Topographic maps are useful in helping us interpret the history of the landscape of an area. The questions below are designed to help you learn to interpret topographic maps. The maps represent a diverse selection of areas and geologic landscapes. Answer the questions as completely as possible. The numbers after the title of the map indicate the number of points possible with that map. **You may earn up to 15 additional points.**

**Agathla Peak, Arizona (1)**

1. What is the vertical relief (difference in elevation) between the low areas and the tops of the buttes and mesas?

2. Are the rocks of this area most likely granite or sandstones? Explain how the topography of this area helps you answer this question.

**Anvil Points, Colorado (1)**

1. The drainage patterns created by running water indicate the types and structure of the underlying rock layers. See page 472 in your text for additional information. What type of drainage pattern has developed in this area of Colorado?

2. What can you tell about the underlying rocks from this type of drainage pattern?
Beaver Dam, Wisconsin (1)

1. This region in Wisconsin has been glaciated. What evidence for glaciation can you find on the map?

2. What direction did the ice move in this region? What evidence did you use to determine this?

Blying Sound (D-8), Alaska (1)

1. What evidence can you find on the map that would indicate that glaciers, such as the Aialik and Holgate glaciers, were at one time larger and extended farther down the valleys?

Cordova (C-4), Alaska (1)

1. Describe how lakes such as Beaver, Sellen, Corser, Cabin, Middle, and Island Lakes were formed. (The source of the water is not as important as what formed the depression).

2. What type of river forms below the Scott Glacier? Why does the river have this form?
Cumberland, Maryland, Pennsylvania, and West Virginia (1)

1. The rectangle to the right represents the outline of the map. Sketch the major rivers on this "map". Use arrows to indicate the direction of flow of the rivers. What is the drainage pattern of this area (see page 472 in your text)? What does this type of drainage pattern tell us about the underlying geology?

Cuny Table West, South Dakota (2)

1. Is the Cuny Table area higher or lower than the irregular ground around it? Is Blindman Table higher or lower than the surrounding area?

2. Explain what this area would look like if you could hike through it.

3. Explain how this type of topography develops.
Davis Island, Louisiana and Mississippi (1)

1. Describe how the crescent-shaped lakes, such as Lake St. Joseph, develop over time. What do we call this type of lake?

Edgartown, Massachusetts (2)

1. Norton Point (in the southeast corner of the map) offers great ocean views and plenty of privacy. Would it be a good place to build a summer home? Why/Why not?

2. What is the term we apply to the landform that separates Edgartown Great Pond from the ocean?

3. If a channel was dredged through this strip of land and jetties were built to keep the channel open, what effect would this have on South Beach and Norton Point? Explain your answer.

4. What direction is the sand moving along Edgartown Beach?
Ennis, Montana (2)

1. Notice that Cedar Creek (in the southeast corner of the map) changes from one channel to many channels near Lawton Ranch. Explain why the river makes this change.

2. Notice that some of the streams just west of the Cedar Creek alluvial fan disappear into the ground. Why do these streams disappear? (look carefully at the map, you may see hints in the region around where the streams disappear)

3. What direction does the Madison River flow? What forms Ennis Lake?

4. In the southwest corner of the map, what is the origin of the "bench-like" area between O'Dell Creek and Bear Creek?

Eureka, California (2)

1. What direction is the beach drift in this area? What is your evidence?

2. Northwest of the Arcata is a flat area called Arcata Bottoms. How did this flat area form?

3. There is a small, linear lake just west of the community of Fisher. Describe how the lake basin formed. (The source of the water is not as important as what formed the basin).
Holden, Washington (2)

1. The topography of this area in the North Cascades is primarily due to alpine glaciation. There are several small glaciers that still exist today. Which side (north, south, east, or west) of the ridges do we see most of the glaciers? Explain this observation.

2. The Isella Glacier (near the top of the map, in the center) occurs on the opposite side of the mountain from most of the other glaciers in this region. Explain why Isella Glacier can exist on this side of the mountain.

3. List four different landforms in this area that were formed by alpine glaciation.

Juanita Arch, Colorado (1)

1. Which direction does the Delores River flow? (Hint: when stream converge, they tend to point downstream) Which direction does Salt Creek flow?

2. What type of bedrock would you expect (sedimentary, igneous, or metamorphic) in this area? Explain your rationale.
Hurricane, Utah (1)

1. If the rectangle to the right is the outline of the map, draw in the rectangle where you see evidence of a major dip-slip fault. Explain your rationale.


Mammoth Cave, Kentucky (2)

1. Notice that there are very few streams in this area other than the Green River (the area receives as much precipitation as western Washington). Other than some minimal evaporation loss, what happens to the precipitation?

2. What type of rock underlies this area? What reasoning did you use to determine this?

3. What problems might one encounter in the construction of a building in this area? (see pages 532-533)
Maverick Springs, Wyoming (2)

1. In the northwest part of the map is an oil field. See the diagrams on page 311 in your text. What type of oil trap is most likely present in the oil field on the map?

2. Why do the NW-SE trending ridges curve in the eastern portion of the map?

3. Why are the ridges (like in section 24, T6N, R2W) steeper on one side than on the other? (see the diagrams and picture on page 299 in your text).

Orbisonia, Pennsylvania (1)

1. The geology of this area in Pennsylvania consists of folded sedimentary rocks. Some of the layers are more resistant to erosion than other layers. The more resistant layers are found on the ridges and the less resistant layers are found in the valleys. The discussion on page 299 should help you understand the structure of this area. Explain why the ridges in the map area curve around and make a "V"-shaped pattern.

2. On page 472 in your text, four drainage patterns are illustrated. What type of drainage pattern if found in this area of Pennsylvania? Explain the development of this drainage pattern.
Pelican Rapids, Minnesota (1)

1. This area in Minnesota has been glaciated. Describe how the glaciation formed the landscape of this area. What term we use to describe the lakes on this map?

2. Notice that much of the area is swampy. What material likely underlies this area and makes the drainage very poor?

Point Reyes, California (2)

1. The San Andreas fault zone is found in the valley which becomes Tomales Bay. When the San Andreas Fault moves, which direction will the Pt. Reyes peninsula move relative to the land east of the fault?

2. Why is the San Andreas fault zone found in a valley along most of its length?

3. What direction is the longshore transport in Drakes Bay?

4. If there is sufficient sand supply in the future, what will happen to Drakes Estero?
Sonoma Range, Nevada (2)

1. This area in the Nevada is a part of the Basin and Range Province (this is described further on page 306 in your text). The rectangle to the right represents the outline of the map. Draw the locations of the major faults in the map area. Explain your reasoning for the locations of the faults.

2. Assuming that all of the motion along the faults was vertical, what is the minimum displacement (the amount of movement) along these faults?

3. Why do the streams from the surrounding hills disappear before they reach the lake?

Waldron, Arkansas (2)

1. Are the rocks of this map area most likely sedimentary rocks (sandstone, limestone, shale) or intrusive igneous rocks (granite, diorite or gabbro). What is your reasoning?

2. Why is there a circular ridge around Waldron? (see page 299)

3. Notice that Piney Mountain and Ross Mountain extend from the eastern border of the map to the west, but end near Jones Creek on the west side of the map. Explain why these ridges end suddenly.