### 2.5 Geologic History Test Review

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- Know how to identify the Relative Age of rock layers and faults and intrusions using the two Laws:
  - Lab: Relative Age
  - Law of superposition
  - Law of crosscutting relationships
  - Handout 1 (pink) Geologic History
    - #'s 3, 6, 7, 17
- Know why Index Fossils are used to determine the absolute age of rock layers:
  - Lab: History in the Rocks
  - Handout 1 (pink) Geologic History
    - #'s 8, 9, 10, 11, 12, 13, 21
- Know how to use the Geologic Time Scale to do the following:
  - Lab: Geologic Time Scale
  - Identify when a geologic era begins and ends
  - Identify the era and period an organisms appears on Earth
  - Handout 1 (pink) Geologic History
    - #'s 15, 18, 20, 22

#### Relative Age

- Know how to identify the Relative Age of rock layers and faults and intrusions using the two Laws:
  - Lab: Relative Age
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  - Handout 1 (pink) Geologic History

• #'s 3, 6, 7, 17

#### Lab: Relative Age

- Law of Superposition:
  - A sedimentary rock layer is older than the layers above it and younger than the layers below it if the layers are not disturbed.
- Law of Crosscutting Relationships:
  - The principle that a fault or body of rock is younger than any other body of rock that it cuts through.



## **3.** What does the law of superposition helps scientists determine?

• The relative age of a layer of sedimentary rock.



**6.** What law do scientists apply to determine relative ages of rock when they find faults or intrusions?

• Crosscutting relationships



**7.** What is the relative age of a fault or igneous intrusion that cuts through an unconformity?

• The fault or intrusion is younger than the rocks it cuts through above and below the unconformity.



**17.** In a geologic column, the oldest rocks are located at the <u>bottom</u> of the column.



#### Index Fossils

- Know why Index Fossils are used to determine the absolute age of rock layers:
  - Lab: History in the Rocks
  - Handout 1 (pink) Geologic History
    - #'s 8, 9, 10, 11, 12, 13, 21

#### History in the Rocks Lab:



### **8.** Fossils that are found only in the rock layers of a particular geologic period are called \_\_\_\_\_\_.

• Index fossils



## **9.** What is most important about the features of an index fossil?

• The index fossil must be present in rocks scattered over a large region.



#### 10. The organisms that form index fossils lived

#### • During a short span of geologic time.

INDEX FOSSILS



**11.** How commonly distributed must the fossil of an organism be in order to be considered an index fossil?

• The fossil must occur in fairly large numbers within a rock layer.



**12.** Rock layers in which index fossils have been found can be dated accurately because the organisms that formed the index fossils lived

• For a short span of geologic time.



**13.** How can scientists use index fossils to determine the absolute age of rock layers in different parts of the world?

• An index fossil discovered in rock layers in different areas of the world indicates that the rock layers in those areas formed during the same time period.



# **21.** How are rocks grouped within each unit of geologic time similar?

• They contain similar fossils.





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#### Geologic Time Scale

- Know how to use the Geologic Time Scale to do the following:
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  - Handout 1 (pink) Geologic History
    - #'s 15, 18, 20, 22

#### Lab: Geologic Time Scale

DATA: Years Before P Event 4,600 million (4.6 b 1. formation of Earth (estimate) 4,600 million (4.6 2. Beginning of Precambrian Era 3,900 million (3." 3. oldest known rocks 3.600 million (? 4. oldest microfossils 550 million 5. Early sponges 545 millio END OF PRECAMBRIAN 6 544 milli 7. Beginning of Paleozoic Era- animals evolve hard parts 544 mi 8. beginning of the Cambrian Period 510 9. first vertebrates (fish) 10. beginning of the Ordovician Period 11. beginning of Silurian Period 12. first land plants 13. beginning of Devonian Period 14. first amphibians 15. beginning of Mississippian Period 16. Appalachian Mountains rise 17. beginning of Pennsylvanian 18. first reptiles 19. beginning of Permian Period 20. Pangaea begins to break apart 21. extinction of trilobites-(largest mass extinction in Earth's 22. beginning of Mesozoic Era 23. beginning of Triassic Period 24. first dinosaurs and mammals 25. beginning of Jurassic Period 26. first birds 27. beginning of Cretaceous Period 28. Rocky Mountains begin to rise 29. extinction of dinosaurs 30. beginning of Cenozoic Era 31, beginning of Paleocene Epr 32. horses, flying squirrels, b s million 1 million 33. first horses 33.9 million 34. deer, pigs, cats, and de 35. Wasatch Mountains J 20 million 36. large carnivores (br 5.3 million 5 million 37. first elephants 38. Wooly mammot' 1.8 million 1.5 million 39, early human at 40. beginning of 1 million 41. first moder 500,000 42. continent/ 43. Eratostb 44. Pompe 45. Colu 46. U.S 47. A 48. 49

m

+10D

allion

10.000

2.100

1,940 525

150

46

11 0

14-15

### **15.** What is the purpose of the geologic time scale, 650 million years ago to the present scale?

• To outline the development of Earth and life on Earth.



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**18.** How do the fossils in the upper layers of a geologic column differ from those in the lower, older layers?

• Those in the upper layers resemble modern plants and animals, while those in the lower layers are of plants and animals different from those living today.

![](_page_20_Figure_2.jpeg)

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### **20.** What three indicators do geologists use to divide the geologic time scale into small require important events

- changes in Earth's surface
- climate
- types of organisms

![](_page_21_Picture_4.jpeg)

![](_page_21_Figure_5.jpeg)

# **22.** Identify the era, period, and epoch we are in today.

- See page 213
- Era: Cenozoic
- Period: Quaternary
- Epoch: Holocene

		G	eologic Time 5	cale
	Period	Epoch	Beginning of interval in Ma	Characteristics from geologic and fossil evidence
IRC	Quaternary	Holocene	0.0115	The last glacial period ends; complex human societies develop.
		Pleistocene	1.8	Woolly mammoths, rhinos, and humans appear.
	Tertiary	Pliocene	5.3	Large carnivores (bears, lions) appear.
		Miocene	23.0	Grazing herds are abundant; raccoons and wolves appear.
		Oligocene	33.9	Deer, pigs, camels, cats, and dogs appear.
		Eccene	55.8	Horses, thying upuirrels, bats, and whales appear.
		Paleocene	65.5	Age of mammals begins; first primates appear,
	Cretaceous		146	Flowering plants and modern birds appear; mass extinctions mark the end of the Mesozoic Era.
	puraesic.		200	Dinosaurs are the dominant life-form; primitive birds and flying reptiles appear.
	Triansic		251	Dimosaurs appear; animonities are common; cycads and coniters are abundant; and mammatis appear.
	Permilan.		299	Pangaes comes together, mass extinctions mark the end of the Paleozoic Era.
	Carron Serous	Pennsylvanian Period	318	Giant cockroaches and dragottfiles are common; coal deposits form; and reptiles appear.
		Mississippian Period	359	Amphibians flourish; brachlopoch, any common in locans; and forests and swamp: cover most land
	Descent		416	Age of listics begins, amonthians appear and giant hursefalls, ferry, and seek-base eginlants develop.
	Silurian		444	Euryptands, land plants and animals append
	Orosvician		488	Echilocoternis appear, brachlopods increase tributates decline; gruptoites flouristi; annos; sen reaches modern Oprich state
	Cambrian		542	Shelled marine invertebrates appear, trilobates and brachiopods are common. First vertebrates appear.
an an broa			4,600	The Earth forms: continental shields appear; foosils are rang and stromatolites are the most common organism.

![](_page_23_Picture_0.jpeg)