

Worksheet: Principles of Geology

name: _____

1. **Relative dating** (not “dating your relatives!”) is discussed on page 337. What is your age **relative** to your teacher’s age?

I am _____ than my teacher.

2. Read the section on the Law of Superposition and then look at the diagrams on p. 338. According to this law, what is the age of the Hermit Shale **relative** to the Supai Group?

The Hermit Shale is _____ than the Supai Group.

3. What does the principle of original horizontality claim? (*Use sentences.)

4. *Why aren’t the layers in Figure 3 horizontal?

5. Look at figure 4. Use the principle of cross-cutting relationships to figure out which of these happened first (1), second, third, and last (4: most recent). Number them 1-4.

conglomerate formed

sandstone formed

dike A formed

fault A formed

6. Read about “inclusions” (p. 339). The rhyolite (formed when lava cools) just south of Helena has **inclusions** (rocks embedded in it). Which formed first? . . . the inclusions, or the rhyolite?

7. Read about **unconformities** on pages 340. Look at Figure 7. How many unconformities are there in the Grand Canyon? _____

How many **angular unconformities** are shown in Figure 7? _____

8. *Both of the features listed in question 7 are formed by periods of erosion, followed by a time of deposition. Besides erosion, what else happened to make the angular unconformity different than the **disconformities**?

9. Look at figure 6. What happened during the time between B and C?

10. *Read about trace fossils on page 343. What are “coprolites”?

11. *What are “gastroliths”?

12. Look at the diagram on page 341. Which two layers can be seen in both the Grand Canyon and Zion National Park?

13. *Why can't the Supai Formation be seen in Zion? (Where is it?)

14. *Why is there no Navajo Sandstone in the Grand Canyon? (What happened to it?)

15. According to the section titled, "Conditions For Fossilization," what two conditions are needed in order for an organism to become a fossil?

16. What two criteria must be met for a fossil to qualify as an "index fossil"? (p. 345)

17. *How can the thickness of fossil shells help geologists figure out the position of ancient shorelines? (p. 346)

18. Read the section about "Radiometric Dating of Sedimentary Rock" on page 350. Based on what you read, what two parts shown on the diagram on page 351 could be dated?

19. The Mancos Shale is between _____ and _____ million years old.

EXTRA CREDIT (3 points . . . all or none)

Go back to page 339 and put everything that is labeled in order from first (earliest) to last (most recent). Two (#7 and #8) are done for you. Use the principles of superposition and cross-cutting relationships.

- | | | | |
|----|------------|--------------|--------------------|
| 1. | <-earliest | 4. | 7. dike B and sill |
| 2. | | 5. | 8. |
| 3. | | 6. batholith | |