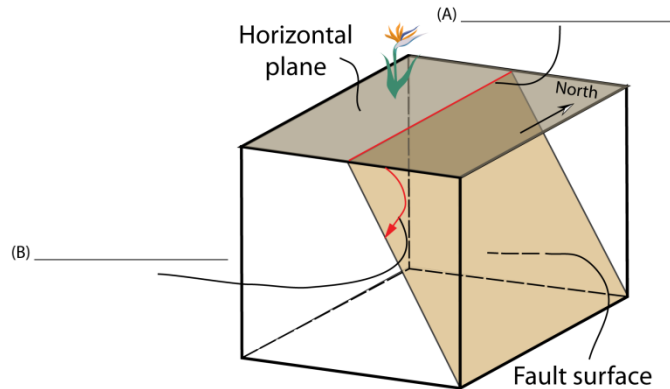


## Chapter 5 – Faults

### Practice Exam and Study Guide

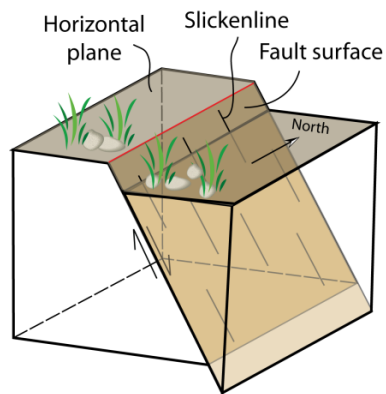
1. What are faults?
2. If a fault does not break the Earth's surface, then it is considered to be
  - a. Hidden
  - b. Blind
  - c. Lost
  - d. Not a fault
  - e. A future fault
3. The attitude of a fault is described by its strike and dip. In the following illustration please label the strike and the dip, and provide a brief definition of each term.



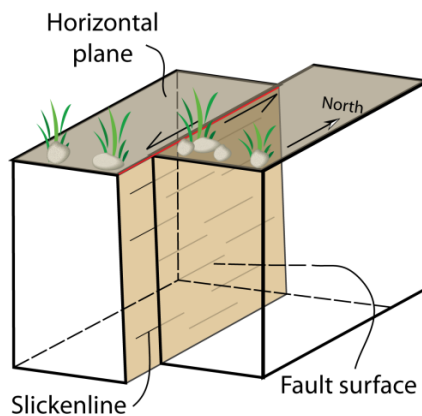
4. What are the grooves cut into a fault surface parallel to the movement direction called?
  - a. Slickensides
  - b. Slickenlines
  - c. Slickengrooves
  - d. Slickenscratches
  - e. Slickenpits
5. If displacement is parallel to the strike of the fault, then the fault is a
  - a. Dip-slip fault
  - b. Oblique-slip fault
  - c. Strike-slip fault
  - d. Blind
  - e. Horse-tail fault

6. If displacement is parallel to the dip of the fault, then the fault is a
  - a. Dip-slip fault
  - b. Oblique-slip fault
  - c. Strike-slip fault
  - d. Blind
  - e. Horse-tail fault
  
7. If displacement is neither parallel to strike or to dip, then the fault is a
  - a. Dip-slip fault
  - b. Oblique-slip fault
  - c. Strike-slip fault
  - d. Blind
  - e. Horse-tail fault

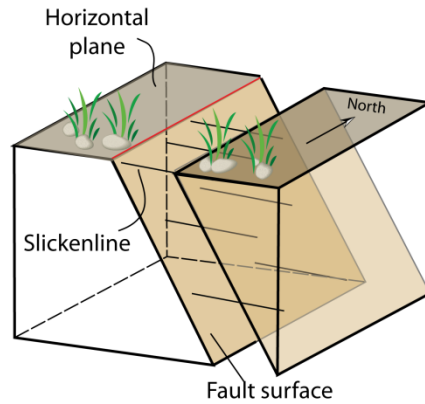
8. What kind of fault is illustrated below: dip-slip, strike-slip, or oblique-slip?



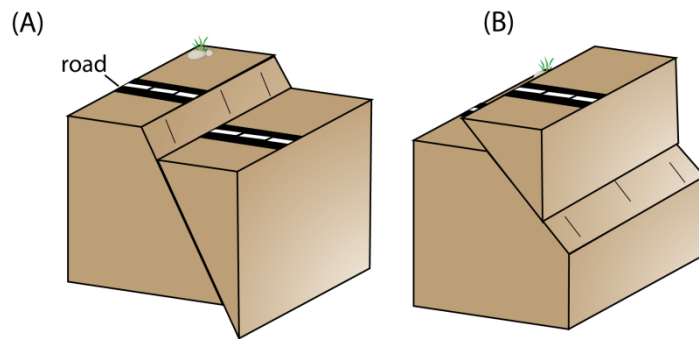
9. What kind of fault is illustrated below: dip-slip, strike-slip, or oblique-slip?



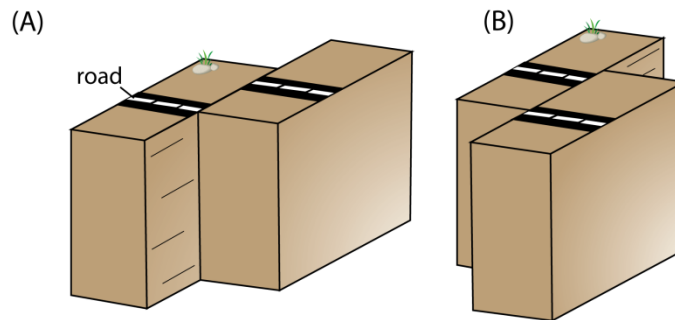
10. What kind of fault is illustrated below: dip-slip, strike-slip, or oblique-slip?



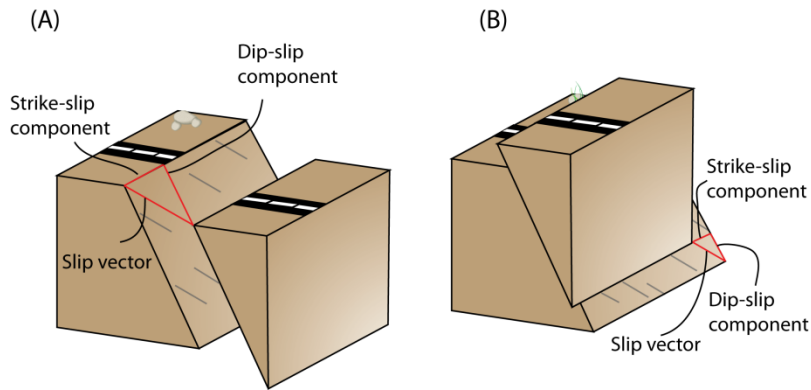
11. What kinds of faults are illustrated below?



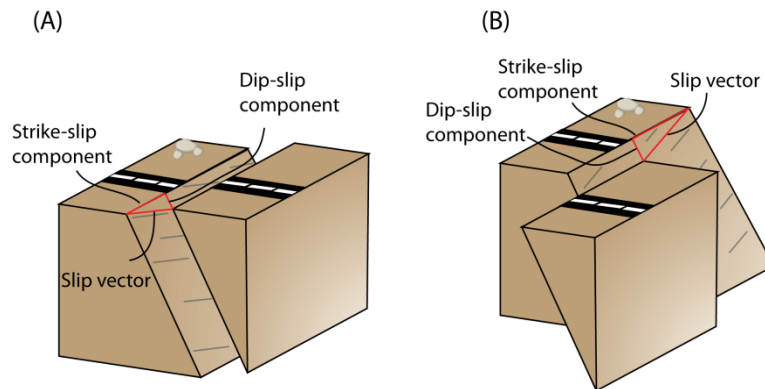
12. What kinds of faults are illustrated below?



13. What kinds of faults are illustrated below: oblique normal or oblique reverse?



14. What kinds of faults are illustrated below: oblique left-lateral or oblique right-lateral strike-slip?

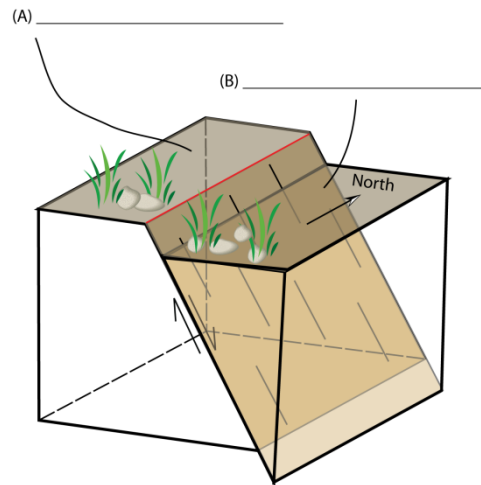


15. What is a piercing point?

16. If the hanging wall block moves down relative to the footwall and the motion is pure dip slip, then the fault is a \_\_\_\_\_ fault.

17. If the hanging wall block moves up relative to the footwall and the motion is pure dip slip, then the fault is a \_\_\_\_\_ fault.

18. In the following illustration, please label the hanging wall and footwall blocks.



19. Strike-slip faults are common along what type of plate margins: convergent, divergent, or transform?

20. Reverse dip-slip faults are common along what type of plate margins: convergent, divergent, or transform?

21. Normal dip-slip faults are common along what type of plate margins: convergent, divergent, or transform?

22. Gravity is an example of what kind of force?

23. If a force is applied to a specific surface, then it is a \_\_\_\_\_ force.

24. Stress is the \_\_\_\_\_ of the applied force.

25. When a stress is applied to a body of rock, it commonly changes its shape. A change in shape is a \_\_\_\_\_. Another term used to describe a change in shape is \_\_\_\_\_.

26. If a body of rock changes shape as a result of an applied stress, and then when the stress is removed or falls to some lower value, it regains its initial shape and volume, then it is behaving
- Plastically
  - Viscoelastically
  - As a Newtonian fluid
  - Elastically
  - None of the above
27. All rocks have a breaking point. If we increase the stress on an elastic rock to this rock-dependent breaking value, then it will break or fracture resulting in the formation of a new fault. However, if a fault already exists, then the stress required for slip to occur on it will be lower than that required to form a new fault. The stress required to initiate movement on an already existing fault is called the \_\_\_\_\_ or \_\_\_\_\_ stress.
28. Because plates are constantly moving, they are always stressed. When this stress builds to the maximum or static stress value for a particular fault, then slip will occur. Once movement on the fault has been initiated what happens to the stress, i.e., does it fall or rise?
29. Along plate boundaries, following cessation of motion along a fault, what happens to the stress on the fault?
30. Briefly explain below the stick-slip mechanism of fault behavior along plate boundaries?
31. When a fault ruptures, both heat and seismic energy are given off. What form does the seismic energy take?
32. If the maximum or static stress value is not reached, then a fault along a plate boundary will continue to build up elastic strain \_\_\_\_\_.

33. What is a locked fault, and how does it differ from a creeping one?

## Answers

1. Faults are surfaces across which Earth material has lost cohesion across which there is perceptible displacement.
2. b. blind
3. (A) = strike; the direction of a line produced by the intersection of a tilted or inclined plane with an imaginary horizontal plane. (B) = dip; the angle between an imaginary horizontal plane and the tilted or inclined plane.
4. b. slickenlines
5. c. strike-slip
6. a. dip-slip
7. b. oblique-slip
8. dip-slip
9. strike-slip
10. oblique-slip
11. (A) normal fault, (B) reverse fault
12. (A) left-lateral strike-slip, (B) right-lateral strike-slip
13. (A) oblique normal, (B) oblique reverse
14. (A) Oblique left-lateral, (B) oblique right-lateral
15. A piercing point is where some linear feature offset by a fault intersects or pierces the fault surface. Examples of linear features that can serve as piercing points include stream channels, fences, roads, or railroad tracks.
16. Normal
17. Reverse
18. (A) footwall, (B) hanging wall
19. Transform
20. Convergent
21. Divergent
22. Body force
23. Surface
24. Intensity
25. Distortion, strain
26. d. elastically
27. maximum, static
28. Once movement occurs, the stress on the fault begins to drop immediately
29. After motion on the fault ceases, the stress on the fault begins to immediately build back up.

30. Stick refers to the fact that after a fault ruptures it stops moving and appears to be stuck. However, the stress begins to immediately build back up eventually reaching the maximum or static stress value, and slip again occurs.
31. The seismic energy given off by a rupturing fault takes the form of seismic waves.
32. Energy
33. Locked faults are faults that have not experienced rupture in some time, and, as a result, large amounts of elastic strain energy can build up. In contrast, creeping faults rupture often, and, as a result, large amounts of elastic strain energy do not build up.