

CURRENT SCIENCE

ASIA EDITION

2010 • Issue 5

Supplements for Science and Geography needs in school



THIS ISSUE AT A GLANCE

LIFE SCIENCE

Sea Monsters

Pages 4–5

Critical Thinking

- Which modern animals are viviparous? (*mammals*) Which are not? (*birds, amphibians, insects*)
- Many prehistoric marine reptiles resembled modern aquatic animals in some ways. What does that suggest about evolution? (*Animals of different eras adapt to the same environments in similar ways.*)
- *Diversity and adaptation of organisms: evolution, prehistoric life*

PHYSICAL SCIENCE

Ice Men

Pages 10–11

Critical Thinking

- Where else besides sporting events might ice-making technology be applied?
- In terms of climate, temperature, and ease of access, which place on Earth might be the best location for an upcoming Olympic Winter Games?
- *Structure of the Earth system: water*
- *Motion and forces: friction*

LIFE SCIENCE

Old News

Pages 6–7

Critical Thinking

- Based on what you learned from the article, what might the common ancestor of humans and chimps have looked and behaved like? Which living animal might it have resembled?
- *Diversity and adaptation of organisms: evolution; structure, function, and behavior*

HEALTH SCIENCE

Power Drain

Pages 12–13

Critical Thinking

- Health and physical fitness are critical to athletic achievement. Why do athletes risk damaging their bodies by taking anabolic steroids?
- If you were offered anabolic steroids, what would you do?
- *Structure and function in living systems: the urinary system*
- *Personal health: drug abuse*

PHYSICAL SCIENCE

Change in Tune

Pages 8–9

Critical Thinking

- If the fluid piano is successful, might the concept be applied to other instruments? How?
- What factors might have led to the differences between Western music and the music of India and the Middle East?
- *Interactions of energy and matter: sound waves*
- *Science and technology in society: new products and quality of life*

EARTH SCIENCE

Mash Up

Pages 14–16


Critical Thinking

- Why might the formation of supercontinents lead to mass extinctions and extreme weather conditions?
- Scientists have found evidence that plate tectonics has occurred on Mars. What formations on Mars might be further evidence of Martian plate tectonics? (*volcanoes, giant canyons*)
- *Structure of the Earth system: plate tectonics, the layers of Earth, continental drift*

Current Science

Online

You can find **Student's worksheet and online resources** at our web site: <http://www.nurturecraft.com/html/currentscience.htm>

Readers, look for the book  throughout this issue to guide in learning **Physics, Chemistry, Biology & Geography** in line with the MOE curriculum.

Video Links

Mega Beasts:

Mosasaur v. Plesiosaur
("Sea Monsters," p. 4)
tinyurl.com/32k2jhp

Discovering Ardi

("Old News," p. 6)
tinyurl.com/35ydqfp

Introducing the 'fluid piano'

("Change in Tune," p. 8)
tinyurl.com/yd2y7If

Beetle Mania

("Battling Beetles With Noise," p. 19)
tinyurl.com/23gns7I

SKILLBUILDERS

Issue 5 2010

**CURRENT
SCIENCE®****Sea Monsters** (Page 4)**Vocabulary Challenge**

Match each numbered word or phrase with its correct description. Write the letter of the description in the bracket provided.

- | | | |
|-----------------|-----|--|
| 1. ectothermic | () | A. prehistoric marine reptiles that moved like turtles |
| 2. mosasaurs | () | B. a prehistoric era |
| 3. viviparous | () | C. an organism that eats plants |
| 4. ichthyosaurs | () | D. cold-blooded |
| 5. herbivore | () | E. prehistoric marine reptiles that had long, supple bodies and may have rippled through the water like eels |
| 6. plesiosaurs | () | F. produces live offspring |
| 7. Mesozoic | () | G. prehistoric marine lizards that had long heads, short necks, and long, sinuous tails |
| 8. pliosaurs | () | H. prehistoric marine reptiles that had short necks, bulky bodies, and heads like those of crocodiles |

Old News (Page 6)**Vocabulary Challenge**

Match each numbered word or phrase with its correct description. Write the letter of the description in the space provided.

- | | | |
|--------------------------------------|-----|---|
| 1. Ardi | () | A. the outer covering of teeth |
| 2. dexterous | () | B. the scientific name for modern humans |
| 3. paleoanthropology | () | C. a tooth that is sharp and daggerlike in the upper jaw of a chimpanzee |
| 4. Lucy | () | D. the oldest known species of a human ancestor |
| 5. <i>Ardipithecus ramidus</i> | () | E. skillful in physical movements |
| 6. canine | () | F. the study of prehistoric humans and their ancestors |
| 7. <i>Australopithecus afarensis</i> | () | G. a specimen of <i>A. afarensis</i> |
| 8. <i>Homo sapiens</i> | () | H. a species of a human ancestor that preceded <i>Homo erectus</i> by about 400,000 years |
| 9. enamel | () | I. a specimen of <i>A. ramidus</i> |
| 10. <i>Homo habilis</i> | () | J. a human ancestor that lived about 3.2 million years ago |

SKILLBUILDERS

Issue 5 2010

**CURRENT
SCIENCE®****Change in Tune** (Page 8)**Short Answer**

1. In music, what is pitch? _____

2. How does Western music differ from the music of India and the Middle East? _____

3. What makes the fluid piano fluid? _____

4. What is a semitone? _____

5. A percussion instrument is an instrument in which sounds are made by striking one object with another object. Is the piano a stringed instrument or a percussion instrument? _____

Ice Men (Page 10)**Short Answer**

1. What should the relative atmospheric humidity be in a skating arena? _____
2. What would a game of hockey do to the ice in a skating rink that has been made from chilled water? Explain your answer. _____

3. How does Vancouver's climate affect the ice made there for sporting events? _____

4. What are the "pebbles" on a curling rink's ice, how are they made, and what is their function? _____

5. How would a game of hockey played on frozen brine water differ from hockey played on regular ice? Explain your answer. _____

SKILLBUILDERS

Issue 5 2010

**CURRENT
SCIENCE®****Power Drain** (Page 12)**Multiple Choice***Choose the response that best completes each statement or answers each question. Write the letters in the brackets.*

1. A kidney is about the size of a human (A) fingernail. (B) fist. (C) big toe. ()
2. About how many liters of blood do the kidneys process each day? (A) 189, (B) 200, (C) 211 ()
3. Anabolic steroids mimic the action of which hormone? (A) estrogen, (B) insulin, (C) testosterone ()
4. Which type of muscle tissue enables a person to move his or her bones? (A) cardiac, ()
(B) skeletal, (C) smooth
5. The body stores urine in the (A) bladder. (B) liver. (C) ureter. ()
6. Which is not a side effect of anabolic steroid use? (A) acne, (B) bone fractures, (C) paranoia ()
7. Which blood vessel receives filtered blood from the kidneys? (A) aorta, (B) inferior vena cava, ()
(C) jugular vein
8. Patrick Antonecchia quit using anabolic steroids because his glomeruli had (A) become scarred. ()
(B) bulked up. (C) shrunk.

Mash Up (Page 14)**True or False***Read each statement, and decide whether it is true (T) or false (F). Write your response in the space provided.*

1. Earth's interior has several layers—the crust, the mantle, and the core. ()
2. All of Earth's landmasses were joined 300 million years ago in a supercontinent called Pangaea Proxima. ()
3. The motion of Earth's tectonic plates moves the planet's continents. ()
4. Landmasses break apart and come together in a process called the supercontinent cycle. ()
5. Subjection is a process in which one tectonic plate slides underneath another tectonic plate. ()
6. A hyper-cane is an extreme hurricane. ()
7. Scientists agree on the shape that the next supercontinent will take. ()
8. A global ocean called Moravia surrounded the prehistoric supercontinent Rodinia 1 billion years ago. ()

Discoveries (Page 17)**Fill in the Blanks***Write the word or words that best complete each sentence.*

1. Ultrasonic noises are too high in _____ to be heard by human ears.
2. The transparent fish and frogs that have been bred in Japan lack _____ in their skin.
3. Seismic _____ are vibrations produced by earthquakes.
4. Staph infections are caused by _____.
5. Pine trees produce a sticky sap called _____.
6. A _____ is a fountain of hot rock bubbling up from deep inside Earth.
7. Penicillin is a type of _____.
8. *Asperatus* means " _____ " in Latin.

Sci-Triv Game (Page 2)

Answers

Health Science

1. True. Some studies have shown that normal body temperature declines slightly overtime. The decline becomes particularly pronounced in senior citizens. 2. C. A sudden failure of the body's blood supply can cause a sharp drop in blood pressure and a loss of consciousness. 3. Phlegm is thick, sticky mucus secreted by the breathing passages. 4. laughter, 5. An endoscope is a flexible viewing instrument that can be inserted into the body to examine the interior of hollow organs, such as the stomach, the intestines, and the bladder.

Life Science

1. False. They can fly, but their wings are too short to keep them aloft for more than a few seconds. 2. C. Black widows and brown recluses are much more poisonous than tarantulas are. Tarantulas are also docile, need very little space, and are easy to care for. 3. Tissue is a group of similar cells

that carry out the same work. 4. bone, 5. A potometer is a device that measures the amount of water a plant loses through its leaves by transpiration.

Mathematics

1. True. The range is the difference between the smallest number and the largest number in a sample. 2. B, 3. 42, 4. concave, 5. An empty set is a set that has no elements.

Earth Science

1. True, 2. C, 3. A rill is a very small creek or a long narrow valley on the moon's surface. 4. relief or topographic, 5. An anemometer is a device that measures wind speed.

Physical Science

1. False. A pneumatic device is operated by the force of compressed air. 2. A. An allotrope is a different physical form of an element. Diamond and graphite are hard and soft allotropes of carbon. 3. Adsorption is when a thin layer of a gas or a liquid

adheres to the surface of a solid or a liquid. *Absorption*, by contrast, is when one substance completely absorbs another, like the way a sponge soaks up water. 4. virus, 5. A hologram is a three-dimensional image made with laser light.

Optricks (Page 24)

Mystery Photos:

Top: plastic mustard bottle

Middle: LEGO block

Bottom: root beer

Bend Your Mind: Fifi just needs to walk to the tree and then walk 2 meters farther in the same direction to reach the bowl.

Whatizit? Pneumatic bones have holes in them, making them lightweight. A pelican's lightweight bones enable it to fly.

SKILLBUILDERS ANSWER KEY

Page 2

Sea Monsters

1. D, 2. G, 3. F, 4. E, 5. C, 6. A, 7. B, 8. H

Old News

1. I, 2. E, 3. F, 4. G, 5. D, 6. C, 7. J, 8. B, 9. A, 10. H

Page 3

Change in Tune

1. Pitch is the frequency of each note. 2. In Western music, each note has a frequency that is 5.95 percent higher than the frequency of the note below it. In the music of India and the Middle East, the difference in frequency between notes varies. 3. The fluid piano has plastic bridges attached to each string. By moving white knobs attached to the bridges, the strings can be shortened or lengthened, which changes the notes' pitch. 4. A semitone is an interval, or difference in frequency, between two musical notes.

5. It's both. The strings are struck with hammers, not plucked or bowed as guitar and violin strings are.

Ice Men

1. 40 percent 2. A game of hockey would do a lot of damage to the ice because ice made from chilled water is weak and lacks the ability to resist damage from skaters' blades. 3. Vancouver's humid climate can cause frost (a layer of ice crystals) to form on the ice, which makes the ice look foggy and dull and slows skaters. 4. The pebbles on a curling rink are bumps made by spraying a mist of tiny droplets of filtered water on the ice. The pebbles decrease the surface contact between the ice and the curling stones, enabling the stones to slide farther before stopping. 5. A game of hockey played on frozen brine water would be slower than hockey played on regular ice. The salt in the brine water would create greater friction with the skaters'

blades, slowing them down.

Page 5

Power Drain

1. B, 2. A, 3. C, 4. B, 5. A, 6. B, 7. B, 8. A

Mash Up

1. T 2. F. The supercontinent's name was Pangaea. Pangaea Proxima is the name of a possible future supercontinent. 3. T, 4. T 5. F. The process is called subduction. 6. T 7. F. Scientists disagree about the shape of the next supercontinent. 8. F. The global ocean was Mirovia. Moravia is a historic region in Central Europe.

Discoveries

1. frequency, 2. pigments 3. waves, 4. bacteria 5. resin, 6. hot spot 7. antibiotic, 8. rough



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