

LAB: TOPO ISLAND

Name: _____

Important Rules obeyed by Contour Lines:

- Contour lines never run into a body of water
- Contour lines never cross one another
- ALL contour lines are closed loops Contour lines point or "V" upstream

Additional things to know about Contour Lines:

- If contour lines are closely spaced it represents a steep slope.
- If contour lines are widely spaced it represents a gentle slope.

Materials: scissors, ruler, colored pencils, glue

Procedures:

In this investigation, you will construct a contour model by cutting out and pasting together paper contour levels. Each thickness of paper will represent a contour interval of 20 feet. When you are finished, you will have a model with the features found on a typical topographic map. You will only cut ONE of the two sheets.

1. Find the page with the large square on it (figure 1). This is your "base map". The southern parallel is $5^{\circ} 00' N$, and the northern parallel is $5^{\circ} 05' N$. The eastern meridian is $140^{\circ} 05' W$, and the western meridian is $140^{\circ} 10' W$. Write the full coordinates at all four corners (both latitude and longitude).

2. Find the scale at the bottom of this page, labeled SCALE OF MILES. Mark off the line in inches and subdivide the first inch into quarters.

3. Next to CONTOUR INTERVAL write 20 feet.

4. To show the relief on the map, you will color each of the contour levels (key below). Colored pencils are highly recommended over markers!

Base layer = green, layer 2 = purple, layer 3 = yellow, layer 4 = orange, layer 5 & 6 = brown, layer 7 & 8 = red

5. Cut out all of the smaller contour levels in Figure 2. Cut only on the solid lines.

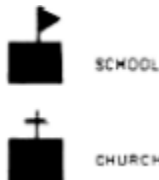
6. Paste each higher contour into the dashed space on the layer below it. Then paste the set of layers inside the dashed line on Figure 1.

7. The drainage on this island consists of a stream and one tributary. The V-shaped contours show the outline of the stream valley. Use a blue colored pencil to draw the streams in the valleys on Figure 1 and color the water surrounding the island blue!

8. Using the symbols shown below, draw each of the following ON your newly created 3D map:

- Swamp at $5^{\circ} 03' N \times 140^{\circ} 06' W$
- A town with a school, church and ten small buildings at $5^{\circ} 01' N \times 140^{\circ} 08' W$
- Mine at $5^{\circ} 03' N \times 140^{\circ} 09' W$
- A railroad connects the mine to the town
- A paved (secondary) road runs all around the shore of the island
- A benchmark is on top of a hill with an elevation of 115 feet at $5^{\circ} 02' N \times 140^{\circ} 07' W$

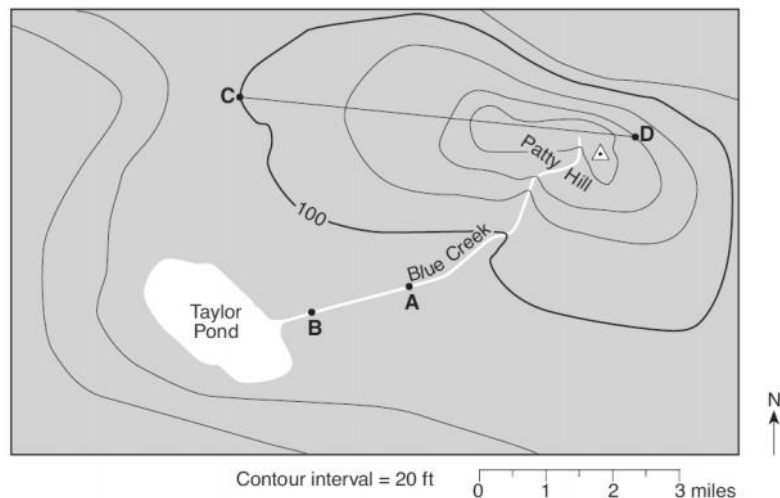
Map Symbols:



Questions and Conclusions:

1. In what compass direction would you need to go to travel from the town to the mine?
2. What is the total relief (highest point to lowest) on this island?
3. Describe two (2) features on the map that indicates the slope of the land.
4. Look at the railroad connecting the mine to the town and EXPLAIN WHY a simple straight line between the two is NOT the best solution.
5. HOW is your road around the shoreline different than the railroad that connects the town to the mine?
6. What are some ways that a civil engineer can overcome the challenge in #5 when designing roads in mountainous areas?
7. What is a topographic map designed to show that makes it different from other maps?

Base your answers to questions 8 through 11 on the topographic map shown below. Letters A, B, C, and D represent locations on Earth's surface. The symbol marks the highest elevation on Patty Hill. Elevations are shown in feet.



8. What is a possible elevation at the benchmark located at the top of Patty Hill? JUSTIFY your answer.
9. Indicate, using a compass direction, the steepest side of Patty Hill. What evidence supports your answer?
10. Which direction is Blue Creek flowing? This can be determined in two ways. Explain each below:
Method 1:
Method 2
11. Give a detailed example of a situation in which someone would require knowledge of topographic maps.