# GEOL 308 Natural Hazards
## Quiz #2

Name (Last, First): _____ Date: _____

1. Which river would have the highest gradient?
   A) Rivers near their floodplains
   B) Rivers near the ocean
   C) Rivers in gentle valleys
   D) Rivers flowing into dams
   **E) Rivers moving down mountains**
2. Choose the best answer. Which would increase during a flood, discharge or velocity?
   A) Discharge because there is more water flowing
   B) Velocity because more water is trying to flow through a smaller space
   C) Neither discharge or velocity because the stream will be doing more erosion during a flood
   D) Neither discharge or velocity because both are constant for any stream
   **E) Both discharge and velocity will increase because more water is flowing into a smaller space.**
3. Where does a meandering river run the fastest?
   **A) On the outside of a bend**
   B) On the inside of a bend
   C) At the mouth of the river
   D) Along the floodplain
   E) Near the point bars
4. Where on a river would you most likely find point bars?
   A) On the outside of a bend
   **B) On the inside of a bend**
   C) At the mouth of the river
   D) At the source of the river
   E) In the center of the river
5. Which of the following affect whether a river will flood?
   A) Amount of precipitation in the drainage basin
   B) Rate at which the precipitation soaks into earth
   C) Rate at which the runoff moves towards the river
   D) Amount of moisture in the soil
   **E) All of the above affect flooding**
6. In which of the following cases would you not expect to result in flooding?
   A) Rain falling on an area where soil has been saturated due to persistent thunderstorms.
   B) Rain falling on an area where the ground is frozen
   C) Rain falling on an area that is typically very dry such as a desert
   D) Rain falling on an area that has been recently developed into a housing community with new paved roads and sidewalks
   **E) All of the above situations would probably result in flooding**
7. What is the stage of a river?
   A) The amount of water that flows
   **B) The height of water that is flowing**
   C) The age of the river
   D) The temperature of the river
   E) The size of the river

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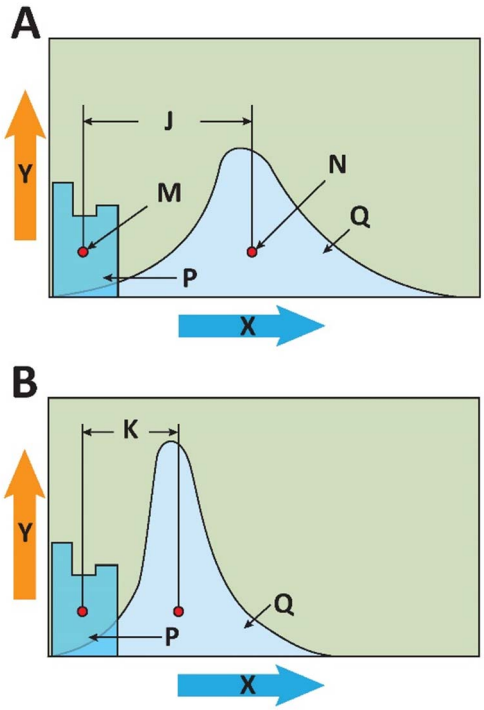
8. What is a hydrograph?
   A) Graph of cross-sectional area vs. stage
   B) Graph of stage vs. elevation
   **C) Graph of stage vs. time**
   D) Graph of discharge vs. gradient
   E) Graph of speed vs. discharge

In the following X questions, refer to the figure at the right.




9. Diagram A represents:
   A) A rural basin
   B) A well vegetated basin
   C) A naturally formed river
   D) A river far downstream from the storm
   **E) All of the above**
10. Diagram B represents:
   A) An urban basin
   B) A basin with a large proportion of the ground covered in concrete
   C) A straightened or leveed river
   D) A river close in proximity to the storm
   **E) All of the above**
11. The units for the horizontal axis are _____ and for the vertical axis are _____.
   A) Distance, Discharge
   B) Distance, Velocity
   **C) Time, Discharge**
   D) Time, Velocity
   E) None of these choices
12. What do the labels J and K represent?
   **A) Lag Time**
   B) Difference Time
   C) Stage-Discharge Time
   D) Flash Flood Time
   E) None of these choices
13. Which of the following natural hazards is the number 1 disaster in the United States in the past century?
   **A) Floods**
   B) Volcanoes
   C) Earthquakes
   D) Hurricanes
   E) Lightning

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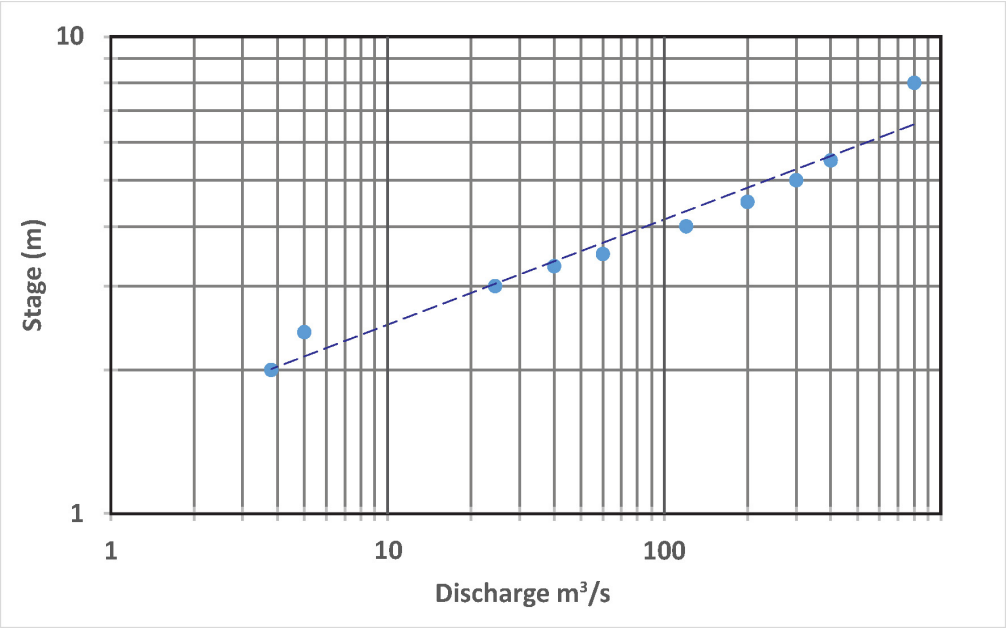
14. Plot the data in the table to the right on the blank chart below.
15. Draw a straight regression line through your data points.
16. What is the type of plot is this below?
    A) A discharge curve.
    B) A hydrograph.
    C) A stage plot.
    **D) A stage-discharge rating curve.**
17. Using your regression line, given a flood stage of 4 m, what is the discharge?
    A) 10 $m^3/s$.
    B) 10 $ft^3/s$.
    **C) 100 $m^3/s$.**
    D) 100 $ft^3/s$.
    E) 200 $m^3/s$

| Flood Number | Stage | Flow Q |
|---|---|---|
| | m/ ft | $m^3/s$ or $ft^3/s$ |
| 1 | 3 | 24.5 |
| 2 | 4 | 120 |
| 3 | 2 | 3.8 |
| 4 | 5 | 300 |
| 5 | 4.5 | 200 |
| 6 | 3.3 | 40 |
| 7 | 2.4 | 5 |
| 8 | 3.5 | 60 |
| 9 | 5.5 | 400 |
| 10 | 8 | 800 |




18. Why would people build dams on rivers?
    A) To control the amount of water that flows down a river
    B) To hold back water for irrigation
    C) To use water for hydroelectric power
    D) To build lakes for recreation
    **E) All of the above are reasons to build dams**
19. How would the hydrograph of a large rainstorm change after urbanization of an area?
    A) The hydrograph would become a straight line.
    B) The peak of the hydrograph would become lower and wider.
    C) The peak of the hydrograph would become higher and wider.
    **D) The peak of the hydrograph would become higher and narrower.**
    E) The peak of the hydrograph would become lower and narrower.

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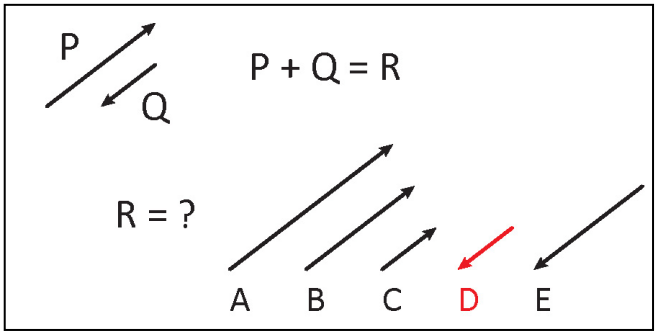
20. How does urbanization influence a river or stream?
    A) Urbanization increases the frequency of floods.
    B) Urbanization increases the magnitude of floods.
    C) Urbanization increases the rate at which water flows to the river.
    D) Urbanization decreases stream flow during dry season.
    **E) All of the above are ways in which urbanization influences a river.**
21. Which of the following describes slump?
    A) Rocks break off of cliffs and fall to the base of a slope
    B) Rocks and soil move down-slope very slowly
    C) Rock mixes with water and moves fluidly down a slope
    **D) Blocks of rock break off and move together along a curved path**
    E) Mud becomes saturated and flows into a streambed
22. Using the diagram to the right, which vector is the correct vector R? (Circle A, B, C, D, or E).




23. Would adding mass to the top of a slope in the form of houses or buildings make the mass or less likely to slide?
    A) It would make it less likely to slide because the houses would add pressure on the slope keeping it stable
    B) It would make it less likely to slide because the houses make the slope less steep
    **C) It would make it more likely to slide because the houses add weight to the slope making it more unstable**
    D) It would make it more likely to slide because the houses would make the slope more steep
    E) It would not make a difference either way
24. _____ occur when material remains fairly coherent and moves along a weakness surface, such as a joint, a fault, or a bedding plane.
    A) Falls
    **B) Slides**
    C) Flows
    D) None of these
    E) All of these
25. The mass pieces fall through the air. It is a common form of movement on steep slopes.
    **A) Fall**
    B) Slide
    C) Flow
    D) None of these
    E) All of these

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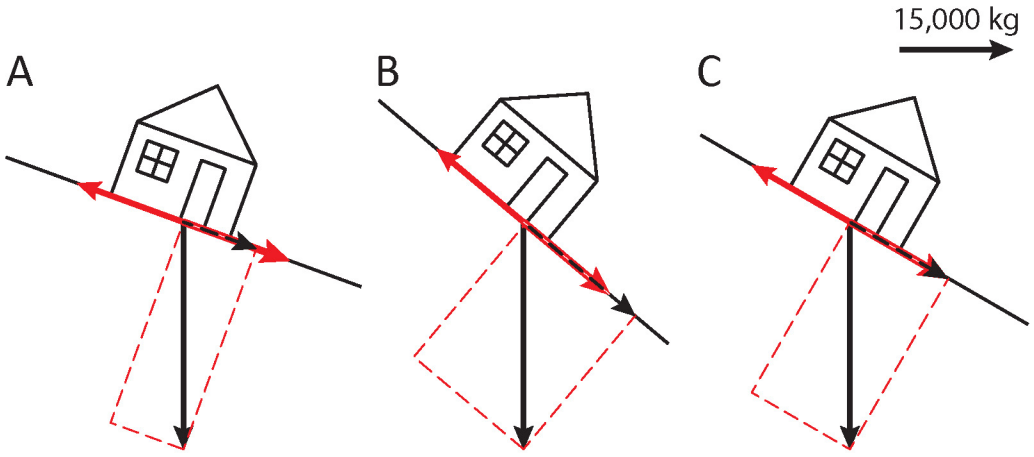
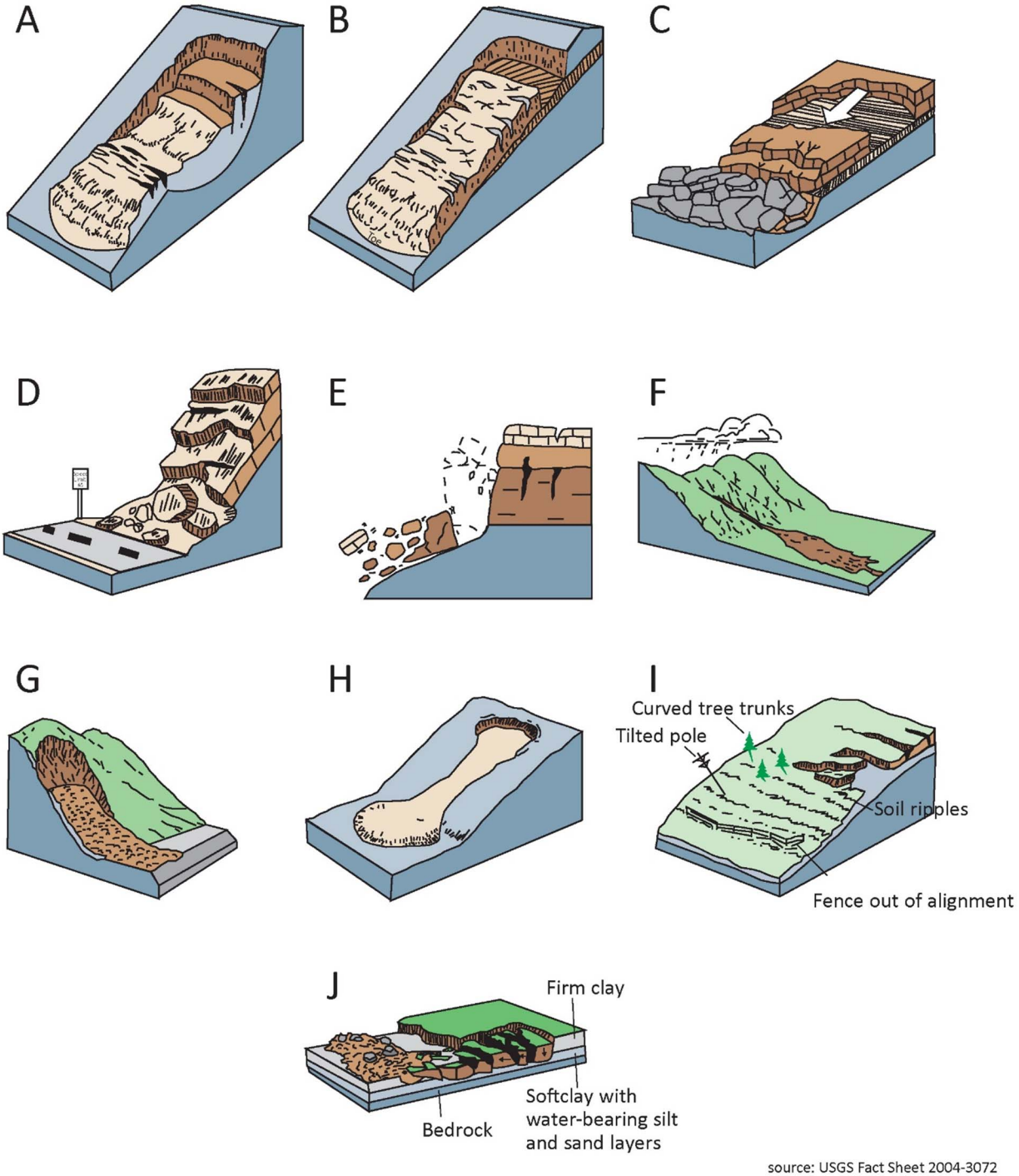
26. _____ occur when material moves downslope as a viscous fluid. Most flows are saturated with water.
    A) Falls
    B) Slides
    **C) Flows**
    D) None of these
    E) All of these

Use the diagram below for the next X questions. The downward force (based on gravity) of the house is 30,000 kg. The shear strength of the soil can withstand 15,000 kg of force.




27. Draw the slope parallel and slope perpendicular force vectors in the diagram. Draw the shear strength vector (friction).
28. Which diagram has the largest slope parallel force (shear stress)?
    A) A
    **B) B**
    C) C
29. Which diagram shows a house that is stable in its current configuration?
    **A) A**
    B) B
    C) C
30. Which diagram shows a house that is unstable in its current configuration?
    A) A
    **B) B**
    C) C
31. Which diagram shows a house that is just about to slide in its current configuration?
    A) A
    B) B
    **C) C**

# GEOL 308: Natural Hazards
# Landslide Types




source: USGS Fact Sheet 2004-3072

Use the above figure to answer the next 5 questions.

32. Which diagram represents a translational slide?
    A) A
    **B) B**
    C) E
    D) F
    E) H
33. Which diagram represents a rotational slide?
    **A) A**
    B) B
    C) E
    D) F
    E) H
34. Which diagram represents a topple?
    A) A
    B) B
    **C) E**
    D) F
    E) H
35. Which diagram represents a debris flow?
    A) A
    B) B
    C) E
    **D) F**
    E) H
36. Which diagram represents an earthflow?
    A) A
    B) B
    C) E
    D) F
    **E) H**