

CURRENT SCIENCE®

ASIA EDITION

2010 • Issue 6

Supplements for Science and Geography needs in school



THIS ISSUE AT A GLANCE

LIFE SCIENCE

Down to Earth

Pages 4–7

Critical Thinking

■ How does luminescence differ from incandescence (see “Trial By Fire,” page 14–15)? (*Luminescence is the emission of light without using heat. Incandescence is the emission of light by a hot substance.*)

■ List some luminescent organisms or objects not mentioned in the article.

■ *Structure and function in living systems*: coloration, bioluminescence

LIFE SCIENCE

Free Range

Pages 8–9

Critical Thinking

■ Does your local government allow people to keep chickens in their backyards? If not, why does the government forbid it? Should other livestock, such as pigs, cattle, sheep, and turkeys, be allowed to live within city limits? Defend your answer.

■ *Structure and function in living systems*: reproduction

■ *Science and technology in society*: quality of life

HEALTH SCIENCE

Fed Up

Pages 10–11

Critical Thinking

■ If obesity continues to rise at the current rate, 40 percent of American adults will be obese by 2018, costing the country \$344 billion in health-care expenses, according to a study conducted by scientists at Emory University. Should food companies be taxed to pay for the rising health-care costs of obese citizens?

■ *Personal and community health*: proper nutrition

EARTH SCIENCE

Muddy Waters

Pages 12–13

Critical Thinking

■ Identify some nonpoint and point sources of pollution. (*Nonpoint: dirt and chemicals that storm water washes from construction sites, lawns, city streets, rooftops, and parking lots; Point: waste from oil refineries, chemical plants, factories, and sewage treatment plants*)

■ *Structure of the Earth system*: the water cycle

■ *Environmental quality*: soil and water, resource use

PHYSICAL SCIENCE

Trial By Fire

Pages 14–15

Critical Thinking

■ In what ways was your school designed to prevent and respond to fires? What procedures should you follow in the event of a fire?

■ Describe some examples of oxidation not mentioned in the article. (*the formation of rust when iron reacts with oxygen; the formation of a greenish coating when copper reacts with oxygen*)

■ *Environmental quality*: urban development

PHYSICAL SCIENCE

Need for Speed

Pages 16–17

Critical Thinking

■ Inertia is defined as the resistance of an object to a change in its state of motion. Does a parked car have inertia? Does a moving car have inertia? (*Both a parked car and a moving car have inertia.*)


■ Have you ever heard a vehicle break the sound barrier? Describe the sound of the sonic boom.

■ *Motions and forces*: objects in motion

Current Science

Online

You can find **Student's worksheet and online resources** at our web site: <http://www.naturecraft.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.

NOVA

Aging

(“Fed Up,” p. 10)

www.pbs.org/wgbh/nova/teachers/activities/3401_01_nsn.html

Analyze the fat content in several food items.

Maya

(“Muddy Waters,” p. 12)

www.pbs.org/wgbh/nova/teachers/viewing/3401_03_nsn.html

Consider the impact of technology and pollution on another civilization—the Mayan.

Extreme Ice

(“Ice Cap Rapidly Receding,” p. 18)

www.pbs.org/wgbh/nova/teachers/activities/3604_extremeice.html

Investigate how scientists monitor changes in Earth's glaciers, ice caps, and ice sheets.

SKILLBUILDERS

Issue 6 2010

**CURRENT
SCIENCE®****Down to Earth** (Page 4) **Short Answer**

1. What are the two main functions of the colors in animal life?

2. Why do people who live closer to the equator tend to have more melanin in their skin?

3. What is bioluminescence? Name two functions of bioluminescence.

4. How might the saying "The more things change, the more they stay the same" apply to *Avatar*?

Free Range (Page 8)**Fill in the Blanks**

Write the word or words that best complete each sentence.

1. Chicken manure is rich in the element _____.
2. A _____ is a person who consumes only locally grown organic food.
3. When a hen ovulates, it produces an _____.
4. An _____ is an animal that eats both plants and animals.
5. The _____ _____ is a type of chicken that carries the name of a U.S. state.
6. In a _____ hierarchy, members of a group assert control over one another according to their status.
7. An _____ is a law passed by a town or a city.
8. Chickens assert their dominance by _____ one another.
9. _____ farms confine large numbers of animals indoors in close quarters to maximize the output of meat and eggs.
10. In a _____ hierarchy, one member of a group is dominant. The rest are submissive to it.

SKILLBUILDERS

Issue 6 2010

**CURRENT
SCIENCE®****Fed Up** (Page 10)**True or False***Read each statement, and decide whether it is true (T) or false (F). Write your response in the bracket provided.*

1. Dietary fiber is also known as roughage. ()
2. The number of calories in an average bagel in 2005 was 2.5 times the number of calories in an average bagel in 1985. ()
3. Twinkies contain a lot of sugar, but little fiber and few nutrients. ()
4. The number of calories in a cheeseburger increased by 333 between 1985 and 2005. ()
5. Foods high in salt, sugar, and fat are the foods least likely to stimulate the brain's reward system. ()
6. The bigger the serving of food, the more people tend to eat. ()
7. Smart snacks are those that are high in fiber and nutrients. ()
8. Dietary fiber slows the passage of food through the digestive system. ()
9. Humans devote more of what they eat to fueling their brains than chimps do. ()
10. The average serving of a soft drink in 1985 had about 85 percent of the calories that an average serving had in 2005. ()

Muddy Waters (Page 12) **Short Answer**

1. How do point source and nonpoint source pollution differ?

2. Why does Bryan Reed keep his cows indoors?

3. What is no-till farming, and what type of pollution does it prevent?

4. What is a dead zone?

5. Name three sources of nitrogen pollution.

SKILLBUILDERS

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**CURRENT
SCIENCE®****Trial By Fire** (Page 14) **True or False***Read each statement, and decide whether it is true (T) or false (F). Write your response in the bracket provided.*

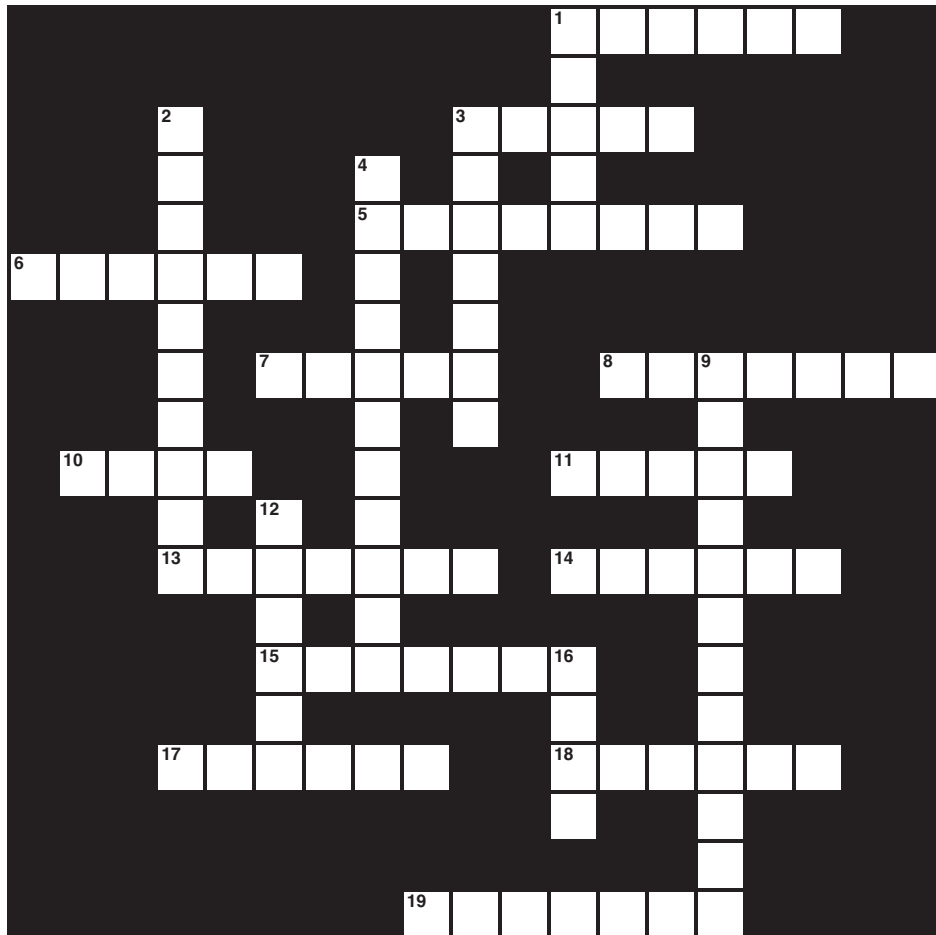
1. Fire is a type of chemical reaction in which oxygen combines with a substance. ()
2. Most deaths caused by residential fires are caused by heat. ()
3. A firebreak is a broad gap between trees that has been cleared of vegetation. ()
4. An incandescent substance is so hot it gives off visible light. ()
5. Firefighters sometimes dynamite buildings to deprive fires of oxygen. ()
6. Wood, paper, and gasoline contain carbon and hydrogen. ()

Need for Speed (Page 16)**Vocabulary Challenge***Match each numbered word or phrase with its correct description. Write the letter of the description in the bracket provided.*

- | | | |
|------------------|-----|---|
| 1. inertia | () | A. forward force |
| 2. lift | () | B. a downward pressure created by the aerodynamic characteristics of a car |
| 3. turbojet | () | C. faster than the speed of sound |
| 4. friction | () | D. at right angles |
| 5. downforce | () | E. an explosive noise that occurs when a moving object breaks the sound barrier |
| 6. thrust | () | F. the resistance of an object to a change in its motion |
| 7. sonic boom | () | G. the vehicle that holds the world's land speed record |
| 8. perpendicular | () | H. a force that opposes motion when two surfaces rub against each other |
| 9. supersonic | () | I. a type of engine |
| 0. ThrustSSC | () | J. upward force |

SKILLBUILDERS

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**CURRENT
SCIENCE®****Discoveries** (Page 18)**Crossword****Across**

1. a type of member of a naked mole rat colony
3. a dish used in a laboratory
5. an animal that has traits of both genders
6. an unfertilized egg
7. a type of radiation
8. a type of nuclear reaction
10. P27 is one type of this.
11. the head of a naked mole rat colony
13. the state where Glacier National Park is located
14. male sex organs
15. a form of an element that differs in the number of neutrons in its atoms

17. an uncontrolled growth of cells

18. a crater on the moon

19. a type of ice sheet

Down

1. a compound recently discovered on the moon
2. an element
3. a U.S. river
4. a mountain in Africa
9. an instrument that analyzes wavelengths of light
12. an ocean
16. endocrine disrupting chemicals (abbr.)

Sci-Triv Game (Page 2)

Answers

Physical Science

1. False. An aromatic compound is one that contains a ring of carbon atoms. Aromatic compounds got their name because many have a strong smell. Not all compounds with a smell are aromatic, however. **2. A, 3. hydrogen, 4. carbon.** Pencils are filled with graphite, a mineral form of the element carbon. **5. light amplification by stimulated emission of radiation**

Life Science

1. False. Nematodes are slender cylindrical worms that are usually tiny in size. They live in great numbers in animals, plants, soil, and water. Several nematodes are disease-causing parasites. **2. B.** Blood is rich in protein. A vampire bat consumes half its body weight in blood each night. Without blood, the bat would die in two to three days. **3. Cud** is food that is brought up into the mouth from the first stomach to be chewed a

second time. Ruminants, such as cows, sheep, and deer, chew their cud. **4. fungus, 5.** A hyperparasite is a parasite that lives on another parasite.

Mathematics

1. True, 2. A, 3. half, 4. 180, 5. A multiplicand is a number that is multiplied by another number.

Earth Science

1. False. Spring tides are especially high or low tides that can occur at any time of year. **2. A, 3. green, 4. ice, 5.** A plunge pool is a deep pool at the base of a waterfall.

Health Science

1. True. Although patients seldom become seriously ill when they contract cat scratch fever, headache, fever, and malaise may occur and can persist for months. **2. A, 3.** The Achilles tendon is a large tendon located at the back of each lower leg. It connects the calf muscles with the heel

bone. **4. gums, 5.** Dentition is the number, arrangement, and shape of a person's teeth.

Optricks (Page 24)

Mystery Photos:

Top: grapefruit; **Middle:** roll of tape; **Bottom:** binder

Bend Your Mind: Make a pencil mark on the page. Don't lift the pencil. Then fold a corner of the paper so that the tip of the corner touches the pencil mark. Now move the pencil in a roughly 2-inch line across the back of the paper. Without lifting the pencil, draw a circle around the mark. When the pencil reaches the front of the page, lift the folded corner and complete the circle. You will end up with a dot in the middle of a circle.

Whatizit? The confused flour beetle got its name because it's often confused for the red flour beetle.

SKILLBUILDERS ANSWER KEY

Page 2

Down to Earth

1. Coloration helps animals avoid predators and attract mates. **2.** The sun's rays are more intense near the equator, and melanin absorbs the rays that burn the skin and cause skin cancer. **3.** Bioluminescence is light created by living things. Its functions include camouflaging, distracting predators, focusing attention on predators, and locating other animals. **4.** The wildlife of Pandora look different from the wildlife on Earth, but the functions of those physical traits are likely the same.

Free Range

1. nitrogen, **2.** locavore, **3.** egg or ovum, **4.** omnivore, **5.** Rhode Island red, or New Hampshire red, **6.** linear dominance, **7.** ordinance, **8.** pecking, **9.** Factory, **10.** despotic

Page 3

Fed Up

1. T, 2. T, 3. T, 4. F. It increased by

257 between 1985 and 2005. **5. F.** Foods high in salt, sugar, and fat are the most likely of all foods to stimulate the reward system in the human brain. **6. T, 7. T, 8. F.** Dietary fiber eases the passage of food through the digestive system. **9. T, 10. F.** It had about 34 percent of the calories that an average serving had in 2005.

Muddy Waters

1. Point source pollution is released by a definite outlet, such as a pipe. Nonpoint source pollution cannot be traced to a specific source and is difficult to control. **2.** He keeps the cows indoors to prevent their manure from being washed by the rain into a nearby stream and polluting it. **3.** No-till farming is a practice in which the soil is neither plowed nor turned. It keeps soil locked into fields and decreases the amount of sediment washed into nearby waterways. **4.** A dead zone is an oxygen-free region of the ocean that cannot support marine life. **5.** Fertilizer, manure, air pollutants released by cars and power plants

Page 4

Trial By Fire

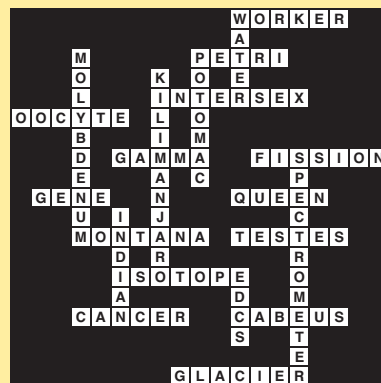
1. T, 2. F. Most deaths in residential fires are caused by smoke. **3. T, 4. T, 5. F.** They dynamite the buildings to deprive the fires of fuel. **6. T**

Need for Speed

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

Page 5

Discovery



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