

## **Hands On Earth Science Activity No. 5**

### **Ohio Geology Crossword Puzzle**

This activity can be used to help review the following Topics and Content Statements for the 2010 Ohio Revised Science Standards and Model Curriculum:

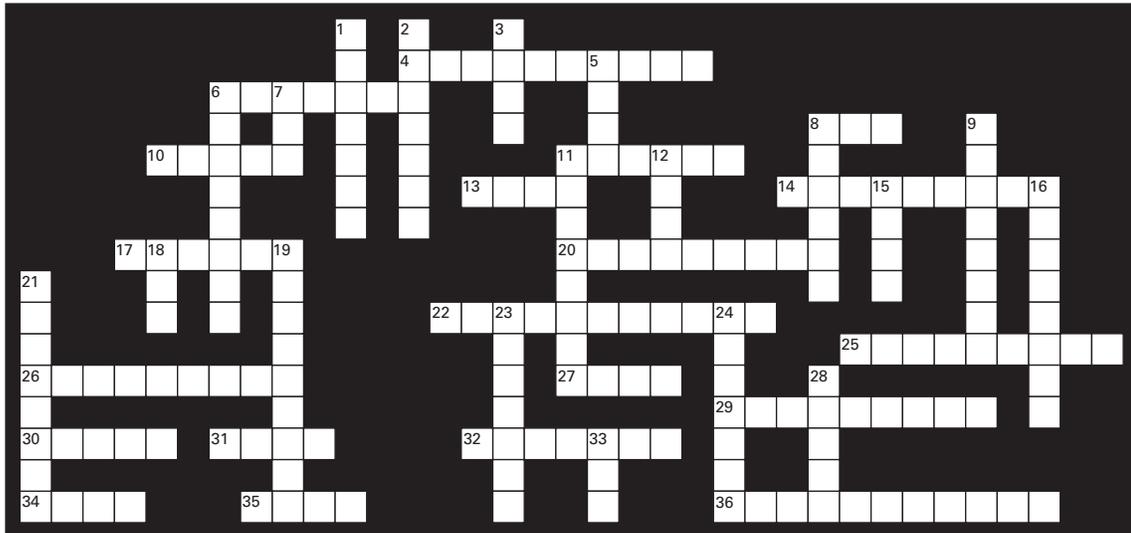
- **Grades 9–12:** Physical Geology



Division Of Geological Survey  
**HANDS ON**  
EARTH SCIENCE

No. 5

## OHIO GEOLOGY CROSSWORD PUZZLE



### ACROSS

- 4 The period of the Paleozoic Era that includes the oldest (about 450 million years old) rocks exposed in Ohio. They are exposed in southwestern Ohio and contain the state fossil.
- 6 These glacial features are channels gouged into bedrock surfaces by abrasion by rock fragments contained in the glacier and high-pressure, sand-charged meltwater along the bottom of the glacier. The largest and best known are on Kelleys Island in Lake Erie.
- 8 This mineral resource is commonly associated with **33 DOWN**. In the late 1880's, Findlay, Ohio, was famous for its plentiful and cheap supplies of this mineral resource.
- 10 This sedimentary rock formed by lithification of clay-size fragments. It is mined in Ohio for use in the brick industry.
- 11 This mineral resource forms in the same manner as **34 ACROSS**. In Ohio, it is mined and used exclusively for the manufacture of wallboard (sheetrock), although other uses include plaster of paris and as an additive in cement.
- 13 A glacial feature composed of sand and gravel, generally in the shape of a conical hill. These features commonly are mined for their sand and gravel or are used as sites for cemeteries.
- 14 The era of geologic time in which all the surface bedrock of Ohio was formed. During much of this time, from about 600 million years ago to about 225 million years ago, Ohio was in tropical latitudes and covered by a warm shallow sea.
- 17 Natural features in which water flows from a higher to a lower elevation. Many of these features in Ohio formed when glacial meltwater eroded channels in bedrock or thick sediments.
- 20 This geologic hazard happens where slopes are steep and rock layers weather easily. This phenomenon is common in shales and clays of southwestern Ohio, southeastern Ohio, and along the Lake Erie shore.
- 22 This type of map depicts the elevation of the land surface using contour lines and also shows lakes, streams, roads, houses, and more.
- 25 This rock is made up mostly of calcium carbonate and forms as a precipitate from sea water or by accumulation of shell fragments on the bottom of tropical seas. This rock is mined for a variety of uses, especially as a construction material.
- 26 These elephantlike animals became extinct about 10,000 years ago. They lived in Ice Age spruce forests typical of Ohio at that time, so many fossil remains of these creatures have been found here.
- 27 This mineral resource formed by the accumulation, compression, and alteration of plant remains deposited in widespread swamps in Ohio about 300 million years ago. Ohio ranks second nationally in the consumption of this mineral resource for electrical generation.
- 29 This group of fossils is characterized by two grooves that divide the animal into three distinct lobes, giving these animals their name. These fossils are common in the Ordovician- and Devonian-age rocks of western Ohio.
- 30 This huge river flowed northward across Ohio more than 2 million years ago and was destroyed by the glaciers. Its valley and tributary valleys were filled with several hundred feet of glacial sediment and are now important sources of water (aquifers).

more ➡

- 31 By Civil War time, Ohio was a leading producer of this mineral resource. Native ore was heated in a furnace using limestone for a flux and charcoal from trees for fuel.
- 32 Several specimens of this precious gemstone have been found in Ohio. It is the hardest mineral known and is used as an industrial cutting tool. It is speculated that the glaciers scraped up them up from Canada or the Upper Peninsula of Michigan and deposited them in Ohio.
- 34 Thick deposits of this mineral resource, also known as halite, precipitated from sea water during the Silurian Period, 400 million years ago. Two underground mines in Ohio produce this mineral resource from about 2,000 feet beneath Lake Erie. Ohio ranks fourth nationally in the production of this mineral resource.
- 35 A mineral resource formed by the decomposition of plant matter in glacially associated bogs. It commonly is used in soil mix.
- 36 At least 120 of these geologic phenomena have been experienced throughout Ohio since 1776, especially in western Ohio.

**DOWN**

- 1 Geologic features formed beneath the ground surface by dissolution of limestones and dolomites by weak acids in ground water. These features can be found in the Silurian- and Devonian-age rocks of western Ohio.
- 2 The remains or traces of past animal or plant life.
- 3 Tiny flakes of this precious metal can be found in nearly any stream in the glaciated portion of the state. It comes from rocks that were scraped up by the glaciers from Canada and deposited in Ohio.
- 5 This mineral resource is found in two types of deposits in Ohio—beneath coal seams in eastern Ohio and in association with glacial lakes. Two uses for this mineral are in pottery and bricks.
- 6 Masses of ice that flow in a specific direction and originate from the compacting of snow by pressure. Over two-thirds of Ohio was covered by at least three of these ice sheets during the Pleistocene Epoch (about 2 million to 10,000 years ago).
- 7 The raw material, especially of a metal, that is mined to be processed into a final product.
- 8 A pebble- to boulder-size sediment of variable composition. It commonly occurs with **12 DOWN**. Many homes have this material in their driveways.
- 9 Genus name of the trilobite that is Ohio's state invertebrate fossil.
- 11 A type of map that shows the distribution of rock units at the surface as if all overlying unconsolidated materials have been removed.
- 12 A fine- to coarse-grained sediment of variable mineral composition that was formed by erosion and carried by glacial meltwater in Ohio to be deposited as outwash. This deposit and **8 DOWN** are mined and used extensively as construction materials.
- 15 This lake was formed when the glaciers deepened the basin north of Ohio, allowing a large meltwater lake to form.
- 16 This era of geologic time began about 70 million years ago and continues to the present. Erosion rather than deposition was the dominant force during this time because Ohio was high above sea level.
- 18 The most abundant mineral in Ohio 19,000 years ago. It has a low melting point, hardness of 1 to 2, and specific gravity of less than 1.0. In many areas of the state this mineral was more than 1 mile thick.
- 19 This rock is composed of sand-size rock fragments cemented by calcite, silica, or iron. These rocks commonly formed as beach, river-channel, or delta deposits. Ohio ranks first nationally in the production of building stone from this type of rock.
- 21 These animals were related to the modern Indian elephant and became extinct about 10,000 years ago. They lived in Ice Age grasslands, so their fossil remains are not common in Ohio.
- 23 The period of the Paleozoic Era that includes the youngest (about 280 million years old) rocks exposed in Ohio. They are exposed in southeastern Ohio.
- 24 Type of chemical used for radiometric dating.
- 28 This mineral resource is Ohio's official gemstone and has been used longer than any other mineral commodity in the state. Items made from this resource by American Indians have been found from the Atlantic Coast to Louisiana.
- 33 This complex hydrocarbon formed when the plants and animals that lived in Ohio's shallow Paleozoic Era seas died and were chemically altered. In the late 1800's, Ohio was the leading national producer of this important energy resource.

Ordovician • ore • Paleozoic • peat • Permian • rivers • salt • sand • sandstone • shale • Teays • topographic • trilobite  
grooves • gypsum • ice • iron • isotope • Isotelus • kame • landslide • limestone • mammoths • mastodons • oil  
caverns • Cenozoic • clay • coal • diamonds • earthquakes • Erie • flint • fossils • gas • geologic • glaciers • gold • gravel

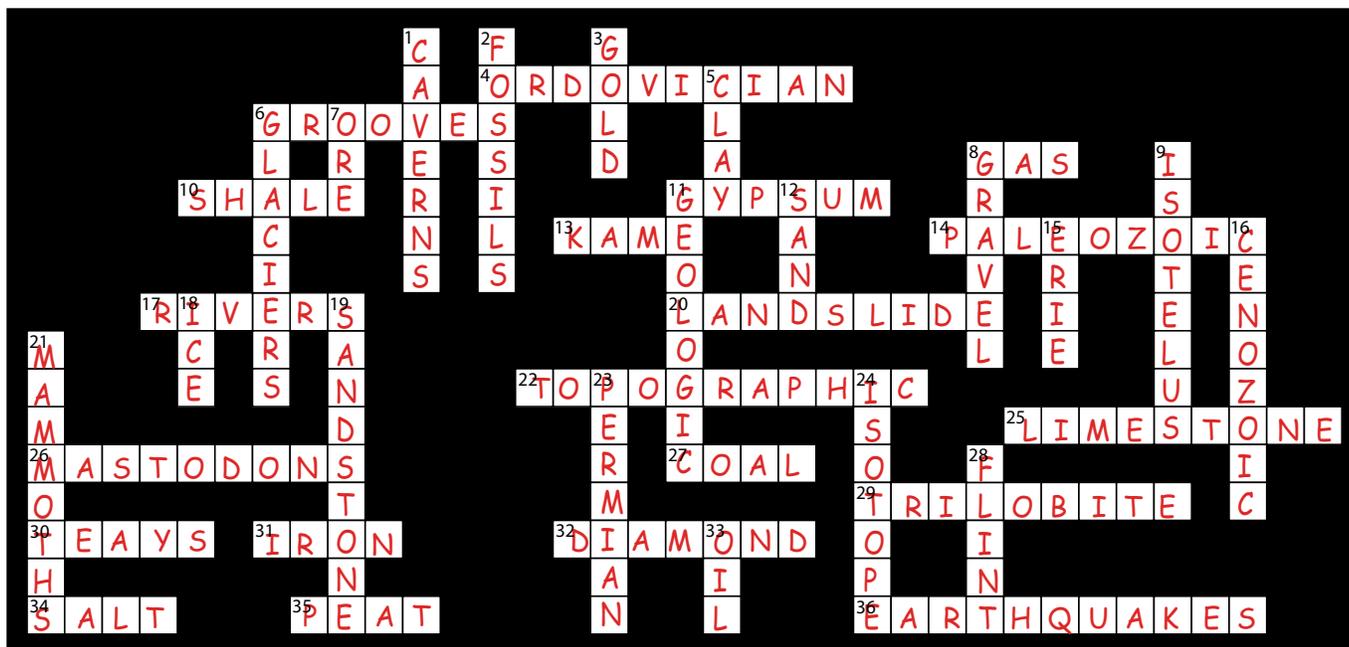
WORD LIST

The idea for this puzzle came from the New Mexico Bureau of Mines and Mineral Resources  
*Lite Geology* (Fall 1993) and Robert F. Kunst.  
Created by Sherry L. Weisgarber & Merrienne Hackathorn



Division Of Geological Survey  
**HANDS ON**  
 EARTH SCIENCE

No. 5  
 Answer Key



**Down**

1. Caverns
2. Fossils
3. Gold
5. Clay
6. Glaciers
7. Ore
8. Gravel
9. Isotelus
11. Geologic
12. Sand
15. Erie
16. Cenozoic
18. Ice
19. Sandstone
21. Mammoths
23. Permian
24. Isotope
28. Flint
33. Oil

**Across**

4. Ordovician
6. Groves
8. Gas
10. Shale
11. Gypsum
13. Kame
14. Paleozoic
17. Rivers
20. Landslide
22. Topographic
25. Limestone
26. Mastodons
27. Coal
29. Trilobite
30. Teays
31. Iron
32. Diamond
34. Salt
35. Peat
36. Earthquake