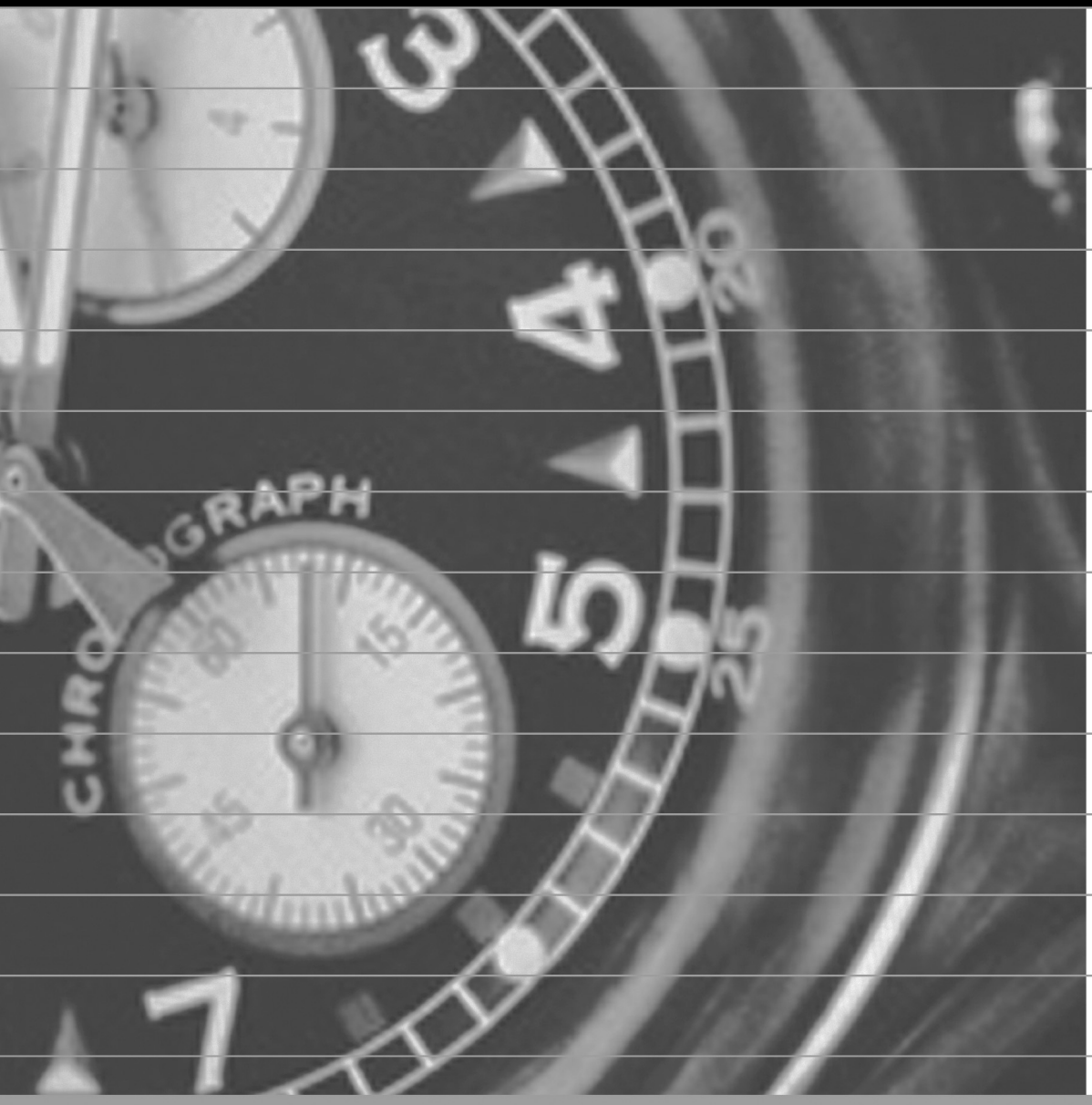
GRADES 3-4

test time!

Earth & Space Science

PRACTICE BOOKS THAT MEET THE STANDARDS



WALCH PUBLISHING

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to the student

Test Your Best!

Long ago, a musician lost in New York City approached a New York musician and asked him how to get to Carnegie Hall. The New Yorker replied with a grin, "Practice! Practice!"

Test Time! is a series of practice books that will help you prepare for testing of all kinds. We all have to take tests, and we are all measured by how we do on them. The special tests you take in school, the standardized tests, are used to figure out how well you and your classmates are learning what the state wants you to know. They are very important.

Even so, test-taking does not have to be stressful. Use strategies to test well. Practice before the test. You can lower your stress level. Just knowing what is likely to be on your test will help!

This series includes strategy books, as well as practice problems in each subject area.

Practice! Practice! And then take your tests with confidence.

PART 1 introduction

Earth and Space Science Strategies

As you take your test, some strategies are likely to help you. Although the Assessment Strategy book for Science goes over the strategies in detail, here are a few that may be of use in an Earth and Space Science test:

Know what to expect. Your test will include four different types of questions.

- Multiple choice—you will have to choose the best answer out of four or five.
- Constructed response—you will write a short answer in response to a question.
- Essay—you will write a paragraph or two in response to a question.
- Short lab—you will perform a laboratory experiment and respond to questions about it.

If your teacher gives you a pretest, take it carefully. Even wrong answers can help you learn how the test will be arranged.

Organize your test the way you want. Within each section, group the questions the way it makes sense to you. There is no rule that you have to do the problems in the order they appear.

Figure out which answers are wrong, first. Especially in multiple choice, one or perhaps two of the answers may be obviously wrong. Don't spend time thinking about them. Go on to the more likely choices.

Figure out the purpose of a problem. Sometimes you can be distracted by words and ideas that don't have anything to do with the problem. If the purpose is to make a graph, concentrate on only the things you need to know to make the graph, for example.

Use your experience and observation to solve problems. This is called inductive reasoning, and you will see it everywhere on the test. Think about how one experience or observation can be related to a new experience.

Use what you know about natural laws to solve problems. This is called deductive reasoning, and you will be expected to know how to use it. Think about how a particular law, for instance, the law of gravity, predicts the behavior of an object.

Use the scientific method to design and recognize quality experiments. Keep in mind the steps of the scientific method, and use them when choosing the best design for an experiment or determining whether an experiment is a good one.

Consider the best scientific tools for the job. Part of the test will be on technology, especially scientific technology. Think about how a tool will be used and what qualities make it important for its task.

Use math to make predictions in science. Remember that math helps us to make long range predictions. Use math in the forms of graphs and estimations.

Memorize some basic information from your studies. Some things don't have a "trick." You just have to remember them. Try to figure out what basic information is likely, and commit those few things to memory.

Read the questions before the reading. In problems with a long story or essay, followed by a few questions, read the questions first and then skim the reading.

Make educated guesses based on what you already know. Even if you don't know the whole answer, you might know parts of it. You can fill in what you don't know with an educated guess.

Find answers within the question. Often, it is hard to write a test question without giving away at least part of the answer. Use that difficulty to your advantage.

Use opposites to help you memorize facts. The human mind likes to group facts into opposites. In Earth Science, there are a lot of opposites that can be grouped this way.

Learn conventions of maps and graphics to save time. If you know how north is always represented on a map, for instance, you don't have to "learn" it during the test.

Use mnemonics, or memory-aids, to help you remember things in order. Often, material must not only be recalled, but recalled in the correct order. If you have a memory aid to remember, for instance, the names of the planets in order, use it.

Keep track of where memory-aids overlap. Sometimes, the way to remember one thing is the way to remember a second as well. The color of stars, organized by temperature, and the colors of the rainbow, for instance, are in the same order.

PART 2 general science

SET 1

Reading Graphs

Read the information, then answer the questions.

Beaufort Scale

Number	Wind Speed (Knots)	Description	Sea Conditions
0	Less than 1	Calm	Sea like a mirror
1	1–3	Light air	Ripples but without a foam crest
2	4–6	Light breeze	Small wavelets. Crests do not break.
3	7–10	Gentle breeze	Large wavelets
4	11–16	Moderate breeze	Small waves
5	17–21	Fresh breeze	Moderate waves
6	22–27	Strong breeze	Large waves begin to form with foam crests.
7	28–33	Near gale	Sea heaps up and white foam blown in streaks in the direction of the wind
8	34–40	Gale	Crests begin to break into spindrift.
9	41–47	Strong gale	High waves. Spray may affect visibility.
10	48–55	Storm	Very high waves. Tumbling sea becomes heavy and shock-like.
11	56–63	Violent storm	Exceptionally high waves. Sea completely covered with foam.
12	63 or more	Hurricane	The air is filled with foam and spray.

GO ON

The Beaufort Scale

The Beaufort scale was developed by Rear-Admiral Sir Francis Beaufort. He devised the scale to describe how the force of the wind would affect the ship under his command, the *Woolwich*. The *Woolwich* was a 44-gun man-of-war and one of the largest fighting vessels in the British navy. In 1838, the Beaufort wind scale was made mandatory for all log entries in the Royal Navy. Weather forecasters still use this scale today to describe the speed of the wind. Some days the wind blows very hard, and other days you can hardly feel the wind. You can see from the effects of the wind how fast the wind is blowing. The Beaufort scale was created in order to estimate the speed of the wind. Scientists use this scale when they are describing the rate of wind speed.

1. When the force of the waves become so strong that they are shock-like, the wind is called

   A. a gale.

   B. a hurricane.

   C. a spendrift.

   D. a storm.

2. When the wind speed is 35 knots, the Beaufort number is

   A. 6.

   B. 7.

   C. 8.

   D. 9.

3. A wind that is gentle causes

   A. crests.

   B. sea spray.

   C. large wavelets.

   D. small wavelets.

4. The Beaufort number for a hurricane is

   A. 9.

   B. 10.

   C. 11.

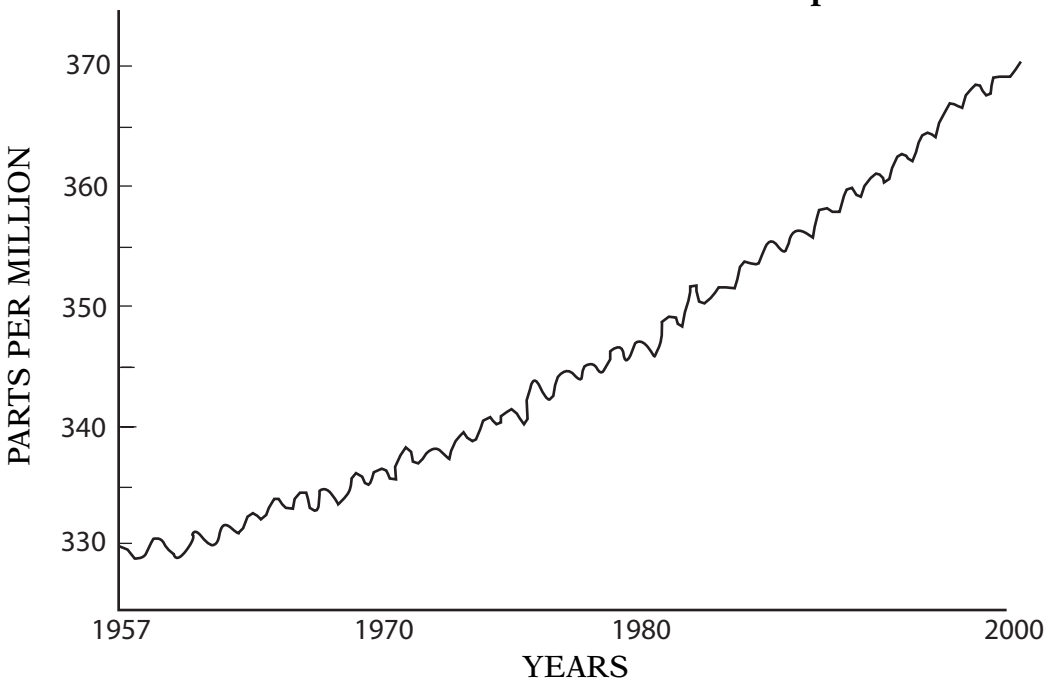
   D. 12.

GO ON

Global Warming

The buildup of greenhouse gases in Earth's atmosphere is causing global warming. This means Earth is getting warmer because of the buildup of carbon dioxide and other gases. The country that releases the most carbon dioxide into the air is the United States. We emit about 23% of the world's total. Much of this pollution comes from factories and automobiles.

Carbon Dioxide in Earth's Atmosphere



5. Which amount best describes the parts per million of carbon dioxide in Earth's atmosphere in 1957?

   A. 300

   B. 330

   C. 320

   D. 370

6. In what year did the carbon dioxide level reach 340 parts per million?

   A. 1957

   B. 1970

   C. 1975

   D. 1980

GO ON

7. In the year 2000, the parts per million of carbon dioxide reached were

   A. 350.

   B. 360.

   C. 365.

   D. 370.

8. Which of the following is true about the graph?

   A. There has been an increase in total concentrations of CO_2 in the atmosphere from 1957–1997.

   B. The graph shows that the carbon dioxide content of the atmosphere has gone up from around 315 parts per million to around 370 parts per million.

   C. There has been a consistent increase in carbon dioxide in our atmosphere.

   D. All of the above are correct.

PART 3 earth science

SET 1

Rocks and Minerals

Read each question, then circle the best answer.

1. Most rocks are a mixture of different minerals. Granite is the most common of igneous rocks on the continental crust of Earth. It is made up of

   A. mostly quartz and two types of feldspar.

   B. different forms of crystal.

   C. slate and mica.

   D. shale and mica.

2. Scientists who study rocks are called

   A. anthropologists.

   B. biologists.

   C. geologists.

   D. meteorologists.

3. Geologists have classified (grouped) all the kinds of rocks by how they were originally formed. Rocks that were formed by molten rock bursting from the mantle under Earth's crust and later cooling to become solid are called

   A. igneous rocks.

   B. sedimentary rocks.

   C. metamorphic rocks.

   D. fossil rocks.

GO ON

4. Sometimes rock is formed by small pieces of rock washed down to the sea. These pieces settle in layers, or strata. Over millions of years, more and more layers press down on one another and turn the bottom layers into hard rocks. This kind of rock is called

   A. igneous rock.

   B. sedimentary rock.

   C. metamorphic rock.

   D. fossil rock.

5. Another group of rocks are formed by a process often caused by heat and pressure underground. This group is called

   A. igneous rock.

   B. sedimentary rock.

   C. metamorphic rock.

   D. fossil rock.

6. If a rock is thought of as a fruit cake, the minerals may be compared to the cake's nuts, raisins, and other ingredients. More than 2,000 different minerals have been identified in the rocks in Earth's crust. Which of the following is NOT a mineral?

   A. mica

   B. marble

   C. quartz

   D. feldspar

7. Rocks have different density, which is how much mass a certain volume of rock has. Pumice has a very low density. That means

   A. it weighs very little.

   B. it floats.

   C. it cooled so quickly that it has a lot of air pockets.

   D. all of the above

GO ON

8. People can identify minerals within rocks by their physical properties, such as color, density, and hardness. Hardness is the mineral's ability to scratch other minerals. The hardest mineral is

   A. ruby.
   B. emeralds.
   C. diamond.
   D. topaz.

9. Some rocks contain the remains of dead animals and plants turned to stone. These remains are called

   A. shale.
   B. fossils.
   C. gems.
   D. crystals.

10. Some rocks are older than others. One way to tell the age of a rock is by figuring out how much of the uranium in the rock has broken down over time. The method of finding the age of a rock is called

   A. radioactive dating.
   B. time gauging.
   C. time recording.
   D. bedrocking.

11. Sometimes water enters the holes or cracks in a rock. If the water freezes, it could cause the rock to

   A. break or split apart.
   B. become larger.
   C. change color.
   D. become harder.

GO ON

12. The softest mineral is

A. talc.
B. quartz.
C. diamond.
D. shale.

13. Marble is a(n) _____, a rock that was originally limestone.

A. igneous rock
B. sedimentary rock
C. metamorphic rock
D. fossil rock

14. _____ is formed by mud and clay under pressure.

A. Conglomerate
B. Shale
C. Limestone
D. Sandstone

15. _____ has a gritty feeling.

A. Conglomerate
B. Shale
C. Limestone
D. Sandstone

16. _____ is composed of the mineral calcite.

A. Conglomerate
B. Shale
C. Limestone
D. Sandstone

GO ON

17. _____ is a mixture of different-sized sediments.

A. Conglomerate
B. Shale
C. Limestone
D. Sandstone

18. Describe the process of forming an igneous rock.

_____

_____

_____

_____

19. Describe the process of forming a sedimentary rock.

_____

_____

_____

_____

20. Describe the process of forming a metamorphic rock.

_____

_____

_____

_____

STOP