

# Teacher's Guide to ASK: *Patterns in Nature*

July/August 2008

This guide was prepared by Betty Lou Askin, a retired educator and administrator, who lives in Toronto, Canada.

## Prior Knowledge:

- Before showing the magazine to the students, conduct a discussion about patterns. This might include patterns such as those in mathematics and in clothing, etc. Make a list on the chalkboard of the ideas presented by the students. Then introduce (if it did not already arise) patterns in nature. If necessary, show the cover of the magazine to spark ideas or extend their list.
- OR, conduct the general discussion of patterns, introduce patterns in nature and show the cover of the magazine. Ask the students to work in groups and have them come up with a list of patterns in nature to present to the class.

## Scoops (pages 2-3)

- **Who Ya Gonna Call?**
  1. Discuss the problem of soil pollution caused by heavy metals. Ask the students if they have any ideas how this problem can be alleviated.
  2. Read the article together.
  3. Discuss why the worms helped the soil. Why did the worms not die from the toxins? This could be a research topic for their science class.
- **Falling (Asleep) Is Good for You**
  1. Ask the students why sleep is so important. Why do we dream?
  2. Discuss the concept of falling asleep.
  3. How was the experiment conducted and what were the results?
- **Voice from the Past**
  1. What did Scott do in 1860?
  2. What did the sound engineers accomplish?

## Nestor's Dock (pages 4-5)

- Ask the students to look at these two pages.
- Compare their lists of patterns in nature.
- Creative Work-
  1. Have the students choose new comments for the end of the two pages.
  2. Ask them to design a similar comic strip using their patterns from nature and to make a final comment.

## Nature's PATTERNS (pages 6-13)

- Read page 6 with the students and discuss the content.
- There are 5 patterns discussed in this article. You might divide the class into 5 groups and assign one of the patterns to each group. The students would then be required to read the material prepare a report for presentation to the

rest of the class. The report and presentation should include written material and pictures of their own that support the concept.

- An alternative to the above would be to read the article as a class group. After the reading and discussion, the students could choose one of the patterns and complete some research. The research and report would expect them to find other information (not included in this article) that supports their chosen pattern.

#### **Weird Tales from the Inventors' Hall of Fame (pages 14-15)**

- Use the Think Pair and Share method to read and discuss this article. Each pair of students takes turns reading the material and discussing the content.
- After this activity is completed then hold a class discussion about what they have read.

#### **CODES Keeping Secrets Secret (pages 16-22)**

Use these questions/ideas to help with the content of this article-

- What is a code? What is a cipher? What is a key?
- Ask the students to bring in a paper towel roll and let them make a word wrap.
- Let the students interpret the Ypres code.
- There are two more codes that the students can have fun with on page 18.
- Discuss the frequency analysis method.
- After reading "Between the Lines" ask the students to create a code to share with a partner.
- Why was Blaise de Vigenere's cipher successful?
- Why was the Enigma an excellent war tactic?
- Allow the students to choose a favorite code from this article. Let them send a message to another student providing a key with their message.

#### **Fins and Fingers, Wings and Hooves (pages 23-27)**

- Before reading this article, discuss the use of limbs considering both humans and animals.

Consider these questions to assist with the discussion of this article-

- What are *vertebrates*? What is a *tetrapod*?
- Describe the early development of tetrapods. (page24)
- Why are tetrapods so different in shape, size, skin type, etc?
- Why did the mutations over time create so many different tetrapods?
- Why was *Tiktaalik* such an important discovery?

#### **Marvin and Friends**

- Why is this comic funny?
- Can you think of any other way that a zebra might be able to hide. Think of what you have learned in this magazine.