

Fossil Fever Finder



Title: Fossil Fever Find

By Denise Haglund

Prior Knowledge Needed for Activity:

- Teacher must have working knowledge of GPS set up and operation.
- GPS set waypoints for 15 locations.
- Knowledge of Fossils, Relative Ages of Rocks, Absolute Ages of Rocks, Life and Geologic Time, Early Earth History, and Middle and Recent Earth History.

Safety Issues:

- Teacher will need to be mindful of area in which the activity is being conducted, as well as the maturity of the students in being self-directed. Water sources- ponds, streams, and lakes could create a drowning danger. Types of trees should be evaluated for possible issues. Weather conditions, nearby traffic, and neighborhood safety should be considered. Extra teachers, aides, parents, or administrators would always be welcome to help supervise the activity.

Management Suggestions:

- Activity could be used as a pretest, review for assessment on Fossils and Earth History, or before common assessment for the semester.
- Activity requires estimated 40-50 minutes, with shorter time needed on successive attempts.
- Administrators of both Valley View High School and John Nowlin Elementary will need to be contacted before initiating activity to receive proper authorization since the activity is set to take place on John Nowlin property.
- Teacher should borrow adequate units for class size and group numbers.
- Teacher should check with Building Maintenance personnel to determine if grass cutting, or other processes will be underway during time needed.
- Teacher should have all GPS locations marked, packets with clues in plastic baggies tied to locations to prevent damage or loss due to rain or wind.
- Students should be grouped with mixed abilities to help all students feel successful.
- Teacher should take map key and answer key to questions outside to facilitate questions.

Major Science Concepts:

GPS navigation- Technology

National Science Education Standards

Unifying Concepts and Processes

- Systems, Order, and Organization
- Evidence, Models, and Explanation
- Change, Constancy, Measurement
- Evolution and Equilibrium
- Form and Function

Earth and Space Science

- Structure of the Earth Systems
- Earth's History

Ch. 13 and 14 Concepts from Glenco Science- Earth Science -Middle School text.

Targeted Grade Level:

8th Grade

Grade Level Expectations:

Inquiry 7.1.B.b. Determine the appropriate tools and techniques to collect data

Inquiry 7.1.B.c. Use a variety of tools and equipment to gather data (e.g., microscopes, thermometers, analog and digital meters, computers, spring scales, balances, metric rulers, graduated cylinders, stopwatches)

Science and Technology 8.1.A.a. Explain how technological improvements, such as those developed for use in space exploration, the military, or medicine, have led to the invention of new products that may improve lives here on Earth (e.g., new materials, freeze-dried foods, infrared goggles, Velcro, satellite imagery, robotics, lasers)

Geology 5.2.A.a. Make inferences about the formation of sedimentary rocks from their physical properties (e.g., layering and the presence of fossils indicate sedimentation) (ES.2.A.6.a.)

Geology 5.2.D.a. Describe the methods used to estimate geologic time and the age of the Earth (e.g., techniques used to date rocks and rock layers, presence of fossils)

Geology 5.2.D.b. Use rock and fossil evidence to make inferences about the age, history, and changing life forms and environment of the Earth (i.e., changes in successive layers of sedimentary rock and the fossils contained within them, similarities between fossils in different geographic locations, similarities between fossils and organisms present today, fossils of organisms indicating changes in climate, fossils of extinct organisms)

Geology 5.2.D.c. Explain the types of fossils and the processes by which they are formed (i.e., replacement, mold and cast, preservation, trace) (ES.2.D.6.a.)

Geology 5.2.D.d. Use fossil evidence to make inferences about changes on Earth and in its environment (i.e., superposition of rock layers, similarities between fossils in different geographical locations, fossils of seashells indicate the area was once underwater) (ES.2.D.6.b.)

Objectives:

1. Student will be able to navigate a course using a GPS (Global Positioning System), following clues about fossils, their formation, identification, and the earth's history.
2. Student will be able to describe the methods used to estimate geologic time and the age of the Earth (e.g., techniques used to date rocks and rock layers, presence of fossils)
3. Student will be able to use rock and fossil evidence to make inferences about the age, history, and changing life forms and environment of the Earth (i.e., changes in successive layers of sedimentary rock and the fossils contained within them, similarities between fossils in different geographic locations, similarities between fossils and organisms present today, fossils of organisms indicating changes in climate, fossils of extinct organisms).
4. Student will be able to explain the types of fossils and the processes by which they are formed (i.e., replacement, mold and cast, preservation, trace) (ES.2.D.6.a.)
5. Student will be able to use fossil evidence to make inferences about changes on Earth and in its environment (i.e., superposition of rock layers, similarities between fossils in different geographical locations, fossils of seashells indicate the area was once underwater) (ES.2.D.6.b.)

Glossary:

1. fossil- the remains, imprints, or traces of prehistoric organisms.
2. mold- the impression or cavity in rock left behind by a fossil when a fossil dissolves.
3. cast- a copy of a fossil produced inside a mold.
4. absolute age- is the age, in years, of a rock or other object.
5. relative age- is its age in comparison to the ages of other things.
6. unconformity- gap in the rock record.
7. Principle of Superposition-states older rocks lie under younger rocks in an undisturbed area.
8. permineralized remains- tiny spaces inside a fossil are filled with minerals.
9. carbon film- thin film of carbon preserved as a fossil.
10. half-life- time needed for half the atoms to decay.
11. index fossil- the fossil of a group that lived for a short time but was widespread.
12. radioactive decay- process in which some isotopes break down into other isotopes and particles.
13. meteorologist- person who studies weather.
14. astronomer- person who studies stars, planets.
15. paleontologist- scientist who studies fossils
16. trace fossils - fossilized tracks or other evidence of the activity of the organism.
17. geologic time scale – division of Earth's history into time units based largely on the types of life forms that lived only during certain periods.
18. Pangaea- one giant land mass, made up of all the continents.
19. angiosperms- flowering plants, first evolved during the Cretaceous Period

Fossil Fever Finder



Goal: You will gain experience using your GPS units while reviewing the information from Ch. 13 and 14 in your textbook. (All GPS waypoints are on on the front lawn of John Nowlin Elementary.)

Directions

1. Each group will have a different and UNIQUE set of instructions. DO NOT FOLLOW other groups.
2. The order of the stations is NOT the same for every group.
3. You will be given your first waypoint number. Using the “Find” command on your GPS, proceed to that waypoint, find the envelope with your group’s name, and then follow the directions in that envelope. If your group’s name is NOT in the envelope you find, then you’re at the wrong location. Backtrack to your last confirmed waypoint, and redo the question to find your next waypoint. Take the clues with you.
4. Continue this pattern until you have found all six waypoints.
5. Summarize the data you collect in the table on the back of this page.
6. When you have reached the final waypoint, have a seat, check to make sure your data collection page is complete, and discuss all your questions with the other group members.



Question Bank-GPS Activity

*Denotes correct answer

1. What is any evidence of ancient life called?
 - A) Half-life (Waypoint-JNE113)
 - B) Fossil* (**Waypoint-JNE123**)
 - C) Unconformity (Waypoint-JNE912)
 - D) Disconformity (Waypoint-JNE514)
2. What are cavities left in rocks when a shell or bone dissolves called?
 - A) Casts (Waypoint-JNE112)
 - B) Molds* (**Waypoint-JNE134**)
 - C) Original remains (Waypoint-JNE413)
 - D) Carbon films (Waypoint-JNE314)
3. Which of the following conditions make fossil formations more likely?
 - A) Buried slowly (Waypoint-JNE212)
 - B) Attacked by scavengers (Waypoint-JNE213)
 - C) Made of hard parts* (**Waypoint-JNE234**)
 - D) Composed of soft parts (Waypoint-JNE714)
4. A fault can be useful in determining which of the following for a group of rocks?
 - A) Absolute age (Waypoint-JNE412)
 - B) Index age (Waypoint-JNE313)
 - C) Radiometric age (Waypoint-JNE214)
 - D) Relative age* (**Waypoint-JNE298**)
5. Which process forms new elements?
 - A) Superposition (Waypoint-JNE114)
 - B) Uniformitarianism (Waypoint-JNE713)
 - C) Permineralization (Waypoint-JNE512)
 - D) Radioactive Decay* (**Waypoint-JNE345**)

6. Which principle states that the oldest rock layer is found at the bottom in an undisturbed stack of rock layers?
 - A) Half life (Waypoint-JNE612)
 - B) Absolute dating (Waypoint-JNE414)
 - C) Superposition* (**Waypoint-JNE387**)
 - D) Uniformitarianism (Waypoint-JNE613)
7. Which type of scientist studies fossils?
 - A) Meteorologist (Waypoint-JNE712)
 - B) Chemist (Waypoint-JNE513)
 - C) Astronomer (Waypoint-JNE614)
 - D) Paleontologist* (**Waypoint-JNE456**)
8. Which are remains of species that existed on Earth for relatively short periods of time, were abundant, and were wide-spread geographically?
 - A) Trace fossils (Waypoint-JNE312)
 - B) Index fossils* (Waypoint-JNE476)**
 - C) Carbon films (Waypoint-JNE813)
 - D) Body fossils (Waypoint-JNE914)
9. Which term means matching up rock layers in different places?
 - A) Superposition (Waypoint-JNE913)
 - B) Correlation* (**Waypoint-JNE565**)
 - C) Uniformitarianism (Waypoint-JNE814)
 - D) Absolute dating (Waypoint-JNE812)
10. Which type of fossil preservation is a thin carbon silhouette of the original organism?
 - A) Cast (Waypoint-JNE112)
 - B) Carbon film* (**Waypoint-JNE567**)
 - C) Mold (Waypoint-JNE413)
 - D) Permineralized remains (Waypoint-JNE714)
11. A record of events in Earth history is the
 - A) Mesozoic Era (Waypoint-JNE214)
 - B) Geologic time scale* (**Waypoint-JNE664**)
 - C) Organic evolution (Waypoint-JNE512)
 - D) Natural selection (Waypoint-JNE113)
12. How many millions of years ago did the era in which you live begin?
 - A) 650 (Waypoint-JNE312)
 - B) 245 (Waypoint-JNE513)
 - C) 1.6 (Waypoint-JNE814)
 - D) 65* (**Waypoint-JNE678**)
13. During what period did the Ice Age occur?
 - A) Pennsylvanian (Waypoint-JNE613)
 - B) Triassic (Waypoint-JNE712)
 - C) Tertiary (Waypoint-JNE914)
 - D) Quaternary* (**Waypoint-JNE789**)

14. What is the earliest form of life?
- A) Gymnosperm (Waypoint-JNE213)
 - B) Cyanobacterium* (Waypoint-JNE890)**
 - C) Angiosperm (Waypoint-JNE212)
 - D) Dinosaur (Waypoint-JNE414)
15. During what era did dinosaurs live?
- A) Mesozoic* (Waypoint -JNE901)**
 - B) Paleozoic (Waypoint-JNE114)
 - C) Miocene (Waypoint-JNE313)
 - D) Cenozoic (Waypoint-JNE612)

Extra Questions- not used for this activity

16. What animal in Missouri fossil record resembles a modern day elephant?
- A) Trilobite
 - B) *Homo sapiens*
 - C) Mastodon*
 - D) *Tyrannosaurus rex*
17. What was the name of the supercontinent that formed at the end of the Paleozoic Era?
- A) Gondwanaland
 - B) Eurasia
 - C) Laurasia
 - D) Pangaea*
18. During which geologic period did modern humans evolve?
- A) Quaternary*
 - B) Triassic
 - C) Ordovician
 - D) Tertiary
19. How many body lobes did Trilobites have?
- A) One
 - B) Two
 - C) Three*
 - D) Four
20. Which group of plants evolved during the Mesozoic Era and is dominant today?
- A) Gymnosperms
 - B) Angiosperms*
 - C) Ginkgoes
 - D) Algae



For JNE GPS Paths

Bivalves Red	Crinoids Blue	Ferns Green	Trilobites Purple	Gastropods Orange	Fish PINK
JNE901	JNE345	JNE664	JNE476	JNE890	JNE678
JNE789	JNE890	JNE123	JNE345	JNE456	JNE664
JNE134	JNE476	JNE234	JNE789	JNE123	JNE567
JNE678	JNE901	JNE345	JNE567	JNE476	JNE789
JNE567	JNE456	JNE901	JNE134	JNE234	JNE890
JNE565	JNE298	JNE387	JNE565	JNE298	JNE387

Way Points Used/#of times used

JNE123-2
 JNE134-2
 JNE234-2
 JNE298-2 Endpoint for Blue and Orange
 JNE345-3
 JNE387-2 Endpoint for Green and Pink
 JNE456-2
 JNE476-3
 JNE565-2 Endpoint for Red and Purple
 JNE567-3
 JNE664-2
 JNE678-2
 JNE789-3
 JNE890-3
 JNE901-3

Way Points for IncorrectAnswers

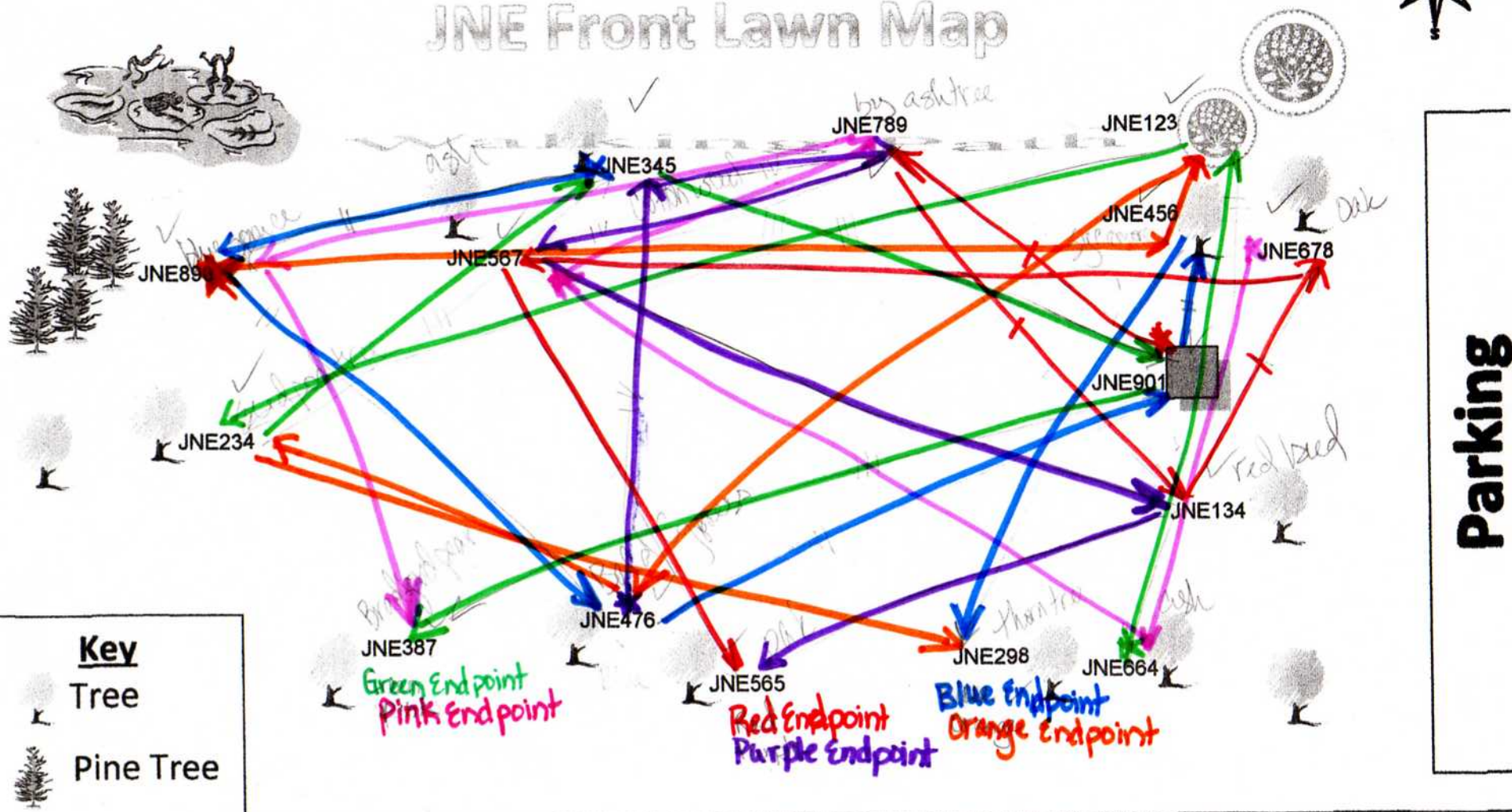
JNE112	JNE213	JNE314
JNE212	JNE313	JNE414
JNE312	JNE413	JNE514
JNE412	JNE513	JNE614
JNE512	JNE613	JNE714
JNE612	JNE713	JNE814
JNE712	JNE813	JNE914
JNE812	JNE913	

Path/Route MAP

Street



JNE Front Lawn Map



Key

- Tree
- Pine Tree
- Bush
- Pond
- Box

Bus Lane

Playground

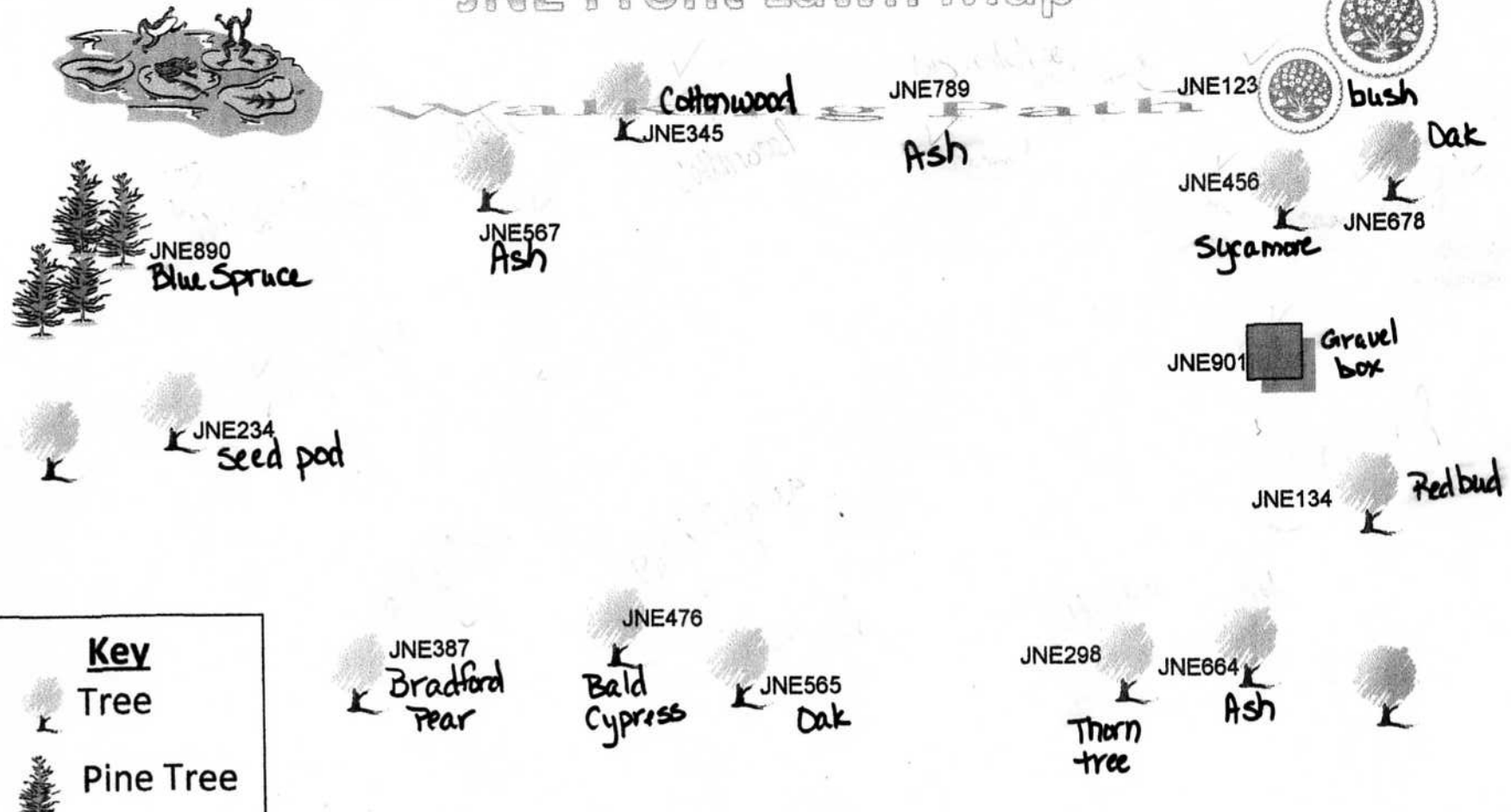
School

Tree Identification MAP

Street



JNE Front Lawn Map



Key

-  Tree
-  Pine Tree
-  Bush
-  Pond
-  Box

Bus Lane

Playground

School

Parking



Student GPS Questions for Bivalves-Red

JNE901 Red	1. During what era did dinosaurs live? A) Mesozoic (Waypoint -JNE901) B) Paleozoic (Waypoint-JNE114) C) Miocene (Waypoint-JNE313) D) Cenozoic (Waypoint-JNE612)
JNE789 Red	2. During what period did the Ice Age occur? A) Pennsylvanian (Waypoint-JNE613) B) Triassic (Waypoint-JNE712) C) Tertiary (Waypoint-JNE914) D) Quaternary (Waypoint-JNE789)
JNE134 Red	3. What are cavities left in rocks when a shell or bone dissolves called? A) Casts (Waypoint-JNE112) B) Molds (Waypoint-JNE134) C) Original remains (Waypoint-JNE413) D) Carbon films (Waypoint-JNE314)
JNE678 Red	4. How many millions of years ago did the era in which you live begin? A) 650 (Waypoint-JNE312) B) 245 (Waypoint-JNE513) C) 1.6 (Waypoint-JNE814) D) 65 (Waypoint-JNE678)
JNE567 Red	5. Which type of fossil preservation is a thin carbon silhouette of the original organism? A) Cast (Waypoint-JNE112) B) Carbon film (Waypoint-JNE567) C) Mold (Waypoint-JNE413) D) Permineralized remains (Waypoint-JNE714)
JNE565 Red	6. Which term means matching up rock layers in different places? A) Superposition (Waypoint-JNE913) B) Correlation (Waypoint-JNE565) C) Uniformitarianism (Waypoint-JNE814) D) Absolute dating (Waypoint-JNE812)



Student GPS Questions for Crinoids-Blue

JNE345 Blue	1. Which process forms new elements? A) Superposition (Waypoint-JNE114) B) Uniformitarianism (Waypoint-JNE713) C) Permineralization (Waypoint-JNE512) D) Radioactive Decay (Waypoint-JNE345)
JNE890 Blue	2. What is the earliest form of life? A) Gymnosperm (Waypoint-JNE213) B) Cyanobacterium (Waypoint-JNE890) C) Angiosperm (Waypoint-JNE212) D) Dinosaur (Waypoint-JNE414)
JNE476 Blue	3. Which are remains of species that existed on Earth for relatively short periods of time, were abundant, and were wide-spread geographically? A) Trace fossils (Waypoint-JNE312) B) Index fossils (Waypoint-JNE476) C) Carbon films (Waypoint-JNE813) D) Body fossils (Waypoint-JNE914)
JNE901 Blue	4. During what era did dinosaurs live? A) Mesozoic (Waypoint -JNE901) B) Paleozoic (Waypoint-JNE114) C) Miocene (Waypoint-JNE313) D) Cenozoic (Waypoint-JNE612)
JNE456 Blue	5. Which type of scientist studies fossils? A) Meteorologist (Waypoint-JNE712) B) Chemist (Waypoint-JNE513) C) Astronomer (Waypoint-JNE614) D) Paleontologist (Waypoint-JNE456)
JNE298 Blue	6. A fault can be useful in determining which of the following for a group of rocks? A) Absolute age (Waypoint-JNE412) B) Index age (Waypoint-JNE313) C) Radiometric age (Waypoint-JNE214) D) Relative age (Waypoint-JNE298)



Student GPS Questions for Ferns-Green

JNE664 Green	1. A record of events in Earth history is the A) Mesozoic Era (Waypoint-JNE214) B) Geologic time scale (Waypoint-JNE664) C) Organic evolution (Waypoint-JNE512) D) Natural selection (Waypoint-JNE113)
JNE123 Green	2. What is any evidence of ancient life called? A) Half-life (Waypoint-JNE113) B) Fossil (Waypoint-JNE123) C) Unconformity (Waypoint-JNE912) D) Disconformity (Waypoint-JNE514)
JNE234 Green	3. Which of the following conditions make fossil formations more likely? A) Buried slowly (Waypoint-JNE212) B) Attacked by scavengers (Waypoint-JNE213) C) Made of hard parts (Waypoint-JNE234) D) Composed of soft parts (Waypoint-JNE714)
JNE345 Green	4. Which process forms new elements? A) Superposition (Waypoint-JNE114) B) Uniformitarianism (Waypoint-JNE713) C) Permineralization (Waypoint-JNE512) D) Radioactive Decay (Waypoint-JNE345)
JNE901 Green	5. During what era did dinosaurs live? A) Mesozoic (Waypoint -JNE901) B) Paleozoic (Waypoint-JNE114) C) Miocene (Waypoint-JNE313) D) Cenozoic (Waypoint-JNE612)
JNE387 Green	6. Which principle states that the oldest rock layer is found at the bottom in an undisturbed stack of rock layers? A) Half life (Waypoint-JNE612) B) Absolute dating (Waypoint-JNE414) C) Superposition (Waypoint-JNE387) D) Uniformitarianism (Waypoint-JNE613)



Student GPS Questions for Trilobites- Purple

JNE476 Purple	1. Which are remains of species that existed on Earth for relatively short periods of time, were abundant, and were wide-spread geographically? A) Trace fossils (Waypoint-JNE312) B) Index fossils (Waypoint-JNE476) C) Carbon films (Waypoint-JNE813) D) Body fossils (Waypoint-JNE914)
JNE345 Purple	2. Which process forms new elements? A) Superposition (Waypoint-JNE114) B) Uniformitarianism (Waypoint-JNE713) C) Permineralization (Waypoint-JNE512) D) Radioactive Decay (Waypoint-JNE345)
JNE789 Purple	3. During what period did the Ice Age occur? A) Pennsylvanian (Waypoint-JNE613) B) Triassic (Waypoint-JNE712) C) Tertiary (Waypoint-JNE914) D) Quaternary (Waypoint-JNE789)
JNE567 Purple	4. Which type of fossil preservation is a thin carbon silhouette of the original organism? A) Cast (Waypoint-JNE112) B) Carbon film (Waypoint-JNE567) C) Mold (Waypoint-JNE413) D) Permineralized remains (Waypoint-JNE714)
JNE134 Purple	5. What are cavities left in rocks when a shell or bone dissolves called? A) Casts (Waypoint-JNE112) B) Molds (Waypoint-JNE134) C) Original remains (Waypoint-JNE413) D) Carbon films (Waypoint-JNE314)
JNE565 Purple	6. Which term means matching up rock layers in different places? A) Superposition (Waypoint-JNE913) B) Correlation (Waypoint-JNE565) C) Uniformitarianism (Waypoint-JNE814) D) Absolute dating (Waypoint-JNE812)



Student GPS Questions for Gastropods- Orange

JNE890 Orange	1. What is the earliest form of life? A) Gymnosperm (Waypoint-JNE213) B) Cyanobacterium (Waypoint-JNE890) C) Angiosperm (Waypoint-JNE212) D) Dinosaur (Waypoint-JNE414)
JNE456 Orange	2. Which type of scientist studies fossils? A) Meteorologist (Waypoint-JNE712) B) Chemist (Waypoint-JNE513) C) Astronomer (Waypoint-JNE614) D) Paleontologist (Waypoint-JNE456)
JNE123 Orange	3. What is any evidence of ancient life called? A) Half-life (Waypoint-JNE113) B) Fossil (Waypoint-JNE123) C) Unconformity (Waypoint-JNE912) D) Disconformity (Waypoint-JNE514)
JNE476 Orange	4. Which are remains of species that existed on Earth for relatively short periods of time, were abundant, and were wide-spread geographically? A) Trace fossils (Waypoint-JNE312) B) Index fossils (Waypoint-JNE476) C) Carbon films (Waypoint-JNE813) D) Body fossils (Waypoint-JNE914)
JNE234 Orange	5. Which of the following conditions make fossil formations more likely? A) Buried slowly (Waypoint-JNE212) B) Attacked by scavengers (Waypoint-JNE213) C) Made of hard parts (Waypoint-JNE234) D) Composed of soft parts (Waypoint-JNE714)
JNE298 Orange	6. A fault can be useful in determining which of the following for a group of rocks? A) Absolute age (Waypoint-JNE412) B) Index age (Waypoint-JNE313) C) Radiometric age (Waypoint-JNE214) D) Relative age (Waypoint-JNE298)



GPS Question/Answer Key for Fish- Pink

JNE678 Pink	1. How many millions of years ago did the era in which you live begin? A) 650 (Waypoint-JNE312) B) 245 (Waypoint-JNE513) C) 1.6 (Waypoint-JNE814) D) 65 (Waypoint-JNE678)
JNE664 Pink	2. A record of events in Earth history is the A) Mesozoic Era (Waypoint-JNE214) B) Geologic time scale (Waypoint-JNE664) C) Organic evolution (Waypoint-JNE512) D) Natural selection (Waypoint-JNE113)
JNE567 Pink	3. Which type of fossil preservation is a thick carbon silhouette of the original organism? A) Cast (Waypoint-JNE112) B) Carbon film (Waypoint-JNE567) C) Mold (Waypoint-JNE413) D) Permineralized remains (Waypoint-JNE714)
JNE789 Pink	4. During what period did the Ice Age occur? A) Pennsylvanian (Waypoint-JNE613) B) Triassic (Waypoint-JNE712) C) Tertiary (Waypoint-JNE914) D) Quaternary (Waypoint-JNE789)
JNE890 Pink	5. What is the earliest form of life? A) Gymnosperm (Waypoint-JNE213) B) Cyanobacterium (Waypoint-JNE890) C) Angiosperm (Waypoint-JNE212) D) Dinosaur (Waypoint-JNE414)
JNE387 Pink	6. Which principle states that the oldest rock layer is found at the bottom in an undisturbed stack of rock layers? A) Half life (Waypoint-JNE612) B) Absolute dating (Waypoint-JNE414) C) Superposition (Waypoint-JNE387) D) Uniformitarianism (Waypoint-JNE613)



GPS Question/Answer Key for Bivalves-Red

JNE901 Red	1. During what era did dinosaurs live? A) Mesozoic* (Waypoint -JNE901) B) Paleozoic (Waypoint-JNE114) C) Miocene (Waypoint-JNE313) D) Cenozoic (Waypoint-JNE612)
JNE789 Red	2. During what period did the Ice Age occur? A) Pennsylvanian (Waypoint-JNE613) B) Triassic (Waypoint-JNE712) C) Tertiary (Waypoint-JNE914) D) Quaternary* (Waypoint-JNE789)
JNE134 Red	3. What are cavities left in rocks when a shell or bone dissolves called? A) Casts (Waypoint-JNE112) B) Molds* (Waypoint-JNE134) C) Original remains (Waypoint-JNE413) D) Carbon films (Waypoint-JNE314)
JNE678 Red	4. How many millions of years ago did the era in which you live begin? A) 650 (Waypoint-JNE312) B) 245 (Waypoint-JNE513) C) 1.6 (Waypoint-JNE814) D) 65* (Waypoint-JNE678)
JNE567 Red	5. Which type of fossil preservation is a thin carbon silhouette of the original organism? A) Cast (Waypoint-JNE112) B) Carbon film* (Waypoint-JNE567) C) Mold (Waypoint-JNE413) D) Permineralized remains (Waypoint-JNE714)
JNE565 Red	6. Which term means matching up rock layers in different places? A) Superposition (Waypoint-JNE913) B) Correlation* (Waypoint-JNE565) C) Uniformitarianism (Waypoint-JNE814) D) Absolute dating (Waypoint-JNE812)



GPS Question/Answer Key for Crinoids-Blue

<p>JNE345 Blue</p>	<p>1. Which process forms new elements? A) Superposition (Waypoint-JNE114) B) Uniformitarianism (Waypoint-JNE713) C) Permineralization (Waypoint-JNE512) D) Radioactive Decay* <u>Waypoint-JNE345</u></p>
<p>JNE890 Blue</p>	<p>2. What is the earliest form of life? A) Gymnosperm (Waypoint-JNE213) B) Cyanobacterium* <u>Waypoint-JNE890</u> C) Angiosperm (Waypoint-JNE212) D) Dinosaur (Waypoint-JNE414)</p>
<p>JNE476 Blue</p>	<p>3. Which are remains of species that existed on Earth for relatively short periods of time, were abundant, and were wide-spread geographically? A) Trace fossils (Waypoint-JNE312) B) Index fossils* <u>Waypoint-JNE476</u> C) Carbon films (Waypoint-JNE813) D) Body fossils (Waypoint-JNE914)</p>
<p>JNE901 Blue</p>	<p>4. During what era did dinosaurs live? A) Mesozoic* <u>Waypoint -JNE901</u> B) Paleozoic (Waypoint-JNE114) C) Miocene (Waypoint-JNE313) D) Cenozoic (Waypoint-JNE612)</p>
<p>JNE456 Blue</p>	<p>5. Which type of scientist studies fossils? A) Meteorologist (Waypoint-JNE712) B) Chemist (Waypoint-JNE513) C) Astronomer (Waypoint-JNE614) D) Paleontologist* <u>Waypoint-JNE456</u></p>
<p>JNE298 Blue</p>	<p>6. A fault can be useful in determining which of the following for a group of rocks? A) Absolute age (Waypoint-JNE412) B) Index age (Waypoint-JNE313) C) Radiometric age (Waypoint-JNE214) D) Relative age* <u>Waypoint-JNE298</u></p>



GPS Question/Answer Key for Ferns-Green

<p>JNE664 Green</p>	<p>1. A record of events in Earth history is the A) Mesozoic Era (Waypoint-JNE214) B) Geologic time scale* (Waypoint-JNE664) C) Organic evolution (Waypoint-JNE512) D) Natural selection (Waypoint-JNE113)</p>
<p>JNE123 Green</p>	<p>2. What is any evidence of ancient life called? A) Half-life (Waypoint-JNE113) B) Fossil* (Waypoint-JNE123) C) Unconformity (Waypoint-JNE912) D) Disconformity (Waypoint-JNE514)</p>
<p>JNE234 Green</p>	<p>3. Which of the following conditions make fossil formations more likely? A) Buried slowly (Waypoint-JNE212) B) Attacked by scavengers (Waypoint-JNE213) C) Made of hard parts* (Waypoint-JNE234) D) Composed of soft parts (Waypoint-JNE714)</p>
<p>JNE345 Green</p>	<p>4. Which process forms new elements? A) Superposition (Waypoint-JNE114) B) Uniformitarianism (Waypoint-JNE713) C) Permineralization (Waypoint-JNE512) D) Radioactive Decay* (Waypoint-JNE345)</p>
<p>JNE901 Green</p>	<p>5. During what era did dinosaurs live? A) Mesozoic* (Waypoint -JNE901) B) Paleozoic (Waypoint-JNE114) C) Miocene (Waypoint-JNE313) D) Cenozoic (Waypoint-JNE612)</p>
<p>JNE387 Green</p>	<p>6. Which principle states that the oldest rock layer is found at the bottom in an undisturbed stack of rock layers? A) Half life (Waypoint-JNE612) B) Absolute dating (Waypoint-JNE414) C) Superposition* (Waypoint-JNE387) D) Uniformitarianism (Waypoint-JNE613)</p>



GPS Question/Answer Key for Trilobites- Purple

JNE476 Purple	1. Which are remains of species that existed on Earth for relatively short periods of time, were abundant, and were wide-spread geographically? A) Trace fossils (Waypoint-JNE312) B) Index fossils* (Waypoint-JNE476) C) Carbon films (Waypoint-JNE813) D) Body fossils (Waypoint-JNE914)
JNE345 Purple	2. Which process forms new elements? A) Superposition (Waypoint-JNE114) B) Uniformitarianism (Waypoint-JNE713) C) Permineralization (Waypoint-JNE512) D) Radioactive Decay* (Waypoint-JNE345)
JNE789 Purple	3. During what period did the Ice Age occur? A) Pennsylvanian (Waypoint-JNE613) B) Triassic (Waypoint-JNE712) C) Tertiary (Waypoint-JNE914) D) Quaternary* (Waypoint-JNE789)
JNE567 Purple	4. Which type of fossil preservation is a thin carbon silhouette of the original organism? A) Cast (Waypoint-JNE112) B) Carbon film* (Waypoint-JNE567) C) Mold (Waypoint-JNE413) D) Permineralized remains (Waypoint-JNE714)
JNE134 Purple	5. What are cavities left in rocks when a shell or bone dissolves called? A) Casts (Waypoint-JNE112) B) Molds* (Waypoint-JNE134) C) Original remains (Waypoint-JNE413) D) Carbon films (Waypoint-JNE314)
JNE565 Purple	6. Which term means matching up rock layers in different places? A) Superposition (Waypoint-JNE913) B) Correlation* (Waypoint-JNE565) C) Uniformitarianism (Waypoint-JNE814) D) Absolute dating (Waypoint-JNE812)



GPS Question/Answer Key for Gastropods- Orange

<p>JNE890 Orange</p>	<p>1. What is the earliest form of life? A) Gymnosperm (Waypoint-JNE213) B) Cyanobacterium* (Waypoint-JNE890) C) Angiosperm (Waypoint-JNE212) D) Dinosaur (Waypoint-JNE414)</p>
<p>JNE456 Orange</p>	<p>2. Which type of scientist studies fossils? A) Meteorologist (Waypoint-JNE712) B) Chemist (Waypoint-JNE513) C) Astronomer (Waypoint-JNE614) D) Paleontologist* (Waypoint-JNE456)</p>
<p>JNE123 Orange</p>	<p>3. What is any evidence of ancient life called? A) Half-life (Waypoint-JNE113) B) Fossil* (Waypoint-JNE123) C) Unconformity (Waypoint-JNE912) D) Disconformity (Waypoint-JNE514)</p>
<p>JNE476 Orange</p>	<p>4. Which are remains of species that existed on Earth for relatively short periods of time, were abundant, and were wide-spread geographically? A) Trace fossils (Waypoint-JNE312) B) Index fossils* (Waypoint-JNE476) C) Carbon films (Waypoint-JNE813) D) Body fossils (Waypoint-JNE914)</p>
<p>JNE234 Orange</p>	<p>5. Which of the following conditions make fossil formations more likely? A) Buried slowly (Waypoint-JNE212) B) Attacked by scavengers (Waypoint-JNE213) C) Made of hard parts* (Waypoint-JNE234) D) Composed of soft parts (Waypoint-JNE714)</p>
<p>JNE298 Orange</p>	<p>6. A fault can be useful in determining which of the following for a group of rocks? A) Absolute age (Waypoint-JNE412) B) Index age (Waypoint-JNE313) C) Radiometric age (Waypoint-JNE214) D) Relative age* (Waypoint-JNE298)</p>



GPS Question/Answer Key for Fish- Pink

<p>JNE678 Pink</p>	<p>1. How many millions of years ago did the era in which you live begin? A) 650 (Waypoint-JNE312) B) 245 (Waypoint-JNE513) C) 1.6 (Waypoint-JNE814) D) 65* (Waypoint-JNE678)</p>
<p>JNE664 Pink</p>	<p>2. A record of events in Earth history is the A) Mesozoic Era (Waypoint-JNE214) B) Geologic time scale* (Waypoint-JNE664) C) Organic evolution (Waypoint-JNE512) D) Natural selection (Waypoint-JNE113)</p>
<p>JNE567 Pink</p>	<p>3. Which type of fossil preservation is a think carbon silhouette of the original organism? A) Cast (Waypoint-JNE112) B) Carbon film* (Waypoint-JNE567) C) Mold (Waypoint-JNE413) D) Permineralized remains (Waypoint-JNE714)</p>
<p>JNE789 Pink</p>	<p>4. During what period did the Ice Age occur? A) Pennsylvanian (Waypoint-JNE613) B) Triassic (Waypoint-JNE712) C) Tertiary (Waypoint-JNE914) D) Quaternary* (Waypoint-JNE789)</p>
<p>JNE890 Pink</p>	<p>5. What is the earliest form of life? A) Gymnosperm (Waypoint-JNE213) B) Cyanobacterium* (Waypoint-JNE890) C) Angiosperm (Waypoint-JNE212) D) Dinosaur (Waypoint-JNE414)</p>
<p>JNE387 Pink</p>	<p>6. Which principle states that the oldest rock layer is found at the bottom in an undisturbed stack of rock layers? A) Half life (Waypoint-JNE612) B) Absolute dating (Waypoint-JNE414) C) Superposition* (Waypoint-JNE387) D) Uniformitarianism (Waypoint-JNE613)</p>

