

Teacher Guide for ASK, "Eureka!"

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Betty Lou Askin, a retired educator, who lives in Toronto Ontario, prepared this guide.

Pre-reading:

- Ask the students to look at the cover of this magazine. Have them predict the theme for this issue.

Scoops (pages 2-3)

Rockin' Cockatoo

- How has Snowball advanced knowledge for scientists?

All Better

- Why does old concrete crack?
- Explain why the new concrete can heal itself.

Frozen in Time

- Why were scientists able to find Lyuba?
- What were scientists able to discover about Lyuba?
- What do scientists hope to learn by studying Mammoths?

Nestor's Dock (pages 4-5)

- What does the expression (title) of this article mean?
- Why is Phil arrogant in the beginning?
- What 2 things made him "sweat"?

The Marvelous Antikythera Machine (pages 6-11)

Questions/activities to use with this article:

- Pre-reading:
Ask the students what they think this machine might be.
- What was lost in 64 B.C.?
- In 1900 an important first event happened. What was it?
- Why was the wooden box ignored at first?
- Tell why the director of the museum thought that the gear might be a hoax.
- Make a list of the types of scientists who pondered over this puzzle.
- How did the 1971 breakthrough help the scientists?
- Explain the significance of the Antikythera mechanism.
- Creative Writing:
 1. Write an essay in which you attempt to answer the questions found in the last paragraph on page 11.
 2. Create a news report, pretend that this ancient mechanism has just been discovered. Use information from the article to help make your report.
- What are gears?
- Explain how gears work.

Thinking with Archimedes (pages 12-14)

Use these ideas as a focus for the reading of the article:

- Who was Archimedes?
- How did young Greek children learn information?
- Where did Archimedes go to advance his studies?
- What is the significance of **pi**?
- Tell why the king was concerned.
- Explain how Archimedes solved the king's problem.
- List some of Archimedes' discoveries.
- Research:
You might ask the students to do further research on Archimedes. They could do a general research about him or narrow their focus to one of his inventions. If the latter is chosen, it could be a more in depth study. Along with written material, pictures and/or actual models could be used in a presentation to other members of the class.

Clock Watching (pages 15-19)

During or after reading use these prompts to highlight the content:

- Describe how a sundial works.
- What is the weakness in using a sundial to tell time?
- Tell how other ancient items helped to give time.
- What were the problems with these methods?
- Explain why it became more important to have an accurate way of telling time.
- Describe why at first there were "communal" clocks.
- Creative Writing:
Use the idea at the end of this article. Ask the students to be a clock/time inventor. Have them develop and write about their invention. Let the students present their ideas to their classmates, including diagrams or models.

Capturing a Castle (pages 20-21)

- Divide the class into 11 groups. Assign 1 of the 11 siege techniques to each group. You might ask the students to do further research on their technique. The groups should write a report and include diagrams and/or models. They would then be responsible for presenting their siege technique to the rest of the class.

Siege Machines of Myth and Legend (pages 22-23)

- In groups, allow the students to study the picture and machines on these pages. Hold a class discussion about the 11 items.
E.g. use of machine/tactic
weaknesses/strengths of each
- Creative Writing:
Ask the students individually or in small groups to develop a siege story. Ask them to create a picture/story book. They should use information from pages 20-23 to help give vivid descriptions and details.

Stonehenge (pages 24-27)

Questions to consider:

- Explain why there is still a puzzle about Stonehenge.
- When was the first Stonehenge built?
- Why do you think that stones were taken from Wales, a long distance away?
- Describe how you think that the huge stones were moved.
- Describe how the large stones tell the time of solstice.

- Explain how Stonehenge may have been used over the years by different people.
- Why do you think that it was built and used?

Jimmy the Bug (page 32)

- Explain why your eyes are red in some photographs.
- How does a two-flash system help reduce the red?

Marvin and Friends

- Why did Marvin's invention backfire?

Don't forget:

1. To work with Archimedes' Puzzle on pages 30-31.
2. To ask Jimmy the Bug a scientific question.
3. To see Snowball dance by visiting www.askmagkids.com/links
4. To see one idea of how the Antikythera mechanism worked at www.askmagkids.com/links