

2006

# FCAT

Florida Comprehensive Assessment Test

Student Name \_\_\_\_\_

# SCIENCE

## SAMPLE TEST & ANSWER BOOK

SCIENCE



## 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 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

### Copyright Statement for This Assessment and School Performance Publication

Authorization for reproduction of this document is hereby granted to persons acting in an official capacity within the Uniform System of Public K–12 Schools as defined in Section 1000.01(4), Florida Statutes. The copyright notice at the bottom of this page must be included in all copies.

All trademarks and trade names found in this publication are the property of their respective owners and are not associated with the publishers of this publication.

Permission is **NOT** granted for distribution or reproduction outside of the Uniform System of Public K–12 Schools or for commercial distribution of the copyrighted materials without written authorization from the Florida Department of Education. Questions regarding use of these copyrighted materials should be sent to the following:

The Administrator  
Assessment and School Performance  
Florida Department of Education  
Tallahassee, Florida 32399-0400

Copyright © 2005  
State of Florida  
Department of State

# 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**

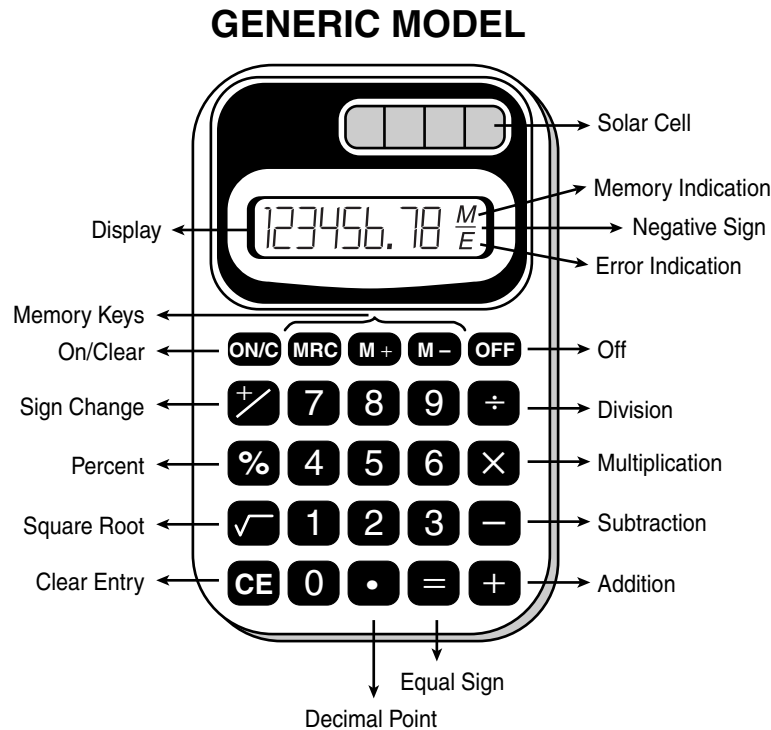
The Science Sample Test consists of 15 practice questions that are similar to questions on the FCAT. It includes a perforated (tear-out) Science Reference Sheet and Periodic Table found on page 11 and page 12.

**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

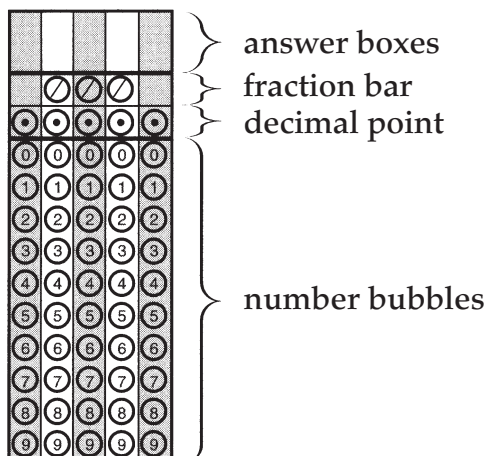
1. Read the problem very carefully. Then decide whether or not you need the calculator to help you solve the problem.
2. When starting a new problem, always clear your calculator by pressing the clear key.
3. If you see an **E** in the display, clear the error before you begin.
4. If you see an **M** 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			
/	/	/		
•	•	•	•	•
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
8	8	8	8	8
9	9	9	9	9

OR

			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
8	8	8	8	8
9	9	9	9	9

#### Decimal

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

5	.	0	6	
/	/	/		
•	•	•	•	•
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
6	6	6	•	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

OR

5	.	0	6	
/	/	/		
•	•	•	•	•
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
6	6	6	6	•
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.

<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><td style="text-align: center;">.</td><td style="text-align: center;">6</td><td style="text-align: center;">2</td><td style="text-align: center;">5</td><td></td></tr> <tr><td style="text-align: center;">/</td><td style="text-align: center;">/</td><td style="text-align: center;">/</td><td></td><td></td></tr> <tr><td style="text-align: center;">●</td><td style="text-align: center;">○</td><td style="text-align: center;">○</td><td style="text-align: center;">○</td><td style="text-align: center;">○</td></tr> <tr><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td></tr> <tr><td style="text-align: center;">1</td><td style="text-align: center;">1</td><td style="text-align: center;">1</td><td style="text-align: center;">1</td><td style="text-align: center;">1</td></tr> <tr><td style="text-align: center;">2</td><td style="text-align: center;">2</td><td style="text-align: center;">●</td><td style="text-align: center;">2</td><td style="text-align: center;">2</td></tr> <tr><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td style="text-align: center;">3</td></tr> <tr><td style="text-align: center;">4</td><td style="text-align: center;">4</td><td style="text-align: center;">4</td><td style="text-align: center;">4</td><td style="text-align: center;">4</td></tr> <tr><td style="text-align: center;">5</td><td style="text-align: center;">5</td><td style="text-align: center;">5</td><td style="text-align: center;">●</td><td style="text-align: center;">5</td></tr> <tr><td style="text-align: center;">6</td><td style="text-align: center;">●</td><td style="text-align: center;">6</td><td style="text-align: center;">6</td><td style="text-align: center;">6</td></tr> <tr><td style="text-align: center;">7</td><td style="text-align: center;">7</td><td style="text-align: center;">7</td><td style="text-align: center;">7</td><td style="text-align: center;">7</td></tr> <tr><td style="text-align: center;">8</td><td style="text-align: center;">8</td><td style="text-align: center;">8</td><td style="text-align: center;">8</td><td style="text-align: center;">8</td></tr> <tr><td style="text-align: center;">9</td><td style="text-align: center;">9</td><td style="text-align: center;">9</td><td style="text-align: center;">9</td><td style="text-align: center;">9</td></tr> </table>	.	6	2	5		/	/	/			●	○	○	○	○	0	0	0	0	0	1	1	1	1	1	2	2	●	2	2	3	3	3	3	3	4	4	4	4	4	5	5	5	●	5	6	●	6	6	6	7	7	7	7	7	8	8	8	8	8	9	9	9	9	9	OR	<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><td></td><td style="text-align: center;">.</td><td style="text-align: center;">6</td><td style="text-align: center;">2</td><td style="text-align: center;">5</td></tr> <tr><td style="text-align: center;">/</td><td style="text-align: center;">/</td><td style="text-align: center;">/</td><td></td><td></td></tr> <tr><td style="text-align: center;">○</td><td style="text-align: center;">●</td><td style="text-align: center;">○</td><td style="text-align: center;">○</td><td style="text-align: center;">○</td></tr> <tr><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td></tr> <tr><td style="text-align: center;">1</td><td style="text-align: center;">1</td><td style="text-align: center;">1</td><td style="text-align: center;">1</td><td style="text-align: center;">1</td></tr> <tr><td style="text-align: center;">2</td><td style="text-align: center;">2</td><td style="text-align: center;">2</td><td style="text-align: center;">●</td><td style="text-align: center;">2</td></tr> <tr><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td style="text-align: center;">3</td></tr> <tr><td style="text-align: center;">4</td><td style="text-align: center;">4</td><td style="text-align: center;">4</td><td style="text-align: center;">4</td><td style="text-align: center;">4</td></tr> <tr><td style="text-align: center;">5</td><td style="text-align: center;">5</td><td style="text-align: center;">5</td><td style="text-align: center;">5</td><td style="text-align: center;">●</td></tr> <tr><td style="text-align: center;">6</td><td style="text-align: center;">6</td><td style="text-align: center;">●</td><td style="text-align: center;">6</td><td style="text-align: center;">6</td></tr> <tr><td style="text-align: center;">7</td><td style="text-align: center;">7</td><td style="text-align: center;">7</td><td style="text-align: center;">7</td><td style="text-align: center;">7</td></tr> <tr><td style="text-align: center;">8</td><td style="text-align: center;">8</td><td style="text-align: center;">8</td><td style="text-align: center;">8</td><td style="text-align: center;">8</td></tr> <tr><td style="text-align: center;">9</td><td style="text-align: center;">9</td><td style="text-align: center;">9</td><td style="text-align: center;">9</td><td style="text-align: center;">9</td></tr> </table>		.	6	2	5	/	/	/			○	●	○	○	○	0	0	0	0	0	1	1	1	1	1	2	2	2	●	2	3	3	3	3	3	4	4	4	4	4	5	5	5	5	●	6	6	●	6	6	7	7	7	7	7	8	8	8	8	8	9	9	9	9	9	OR	<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><td style="text-align: center;">5</td><td style="text-align: center;">5</td><td style="text-align: center;">/</td><td style="text-align: center;">8</td><td style="text-align: center;">8</td></tr> <tr><td style="text-align: center;">/</td><td style="text-align: center;">●</td><td style="text-align: center;">/</td><td></td><td></td></tr> <tr><td style="text-align: center;">○</td><td style="text-align: center;">○</td><td style="text-align: center;">○</td><td style="text-align: center;">○</td><td style="text-align: center;">○</td></tr> <tr><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td></tr> <tr><td style="text-align: center;">1</td><td style="text-align: center;">1</td><td style="text-align: center;">1</td><td style="text-align: center;">1</td><td style="text-align: center;">1</td></tr> <tr><td style="text-align: center;">2</td><td style="text-align: center;">2</td><td style="text-align: center;">2</td><td style="text-align: center;">2</td><td style="text-align: center;">2</td></tr> <tr><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td style="text-align: center;">3</td></tr> <tr><td style="text-align: center;">4</td><td style="text-align: center;">4</td><td style="text-align: center;">4</td><td style="text-align: center;">4</td><td style="text-align: center;">4</td></tr> <tr><td style="text-align: center;">5</td><td style="text-align: center;">●</td><td style="text-align: center;">5</td><td style="text-align: center;">5</td><td style="text-align: center;">5</td></tr> <tr><td style="text-align: center;">6</td><td style="text-align: center;">6</td><td style="text-align: center;">6</td><td style="text-align: center;">6</td><td style="text-align: center;">6</td></tr> <tr><td style="text-align: center;">7</td><td style="text-align: center;">7</td><td style="text-align: center;">7</td><td style="text-align: center;">7</td><td style="text-align: center;">7</td></tr> <tr><td style="text-align: center;">8</td><td style="text-align: center;">8</td><td style="text-align: center;">8</td><td style="text-align: center;">●</td><td style="text-align: center;">8</td></tr> <tr><td style="text-align: center;">9</td><td style="text-align: center;">9</td><td style="text-align: center;">9</td><td style="text-align: center;">9</td><td style="text-align: center;">9</td></tr> </table>	5	5	/	8	8	/	●	/			○	○	○	○	○	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	6	6	6	6	6	7	7	7	7	7	8	8	8	●	8	9	9	9	9	9	OR	<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><td></td><td></td><td style="text-align: center;">5</td><td style="text-align: center;">/</td><td style="text-align: center;">8</td></tr> <tr><td style="text-align: center;">/</td><td style="text-align: center;">/</td><td style="text-align: center;">●</td><td></td><td></td></tr> <tr><td style="text-align: center;">○</td><td style="text-align: center;">○</td><td style="text-align: center;">○</td><td style="text-align: center;">○</td><td style="text-align: center;">○</td></tr> <tr><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td></tr> <tr><td style="text-align: center;">1</td><td style="text-align: center;">1</td><td style="text-align: center;">1</td><td style="text-align: center;">1</td><td style="text-align: center;">1</td></tr> <tr><td style="text-align: center;">2</td><td style="text-align: center;">2</td><td style="text-align: center;">2</td><td style="text-align: center;">2</td><td style="text-align: center;">2</td></tr> <tr><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td style="text-align: center;">3</td></tr> <tr><td style="text-align: center;">4</td><td style="text-align: center;">4</td><td style="text-align: center;">4</td><td style="text-align: center;">4</td><td style="text-align: center;">4</td></tr> <tr><td style="text-align: center;">5</td><td style="text-align: center;">5</td><td style="text-align: center;">●</td><td style="text-align: center;">5</td><td style="text-align: center;">5</td></tr> <tr><td style="text-align: center;">6</td><td style="text-align: center;">6</td><td style="text-align: center;">6</td><td style="text-align: center;">6</td><td style="text-align: center;">6</td></tr> <tr><td style="text-align: center;">7</td><td style="text-align: center;">7</td><td style="text-align: center;">7</td><td style="text-align: center;">7</td><td style="text-align: center;">7</td></tr> <tr><td style="text-align: center;">8</td><td style="text-align: center;">8</td><td style="text-align: center;">8</td><td style="text-align: center;">8</td><td style="text-align: center;">●</td></tr> <tr><td style="text-align: center;">9</td><td style="text-align: center;">9</td><td style="text-align: center;">9</td><td style="text-align: center;">9</td><td style="text-align: center;">9</td></tr> </table>			5	/	8	/	/	●			○	○	○	○	○	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	6	6	6	6	6	7	7	7	7	7	8	8	8	8	●	9	9	9	9	9
.	6	2	5																																																																																																																																																																																																																																																																							
/	/	/																																																																																																																																																																																																																																																																								
●	○	○	○	○																																																																																																																																																																																																																																																																						
0	0	0	0	0																																																																																																																																																																																																																																																																						
1	1	1	1	1																																																																																																																																																																																																																																																																						
2	2	●	2	2																																																																																																																																																																																																																																																																						
3	3	3	3	3																																																																																																																																																																																																																																																																						
4	4	4	4	4																																																																																																																																																																																																																																																																						
5	5	5	●	5																																																																																																																																																																																																																																																																						
6	●	6	6	6																																																																																																																																																																																																																																																																						
7	7	7	7	7																																																																																																																																																																																																																																																																						
8	8	8	8	8																																																																																																																																																																																																																																																																						
9	9	9	9	9																																																																																																																																																																																																																																																																						
	.	6	2	5																																																																																																																																																																																																																																																																						
/	/	/																																																																																																																																																																																																																																																																								
○	●	○	○	○																																																																																																																																																																																																																																																																						
0	0	0	0	0																																																																																																																																																																																																																																																																						
1	1	1	1	1																																																																																																																																																																																																																																																																						
2	2	2	●	2																																																																																																																																																																																																																																																																						
3	3	3	3	3																																																																																																																																																																																																																																																																						
4	4	4	4	4																																																																																																																																																																																																																																																																						
5	5	5	5	●																																																																																																																																																																																																																																																																						
6	6	●	6	6																																																																																																																																																																																																																																																																						
7	7	7	7	7																																																																																																																																																																																																																																																																						
8	8	8	8	8																																																																																																																																																																																																																																																																						
9	9	9	9	9																																																																																																																																																																																																																																																																						
5	5	/	8	8																																																																																																																																																																																																																																																																						
/	●	/																																																																																																																																																																																																																																																																								
○	○	○	○	○																																																																																																																																																																																																																																																																						
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																																																																																																																																																																																																																																																																						
6	6	6	6	6																																																																																																																																																																																																																																																																						
7	7	7	7	7																																																																																																																																																																																																																																																																						
8	8	8	●	8																																																																																																																																																																																																																																																																						
9	9	9	9	9																																																																																																																																																																																																																																																																						
		5	/	8																																																																																																																																																																																																																																																																						
/	/	●																																																																																																																																																																																																																																																																								
○	○	○	○	○																																																																																																																																																																																																																																																																						
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																																																																																																																																																																																																																																																																						
6	6	6	6	6																																																																																																																																																																																																																																																																						
7	7	7	7	7																																																																																																																																																																																																																																																																						
8	8	8	8	●																																																																																																																																																																																																																																																																						
9	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.

<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><td style="text-align: center;">1</td><td style="text-align: center;">8</td><td style="text-align: center;">.</td><td style="text-align: center;">9</td><td></td></tr> <tr><td style="text-align: center;">/</td><td style="text-align: center;">/</td><td style="text-align: center;">/</td><td></td><td></td></tr> <tr><td style="text-align: center;">○</td><td style="text-align: center;">○</td><td style="text-align: center;">●</td><td style="text-align: center;">○</td><td style="text-align: center;">○</td></tr> <tr><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td></tr> <tr><td style="text-align: center;">1</td><td style="text-align: center;">1</td><td style="text-align: center;">1</td><td style="text-align: center;">1</td><td style="text-align: center;">1</td></tr> <tr><td style="text-align: center;">2</td><td style="text-align: center;">2</td><td style="text-align: center;">2</td><td style="text-align: center;">2</td><td style="text-align: center;">2</td></tr> <tr><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td style="text-align: center;">3</td></tr> <tr><td style="text-align: center;">4</td><td style="text-align: center;">4</td><td style="text-align: center;">4</td><td style="text-align: center;">4</td><td style="text-align: center;">4</td></tr> <tr><td style="text-align: center;">5</td><td style="text-align: center;">5</td><td style="text-align: center;">5</td><td style="text-align: center;">5</td><td style="text-align: center;">5</td></tr> <tr><td style="text-align: center;">6</td><td style="text-align: center;">6</td><td style="text-align: center;">6</td><td style="text-align: center;">6</td><td style="text-align: center;">6</td></tr> <tr><td style="text-align: center;">7</td><td style="text-align: center;">7</td><td style="text-align: center;">7</td><td style="text-align: center;">7</td><td style="text-align: center;">7</td></tr> <tr><td style="text-align: center;">8</td><td style="text-align: center;">●</td><td style="text-align: center;">8</td><td style="text-align: center;">8</td><td style="text-align: center;">8</td></tr> <tr><td style="text-align: center;">9</td><td style="text-align: center;">9</td><td style="text-align: center;">9</td><td style="text-align: center;">●</td><td style="text-align: center;">9</td></tr> </table>	1	8	.	9		/	/	/			○	○	●	○	○	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	9	9	9	●	9	OR	<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><td style="text-align: center;">1</td><td style="text-align: center;">9</td><td></td><td></td><td></td></tr> <tr><td style="text-align: center;">/</td><td style="text-align: center;">/</td><td style="text-align: center;">/</td><td></td><td></td></tr> <tr><td style="text-align: center;">○</td><td style="text-align: center;">○</td><td style="text-align: center;">○</td><td style="text-align: center;">○</td><td style="text-align: center;">○</td></tr> <tr><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td></tr> <tr><td style="text-align: center;">1</td><td style="text-align: center;">●</td><td style="text-align: center;">1</td><td style="text-align: center;">1</td><td style="text-align: center;">1</td></tr> <tr><td style="text-align: center;">2</td><td style="text-align: center;">2</td><td style="text-align: center;">2</td><td style="text-align: center;">2</td><td style="text-align: center;">2</td></tr> <tr><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td style="text-align: center;">3</td></tr> <tr><td style="text-align: center;">4</td><td style="text-align: center;">4</td><td style="text-align: center;">4</td><td style="text-align: center;">4</td><td style="text-align: center;">4</td></tr> <tr><td style="text-align: center;">5</td><td style="text-align: center;">5</td><td style="text-align: center;">5</td><td style="text-align: center;">5</td><td style="text-align: center;">5</td></tr> <tr><td style="text-align: center;">6</td><td style="text-align: center;">6</td><td style="text-align: center;">6</td><td style="text-align: center;">6</td><td style="text-align: center;">6</td></tr> <tr><td style="text-align: center;">7</td><td style="text-align: center;">7</td><td style="text-align: center;">7</td><td style="text-align: center;">7</td><td style="text-align: center;">7</td></tr> <tr><td style="text-align: center;">8</td><td style="text-align: center;">8</td><td style="text-align: center;">8</td><td style="text-align: center;">8</td><td style="text-align: center;">8</td></tr> <tr><td style="text-align: center;">9</td><td style="text-align: center;">●</td><td style="text-align: center;">9</td><td style="text-align: center;">9</td><td style="text-align: center;">9</td></tr> </table>	1	9				/	/	/			○	○	○	○	○	0	0	0	0	0	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	OR	<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><td></td><td></td><td></td><td style="text-align: center;">1</td><td style="text-align: center;">9</td></tr> <tr><td style="text-align: center;">/</td><td style="text-align: center;">/</td><td style="text-align: center;">/</td><td></td><td></td></tr> <tr><td style="text-align: center;">○</td><td style="text-align: center;">○</td><td style="text-align: center;">○</td><td style="text-align: center;">○</td><td style="text-align: center;">○</td></tr> <tr><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td></tr> <tr><td style="text-align: center;">1</td><td style="text-align: center;">1</td><td style="text-align: center;">1</td><td style="text-align: center;">●</td><td style="text-align: center;">1</td></tr> <tr><td style="text-align: center;">2</td><td style="text-align: center;">2</td><td style="text-align: center;">2</td><td style="text-align: center;">2</td><td style="text-align: center;">2</td></tr> <tr><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td style="text-align: center;">3</td></tr> <tr><td style="text-align: center;">4</td><td style="text-align: center;">4</td><td style="text-align: center;">4</td><td style="text-align: center;">4</td><td style="text-align: center;">4</td></tr> <tr><td style="text-align: center;">5</td><td style="text-align: center;">5</td><td style="text-align: center;">5</td><td style="text-align: center;">5</td><td style="text-align: center;">5</td></tr> <tr><td style="text-align: center;">6</td><td style="text-align: center;">6</td><td style="text-align: center;">6</td><td style="text-align: center;">6</td><td style="text-align: center;">6</td></tr> <tr><td style="text-align: center;">7</td><td style="text-align: center;">7</td><td style="text-align: center;">7</td><td style="text-align: center;">7</td><td style="text-align: center;">7</td></tr> <tr><td style="text-align: center;">8</td><td style="text-align: center;">8</td><td style="text-align: center;">8</td><td style="text-align: center;">8</td><td style="text-align: center;">8</td></tr> <tr><td style="text-align: center;">9</td><td style="text-align: center;">9</td><td style="text-align: center;">9</td><td style="text-align: center;">9</td><td style="text-align: center;">●</td></tr> </table>				1	9	/	/	/			○	○	○	○	○	0	0	0	0	0	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	●	OR	<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><td></td><td style="text-align: center;">1</td><td style="text-align: center;">9</td><td style="text-align: center;">.</td><td style="text-align: center;">1</td></tr> <tr><td style="text-align: center;">/</td><td style="text-align: center;">/</td><td style="text-align: center;">/</td><td></td><td></td></tr> <tr><td style="text-align: center;">○</td><td style="text-align: center;">○</td><td style="text-align: center;">○</td><td style="text-align: center;">●</td><td style="text-align: center;">○</td></tr> <tr><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td></tr> <tr><td style="text-align: center;">1</td><td style="text-align: center;">●</td><td style="text-align: center;">1</td><td style="text-align: center;">1</td><td style="text-align: center;">1</td></tr> <tr><td style="text-align: center;">2</td><td style="text-align: center;">2</td><td style="text-align: center;">2</td><td style="text-align: center;">2</td><td style="text-align: center;">2</td></tr> <tr><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td style="text-align: center;">3</td></tr> <tr><td style="text-align: center;">4</td><td style="text-align: center;">4</td><td style="text-align: center;">4</td><td style="text-align: center;">4</td><td style="text-align: center;">4</td></tr> <tr><td style="text-align: center;">5</td><td style="text-align: center;">5</td><td style="text-align: center;">5</td><td style="text-align: center;">5</td><td style="text-align: center;">5</td></tr> <tr><td style="text-align: center;">6</td><td style="text-align: center;">6</td><td style="text-align: center;">6</td><td style="text-align: center;">6</td><td style="text-align: center;">6</td></tr> <tr><td style="text-align: center;">7</td><td style="text-align: center;">7</td><td style="text-align: center;">7</td><td style="text-align: center;">7</td><td style="text-align: center;">7</td></tr> <tr><td style="text-align: center;">8</td><td style="text-align: center;">8</td><td style="text-align: center;">8</td><td style="text-align: center;">8</td><td style="text-align: center;">8</td></tr> <tr><td style="text-align: center;">9</td><td style="text-align: center;">9</td><td style="text-align: center;">●</td><td style="text-align: center;">9</td><td style="text-align: center;">9</td></tr> </table>		1	9	.	1	/	/	/			○	○	○	●	○	0	0	0	0	0	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
1	8	.	9																																																																																																																																																																																																																																																																							
/	/	/																																																																																																																																																																																																																																																																								
○	○	●	○	○																																																																																																																																																																																																																																																																						
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																																																																																																																																																																																																																																																																						
9	9	9	●	9																																																																																																																																																																																																																																																																						
1	9																																																																																																																																																																																																																																																																									
/	/	/																																																																																																																																																																																																																																																																								
○	○	○	○	○																																																																																																																																																																																																																																																																						
0	0	0	0	0																																																																																																																																																																																																																																																																						
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																																																																																																																																																																																																																																																																						
			1	9																																																																																																																																																																																																																																																																						
/	/	/																																																																																																																																																																																																																																																																								
○	○	○	○	○																																																																																																																																																																																																																																																																						
0	0	0	0	0																																																																																																																																																																																																																																																																						
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	●																																																																																																																																																																																																																																																																						
	1	9	.	1																																																																																																																																																																																																																																																																						
/	/	/																																																																																																																																																																																																																																																																								
○	○	○	●	○																																																																																																																																																																																																																																																																						
0	0	0	0	0																																																																																																																																																																																																																																																																						
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																																																																																																																																																																																																																																																																						

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

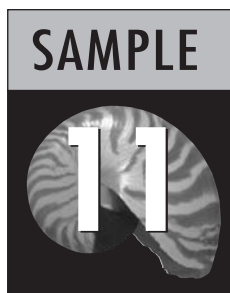
This Sample Test contains the Reference Sheet, the Periodic Table, and 15 science questions. It should take about 30 to 45 minutes to answer all the questions. Mark your answers in the Science Sample Answer Book, which begins on page 23. If you don't know how to answer a question, just ask your teacher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

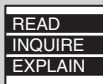
Use the space in your Science Sample Test Book to do your work on the multiple-choice and gridded-response questions, but be sure to put your answers in the Sample Answer Book. For the “Read, Inquire, Explain” questions, write your answers in the Sample Answer Book.

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.

**BLANK PAGE**

# Grade 11 FCAT Science Reference Sheet

## Equations

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

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

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

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

$$\text{Force (F)} = \text{mass (kg)} \times \text{acceleration (m/s}^2\text{)} \quad F = ma$$

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

$$\text{Momentum (p)} = \text{mass (kg)} \times \text{velocity (m/s)} \quad p = mv$$

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

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

$$\text{Work (W)} = \text{Force (N)} \times \text{distance (m)} \quad W = Fd$$

### Units of Measure

m = meter  
cm = centimeter

g = gram  
kg = kilogram

s = second  
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)

Fold and Tear Carefully Along Dotted Line.

# Periodic Table of the Elements

(based on  $^{12}_6\text{C} = 12.00000$ )

Representative  
Elements

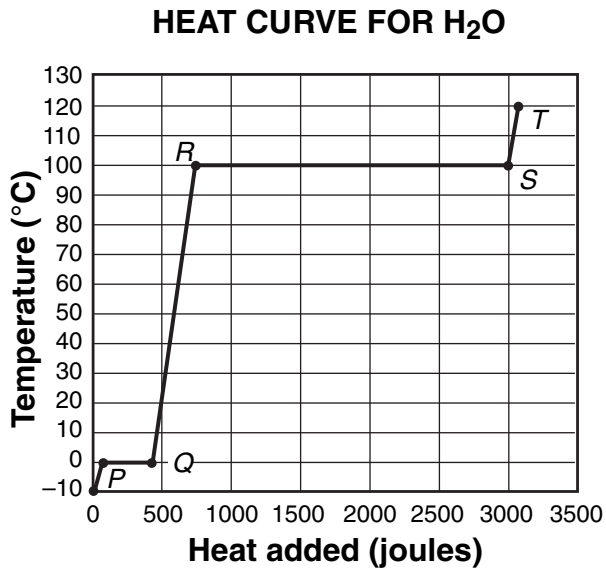
Group	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
	1A	2A	3B	4B	5B	6B	7B	8B			1B	2B	3A	4A	5A	6A	7A	8A		
1	<b>H</b> Hydrogen 1.008												<b>B</b> Boron 10.81	<b>C</b> Carbon 12.011	<b>N</b> Nitrogen 14.007	<b>O</b> Oxygen 15.999	<b>F</b> Fluorine 18.998	<b>He</b> Helium 4.003		
2	<b>Li</b> Lithium 6.941	<b>Be</b> Beryllium 9.012											<b>Al</b> Aluminum 26.982	<b>Si</b> Silicon 28.086	<b>P</b> Phosphorus 30.974	<b>S</b> Sulfur 32.06	<b>Cl</b> Chlorine 35.453	<b>Ar</b> Argon 39.948		
3	<b>Na</b> Sodium 22.990	<b>Mg</b> Magnesium 24.305											<b>Ga</b> Gallium 69.723	<b>Ge</b> Germanium 72.61	<b>As</b> Arsenic 74.922	<b>Se</b> Selenium 78.96	<b>Br</b> Bromine 79.904	<b>Kr</b> Krypton 83.80		
4	<b>K</b> Potassium 39.098	<b>Ca</b> Calcium 40.078	<b>Sc</b> Scandium 44.956	<b>Ti</b> Titanium 47.88	<b>V</b> Vanadium 50.942	<b>Cr</b> Chromium 51.996	<b>Mn</b> Manganese 54.938	<b>Fe</b> Iron 55.847	<b>Co</b> Cobalt 58.933	<b>Ni</b> Nickel 58.693	<b>Cu</b> Copper 63.546	<b>Zn</b> Zinc 65.39	<b>Ga</b> Gallium 69.723	<b>Ge</b> Germanium 72.61	<b>As</b> Arsenic 74.922	<b>Se</b> Selenium 78.96	<b>Br</b> Bromine 79.904	<b>Kr</b> Krypton 83.80		
5	<b>Rb</b> Rubidium 85.468	<b>Sr</b> Strontium 87.62	<b>Y</b> Yttrium 88.906	<b>Zr</b> Zirconium 91.224	<b>Nb</b> Niobium 92.906	<b>Mo</b> Molybdenum 95.94	<b>Tc</b> Technetium 98	<b>Ru</b> Ruthenium 101.07	<b>Rh</b> Rhodium 102.906	<b>Pd</b> Palladium 106.42	<b>Ag</b> Silver 107.868	<b>Cd</b> Cadmium 112.411	<b>In</b> Indium 114.82	<b>Sn</b> Tin 118.710	<b>Sb</b> Antimony 121.757	<b>Te</b> Tellurium 127.60	<b>I</b> Iodine 126.905	<b>Xe</b> Xenon 131.29		
6	<b>Cs</b> Cesium 132.905	<b>Ba</b> Barium 137.327	<b>La</b> Lanthanum 138.905	<b>Hf</b> Hafnium 178.49	<b>Ta</b> Tantalum 180.948	<b>W</b> Tungsten 183.85	<b>Re</b> Rhenium 186.207	<b>Os</b> Osmium 190.2	<b>Ir</b> Iridium 192.22	<b>Pt</b> Platinum 195.08	<b>Au</b> Gold 196.967	<b>Hg</b> Mercury 200.59	<b>Tl</b> Thallium 204.383	<b>Pb</b> Lead 207.2	<b>Bi</b> Bismuth 208.980	<b>Po</b> Polonium 208.982	<b>At</b> Astatine 210	<b>Rn</b> Radon 222		
7	<b>Fr</b> Francium 223	<b>Ra</b> Radium 226.025	<b>Ac</b> Actinium 227.028	<b>Rf</b> Rutherfordium (261)	<b>Db</b> Dubnium (262)	<b>Sg</b> Seaborgium (263)	<b>Bh</b> Bohrium (264)	<b>Hs</b> Hassium (265)	<b>Mt</b> Meitnerium (266)											
			<b>Inner Transition Metals</b>																	
			Lanthanide series																	
			<b>Ce</b> Cerium 140.12	<b>Pr</b> Praseodymium 140.908	<b>Nd</b> Neodymium 144.24	<b>Pm</b> Promethium 144.913	<b>Sm</b> Samarium 150.36	<b>Eu</b> Europium 151.96	<b>Gd</b> Gadolinium 157.25	<b>Tb</b> Terbium 158.925	<b>Dy</b> Dysprosium 162.50	<b>Ho</b> Holmium 164.930	<b>Er</b> Erbium 167.26	<b>Tm</b> Thulium 168.934	<b>Yb</b> Ytterbium 173.04	<b>Lu</b> Lutetium 174.967				
			<b>Th</b> Thorium 232.038	<b>Pa</b> Protactinium 231.036	<b>U</b> Uranium 238.029	<b>Np</b> Neptunium 237.048	<b>Pu</b> Plutonium 244.064	<b>Am</b> Americium 243.061	<b>Cm</b> Curium 247.070	<b>Bk</b> Berkelium 247.070	<b>Cf</b> Californium 251.080	<b>Es</b> Einsteinium 252.083	<b>Fm</b> Fermium 257.095	<b>Md</b> Mendelevium 258.099	<b>No</b> Nobelium 259.101	<b>Lr</b> Lawrencium 260.105				



Actinide series

Fold and Tear Carefully Along Dotted Line.

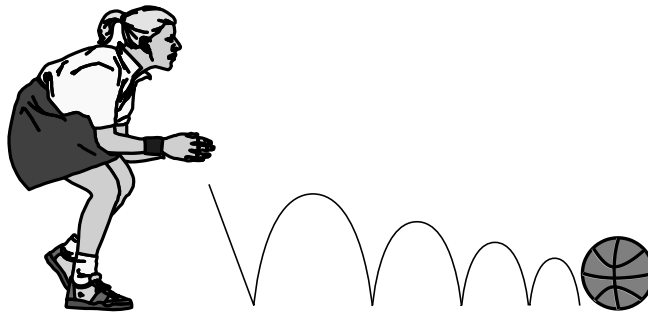
- 1 The graph below shows a heating curve for water ( $H_2O$ ) in degrees Celsius ( $^{\circ}C$ ).



Which line segment on the heating curve identifies where water changes from a liquid into a gas?

- A.  $\overline{PQ}$
- B.  $\overline{QR}$
- C.  $\overline{RS}$
- D.  $\overline{ST}$

- 2 Natural diamonds are formed when carbon (C) atoms are forced into a crystal structure under conditions of high temperature and pressure. Nitrogen (N) atoms are sometimes trapped in the carbon crystal spaces. Which property of nitrogen atoms makes it possible for nitrogen to occupy spaces in the crystal structure?
- F. Nitrogen atoms are colorless.
  - G. Nitrogen is plentiful in Earth's crust.
  - H. Nitrogen is a gas at room temperature.
  - I. Nitrogen atoms are similar in shape and size to carbon atoms.
- 3 As Carol plays basketball, the ball bounces off the court. After each bounce, the height and energy of the bounce decreases.



What is the **main** reason the bounce height decreases?

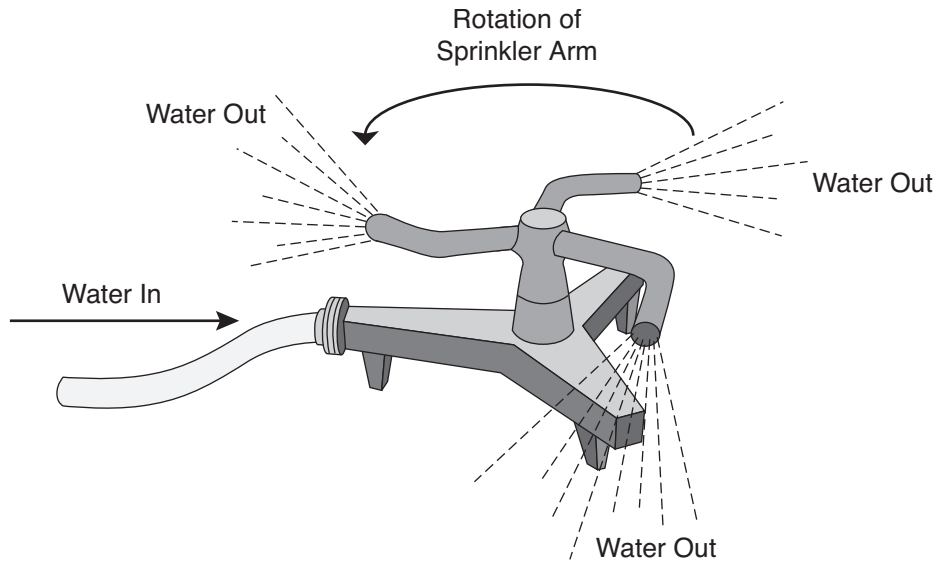
- A. The energy has been released into the surroundings.
- B. The energy has been recycled into horizontal motion.
- C. The energy has disappeared due to the force of gravity.
- D. The energy has been balanced by equal and opposite reactions.



- 4 Gravitational force on different objects varies. For example, the acceleration due to gravity on Earth is 9.8 meters per second squared ( $m/s^2$ ). This is 6 times greater than the acceleration due to gravity on the Moon. The weight of an object on Earth, in newtons (N), is found by multiplying the mass of the object by the acceleration due to gravity. An astronaut's sledgehammer has a mass of 9.0 kilograms (kg) on Earth. What will be the weight, in newtons (N), of the sledgehammer on the Moon?



- 5 Pierre staked a rotary sprinkler into the ground to water his lawn. When the water is turned on, the sprinkler arms rotate as shown below.

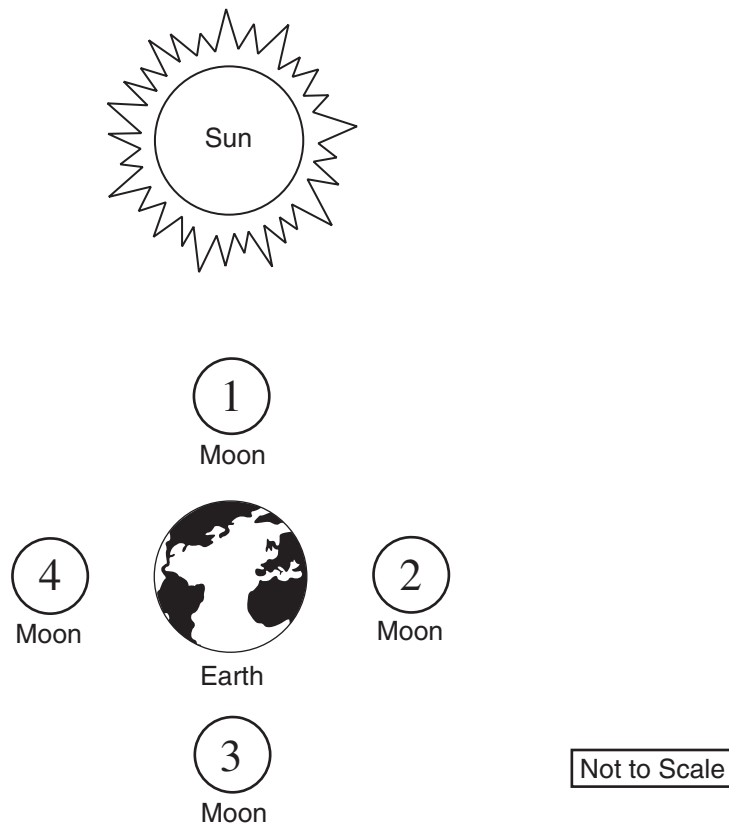


**Pierre's Rotary Sprinkler**

Why does the sprinkler rotate when the water rushes out of the three arms?

- F. The escaping water counteracts the force of gravity on the sprinkler arms.
- G. The water expands rapidly, causing the arms on the sprinkler to perform work.
- H. The water spraying outward produces an opposite force on the sprinkler arms.
- I. The escaping water causes air to rush back and push against the sprinkler arms.

- 6 The warm Gulf Stream passes the southern tip of Florida on its way north. How does the warm, moist air associated with this current affect the climate of southern Florida?
- A. It increases the amount of rainfall.
  - B. It causes prevailing easterly winds.
  - C. It decreases the amount of humidity.
  - D. It causes the skies to clear after sunset.
- 7 Consuela lives on the east coast of Florida. She notices a neap tide occurs twice a month. Neap tides occur when the Sun, the Moon, and Earth are in specific positions.



Which two of the four Moon positions shown above will cause neap tides?

- F. positions 1 and 2
- G. positions 1 and 3
- H. positions 2 and 3
- I. positions 2 and 4



- 8 The fusion of hydrogen in a star's core to produce helium generates energy, allowing small- to medium-sized stars like the Sun to burn for billions of years. During which stage do stars produce energy from the fusion of hydrogen into helium?
- A. blue supergiant
  - B. main sequence
  - C. red shift
  - D. stellar nebulae
- 9 Most organisms cannot survive in temperatures higher than 40 degrees Celsius ( $^{\circ}\text{C}$ ). When temperatures are sustained above  $40^{\circ}\text{C}$ , the organism's enzymes become inactive and the organism eventually dies; however, bacteria have been observed to survive in hot springs with temperatures above  $40^{\circ}\text{C}$ . Which of the following is the **best** explanation for these bacteria surviving at higher temperatures?
- F. Bacteria can change their genetic material.
  - G. Enzymes are most active at acidic pH levels.
  - H. Enzymes present in the bacteria can tolerate the harsh springs environment.
  - I. Bacteria speed up a chemical reaction that occurs in the springs environment.
- 10 

READ
INQUIRE
EXPLAIN

 Go to your Sample Answer Book to answer Number 10.

- 11 Each year, approximately 5 000 metric tons of mercury compounds are released into the environment either naturally or from human activities. Once mercury enters the water systems, bacteria convert it into an organic form called methylmercury, introducing it into the food web. Which of the following will happen to the methylmercury released into the environment?
- A. It will be evenly distributed throughout the food web.
  - B. It will be retained only in filter feeders of the aquatic system.
  - C. It will be retained mostly by the producers and herbivores.
  - D. It will have the highest concentration in the large secondary consumers.
- 12 Damon knows that plants are the base for most food chains. He made a list of plant characteristics shown in the chart below.

Plant Characteristics
Contains chloroplasts
Contains rigid cell walls
Can have fibrous or tap roots
Can have a waxy outer covering

Which characteristic from the chart enables these plants to capture the sunlight needed to be a producer?

- F. Contains chloroplasts
- G. Contains rigid cell walls
- H. Can have fibrous or tap roots
- I. Can have a waxy outer covering



- 13** Stephen learned that methane ( $\text{CH}_4$ ) absorbs about 25 times more infrared radiation than carbon dioxide ( $\text{CO}_2$ ). He knew that ice core data could give information about historic atmospheric changes. A table showing ice core data from Antarctica is shown below.

**METHANE DATA FROM DE08, DE08-2, AND  
DSS ICE CORES IN ANTARCTICA**

Year (A.D.)	Concentration of $\text{CH}_4$ mixed with air in ice core (ppm)	Mean ice depth (meters)
1008	0.67	534
1501	0.69	337
1694	0.68	238
1798	0.70	180
1847	0.76	152
1931	1.01	100
1980	1.48	81

Using the ice core data and other data, Stephen made the hypothesis that for every 0.1 parts per million (ppm) increase in the concentration of atmospheric methane, the average temperature of Earth's polar regions would increase by  $0.4^\circ\text{C}$  (degrees Celsius). Based on his hypothesis, what would be the rise in temperature, in  $^\circ\text{C}$  (degrees Celsius), for the period 1694–1980?

**14**

READ
INQUIRE
EXPLAIN

Go to your Sample Answer Book to answer Number 14.

- 15 Gold (Au), silver (Ag), platinum (Pt), and copper (Cu) are metals that are used in manufacturing processes. The table below shows the melting point in degrees Celsius ( $^{\circ}\text{C}$ ) and density in grams per cubic centimeter ( $\text{g}/\text{cm}^3$ ) of these metals.

**METAL DATA**

<b>Metal</b>	<b>Melting Point (<math>^{\circ}\text{C}</math>)</b>	<b>Density (<math>\text{g}/\text{cm}^3</math>)</b>
Gold	1063	19.31
Silver	961	14.50
Platinum	1773	21.42
Copper	1083	8.96

Which relationship between melting point and density is supported by the data in the chart?

- A. The melting point is independent of density.
- B. The melting point decreases as density decreases.
- C. The densest materials have the lowest melting points.
- D. The densest materials have the highest melting points.



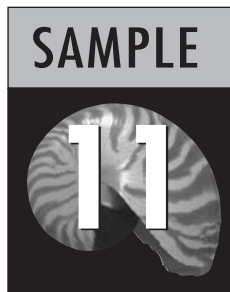
This is the end of the Science Sample Test.  
Until time is called, go back and check your work or answer questions you did not complete. When you have finished, close your Sample Test Book and Sample Answer Book.

**BLANK PAGE**



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** (A) (B) (C) (D)

**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** (F) (G) (H) (I)

**6** (A) (B) (C) (D)

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

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

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

**10** Laura has been using an insecticide to control the ant population in her yard. She has used the same brand of insecticide for many years. At first, the insecticide killed many ants; now, it is not as effective. Explain why the insecticide is no longer as effective as it once was.

READ  
INQUIRE  
EXPLAIN

---

---

---

---

---

---

---

---

---

---

**11**    **A**    **B**    **C**    **D**                      **12**    **F**    **G**    **H**    **I**

**13**

	7	7	7	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input 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
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9



14

In 1999, some astronomers thought they observed a Jupiter-sized planet outside our solar system orbiting a young star 63 light years from Earth. Later, other astronomers concluded that the planet was actually a giant sunspot rotating around the surface of the young star.

READ  
INQUIRE  
EXPLAIN

---

---

---

---

**Part A** What kind of instruments would the astronomers have used to investigate the star and the phantom planet? Describe what kind of research they **most likely** would have done before concluding they were observing a giant sunspot rather than a large planet.

---

---

---

---

---

---

---

---

---

---

**Part B** Based on the scientific method, why did the later astronomers probably choose to challenge the first group of astronomers' finding of the new planet rather than accept it? What had the first group of astronomers **most likely** done to make it possible for others to disprove the discovery?

---

---

---

---

---

---

---

---

---

---



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.

**Notes**

---





**SCIENCE**



**FLORIDA DEPARTMENT OF EDUCATION**  
**[www.fldoe.org](http://www.fldoe.org)**

Assessment and School Performance  
Florida Department of Education  
Tallahassee, Florida

ISBN 999-8243-64-5



9 789998 243644