





TEACHER GUIDE

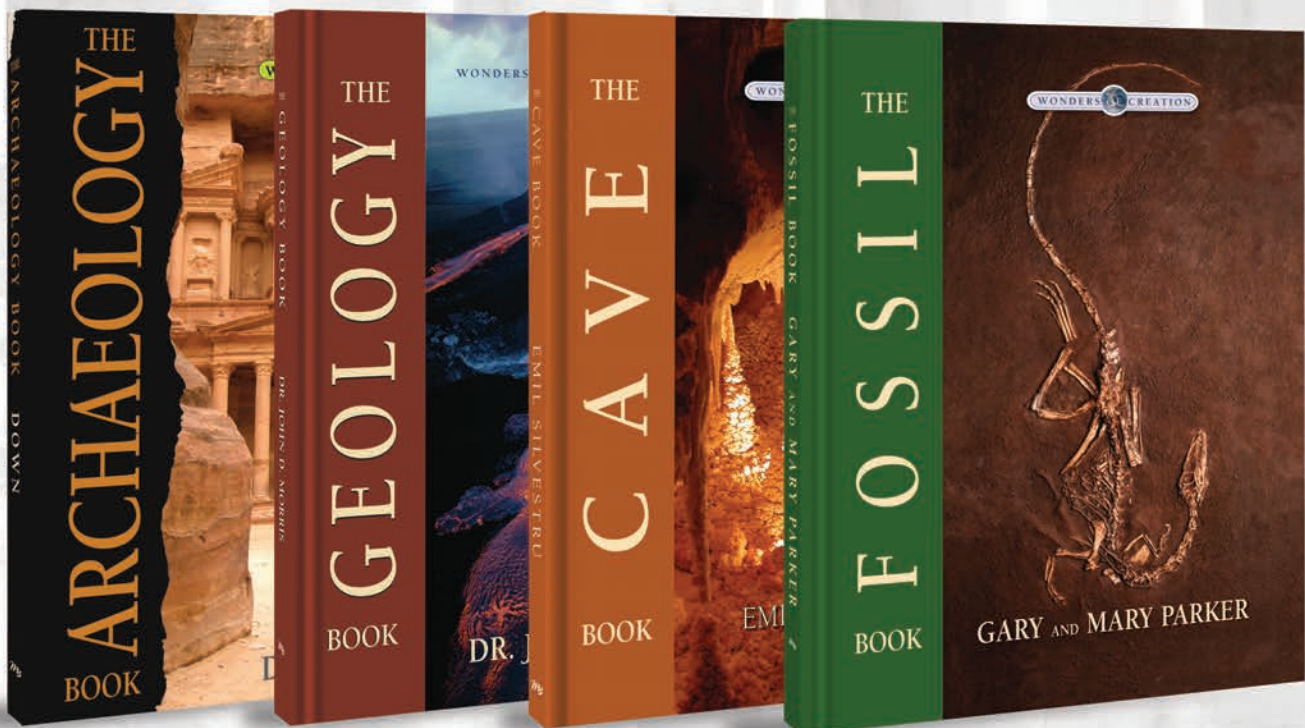
7th–12th Grade

Includes
Student Worksheets

Science

-  Answer Keys
-  Weekly Lesson Schedule
-  Worksheets
-  Quizzes

GENERAL SCIENCE 2: SURVEY OF GEOLOGY & ARCHAEOLOGY







TEACHER GUIDE

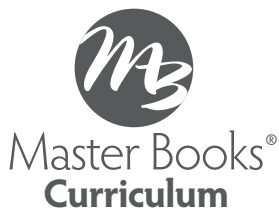
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General Science 2: Survey of Geology & Archaeology



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Unless otherwise noted, Scripture quotations are from the New King James Version of the Bible.

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Table of Contents

Using This Teacher Guide	4
Course Description	4
Course Objectives	5
Suggested Daily Schedule	7
Worksheets	
<i>The Archaeology Book</i> Worksheets.....	15
<i>The Geology Book</i> Worksheets.....	39
<i>The Cave Book</i> Worksheets.....	61
<i>The Fossil Book</i> Worksheets	77
Quizzes and Tests	
<i>The Archaeology Book</i> Quizzes	99
<i>The Archaeology Book</i> Test	107
<i>The Geology Book</i> Quizzes	111
<i>The Geology Book</i> Test	119
<i>The Cave Book</i> Quizzes	123
<i>The Cave Book</i> Test	131
<i>The Fossil Book</i> Quizzes.....	135
<i>The Fossil Book</i> Test.....	143
Answer Key	
<i>The Archaeology Book</i> Worksheets.....	149
<i>The Geology Book</i> Worksheets.....	153
<i>The Cave Book</i> Worksheets.....	160
<i>The Fossil Book</i> Worksheets	165
<i>The Archaeology Book</i> Quizzes	171
<i>The Archaeology Book</i> Test	175
<i>The Geology Book</i> Quizzes	177
<i>The Geology Book</i> Test	180
<i>The Cave Book</i> Quizzes	182
<i>The Cave Book</i> Test	186
<i>The Fossil Book</i> Quizzes.....	188
<i>The Fossil Book</i> Test.....	193
Extended Glossaries.....	197

Emil Silvestru is a prospecting and exploration geologist. He is a cave expert born in Transylvania, Romania and is currently a writer, researcher, and speaker. **Dr. Gary Parker** lectures worldwide for both ICR and Answers in Genesis, has written five science textbooks and numerous creation books. **David Down** has been a field archaeologist for over four decades, excavating regularly in Israel, and offers special insight into the connections of archaeology and biblical history. **Dr. John D. Morris** is president of the Institute for Creation Research and currently travels and speaks on the topic of creation science.

Using This Teacher Guide

Features: The suggested weekly schedule enclosed has easy-to-manage lessons that guide the reading, worksheets, and all assessments. The pages of this guide are perforated and three-hole punched so materials are easy to tear out, hand out, grade, and store. Teachers are encouraged to adjust the schedule and materials needed in order to best work within their unique educational program.

Lesson Scheduling: Students are instructed to read the pages in their book and then complete the corresponding section provided by the teacher. Assessments that may include worksheets, activities, quizzes, and tests are given at regular intervals with space to record each grade. Space is provided on the weekly schedule for assignment dates, and flexibility in scheduling is encouraged. Teachers may adapt the scheduled days per each unique student situation. As the student completes each assignment, this can be marked with an “X” in the box.



Approximately 30 to 45 minutes per lesson, three to five days a week



Includes answer keys for worksheets, quizzes, and tests.



Worksheets for each section



Quizzes and tests are included to help reinforce learning and provide assessment opportunities.



Designed for grades 7 to 12 in a one-year course to earn 1 science credit

Course Description

This is the suggested course sequence that allows two core areas of science to be studied per semester. You can change the sequence of the semesters per the needs or interests of your students; materials within each semester are independent of one another to allow flexibility. The following is how this teacher guide has been structured for the year of study. The first quarter covers archaeology and takes students on an exciting exploration of history and ancient cultures. The second quarter covers geology, guiding students to see what really carved the Grand Canyon, how thick the Earth’s crust is, why the Earth is unique for life, and the varied features of the Earth’s surface. This third quarter focuses on caves, exploring deep into the hidden wonders beneath the surface as cave expert Dr. Emil Silvestru takes students on this illuminating and educational journey. The fourth quarter concludes the year with a study of fossils, their origins, as well as how to collect them.

Course Objectives

Students completing this course will:

- ✓ Evaluate how archaeologists know what life was like in the past, some of the difficulties in dating ancient artifacts, and how the brilliance of ancient cultures demonstrates God's creation.
- ✓ Discover the beautiful, thriving ecology, unique animals, and fragile balance of this little-seen ecosystem in caves from around the globe
- ✓ Review how the Flood affected fossil formation, the difference between evolutionists' and creationists' views on fossils, and the "four Cs" of biblical creation
- ✓ Investigate what really carved the Grand Canyon, how thick the Earth's crust is, why the Earth is unique for life, the varied features of the Earth's surface
- ✓ Explore the origin of fossils, how to start your own fossil collection, what kinds of fossils can be commonly found, the age of fossils, and how scientists find and preserve fossils
- ✓ Learn both the techniques of the archaeologist and the accounts of some of the richest discoveries of the Middle East that demonstrate the accuracy and historicity of the Bible
- ✓ Identify a creationary model for how caves form, a history of how caves have been used by humans for shelter and worship, and how old caves really are.

Special Note: High school students who take the course are expected to do a majority of the activities. The activities can be modified based on student interests and creativity, but should reflect an understanding of the core concepts being learned.

Optional Science Lab

There are a variety of companies that offer science labs that complement our courses. These items are only suggestions, not requirements, and they are not included in the daily schedule. We have tried to find materials that are free of evolutionary teaching, but please review any materials you may purchase. The following items are available from www.HomeTrainingTools.com.

Survey of Geology & Archaeology

The Cave Book

RM-CRYSGAR Flowering Rock Crystal Garden

The Fossil Book

RM-FSTUDY Fossil Study Kit

The Geology Book

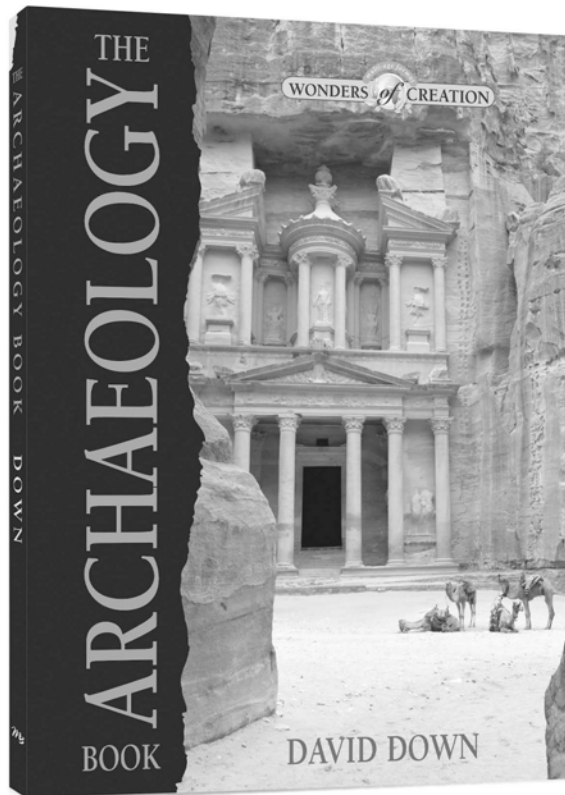
RM-GEOBAG Geology Field Trip in a Bag

RM-ROCKMIN Rocks & Minerals of the U.S. Basic Set

First Semester Suggested Daily Schedule

Date	Day	Assignment	Due Date	✓	Grade
First Semester-First Quarter — <i>The Archaeology Book</i>					
Week 1	Day 1	Read Pages 6-19 • <i>The Archaeology Book</i> • (AB)			
	Day 2	What Archaeology is . . . - Words to Know Archaeology Ch1: Worksheet 1 • Page 17 • (LP)			
	Day 3	What Archaeology is All About - Questions Archaeology Ch1: Worksheet 1 • Page 18 • (LP)			
	Day 4	What Archaeology is All About - Activities Archaeology Ch1: Worksheet 1 • Page 18 • (LP)			
	Day 5	Read Pages 20-29 • (AB)			
Week 2	Day 6	Land of Egypt - Words to Know Archaeology Ch2: Worksheet 1 • Page 19 • (LP)			
	Day 7	Land of Egypt - Questions Archaeology Ch2: Worksheet 1 • Page 19 • (LP)			
	Day 8	Land of Egypt - Activities Archaeology Ch2: Worksheet 1 • Page 20 • (LP)			
	Day 9	Archaeology Book Chapters 1-2 Study Day			
	Day 10	Archaeology Book Ch1-2 Quiz 1 • Page 99 • (LP)			
Week 3	Day 11	Read Pages 30-35 • (AB)			
	Day 12	The Hittites - Words to Know, Questions Archaeology Ch3: Worksheet 1 • Page 21 • (LP)			
	Day 13	The Hittites - Activities Archaeology Ch3: Worksheet 1 • Page 22 • (LP)			
	Day 14	Read Pages 36-41 • (AB)			
	Day 15	Ur...Chaldees - Words to Know, Questions Archaeology Ch4: Worksheet 1 • Page 23 • (LP)			
Week 4	Day 16	Ur of the Chaldees - Activities Archaeology Ch4: Worksheet 1 • Page 24 • (LP)			
	Day 17	Read Pages 42-45 • (AB)			
	Day 18	Assyria - Words to Know, Questions Archaeology Ch5: Worksheet 1 • Page 25 • (LP)			
	Day 19	Assyria - Activities Archaeology Ch5: Worksheet 1 • Page 26 • (LP)			
	Day 20	Archaeology Book Chapters 3-5 Study Day			
Week 5	Day 21	Archaeology Book Ch3-5 Quiz 2 • Page 101 • (LP)			
	Day 22	Read Pages 46-51 • (AB)			
	Day 23	Babylon:...Gold - Words to Know, Questions Archaeology Ch6: Worksheet 1 • Page 27 • (LP)			
	Day 24	Babylon: City of Gold - Activities Archaeology Ch6: Worksheet 1 • Page 28 • (LP)			
	Day 25	Read Pages 52-59 • (AB)			

Date	Day	Assignment	Due Date	✓	Grade
Week 6	Day 26	Persia - Words to Know, Questions Archaeology Ch7: Worksheet 1 • Page 29 • (LP)			
	Day 27	Persia - Activities Archaeology Ch7: Worksheet 1 • Page 30 • (LP)			
	Day 28	Read Pages 60-69 • (AB)			
	Day 29	Petra - Words to Know, Questions Archaeology Ch8: Worksheet 1 • Page 31 • (LP)			
	Day 30	Petra - Activities Archaeology Ch8: Worksheet 1 • Page 32 • (LP)			
Week 7	Day 31	Chapter 6-8 Study Day			
	Day 32	Chapter 6-8 Quiz 3 • Page 103 • (LP)			
	Day 33	Read Pages 70-77 • (AB)			
	Day 34	The Phoenicians - Words to Know, Questions Archaeology Ch9: Worksheet 1 • Page 33 • (LP)			
	Day 35	The Phoenicians - Activities Archaeology Ch9: Worksheet 1 • Page 34 • (LP)			
Week 8	Day 36	Read Pages 78-83 • (AB)			
	Day 37	Dead Sea Scrolls - Words to Know, Questions Archaeology Ch10: Worksheet 1 • Page 35 • (LP)			
	Day 38	Dead Sea Scrolls - Activities Archaeology Ch10: Worksheet 1 • Page 36 • (LP)			
	Day 39	Read Pages 84-93 • (AB)			
	Day 40	Israel - Words to Know, Questions Archaeology Ch11: Worksheet 1 • Page 37 • (LP)			
Week 9	Day 41	Israel - Activities Archaeology Ch11: Worksheet 1 • Page 38 • (LP)			
	Day 42	Archaeology Book Chapters 6-11 Study Day			
	Day 43	Archaeology Ch 9-11 Quiz 4 • Page 105 • (LP)			
	Day 44	Archaeology Book Chapters 1-11 Study Day			
	Day 45	Archaeology Book Exam • Page 107 • (LP)			
First Semester-Second Quarter — <i>The Geology Book</i>					
Week 1	Day 46	Read Pages 4-10 • <i>The Geology Book</i> • (GB) Planet Earth - Words to Know, Questions Geology Intro. & Ch1: Worksheet 1 • Page 41 • (LP)			
	Day 47	Planet Earth - Activities Geology Intro. & Ch1: Worksheet 1 • Page 42 • (LP)			
	Day 48	Read Pages 10-19 • (GB)			
	Day 49	The Ground We Stand On - Words to Know, Questions Geology Ch2: Worksheet 1 • Page 43 • (LP)			
	Day 50	The Ground We Stand On - Activities Geology Ch2: Worksheet 1 • Page 44 • (LP)			



Archaeology Worksheets

for Use with

The Archaeology Book



Words to Know

accession year

AD

archaeology

artifact

BC

carbon dating

ceramic

chronology

debris

EB

exile

exodus

hieroglyphs

LB

MB

millennium

non-accession year

pottery

synchronism

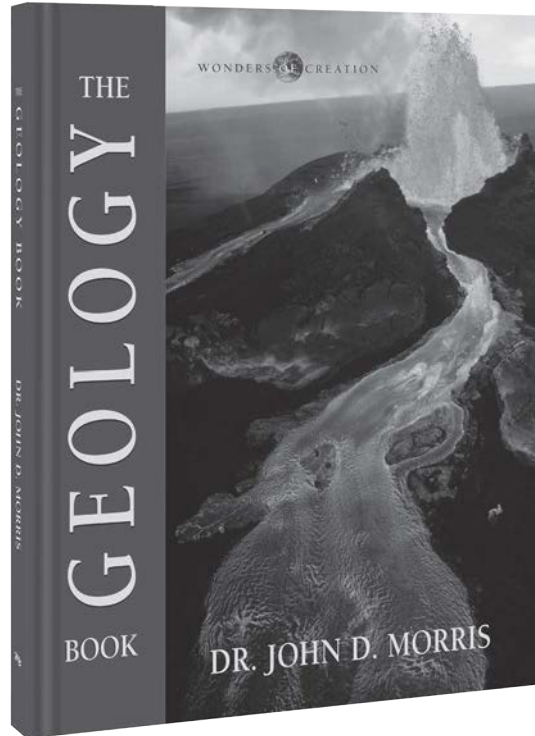
tell

Questions

1. What does the word archaeology mean?
2. For what three reasons were cities built on hills?
3. When did people first start using coins?
4. Why are inscriptions found on ancient pottery valuable to archaeologists?
5. What are the four main periods of archaeological time?

Activities

1. See if you can find a small piece of damp clay, or plasticine, and with the end of a screwdriver impress your name on it. This would then look like a seal impression.
2. Take some everyday items and set up an archaeological treasure hunt. Have an adult bury the items in shallow holes, covering them with a thin layer of soil. Carefully go about digging them up and classifying your treasures in a journal.



Geology Worksheets

for Use with

The Geology Book



Scripture: Genesis 1:1–31; Genesis 3:17–21; Romans 6:23; Romans 8:22

Words to Know

Principle of uniformity

Principle of catastrophe

Asthenosphere

Plate

Questions

1. Operational science is the science that deals with repeatable, observable experiments in the present. Origins science deals with reconstructing events that have happened in the past. What is the key difference between “origins” and “operational” science?

2. There are two ways of thinking about the unobserved past. What are they?

3. Where is the true history of the earth found?

4. In what order did God create the heavens and earth? (e.g., describe what He created on Day 1, Day 2, etc.) See Genesis 1.

5. Write a short paragraph answering the question, “What is sin?”

6. What are the main “zones” into which the earth is divided?

7. What is the earth’s crust composed of?

8. What is the purpose of the earth’s atmosphere?

Activities

Review the text on pages 4-10 again. Two views of earth history are compared (uniformity and catastrophe). Make a chart of the comparisons – see if you can find three to five examples to include in your comparison.



Scripture: Genesis 1:1; Obadiah 1:3

Words to Know

Igneous rocks

Sedimentary rocks

Metamorphic rocks

Ripple marks

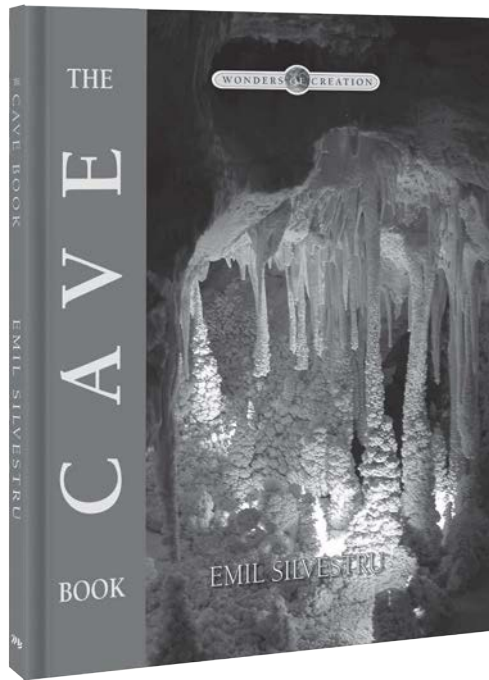
Crossbed

Concretions

Metamorphism

Questions

1. This chapter lists three categories of rock, with each category containing a discussion on several types of rock. Draw an expanded version of the table on the next page.
 - a. In the first column, list each type of rock mentioned in this chapter.
 - b. In the second column, list the category under which the rock is found.
 - c. In the third column, describe the composition of each rock type.
 - d. In the fourth column, describe how the rock is formed.
 - e. In the fifth column, make a list of where the rock is found today.
 - f. Watch out for types within types! (We've done the first one for you!)



Cave Worksheets
for Use with
The Cave Book



Words to Know

acoustics

Acheulean industry

bas-reliefs

cave paintings

engravings

Kyr

Myr

speleothems

Short Answer

1. Were there caves present before the Flood?
2. When does the Bible mention caves for the first time?
3. How many times is the word “cave” mentioned in the Bible?
4. Name three large animals that lived in caves prior to their extinction.
5. In what country is Longgupo Cave, which is believed to host the oldest stone artifacts?

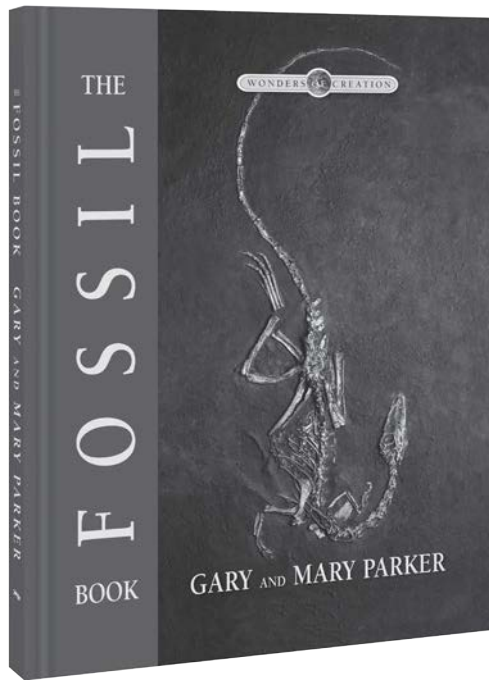
6. What is the Twin River Cave in Zambia known for: (a) oldest human remains, (b) oldest burial site, or (c) art associated with burial rituals?
7. What are the three kinds of cave art that have been found?
8. Were Neanderthals a different species than us?

Discussion Questions

1. Why did humans move to caves after having lived in cities?
2. Why did humans worship inside caves?
3. Where is the largest number of cave paintings located? Why?
4. What is the main criterion to separate various human cultures?
5. Who were the Neanderthals?
6. What did the human remains from Shanidar Cave reveal about Neanderthal social life?

Activities

1. Do a keyword search for the word “cave(s)” in the Bible using a Bible concordance or online search. Examine the various reasons people used caves during the biblical period.
2. Use a plastic knife to carve a bar of soap into a stone axe head. Examine the different uses for an axe in a book or online resource.
3. With a large sheet of paper and paints (or chalk), recreate the look of cave paintings. You might consider using a dark room or garage with candles (under parental supervision), to sense the dark cave atmosphere.



Fossil Worksheets
for Use with
The Fossil Book

4. What does TCSD stand for?

5. List and describe the four C's of biblical history discussed in this book.

Activities

Who was Charles Lyell? Research his life and his impact on long-age ideas. Write a short paper summarizing your findings.



Words to Know

Archeology

Artifacts

Fossil

Geology

Paleontology

Permineralized fossils

Polystrates

Pseudofossils

Sediments

Trace fossils

Questions

1. What types of sedimentary rocks are fossils normally found in?
2. List two agents that erode and deposit sediments.
 - a. _____
 - b. _____
3. Which agent is more powerful?
4. What two elements must exist in the right amounts for sediments to turn into rocks?
 - a. _____
 - b. _____
5. True/False? (If false, explain your answer.) Time is a vital part of rock or fossil formation.

6. What are the two most common rock cements?
 - a. _____
 - b. _____
7. Give three examples where calcium carbonate can be found.
 - a. _____
 - b. _____
 - c. _____
8. Give one example where silica can be found.
9. What type of event would provide the right conditions to form fossils?
10. Briefly describe how a fossil can form.
11. Why must fossilization begin quickly?
12. What is the most common type of fossil?
13. What is the difference between permineralized wood and petrified wood?
14. Why is coal considered to be a fossil fuel?
15. Describe how coal forms (based on the research of Dr. Steve Austin).
16. What catastrophic event in May of 1980 supports Dr. Austin's theory?
17. How do polystrate fossils imply rapid burial?

Activities

1. Write a short research paper describing how coal is formed from a Bible-based perspective.
2. Take a field trip to your local natural history museum. How many of the different types of fossils described in this chapter are on display there? Take along a sketch pad and pencil and draw a representative from the different fossil types (permineralized, mold, cast, carbon films, preserved soft parts, amber, trace, etc.). Label each drawing with the name of the fossil, the type of fossil, and where it was found.
3. Find out if you live near a coal mine that offers tours, and plan a visit.

Quizzes & Tests Section



Define: (5 Points Each Answer)

1. accession year: _____
2. AD: _____
3. BC: _____
4. carbon dating: _____
5. EB: _____
6. LB: _____
7. MB: _____
8. baulk: _____
9. synchronism: _____
10. mastabas: _____

Multiple Answer Questions: (2 Points Each Blank)

11. What are the four main periods of archaeological time?
 - a. _____
 - b. _____
 - c. _____
 - d. _____
12. For what three reasons were cities built on hills?
 - a. _____
 - b. _____
 - c. _____

Short Answer Questions: (4 Points Each Question)

13. What does the word archaeology mean? _____

14. When did people first start using coins? _____

15. What was the name of the Egyptian god of the Nile River? _____

16. What is the Egyptian name for Egypt? _____

17. Who was the first Egyptian king to build a pyramid? _____
18. Who built the biggest pyramid in Egypt? _____

Applied Learning Activity: (12 Points Total; 1 Point Each Answer)

19. Identify the Pyramids, Temples, Tombs, and unique features on Giza Map:

Pyramid of Kufu

Valley Temple of Kufu

Pyramid of Menkaure

Valley Temple of Menkaure

Pyramid of Kahfre

Valley Temple of Kahfre

The Sphinx

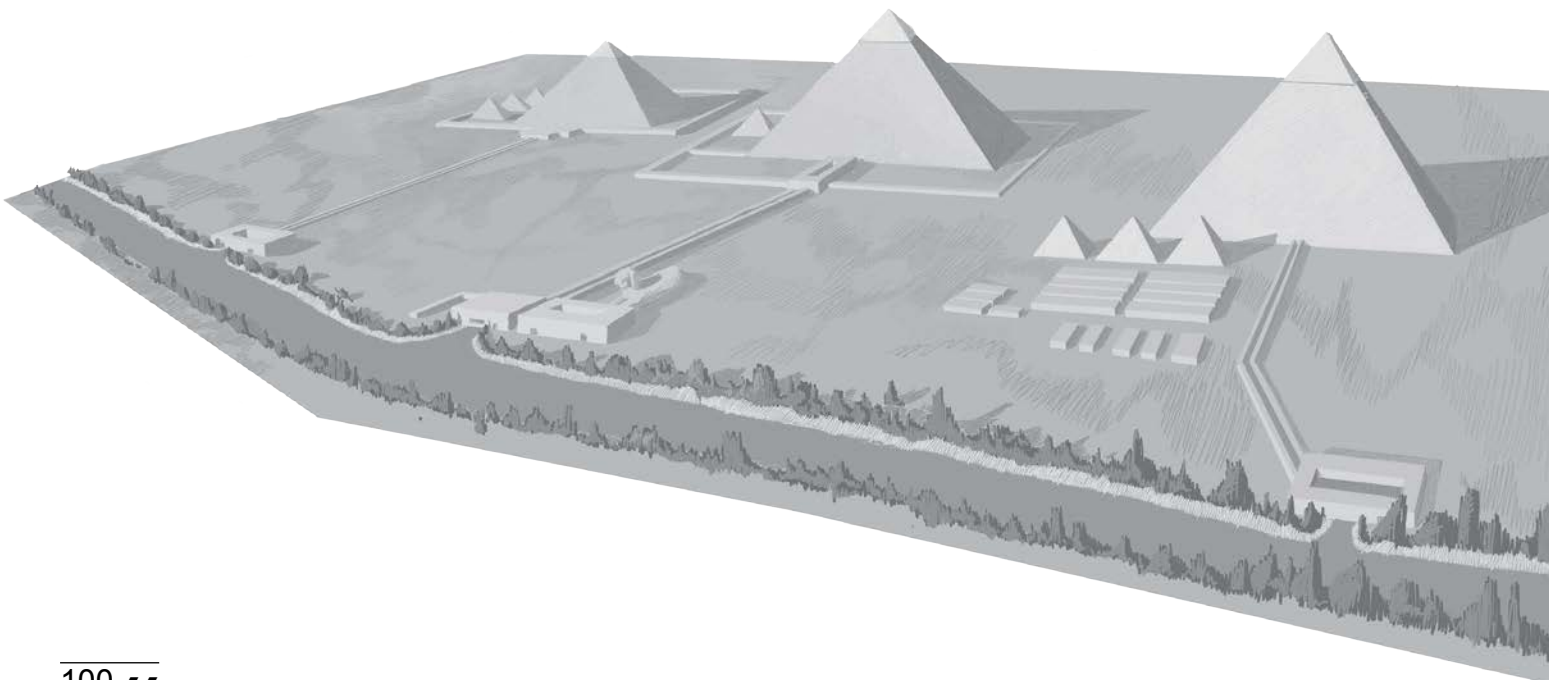
The Temple of the Sphinx

Pyramid of Queens

Queen's Tombs

Eastern Cemetery

Mortuary Temple





Define: (5 Points Each Answer)

1. Principle of uniformity: _____
2. Principle of catastrophe: _____
3. Sediment: _____
4. Metamorphism: _____

Multiple Answer Questions: (2 Points Each Blank)

5. There are two ways of thinking about the unobserved past. What are they? (3 Points Each Answer)

- a. _____
- b. _____

6. In what order did God create the heavens and the earth?

- | | |
|--------------|--------------|
| Day 1. _____ | Day 4. _____ |
| Day 2. _____ | Day 5. _____ |
| Day 3. _____ | Day 6. _____ |

7. What are the main “zones” into which the earth is divided?

- | | |
|----------|----------|
| a. _____ | d. _____ |
| b. _____ | e. _____ |

8. List the three types of plateaus and give an example of each.

- | | |
|----------|----------|
| a. _____ | b. _____ |
| c. _____ | d. _____ |
| e. _____ | f. _____ |

9. List the four types of mountains and give an example of each type.

- | | |
|----------|----------|
| a. _____ | b. _____ |
| c. _____ | d. _____ |
| e. _____ | f. _____ |
| g. _____ | h. _____ |

Applied Learning Activity: (4 Points Each Blank)

10. List which category the following types of rocks belong to.

Granite a. _____

Marble b. _____

Shale c. _____

Limestone d. _____

Coal e. _____

Rhyolite f. _____

Slate g. _____

Define: (5 Points Each Answer)

1. karst: _____
2. Acheulean industry: _____
3. bas-reliefs: _____
4. Kyr: _____
5. Myr: _____
6. Neanderthals: _____
7. speleothems: _____
8. karst aquifer: _____

Multiple Answer Questions: (2 Points Each Blank)

9. Name two large animals that inhabited caves prior to their extinction.
 - a. _____
 - b. _____
10. What are the three kinds of cave art that have been found?
 - a. _____
 - b. _____
 - c. _____

Short Answer Questions: (4 Points Each Question)

11. What is the probable reason some of our ancestors may have entered the “underland” of cave systems? _____
12. What role did caves play for our ancestors? _____
13. How much of the world’s drinking water comes from limestone (karst) terrains? _____
14. How much is it estimated to be by 2025? _____
15. The strange event near the _____ not only split the once unified population, but scattered those with different skills and abilities.
16. How did the events surrounding the Tower of Babel affect the ancient groups of people who disbursed from that area? _____
17. When does the Bible mention caves for the first time? _____

18. In what country is Longgupo Cave, which is believed to host the oldest stone artifacts? _____
-
19. What is the Twin River Cave, in Zambia known for: (a) oldest human remains, (b) oldest burial site, or (c) art associated with burial rituals?
20. Were Neanderthals a different species than us? _____

Applied Learning Activity: (10 Points)

21. Explain the relationship between cave paintings and acoustics and the conclusion the author draws from this relationship.



Define: (5 Points Each Answer)

1. Evolution: _____
2. Paleontologist: _____
3. Permineralized fossils: _____
4. Trace fossils: _____

Multiple Answer Questions: (2 Points Each Blank)

5. Who were the two men given credit for popularizing the modern teaching of evolution?
 - a. _____
 - b. _____
6. List two agents that erode and deposit sediments. Which agent is more powerful?
 - a. _____
 - b. _____
 - c. _____
7. What two elements must exist in the right amount for sediments to turn into rocks?
 - a. _____
 - b. _____
8. What are the two most common rock cements?
 - a. _____
 - b. _____
9. Give three examples where calcium carbonate can be found.
 - a. _____
 - b. _____
 - c. _____

Short Answer Questions: (4 Points Each Question)

10. When did most of the branches of modern science begin?
11. What does TCSD stand for?
12. What types of sedimentary rocks are fossils normally found in?

13. What type of event would provide the right conditions to form fossils?
14. Briefly describe how a fossil can form.
15. Why must fossilization begin quickly?
16. What is the most common type of fossil?
17. What is the difference between permineralized wood and petrified wood?
18. Why is coal considered to be a fossil fuel?
19. Describe how coal forms (based on the research of Dr. Steve Austin).
20. What catastrophic event in May of 1980 supports Dr. Austin's theory?
21. How do polystrate fossils imply rapid burial?

Applied Learning Activity: (1 Point Each Answer)

List and describe the four C's of biblical history discussed in this book.

22. a. b.
23. a. b.
24. a. b.
25. a. b.



Answer Keys

Chapter 1 – What Archaeology is All About – Worksheet 1

accession year — the year a king actually began his reign

AD — Anno Domini (the year of our lord); the years after the Christian era began

Archaeology — study of beginnings

Artifact — an item from antiquity found in an excavation

BC — Before Christ; the years before the Christian era began

carbon dating — calculating the amount of carbon left in organic material that has died

ceramic — something made of pottery

chronology — time periods; dates in which events happened

debris — discarded rubbish

EB — the Early Bronze Period

exile — a people sent out of their home country to another country

exodus — going out; applied to the Israelites leaving Egypt

hieroglyphs — Egyptian picture writing

LB — the Late Bronze Period

MB — the Middle Bronze Period

millennium — one thousand years

non-accession year — the first complete year of a king's reign

pottery — a vessel made of clay fired in a kiln

synchronism — something happening at the same time

tell — a Hebrew word meaning “ruins;” applied to hills on which people once lived

1. A study about beginnings
2. Defense, heat, and floods
3. 600 B.C.
4. It helps them identify from which period the pottery comes.
5. Early Bronze, Middle Bronze, Late Bronze, Iron Age

Chapter 2 – Land of Egypt – Worksheet 1

Asiatic — in Egyptian terms, someone from Syria or Palestine

bulwark — the vertical ridge left between two excavated squares in the ground

dowry — gift given to a prospective bride at the time of her marriage

drachma — a Greek coin worth about a day's wages

dynasty — a succession of kings descended from one another

mastabas — mud-brick structures beneath which were tomb chambers

Nubia — a country south of Egypt now called Sudan

Pharaoh — title applied to many Egyptian kings

1. Misr
2. Zoser
3. Khufu
4. Hapi
5. Straw

Chapter 3 – The Hittites – Worksheet 1

amphitheater — a circle of seats surrounding an area where gladiators fought each other or fought wild beasts

Anatolia — mountainous area in central Turkey

bathhouse — a club where citizens could bathe in cold, warm, or hot water

inscription — writing made on clay, stone, papyrus, or animal skins

1. The Hittites
2. Hittites and Egyptians
3. Heth
4. Forty-six
5. William Wright

Chapter 4 – Ur of the Chaldees – Worksheet 1

centurion — a military officer in charge of a hundred men

Chaldees — people who used to live in southern Iraq

nomad — a person who lived in a tent that could be moved from place to place

papyrus — sheets of writing material made from the Egyptian papyrus plant

1. Four
2. Sir Leonard Woolley
3. He wanted to learn more about Ur before he excavated such an important site.
4. Sumerians
5. Evidence of human sacrifice

Chapter 5 – Assyria – Worksheet 1

bullae — an impression made on clay with a seal (plural: bullae)

Medes — people who used to live in northern Iran

scarab — model of a dung beetle with an inscription engraved on it for sealing documents

seal — an object made of stone, metal, or clay with a name engraved on it used to impress in soft clay

1. Henry Austin Layard
2. Nimrud
3. Jehu

Introduction & Chapter 1 – Planet Earth – Worksheet 1

Principle of uniformity — the scientific thought that past processes are no different than processes today, meaning everything happens by gradual process over very long periods of time

Principle of catastrophe — the scientific thought that sees evidence of rapid, highly energetic events over short periods of time, doing a lot of geologic work

Asthenosphere — a suspected area in the uppermost portion of the earth’s mantle where material is hot and deforms easily

Plate — huge regions of the earth identified by zones of earthquake activity

1. Origins science cannot be studied with repeatable, observable experiments in the present.
2. Uniformity (the present is the key to the past) and catastrophe (highly energetic events operated over short periods of time and did much geologic work rapidly)
3. In the Bible
4. Day 1: earth, space, time, light; Day 2: atmosphere; Day 3: dry land, plants; Day 4: sun, moon, stars, planets; Day 5: sea and flying creatures; Day 6: land animals, people
5. Sin can be defined as rebellion against God.
6. Crust, mantle, outer core, inner core
7. Continental crust (composed of granitic rock covered by sedimentary rock); oceanic crust (composed primarily of basaltic rock)
8. Provides the air we breathe, protects us from harmful cosmic radiation, and gives us weather

Chapter 2 – The Ground We Stand Upon – Worksheet 1

Igneous rocks — rock formed when hot, molten magma cools and solidifies

Sedimentary rock — rock formed by the deposition and consolidation of loose particles of sediment, and those formed by precipitation from water

Metamorphic rock — rocks formed when heat, pressure and/or chemical action alters previously existing rock

Ripple Marks — marks which indicate moving water flowed over a rock layer when the sediments were still muddy and yet to harden

Crossbed — areas of extremely large ripple marks

Concretions — concreted masses of sedimentary rock that has been eroded out of a softer area of rock

Metamorphism — a process of heat and pressure that causes one rock to alter into another

Type	Category	Composition	Formation	Found
Granite	Igneous	Quartz and feldspar with mica and hornblende	Formed when molten rock is cooled	Mountains Upper mantle
Rhyolite	Igneous	Quartz and feldspar with mica and hornblende	Formed when molten rock erupts on land and solidifies	Land

Type	Category	Composition	Formation	Found
Obsidian	Igneous	Quartz and feldspar with mica and hornblende	Formed by the rapid cooling of lava as it flows on the surface of the ground	Land
Pumice	Igneous	Quartz and feldspar with mica and hornblende	Formed by eruptions on land—the cooling process forms air pockets in the rock	Land
Basalt	Igneous	Pyroxene, plagioclase feldspar	Solidified molten lava under water and on land	Oceanic crust, land
Shale	Clastic Sedimentary	Cemented particles of clay (and minor silt)	Formed from previously existing rocks which were eroded, transported and redeposited elsewhere	Mountains, land
Sandstone	Clastic Sedimentary	Quartz sand, particles big enough to be seen	Formed from previously existing rocks which were eroded, transported and redeposited elsewhere	Mountains, land
Conglomerate	Clastic Sedimentary	Pebble-size to boulder-size grains mixed with smaller sand or clay particles	Formed from previously existing rocks which were eroded, transported and redeposited elsewhere	Mountains, land
Limestone	Organic chemical sedimentary	Calcium carbonate from shells of sea creatures, reef fragments or limey secretions of sea creatures	Formed when water can no longer keep various chemicals dissolved within it	Sea floors, land
Diatomaceous earth	Organic chemical sedimentary	Collection of shells from diatoms or radiolarians and certain algae	Formed when water can no longer keep various chemicals dissolved within it	Land
Coal	Organic chemical sedimentary	Buried plant material	Formed when water can no longer keep various chemicals dissolved within it	Land

Type	Category	Composition	Formation	Found
Limestone	Inorganic chemical sedimentary	Calcium carbonate derived from inorganic sources	Formed when water can no longer keep various chemicals dissolved within it	Caves, mineral springs, stalactites, stalagmites
Dolomite	Inorganic chemical sedimentary	Calcium carbonate with magnesium atoms	Formed when water can no longer keep various chemicals dissolved within it	Land
Evaporites	Inorganic chemical sedimentary	The remains of evaporated seawater	Some were formed when a huge volume of mineral-laden water came up through the ocean floor basalts and released its dissolved content when it hit the cold ocean waters	Land
Slate	Metamorphic	Shale	Shale subjected to heat and pressure	Land
Schist	Metamorphic	Shale	Slate that continues to undergo heat and pressure	Land
Gneiss	Metamorphic	Alternating bands of different minerals from other sedimentary or igneous rocks	Formed from other sedimentary or igneous rocks that have been subjected to heat and pressure	Land
Quartzite	Metamorphic	Quartz sandstone	Quartz sandstone that has been subjected to change	Land
Marble	Metamorphic	Limestone	Heat and pressure applied to limestone	Land

Chapter 3 – The Earth’s Surface – Worksheet 1

Plain — a broad area of relatively flat land

Sediment — a natural material broken down by processes of erosion and weathering; can be transported or deposited by water or wind

Plateau — flat lying sediment layers similar to plains but at higher elevations

The Cave Book — Worksheet Answer Keys

Introduction – Worksheet 1

karst — the term used by scientists to describe a landscape of caverns, sinking streams, sinkholes, and a vast array of small-scale features all generated by the solution of the bedrock, formed predominantly by limestones

karst aquifers — the assembly of ground water accumulated inside a karstic rock, enough to supply wells and springs

1. Their immediate need to find shelter from the rapidly cooling climate
 2. Tower of Babel
 3. 25 percent
 4. Over 50 percent
1. It was deep inside the caves that some found shelter, mystical ritual hunting grounds, and a burial place for their dead.
 2. The once-global knowledge and craftsmanship was split between many groups that could no longer truly communicate. Very quickly, various groups found themselves with the monopoly over one or several crafts/technologies, while other crafts were more or less lost for them. They were soon isolated from the other groups and many lost much of their knowledge of God.

Chapter 1 – Humans and Caves – Worksheet 1

acoustics — points of resonance (locations where if certain musical notes are emitted, they will bounce back, amplified, from the walls)

Acheulean industry — from the town of Saint-Acheul, whose most characteristic tool was the stone hand axe

bas-reliefs — artwork usually made of soft, pliable clay attached to walls or even to large blocks

cave paintings — either simple outlines of charcoal or mineral pigment, or true paintings with outlines, shading, and vivid pigment fills

engravings — usually made on soft limestone surfaces

Kyr — abbreviation for thousand years

Myr — abbreviation for million years

speleothems — mineral deposits that form inside caves; especially stalagmites and stalactites

1. Though we do not know for sure because there is no mention in Scripture, it is possible that there were caves prior to the Flood. They would have been formed differently than caves that exist today.
2. It is first mentioned in Genesis 19:30 concerning Lot and his daughters.
3. The word “cave” appears some 40 times in the Bible.
4. Cave bears, cave lions, and cave hyenas
5. China
6. Art associated with burial rituals
7. Paintings, engravings, and bas-reliefs
8. No, they were descended from the family of Noah.

1. Discussion might include their role as shelters or religious sanctuaries.
2. These early people carried their deep beliefs from their ancestor Noah. They also took on new beliefs as they separated from each other. Some may have come to see caves as an entrance into the earth. These were places of deep mystery to them.
3. The largest number of cave paintings are located in places of resonance (locations where if certain musical notes are emitted, they will bounce back, amplified, from the walls). It seems probable that chanting, dancing, and other types of ritual musical activities were associated with cave paintings.
4. Civilization; individual and unique. Man was created by God in His own image and was very intelligent and skilled from the beginning.
5. First representative of this human type was discovered in 1856 in a cave in the Neander Valley in Germany. Some have seen the remains as those belonging to an idiot, a hermit, or a medieval Mongolian warrior. Evolutionists were looking for a missing link, seeing this as a possible connection. However, they were simply humans with stocky, shorter bodies than many people today. They had broad noses and their brain size was slightly larger than that of modern humans.
6. Neanderthals had a spoken language, seemed to care for each other (those injured), and used flowers to decorate those buried.

Chapter 2 – Caves and Mythology – Worksheet 1

arthropods — invertebrate animals having an exoskeleton, segmented body and jointed appendages

bidirectional air circulation — air flowing two ways

cul-de-sac — cave with only one entrance

echolocation — bats send out sound waves that hit an object and an echo comes back, helping them identify the object

troglobites — creatures which live only in caves (from Greek for “cave dwellers”)

troglophiles — creatures which spend some part of their life in caves (from Greek for “who like caves”)

trogloxenes — creatures that got into a cave by accident and which try to leave (from Greek for “foreign to caves”)

unidirectional air circulation — air flowing one way

1. Egypt, Phoenicia, Assyro-Babylonia, Greece, Rome, and Maya
2. The cave olm
3. Troglophiles
4. A spectacular cave environment where several new species of creatures were found
5. Usually about 90 percent
 1. Often one or two other females spread their wings underneath the delivering mother, ready to catch the little one if needed.
 2. Thirty-eight Ukrainian Jews hid during World War II for nearly two years.
 3. Ice can accumulate in cul-de-sac shafts because they act as traps for cold air.
 4. Some caves have an abundance of negative ions in the air, which are usually oxygen atoms. Someone with a cold or flu can improve more quickly because of the absence of cosmic radiation.

Introduction – Solving the Fossil Mystery – Worksheet 1

Evolution — the belief that life started by chance, and millions of years of struggle and death slowly changed a few simple living things into many varied and complex forms through stages

Paleontologist — a person who studies fossils

1. During the 1600s and 1700s
2. True
3. Charles Lyell and Charles Darwin
4. Time, chance, struggle, and death
5. Creation (God created all things in six actual days about 6,000 years ago. The completed creation was “very good”), corruption (Adam’s sin ushered death, disease, sickness, pain, etc. into the world), catastrophe (God judged the wickedness of mankind with a global, earth-covering flood during Noah’s day, around 4,500 years ago), and Christ (Jesus Christ came to earth to redeem mankind from the curse of sin and death).

Chapter 1 – Fossils, Flooding, and Sedimentary Rock – Worksheet 1

Archaeology — the science that deals with human artifacts, and with things deliberately buried by humans

Artifacts — products crafted by humans

Fossil — remains or trace of a once-living thing preserved by natural processes, most often by rapid, deep burial in waterlaid sediments.

Geology — the scientific study of the earth, including the materials that it is made of, the physical and chemical processes that occur on its surface and in its interior, and the history of the planet and its life forms

Paleontology — the study of fossils

Permineralized fossils — fossils preserved by minerals hardening in the pore spaces of a specimen such as a shell, bone, or wood

Polystrates — fossils that cut through many layers, suggesting the sequence was laid down very rapidly

Pseudofossils — false fossils; things that look like fossils but really aren’t

Sediments — particles of sand, silt, clay, ash, etc. eroded and deposited by wind and water currents

Trace fossils — are not remains of plant or animal parts, but show evidence of once-living things

1. Flaky shale, gritty sandstone, or chalky limestone
2. Wind and water
3. Water
4. Water and rock cement
5. False. Rocks and fossils can form quickly given the right conditions. Long periods of time are not needed to form rocks and fossils.
6. Calcium carbonate and silica
7. Any three: limestone, bottom of tea kettle, in Tums and Roloids, chalk
8. Silica gel packs are placed in boxes of electronic equipment.
9. A flood

10. When a plant is buried in sediment under flood conditions, the plant is preserved when the heavy sediment weight squeezes out extra water and encourages the growth of cement minerals that turn the plant into a fossil.
11. The plant or animal needs to be preserved quickly before it begins to decompose.
12. A permineralized fossil
13. Permineralized wood has minerals in its pore spaces but still has wood fibers, while minerals have completely replaced the wood but preserved the pattern in petrified wood.
14. Coal is the charred remains and carbon atoms of once-living plants, making it a fossil. Coal burns, making it a fuel.
15. Huge mats of vegetation were ripped up in violent storms, torn apart by the waves and currents, and deposited in layers. Sediment on top of these layers then squeezed out water and raised the temperature of the buried plants. The plants would then begin to char, turning into coal.
16. The eruption of Mount St. Helens
17. If the layers surrounding the polystrate item had built up slowly over millions of years, the tops of the polystrate item would rot away, even if the bottoms were fossilized.

Chapter 2 – Geologic Column Diagram – Worksheet 1

Index fossil — fossils used to identify a geologic system because they lived either (a) at a certain time or (b) in a certain place in the pre-Flood world

Geologic column — a columnar diagram identifying rocky layers (strata) that form a sequence from bottom to top to indicate their relation to the twelve geologic systems

Living fossils — creatures found alive today that evolutionists thought became extinct millions of years ago

Trilobite — a crab-like creature that was the first fossil found buried in abundance around the world

1. Sedimentary rocks (limestone, shale, sandstone); cliffs, cuts, creeks, and quarries
2. Stages of evolutionary development over millions of years
3. A series of burials
4. 12; 3
5. Since they were buried later in Noah's Flood, paleosystems with land plants and animals occur higher in the geologic column diagram than those with only sea creatures, but fossils of sea life occur in all geologic systems or eco-sedimentary zones since the Flood waters eventually covered all the land.
6. Flood geologists use the word "first" to refer to the first to be buried by the Flood. They use the term "last" to refer to the last to be buried in the Flood. Evolutionists use the word "first" to refer to the first to evolve, meaning that nothing lived before it did. They use the word "last" to refer to the last surviving of its kind before it evolved into something else or became extinct.
7. Charles Darwin; Charles Darwin realized that evolution needed viable evidence of transitions from one animal into another; without them, evolution could not be validated.

Chapter 3 – Flood Geology vs. Evolution – Worksheet 1

Cambrian explosion — the sudden appearance of a wide variety of complex life forms in the lowest rock layer with abundant fossils (Cambrian); considered a challenge to evolution, these may be the first organisms in a corrupted creation to be buried in Noah's flood

Cavitations — bubbles formed by surging waters