ESS 110: Introduction to Geology Dr. Woltemade Topographic Maps: Symbols and scale	**Name:** _____ **Section (circle):** **8:00 AM** **9:30 AM** **11:00 AM**

Introduction

Topography means "the shape of the land" and thus topographic maps illustrate the scale, shape, and height of landscape features. Topographic maps also show a number of cultural features (land survey system, roads, houses, schools, etc.). Topographic maps are extensively used in the Earth sciences to evaluate locations, landform types, elevations, characteristics of streamflow, and other physical data. Topographic maps are also useful for such purposes as planning a backpacking trip or bicycle route, orienteering, or evaluating real estate.

The purpose of this laboratory is for you to become familiar with the fundamentals of topographic map interpretation. When you are finished, you should be comfortable working with the concepts of scale, elevations and contour lines. You should be able to identify the direction and steepness of land slope and visualize the form of the land.

Materials

USGS Shippensburg 7.5 minute topographic map, ruler, paper, pencil, calculator.

Symbols

For a complete guide to topographic map symbols, see the USGS website.

1. What is shown by the following colors?	
Map color	*Indicates:*
Green (see "Vegetation")	
Blue	
Brown lines	

2. What symbols are used for the following features?	
Feature	*Symbol (describe and draw):*
Intermittent stream	
Wetlands ("marsh or swamp")	
Primary highway	

Scale

Scale expresses the relationship between distances on the map and corresponding distances on the ground (in the "real world"). Topographic maps include both a ratio scale and a graphical scale. Ratio (or “fractional”) scales have no units associated, because the *same units* are used on both sides of the ratio (or fraction). For example, a scale of 1:10,000 indicates that one inch on the map corresponds to 10,000 inches on the ground or, alternatively, one millimeter on the map corresponds to 10,000 millimeters (also 10 meters) on the ground.

3. Basics of map scale.
What is the ratio (or fractional) scale of the Shippensburg map?
One *inch* on the map represents how many *inches* on the ground?
How many *feet* on the ground does that represent?

4. Calculate the following using a mathematical calculation with the numerical scale rather than estimating based on the bar scale. (Show your mathematical steps!)
One *mile* (5280 feet) on the ground covers how many *inches* on the map?
Measure the map distance along King Street from Queen Street to Fayette Street. Using the map scale, calculate the actual distance of this stretch of road in miles. (If you are not familiar with these streets on the topographic map, use Google maps to find them.)
How many miles are covered by the length of I-81 that crosses this map?