

Grade 8

FCAT 2.0 Science

Sample Questions

The intent of these sample test materials is to orient teachers and students to the types of questions on FCAT 2.0 tests. By using these materials, students will become familiar with the types of items and response formats that they will see on the actual test. The sample questions and answers are not intended to demonstrate the length of the actual test, nor should student responses be used as an indicator of student performance on the actual test. Additional information about test items can be found in the *FCAT 2.0 Test Item Specifications* at <http://fcab.fldoe.org/fcat2/itemspecs.asp>.

The FCAT 2.0 Science tests and sample questions and answers are based on the 2008 Next Generation Sunshine State Standards.

The sample questions for students and the sample answers for teachers are only available online, at <http://fcab.fldoe.org/fcat2/fcatitem.asp>.

Directions for Answering the Science Sample Questions

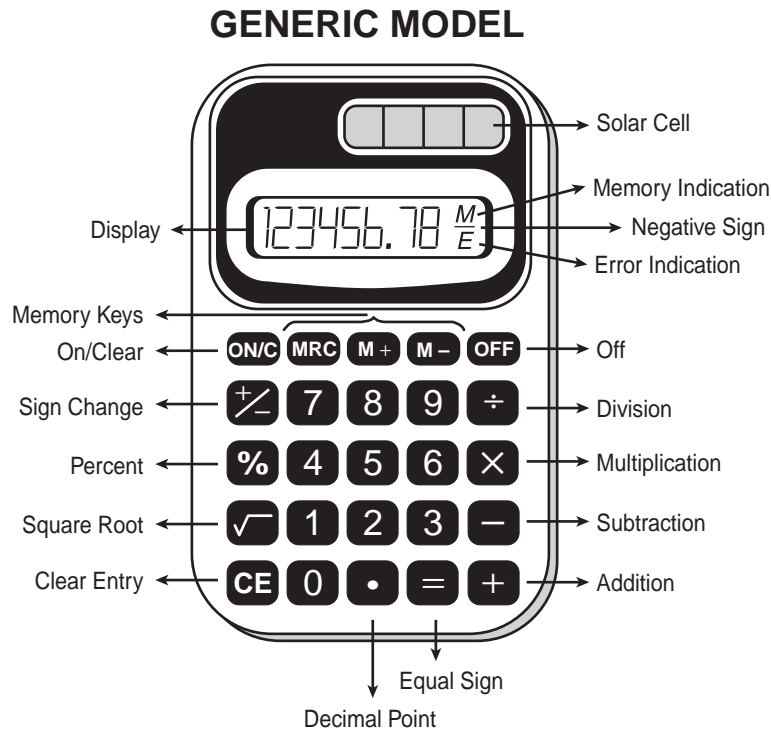
Mark your answers on the Science Sample Answer Sheet on page 11. If you don't understand a question, ask your teacher to explain it to you. Your teacher has the answers to the sample questions.

You may need the Periodic Table of the Elements to help you answer some of the questions. You may refer to the Periodic Table on page 3 as often as you like.

Use the space in this booklet to do your work on the multiple-choice questions, but be sure to put your answers on the Sample Answer Sheet.

Calculator Instructions

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



HELPFUL HINTS FOR USING A FOUR-FUNCTION CALCULATOR

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 on/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.

Periodic Table of the Elements

(based on $^{12}_6\text{C} = 12.0000$)

Representative
Elements

Group												Representative Elements									
1 1A		2 2A		Transition Metals										13 3A	14 4A	15 5A	16 6A	17 7A	18 8A		
1	1 H Hydrogen 1.008																				
2	3 Li Lithium 6.941	4 Be Beryllium 9.012											5 B Boron 10.81	6 C Carbon 12.011	7 N Nitrogen 14.007	8 O Oxygen 15.999	9 F Fluorine 18.998	10 Ne Neon 20.180			
3	11 Na Sodium 22.990	12 Mg Magnesium 24.305	3 3B	4 4B	5 5B	6 6B	7 7B	8 8B	9 8B	10 8B	11 1B	12 2B	13 Al Aluminum 26.982	14 Si Silicon 28.086	15 P Phosphorus 30.974	16 S Sulfur 32.06	17 Cl Chlorine 35.453	18 Ar Argon 39.948			
4	19 K Potassium 39.098	20 Ca Calcium 40.078	21 Sc Scandium 44.956	22 Ti Titanium 47.88	23 V Vanadium 50.942	24 Cr Chromium 51.996	25 Mn Manganese 54.938	26 Fe Iron 55.847	27 Co Cobalt 58.933	28 Ni Nickel 58.693	29 Cu Copper 63.546	30 Zn Zinc 65.39	31 Ga Gallium 69.723	32 Ge Germanium 72.61	33 As Arsenic 74.922	34 Se Selenium 78.96	35 Br Bromine 79.904	36 Kr Krypton 83.80			
5	37 Rb Rubidium 85.468	38 Sr Strontium 87.62	39 Y Yttrium 88.906	40 Zr Zirconium 91.224	41 Nb Niobium 92.906	42 Mo Molybdenum 95.94	43 Tc Technetium 98	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.906	46 Pd Palladium 106.42	47 Ag Silver 107.868	48 Cd Cadmium 112.411	49 In Indium 114.82	50 Sn Tin 118.710	51 Sb Antimony 121.757	52 Te Tellurium 127.60	53 I Iodine 126.905	54 Xe Xenon 131.29			
6	55 Cs Cesium 132.905	56 Ba Barium 137.327	57 La Lanthanum 138.905	72 Hf Hafnium 178.49	73 Ta Tantalum 180.948	74 W Tungsten 183.85	75 Re Rhenium 186.207	76 Os Osmium 190.2	77 Ir Iridium 192.22	78 Pt Platinum 195.08	79 Au Gold 196.967	80 Hg Mercury 200.59	81 Tl Thallium 204.383	82 Pb Lead 207.2	83 Bi Bismuth 208.980	84 Po Polonium 208.982	85 At Astatine 210	86 Rn Radon 222			
7	87 Fr Francium 223	88 Ra Radium 226.025	89 Ac Actinium 227.028	104 Rf Rutherfordium (261)	105 Db Dubnium (262)	106 Sg Seaborgium (263)	107 Bh Bohrium (264)	108 Hs Hassium (265)	109 Mt Meitnerium (268)												

14	Atomic number
Si	Symbol
Silicon	Name
28.086	Average Atomic Mass

Metals ← → Nonmetals

Inner Transition Metals

Lanthanide series

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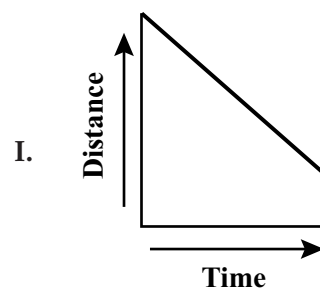
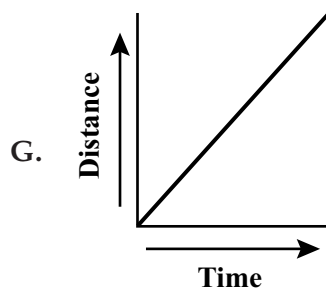
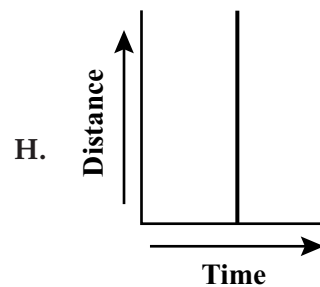
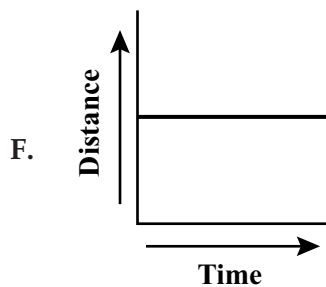
90 Th Thorium 232.038	91 Pa Protactinium 231.036	92 U Uranium 238.029	93 Np Neptunium 237.048	94 Pu Plutonium 244.064	95 Am Americium 243.061	96 Cm Curium 247.070	97 Bk Berkelium 247.070	98 Cf Californium 251.080	99 Es Einsteinium 252.083	100 Fm Fermium 257.095	101 Md Mendelevium 258.099	102 No Nobelium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

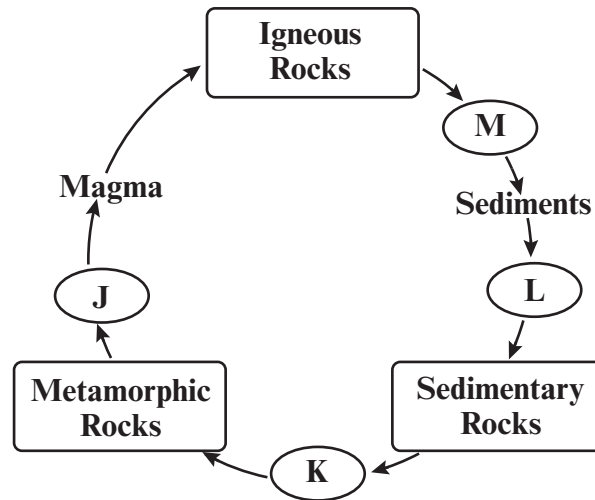
1 Ethan is observing chemical and physical properties of a substance. He heats a substance and observes that the substance turns from a brown solid to a black powder. He refers to several chemistry journals that claim this represents a chemical reaction. From his observation and research, he concludes that the substance goes through a chemical change when heated. How can Ethan **best** defend his conclusion?

- A. by demonstrating that the substance will eventually melt if the temperature continues to increase
- B. by verifying that the substance is now made up of different molecules than before it was heated
- C. by verifying that the substance is made up of only one type of element
- D. by demonstrating that the substance is less dense after it is heated

2 Mr. Roberts drives his car away from his house at a constant speed. Which of the following graphs **best** shows the relationship between the distance traveled and the time spent driving?



- 3 Ice forms in the cracks of a basalt rock formation and breaks some rock into smaller pieces. The diagram below shows part of the rock cycle.

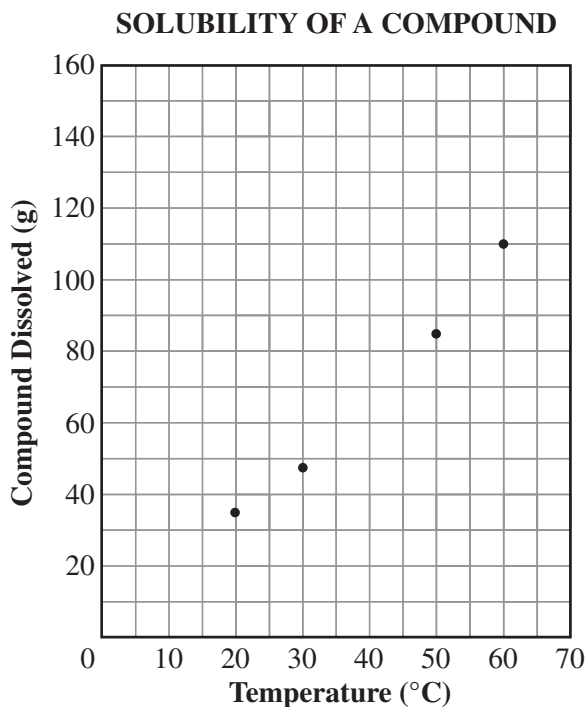


At which point in the cycle shown above would the process of breaking down rocks occur?

- A. J
- B. K
- C. L
- D. M

- 4 An object moves through space with balanced forces acting on it. Which statement **best** describes the speed and direction of the object as long as the forces acting on it remain balanced?
- F. The speed and direction of the object will both change.
 - G. The speed and direction of the object will remain constant.
 - H. The speed will change, but the direction will remain constant.
 - I. The speed will remain constant, but the direction will change.
- 5 A scientist performs an experiment and asks other scientists around the world to replicate it. Why would other scientists **most likely** try to perform the same experiment?
- A. to find out if weather of various regions of the world would affect the results
 - B. to see if the experiment would be less expensive in another part of the world
 - C. to confirm the results of the experiment conducted by the scientist
 - D. to verify that the hypothesis of the experiment is a scientific law

- 6 Students in Ms. Alvarez's eighth grade science class are investigating how temperature, in degrees Celsius ($^{\circ}\text{C}$), affects the solubility of a compound in 100 milliliters (mL) of water. Ms. Alvarez provides the students with a graph that shows the solubility of a certain compound, as shown below.

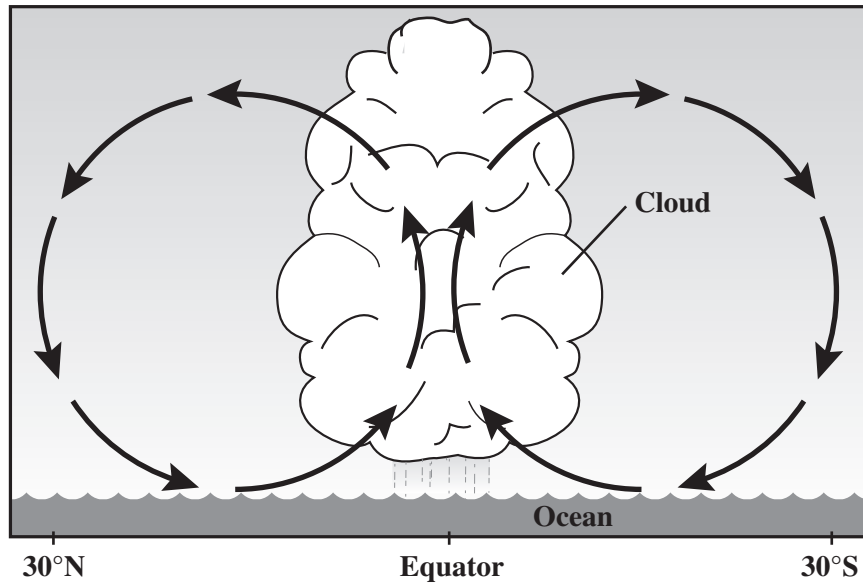


She then tells the students that she will demonstrate how many grams (g) of the compound will dissolve in 100 mL of water at 40°C . Based on the information in the graph, which of the following is the **best** prediction of how many grams of the compound will dissolve at 40°C ?

- F. 40 g
- G. 65 g
- H. 85 g
- I. 100 g

- 7 Food webs show feeding relationships among different types of organisms. Those organisms each have a specific niche. Which of the following **best** describes a function of decomposers in food webs?
- A. to recycle nutrients into soil
 - B. to convert solar energy into food
 - C. to provide food for secondary consumers
 - D. to compete with secondary consumers for oxygen
- 8 The interaction between the cryosphere and hydrosphere can have an impact on Earth's oceans. Which of the following is an example of an interaction between the cryosphere and hydrosphere?
- F. evaporation of water from oceans at the equator
 - G. release of fresh water into ocean water as icebergs melt
 - H. decomposition of organic matter at the bottom of oceans
 - I. release of large amounts of salt from icebergs into the ocean

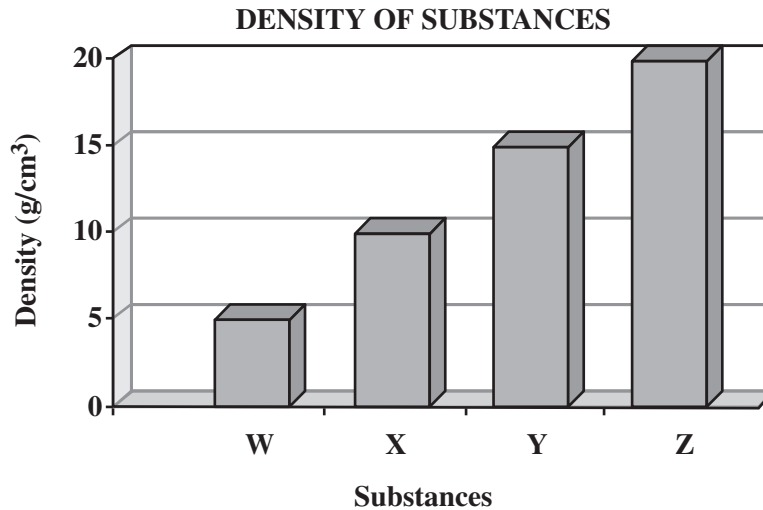
- 9 Several factors can cause weather patterns in the atmosphere. The diagram below shows how air movement near the equator can form thunderstorms.



Which process is the main source of this movement?

- A. movement of ocean currents
- B. decrease in relative humidity
- C. heating by energy from the Sun
- D. warming in the upper atmosphere

- 10 The graph below compares the density, in grams per cubic centimeter (g/cm^3), of four different substances.



Based on information from the graph, which of the following **best** compares the physical properties of two of the substances?

- F. Substance X has less mass than substance Y has.
- G. Substance W has less volume than substance X has.
- H. Substance Y would have less mass than substance Z would have if they had the same volume.
- I. Substance Z would have less mass than substance W would have if they had the same volume.

Name _____

Answer all the Science Sample Questions on this Sample Answer Sheet.

1 A B C D

6 F G H I

2 F G H I

7 A B C D

3 A B C D

8 F G H I

4 F G H I

9 A B C D

5 A B C D

10 F G H I



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