

Paleontology and Geology of Indiana



Name: _____

Lab 1 Indiana Topography and US Topographic Maps

This exercise familiarizes you with US topographic maps, with township and range coordinates, and with Indiana topography. Work in groups of two with one of the seven topographic maps available for this exercise. Turn in your worksheet by Monday (you can turn it in today). Each group is working with a different part of the state. At the end of the session we will compare findings of the different groups.

Township and range is the dominant surveying system used in Indiana and many fossil localities are described using these coordinates. It is useful to be able to understand these coordinates to find locations on a topographic map, where you can find their latitude and longitude. The accompanying hand-out titled “Reading Topographic Maps” introduces the layout of US topographic maps, the UTM (universal transverse Mercator) grid, and the township and range system. Most topo maps are available electronically on your desktop. Instructions are given at the end of the handout for viewing topo maps in Google Earth as a layer on top of satellite imagery.

1. What is the name of your quadrangle?

2. What are the maximum and minimum elevations on your map? (indicate the units of elevation and report the conversion of the elevations to meters)

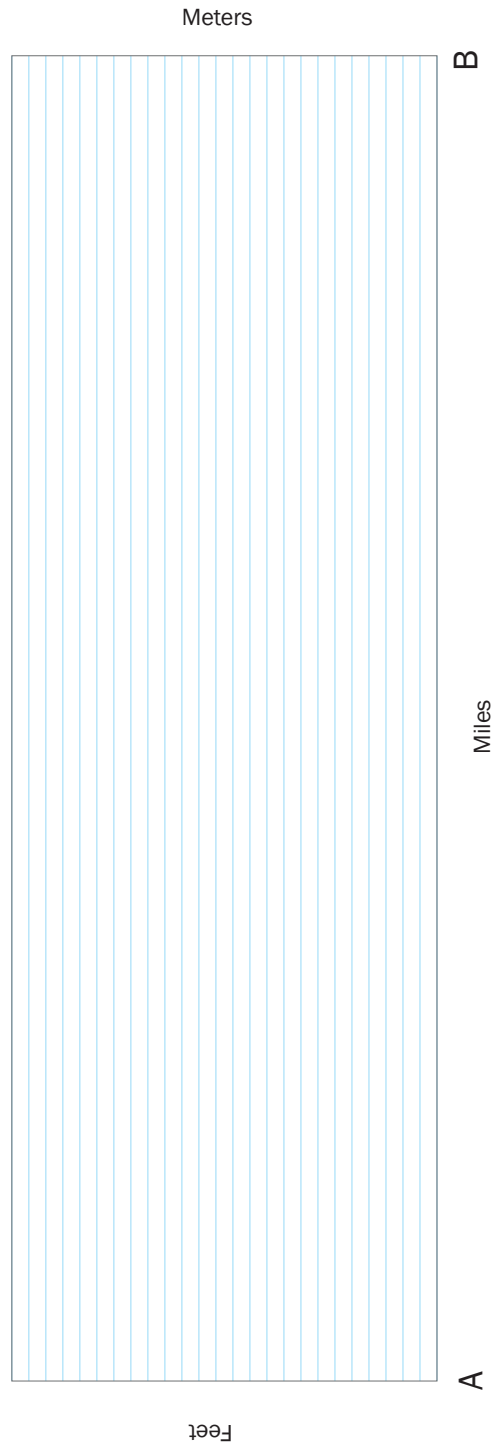
Max:

Min:

What is the baseline for elevation? (What defines the point 0.0 elevation?)

3. The maximum and minimum elevations in Indiana are 97.5 m and 383.1 m respectively. In what quartile does the midpoint elevation of your quadrangle fall? (top quarter, second quarter, third quarter, bottom quarter).

5. Draw an elevational contour of your transect. Decide on an appropriate scale for the left axis (feet) based on your maximum and minimum elevations and label the grid lines appropriately (e.g., 800, 820, 840, 860, etc). Figure out how many miles long your section is and put tick marks on the horizontal axis. Convert feet to meters to put an appropriate tick labels on the right axis. Then draw the topographic contour along your transect (use pencil so you can erase). Report the latitude and longitude of the endpoints A and B



Getting Topographic Maps in Google Earth

Google Earth can be used to view topographic maps, satellite imagery, and local photographs in the same applications. To install Google Earth go to: <http://www.google.com/earth/index.html>

To install the USGS topographic map overlay in Google Earth, visit <http://www.gelib.com/usgs-topographic-maps-2.htm>. Scroll to the middle of the page and look for the button labelled “Download with Google Earth”. A KMZ file will be downloaded, which you can double click to load in Google Earth. Note that when you exit GE you will be asked if you want to save it in Places. Click yes if you want the map grids to be available each time you use GE. You can turn off the grid and pop-ups by unchecking the USGS Topographic Maps layer.

Once loaded, zoom to a local area. For example, enter “Bloomington, IN” in the “Fly to” search box at the top left of the GE interface. You will see a blue grid with place names in the middle of each rectangle. The names identify US Geological Survey Topographic Quadrangles, each of which covers 7.5 minutes of latitude and longitude. Click on the name and you will see a pop-up that allows you to download the map. Expect a delay of a minute or two while the map downloads before you see it as an overlay.

You can turn the map view on and off by clicking its layer under Temporary Places (the layer’s name starts with “o” followed by the latitude and longitude of the baseline (e.g., o39086b3).