMENT, SUPPORT THE COMMUNITY

START HERE!

ADD IT ALL TOGETHER TO MAKE YOUR TOTAL SCORE:

4Cs
COLOR - IS THE COLOR WOOD AND BEAUTIFUL?
CUT - ARE THE LINES STRAIGHT AND DOES GEM SPARKLE OR GLEAM?
CLARITY - IS THE GEM FEW OF BLEMISHES AND INCLUSIONS?
WEIGHT - IS IT BIG?

SORRY, BUT NO. 1 = SO-SC
2 = HO-HO
3 = WOW, AMAZING!
4 = WOAH, INCREDIBLE!
FROM MAGMA TO ME CONCLUSION

1) Use your own words to explain how a diamond gets from the earth to a piece of jewelry. Use the back of this page if you need more room.

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2) Was your hypothesis correct? How has your thinking changed?

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3) In your opinion, why is honesty important in mining, producing, and selling gems?

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