

Scioly Summer Study Session Fossils

Test-**Key**

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Total Points: 140

Station 1:

1. Dactyloceras
2. Nautilida (NOT "Nautilus")
3. An index fossil is a fossil that was widespread, and lived a short time. They are used to determine what geologic period rocks are from.
4. Lower Jurassic
5. Ammonitic
6. Mollusca
7. Dactyl comes from the Greek language, and means finger.
8. Louis Agassiz in 1847 (1 point for Scientist, 1 point for year)
9. Phylum

Station 2:

1. Crocodylia
2. Ichthyosauria
3. Diplocaulus
4. Specimen C (Diplocaulus) (1 pt), as it's an amphibian, while the crocodile and the Ichthyosaur are reptiles (1 pt).
5. 4
6. Cretaceous
7. 16 meters (accept anywhere between 14 and 18 meters)
8. 5 species

9. Dimetrodon

10. Permian

Station 3

1. 4 half lives have passed

2. 22920 years ago

3. Short Half life (1 pt), old wood problem (1 pt)

4. Half life is 1.3 Billion years (1 pt), decay product is Argon-40 (accept just Argon) (1 pt).

Workspace (Not Graded, Use if you wish):

5. **No** (1 pt), because the area is tectonically active, or is an erosional coast (1 pt).

6. Illinois

7. 3-4 centimeters

8. Green River Formation

Station 4

1. Ankylosaurus

2. Maiasaura

3. Otodus
4. Calymene
5. Rare
6. Ferns, Horsetails (only need 1)
7. Apex Predator
8. 13 in America, 19 in Britain 1 point for America, 1 point for Britain

Station 5

1. G
2. B
3. E
4. D
5. A
6. F
7. C
8. H
9. J
10. I
11. Trotting (1 pt for correct answer) and $SL = 2m$, $FP = .31m \rightarrow HH = 4FP = 4(.31) = 1.24m \rightarrow Gait = SL/HH = (2/1.24) = 1.61 \rightarrow 1 < 1.61 < 1.9 = TROTting (1 pt for work)$

Station 6

1. Annularia
2. Psaronius
3. Platanus
4. Lepidodendron
5. Specimen A (the Annularia)
6. Carboniferous, Permian (1 pt per correct answer)
7. There are vast swaths of wetlands (1 pt), as plants died over a long period of time and their remnants decayed lots of peat came about (1 pt), which then compressed into coal (1 pt).
8. 10-15 years

Station 7

1. Platyceras
2. Exogyra
3. Hexagonaria
4. Crinozoa
5. Bertie Formation
6. 9
7. 3 Possible Answers (only need 1): Western Europe, Northeast Africa, Middle-East
8. 37 (accept anywhere from 34-42)
9. Glaciation

Station 8

1. Copal
2. Stromatolites
3. Coprolites
4. Copaline
5. Nahuatl (The language of the Mayans)
6. Wood Varnish
7. Hypersaline Lakes (1 pt), as grazers struggled to eat them in that environment.(1 pt).
8. Bezoar Stones or Fossil Fir Cones (accept either, only need 1)
9. (2 pts) A group of trace fossils which provides an indication of what the conditions were like during the time period they were formed. (2 pts, all or nothing)

Station 9

1. Cephalon
2. Glabella
3. Genal Spine
4. Axial Ring
5. Pygidium
6. Posterior Margin
7. Pleural Spine (Pleura is also acceptable, due to the specimen not being great quality)

8. Food
9. Potential Answers Include: New types of eyes, More efficient movement mechanisms, pygidium size increase, Certain trilobites developed large spines relative to their axial ring size, Changes in glabella size, position of eyes
10. Natant, Contaminant, Impendant (3 pts, 1 per answer)

Station 10

1. Agnatha
2. Otodus
3. Eryops
4. Specimen B
5. Cyclostomes
6. Apex Predator
7. 6
8. Edward Cope

Station 11

1. Mammut
2. Megacerops
3. Neanderthalensis
4. Hunting from humans/humanoids
5. Anthropocene Mass Extinction
6. Eocene

7. Volcanic eruptions from the Rocky Mountains
8. 4
9. Europe

Station 12

1. Pentremites
2. Deltoid
3. Mouth
4. Anus
5. Ambulacra
6. Radial Symmetry
7. Carboniferous
8. Many different Tetrapods

Station 13

1. The fossils record of all organisms is incomplete (1 pt), as the first and last organisms were never or never will be recorded as fossils (1 pt). This makes it hard to know the exact timing and speed of events such as mass extinctions (1 pt).
2. Jaanusson Effect or Spil-Rongis effect (either are acceptable, only need 1)
3. A fossil that has been removed from its original burial site by earth processes (1 pt), and deposited in rock that is millions of years younger (1 pt).
4. A fossil that was incorrectly identified as still existing after being deemed extinct.
5. Cloning, Genome Editing, Back Breeding, Iterative Evolution

6. Mammuthus primigenius (Smilodon doesn't have a species on the fossil list, but it has also been brought up).
7. The last known organism of an animal species (the organism dies, species is considered extinct).

Station 14

1. The Mesozoic Marine revolution is a period of time where very rapid evolution took place in benthic fauna (1 pt). It was driven by an abundance of shell crushing predators at the bottom of the ocean (1 pt). Some aftereffects of the Marine Mesozoic Revolution include less suspension feeding epifauna (1 pt), a large influx in the number of species of infauna (1 pt), and more epifauna becoming mobile (1 pt).

Affected Taxa:

- Gastropods (1 pt)
- Crinoids (1 pt)
- Brachiopods (1 pt)
- Bivalves (1 pt)
- Echinoids (1 pt)