

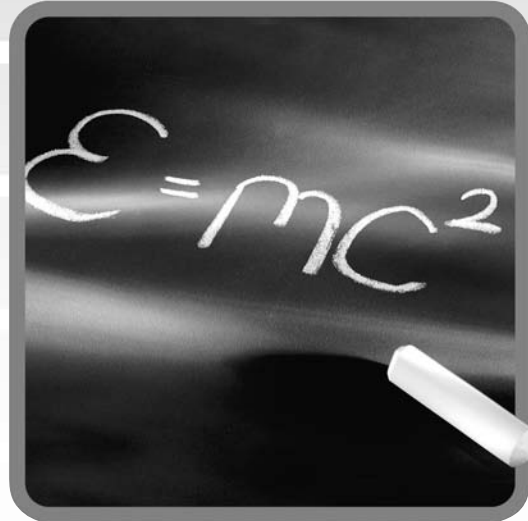
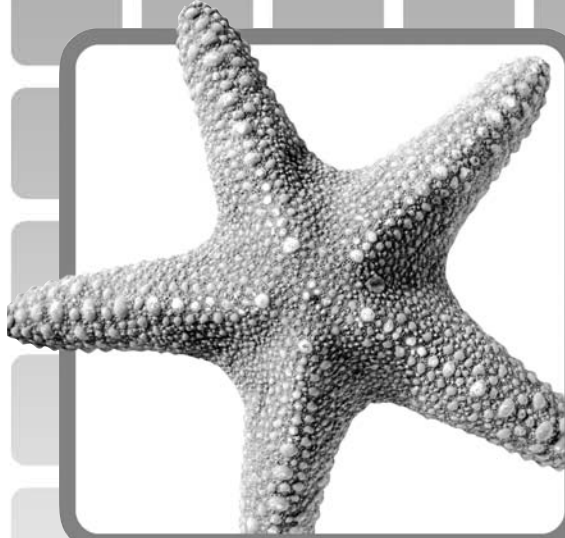
2008

FCAT

Florida Comprehensive Assessment Test®

Student Name

SCIENCE



SCIENCE
SAMPLE TEST & ANSWER BOOK

GRADE
11

FCAT Sample Test Materials

These sample test materials are designed to help you prepare to answer FCAT questions. These materials introduce you to the kinds of questions you will answer when you take the FCAT and include hints for responding to the different kinds of FCAT questions. The FCAT Science sample test materials for Grade 11 are composed of the books described below:

- Sample Test and Answer Book**
Includes a science sample test, a sample answer book, and instructions for completing the sample test. (Copies are available for all students in the tested grade.)
 - Sample Answer Key**
Includes answers and explanations for the questions in the sample test. (Copies are available for classroom teachers only.)
- = This book

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FCAT Science Sample Test Book



Calculator Instructions Page 2

A calculator is provided for you to use during the test. This section provides helpful hints for using a calculator on the test.

Gridded-Response Instructions Page 3

Some FCAT Science questions require you to provide your answers by filling in numeric grids. This section shows different ways of completing the response grids correctly.

Taking the FCAT Science Sample Test Page 7

This section introduces the FCAT Science Sample Test. It includes a description of the different kinds of questions on the FCAT, hints for answering FCAT Science questions, and an estimate of the time required to complete the sample test.

FCAT Science Sample Test Page 9

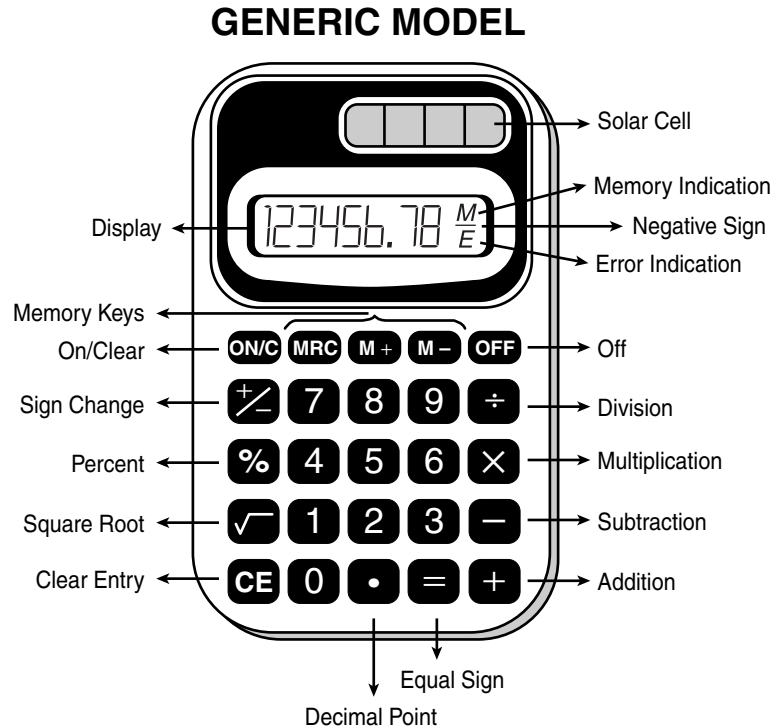
The Science Sample Test consists of 15 practice questions that are similar to questions on the FCAT. It includes a perforated (tear-out) Science Reference Sheet and Periodic Table found on page 11 and page 12.

FCAT Science Sample Answer Book Page 23

Your answers to the sample test questions should be placed in the Science Sample Answer Book. The answer book is perforated and may be removed before you start the sample test.

Calculator Instructions


This is a picture of a generic calculator and its parts.



HELPFUL HINTS FOR TAKING THE FCAT SCIENCE TEST

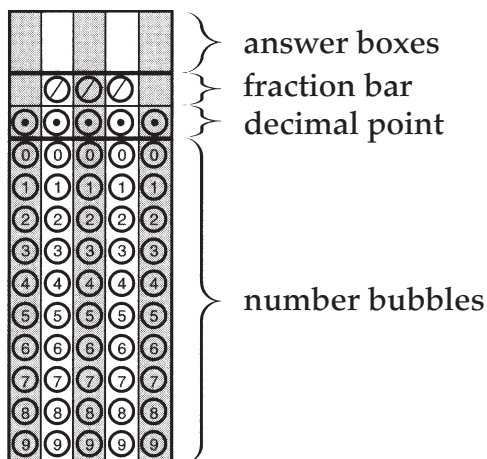
1. Read the problem very carefully. Then decide whether or not you need the calculator to help you solve the problem.
2. When starting a new problem, always clear your calculator by pressing the clear key.
3. If you see an **E** in the display, clear the error before you begin.
4. If you see an **M** in the display, clear the memory and the calculator before you begin.
5. If the number in the display is not one of the answer choices, check your work. Remember that when computing with certain types of fractions, you may have to round the number in the display.
6. Remember, your calculator will NOT automatically perform the algebraic order of operations.
7. Calculators might display an incorrect answer if you press the keys too quickly. When working with calculators, use careful and deliberate keystrokes, and always remember to check your answer to make sure that it is reasonable.
8. The negative sign may appear either to the left or to the right of the number.
9. Always check your answer to make sure that you have completed all of the necessary steps.

How to Complete the Response Grids

Science test questions with this symbol  require that you fill in a grid in your answer book. There may be more than one correct way to fill in a response grid. This section shows you different ways the response grid may be completed.

Parts of a Response Grid

For Grade 11, response grids have the following parts:



Directions

1. Work the problem and find an answer or solution.
2. Write your answer in the answer boxes at the top of the grid.
 - Print your answer with the first digit in the left answer box OR with the last digit in the right answer box.
 - Print only one digit or symbol in each answer box. Do NOT leave a blank answer box in the middle of an answer.
 - Be sure to write a decimal point or fraction bar in the answer box if it is a part of the answer.

3. Fill in a bubble under each box in which you wrote your answer.

- Fill in one and ONLY one bubble for each answer box. Do NOT fill in a bubble under an unused answer box.
- Fill in each bubble by making a solid black mark that completely fills the circle.
- You MUST fill in the bubbles accurately to receive credit for your answer.

Examples

Whole Number

$60 + 10 =$

7	0			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
<input checked="" type="radio"/>	7	7	7	7
8	8	8	8	8
9	9	9	9	9

OR

			7	0
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
0	0	0	0	<input checked="" type="radio"/>
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	<input checked="" type="radio"/>	7
8	8	8	8	8
9	9	9	9	9

Decimal

Show the decimal equivalent of $5\frac{6}{100}$.

5	.	0	6	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
0	0	<input checked="" type="radio"/>	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
<input checked="" type="radio"/>	5	5	5	5
6	6	6	<input checked="" type="radio"/>	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

OR

5	.	0	6	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
0	0	0	<input checked="" type="radio"/>	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	<input checked="" type="radio"/>	5	5	5
6	6	6	6	<input checked="" type="radio"/>
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

Fraction

NOTE: You may NOT write a **mixed number** such as $13\frac{1}{4}$ in the answer grid. If your answer is a mixed number, you must convert the answer to an improper fraction, such as $\frac{53}{4}$, or to a decimal number, such as 13.25. If you tried to fill in $13\frac{1}{4}$, it would be read as $\frac{131}{4}$ and would be counted wrong.

INCORRECT

$$12\frac{3}{4} + \frac{1}{2} =$$

1	3	1	/	4
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

CORRECT

$$12\frac{3}{4} + \frac{1}{2} =$$

5	3	/	4	
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

OR

1	3	.	2	5
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

Decimal or Fraction

Many answers may be shown as either a decimal or a fraction.

.	6	2	5
/	/	/	
•	•	•	•
0	0	0	0
1	1	1	1
2	2	•	2
3	3	3	3
4	4	4	4
5	5	5	•
6	•	6	6
7	7	7	7
8	8	8	8
9	9	9	9

OR

.	6	2	5
/	/	/	
•	•	•	•
0	0	0	0
1	1	1	1
2	2	2	•
3	3	3	3
4	4	4	4
5	5	5	•
6	6	•	6
7	7	7	7
8	8	8	8
9	9	9	9

OR

5	5	/	8
/	•	/	
•	•	•	•
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	•	5	5
6	6	6	6
7	7	7	7
8	8	•	•
9	9	9	9

OR

	5	/	8
/	/	•	
•	•	•	•
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	•	5
6	6	6	6
7	7	7	7
8	8	8	•
9	9	9	9

Ranges

A correct answer within a range of values may be represented in various ways. For example, for the inequality

$$18.8 < n < 19.2$$

values of n could be written as shown below.

1	8	.	9
/	/	/	
•	•	•	•
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	•	8	8
9	9	•	9

OR

1	9		
/	/	/	
•	•	•	•
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	•	9	9

OR

			1
/	/	/	
•	•	•	•
0	0	0	0
1	1	1	•
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	•

OR

	1	.	1
/	/	/	
•	•	•	•
0	0	0	0
1	•	1	•
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	•	9	9

There are also other correct answers.

Taking the FCAT Science Sample Test

Hints for Taking the FCAT Science Test

Here are some hints to help you do your best when you take the FCAT Science test. Keep these hints in mind when you answer the sample questions.

- ✓ **Learn how to answer each kind of question. The FCAT Science test for Grade 11 has four types of questions: multiple-choice, gridded-response, short-response, and extended-response.**
- ✓ **Read each question carefully.**
- ✓ **Check each answer to make sure it is the best answer for the question.**
- ✓ **Answer the questions you are sure about first. If a question seems too difficult, skip it and go back to it later.**
- ✓ **Be sure to fill in the answer bubbles correctly. Do not make any stray marks around answer spaces.**
- ✓ **Think positively. Some questions may seem hard to you, but you may be able to figure out what to do if you reread the question carefully.**
- ✓ **When you have finished each question, reread it to make sure your answer is reasonable.**
- ✓ **Relax. Some people get nervous about tests. It's natural. Just do your best.**

How to Answer the “Read, Inquire, Explain” Questions

Answers to the short- and extended-response problems can receive full or partial credit. You should try to answer these questions even if you are not sure of the correct answer. If a portion of the answer is correct, you may get a portion of the points.

- ✓ Allow about 5 minutes to answer the short “Read, Inquire, Explain” questions and about 10 to 15 minutes to answer the long ones.
- ✓ Read each question carefully.
- ✓ If you do not understand the question, read it again and try to answer one part at a time.
- ✓ Be sure to answer every part of the question.
- ✓ Use the information provided to answer the question.
- ✓ Write your explanations in clear, concise language. Use only the space provided in the Sample Answer Book. Be sure to keep your writing or drawings inside the box.
- ✓ Reread your explanation to make sure it says what you want it to say.

Directions for Taking the Science Sample Test

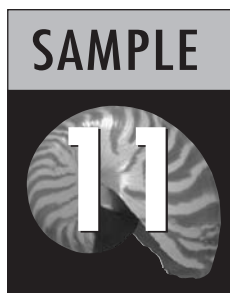
This Sample Test contains the Reference Sheet, the Periodic Table, and 15 science questions. It should take about 30 to 45 minutes to answer all the questions. Mark your answers in the Science Sample Answer Book, which begins on page 23. If you don't know how to answer a question, just ask your teacher to explain it to you. Your teacher has the answers to the sample questions.

You may need formulas or the Periodic Table to help you answer some of the questions. You may refer to the Reference Sheet (page 11) or the Periodic Table (page 12) as often as you like.

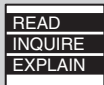
Use the space in your Science Sample Test Book to do your work on the multiple-choice and gridded-response questions, but be sure to put your answers in the Sample Answer Book. For the “Read, Inquire, Explain” questions, write your answers in the Sample Answer Book.

Before you begin, remove the Sample Answer Book by tearing along the dotted line.

FCAT Science Sample Test

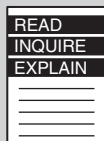


FCAT Question Symbols



This symbol appears next to questions that require short written answers. Use about 5 minutes to answer these questions.

A complete and correct answer to each of these questions is worth 2 points. A partially correct answer is worth 1 point.



This symbol appears next to questions that require longer written answers. Use about 10 to 15 minutes to answer these questions.

A complete and correct answer to each of these questions is worth 4 points. A partially correct answer is worth 1, 2, or 3 points.



This symbol appears next to questions that require you to fill in your answer on a grid. There may be more than one correct way to fill in a response grid. You **MUST** fill in the bubbles accurately to receive credit for your answer.

A correct answer to each of these questions is worth 1 point.

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Grade 11 FCAT Science Reference Sheet

Equations

Acceleration (a)	=	$\frac{\text{change in velocity (m/s)}}{\text{time taken for this change (s)}}$		a	=	$\frac{v_f - v_i}{t_f - t_i}$
------------------	---	---	--	---	---	-------------------------------

Average speed (v)	=	$\frac{\text{distance}}{\text{time}}$		v	=	$\frac{d}{t}$
-------------------	---	---------------------------------------	--	---	---	---------------

Density (D)	=	$\frac{\text{mass (g)}}{\text{Volume (cm}^3\text{)}}$		D	=	$\frac{m}{V}$
-------------	---	---	--	---	---	---------------

Percent Efficiency (e)	=	$\frac{\text{Work out (J)}}{\text{Work in (J)}} \times 100$		%e	=	$\frac{W_{\text{out}}}{W_{\text{in}}} \times 100$
------------------------	---	---	--	----	---	---

Force (F)	=	mass (kg) \times acceleration (m/s ²)		F	=	ma
-----------	---	---	--	---	---	----

Frequency (f)	=	$\frac{\text{number of events (waves)}}{\text{time (s)}}$		f	=	$\frac{n \text{ of events}}{t}$
---------------	---	---	--	---	---	---------------------------------

Momentum (p)	=	mass (kg) \times velocity (m/s)		p	=	mv
--------------	---	-----------------------------------	--	---	---	----

Pressure (P)	=	$\frac{\text{Force (N)}}{\text{area (m}^2\text{)}}$		P	=	$\frac{F}{A}$
--------------	---	---	--	---	---	---------------

Wavelength (λ)	=	$\frac{\text{velocity (m/s)}}{\text{frequency (Hz)}}$		λ	=	$\frac{v}{f}$
--------------------------	---	---	--	-----------	---	---------------

Work (W)	=	Force (N) \times distance (m)		W	=	Fd
----------	---	---------------------------------	--	---	---	----

Units of Measure

m = meter	g = gram	s = second
cm = centimeter	kg = kilogram	Hz = hertz (waves per second)
J = joule (newton-meter)		
N = newton (kilogram-meter per second squared)		
1 Astronomical Unit (AU) = distance between Earth and the Sun (approximately 150 million kilometers)		

Periodic Table of the Elements

(based on $^{12}\text{C} = 12.0000$)

Representative
Elements

Group

1

2

3

4

5

6

7

1A

2A

3B

4B

5B

6B

7B

8B

9B

10B

11B

12B

13A

14A

15A

16A

17A

18A

14	Atomic number
Si	Symbol
Silicon	Name
28.086	Atomic Mass

Transition Metals

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
H Hydrogen 1.008	He Helium 4.003	Li Lithium 6.941	Be Beryllium 9.012	B Boron 10.81	C Carbon 12.011	N Nitrogen 14.007	O Oxygen 15.999	F Fluorine 18.998	Ne Neon 20.180	Na Sodium 22.990	Mg Magnesium 24.305	Al Aluminum 26.982	Si Silicon 28.086	P Phosphorus 30.974	S Sulfur 32.06	Cl Chlorine 35.453	Ar Argon 39.948
K Potassium 39.098	Ca Calcium 40.078	Sc Scandium 44.956	Ti Titanium 47.88	V Vanadium 50.942	Cr Chromium 51.996	Mn Manganese 54.938	Fe Iron 55.847	Co Cobalt 58.933	Ni Nickel 58.693	Cu Copper 63.546	Zn Zinc 65.39	Ga Gallium 69.723	Ge Germanium 72.61	As Arsenic 74.922	Se Selenium 78.96	Br Bromine 79.904	Kr Krypton 83.90
Rb Rubidium 85.468	Sr Strontium 87.62	Y Yttrium 88.906	Zr Zirconium 91.224	Nb Niobium 92.906	Mo Molybdenum 95.94	Tc Technetium 98	Ru Ruthenium 101.07	Rh Rhodium 102.906	Pd Palladium 106.42	Ag Silver 107.868	Cd Cadmium 112.411	In Indium 114.82	Sn Tin 118.710	Sb Antimony 121.757	Te Tellurium 127.60	I Iodine 126.905	Xe Xenon 131.29
Cs Cesium 132.905	Ba Barium 137.327	La Lanthanum 138.905	Hf Hafnium 178.49	Ta Tantalum 180.948	W Tungsten 183.85	Re Rhenium 186.207	Os Osmium 190.2	Ir Iridium 192.22	Pt Platinum 195.08	Au Gold 196.967	Hg Mercury 200.59	Tl Thallium 204.383	Pb Lead 207.2	Bi Bismuth 208.980	Po Polonium 209.982	At Astatine 210	Rn Radon 222
Fr Francium 223	Ra Radium 226.025	Ac Actinium 227.028	Rf Rutherfordium (261)	Db Dubnium (262)	Sg Seaborgium (263)	Bh Bohrium (264)	Hs Hassium (265)	Mt Meitnerium (266)	Pt Platinum 195.08	Au Gold 196.967	Hg Mercury 200.59	Tl Thallium 204.383	Pb Lead 207.2	Bi Bismuth 208.980	Po Polonium 209.982	At Astatine 210	Rn Radon 222

Metals

Nonmetals

Inner Transition Metals

Lanthanide series

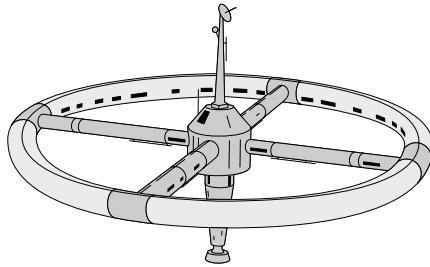
58	59	60	61	62	63	64	65	66	67	68	69	70	71
Ce Cerium 140.12	Pr Praseodymium 140.908	Nd Neodymium 144.24	Pm Promethium 144.913	Sm Samarium 150.36	Eu Europium 151.96	Gd Gadolinium 157.25	Tb Terbium 158.925	Dy Dysprosium 162.50	Ho Holmium 164.930	Er Erbium 167.26	Tm Thulium 168.934	Yb Ytterbium 173.04	Lu Lutetium 174.967
90	91	92	93	94	95	96	97	98	99	100	101	102	103
Th Thorium 232.038	Pa Protactinium 231.036	U Uranium 238.029	Np Neptunium 237.048	Pu Plutonium 244.064	Am Americium 243.061	Cm Curium 247.070	Bk Berkelium 247.070	Cf Californium 251.080	Es Einsteinium 252.083	Fm Fermium 257.095	Md Mendelevium 258.099	No Nobelium 259.101	Lr Lawrencium 260.105

Actinide series

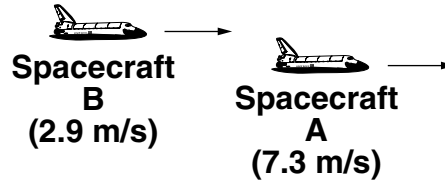


- 1 Engineers are designing a five-story parking garage in an area where seismic activity has been detected. They are planning to do tests to make sure the parking garage can withstand an earthquake. Which would be the **most effective** procedure for these tests?
- A. Apply simulated earthquake forces to a scale model of the garage.
 - B. Apply simulated earthquake forces during construction of the garage.
 - C. Apply simulated earthquake forces to the entire garage once it has been built.
 - D. Apply simulated earthquake forces that were used on other garages built in the same area.
-
- 2 Light travels at the speed of 300 000 kilometers per second (km/s). Which of these would light take the longest time to cross?
- F. galaxy
 - G. nebula
 - H. star system
 - I. solar system

- 3 Two spacecraft are leaving a space station as shown in the picture below. Spacecraft A is moving away from the space station at 7.3 meters per second (m/s). Spacecraft B is moving away from the station in the same direction at 2.9 m/s.



Space Station



What is the speed, in meters per second, of Spacecraft A relative to Spacecraft B?

- 4 Solar wind consists of positively and negatively charged particles constantly flowing from the Sun. Solar wind has a speed of approximately 1 485 000 kilometers per hour (km/h) or 0.0099 astronomical units per hour (AU/h). How many **hours** will it take for a new stream of solar wind particles to travel from the Sun to Earth?





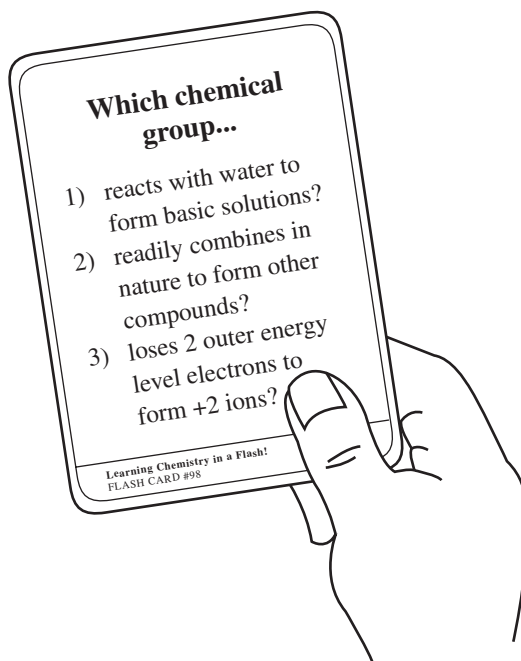
- 5 Some thunderstorms are caused by convection resulting from the collision of two air masses. Which describes the collision involved in this type of thunderstorm?
- A. Two cold fronts collide.
 - B. Two warm fronts collide.
 - C. A cold front moves into an area with warm air.
 - D. A warm front moves into an area with cold air.

- 6

READ
INQUIRE
EXPLAIN

 Go to your Sample Answer Book to answer Number 6.

- 7 Mr. Lopez's science class is playing an educational game to study the periodic table. He gives Trahn a card with some clues to help him identify a particular group on the periodic table. Below is Trahn's card.



Trahn's card describes which group on the periodic table?

- F. Group 1
- G. Group 2
- H. Group 16
- I. Group 18



8 Scientists believe that during the late Cretaceous period sea levels rose drastically. This resulted in about $\frac{1}{3}$ of Earth's present land area being under water. Which of the following types of evidence supports this theory?

- A. dinosaur and bird fossils found in swamp areas
- B. minerals and oil found in underground deposits
- C. corals and marine fossils found in the Great Plains
- D. volcanoes and igneous rocks found on the ocean floor

9 According to the plate tectonic theory, when oceanic plates collide with continental plates, the denser oceanic plate is forced under the lighter continental plate. Which geologic feature is a result of this type of collision?

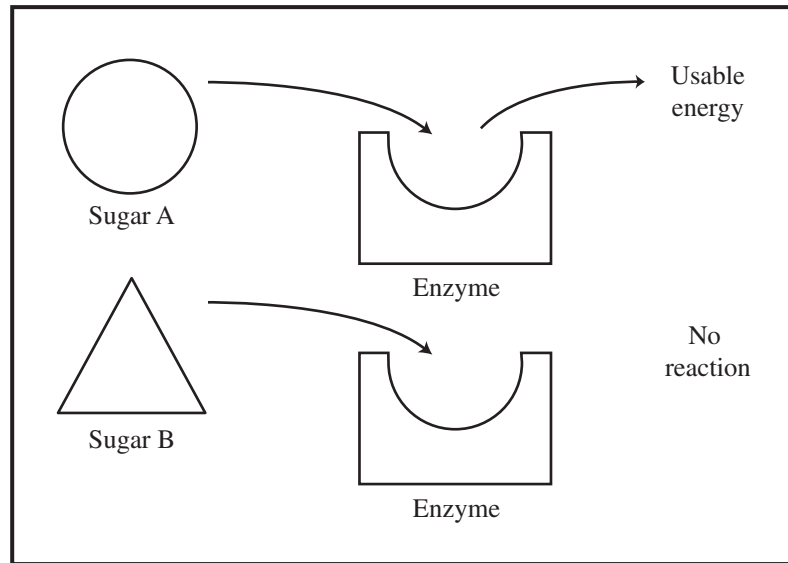
- F. hot spot
- G. abyssal plain
- H. midocean ridge
- I. composite volcano



- 10 Gravitational potential energy is the energy an object possesses due to its position relative to Earth's surface. Which of the following involve the conversion of gravitational potential energy into electric energy?
- A. solar cell generators
 - B. nuclear power plants
 - C. wind electric generators
 - D. hydroelectric power plants



- 11 Sugar molecule A is converted to usable energy by a specific enzyme. If a different sugar molecule B is substituted, the energy conversion will not occur, as shown below.



Why will the enzyme convert only sugar molecule A to usable energy?

- F. The enzyme is specific to a type of sugar.
- G. The concentration of molecules is different in each sugar.
- H. The sugar molecule A may be degrading the sugar molecule B.
- I. The conversion is only partially complete with sugar molecule B.



- 12 In 1890, sixty European starlings (a species of bird) were introduced to New York City. There are now more than 200 million European starlings in North America. Which of the following is the **most likely** outcome of the increased population of European starlings?
- A. increased nonrenewable resources
 - B. decrease in the number of native birds
 - C. decrease in the number of predators of the birds
 - D. increased food sources for the competing bird species
- 13 Most flower species reproduce sexually. A particular flower has a normal chromosome number of 38. The pollen grains of the flower contain sperm cells. During sexual reproduction, what is the number of chromosomes present in a sperm cell before the sperm cell joins an egg cell to form a zygote?
- F. 2
 - G. 19
 - H. 38
 - I. 76



14

READ
INQUIRE
EXPLAIN

Go to your Sample Answer Book to answer Number 14.

15

Studies from 1830 indicated that a remote island chain in the Pacific Ocean had 13 separate species of finches. Each finch species had a distinctive beak shape that was specialized for eating a particular type of food. In spite of these differences, there were strong similarities shared by the finches. A scientist hypothesized that the 13 species of finches descended from a common ancestor. Which of the following factors produced variation in the finch species?

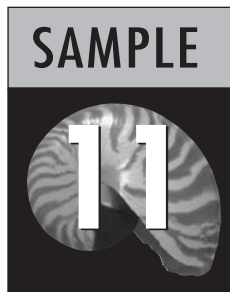
- A. mutation
- B. extinction
- C. overpopulation
- D. artificial selection



This is the end of the Science Sample Test.
Until time is called, go back and check your work or answer questions you did not complete. When you have finished, close your Sample Test Book and Sample Answer Book.

Name _____

FCAT Science Sample Answer Book



Answer all the questions that appear in the Sample Test in this Sample Answer Book. Answer multiple-choice questions by filling in the bubble for the answer you select. Answer gridded-response questions by filling in the correct bubbles. Write your answers to “Read, Inquire, Explain” questions in the space provided.

To remove your Sample Answer Book, tear carefully along the dotted line.

Fold and Tear Carefully Along Dotted Line.

1 (A) (B) (C) (D)

2 (F) (G) (H) (I)

3

7	7	7		
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

4

7	7	7		
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

5 (A) (B) (C) (D)

6 Carbon dioxide (CO₂), water (H₂O), sulfur dioxide (SO₂), and ash particles are produced when electricity is generated by coal-burning power plants. In the atmosphere, SO₂ can further react with oxygen (O₂) to form the pollutant sulfur trioxide (SO₃). Ash particles trapped inside the smokestack of a power plant catalyze the reaction and SO₃ is produced much faster inside the smokestack than in the atmosphere.

READ
INQUIRE
EXPLAIN

Part A How do ash particles affect the energy requirements of the reaction that produces SO₃ in the power plant smokestack?

Part B How is the quantity of ash particles affected as SO₃ is being made in the power plant smokestack?

7 (F) (G) (H) (I)

8 (A) (B) (C) (D)

9 (F) (G) (H) (I)

10 (A) (B) (C) (D)

11 (F) (G) (H) (I)

12 (A) (B) (C) (D)

13 (F) (G) (H) (I)

14

Lisa is curious about how different types of soil are affected by water. With a small nail, she pokes four holes in the sides of three plastic drinking cups, near the bottom. Then, she fills one cup with garden soil only, one with sand and gravel, and one with sand only. She places the cups on a level surface and fills each cup to the top with water. She repeated her investigation two more times and found the same results each time. Her observations are shown in the chart below.

READ
INQUIRE
EXPLAIN

EFFECTS OF WATER ON THREE TYPES OF SOIL

Garden Soil	Sand and Gravel	Sand
<ol style="list-style-type: none"> 1. A couple of drops of cloudy water came out of the holes. 2. The holes got all clogged up with mud. 3. The water never completely drained out. 	<ol style="list-style-type: none"> 1. The water was not clear. 2. The water drained from the holes almost as quickly as the water drained from the cup of sand. 3. When the water finished running out, the sand and gravel were still a little wet. 	<ol style="list-style-type: none"> 1. The water was very clear. 2. The water flowed very quickly out of the holes. 3. When the water finished running out, the sand was still a little wet.

Lisa wants to do an experiment to find out which type of soil will hold the most water.

Part A What is one hypothesis Lisa should test? Explain your answer.

Part B What data should Lisa collect to test her hypothesis? Explain your answer.

Part C How would Lisa use these data to draw a conclusion? Explain your answer.

15 (A) (B) (C) (D)



This is the end of the Science Sample Answer Book.
Until time is called, go back and check your work or answer questions you did not complete. When you have finished, close your Sample Test Book and Sample Answer Book.



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