

Activity: Topography & dipping planes

2020



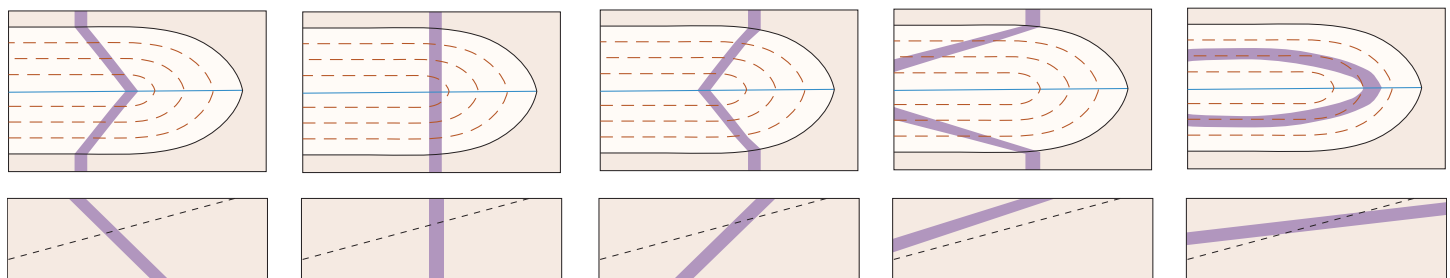
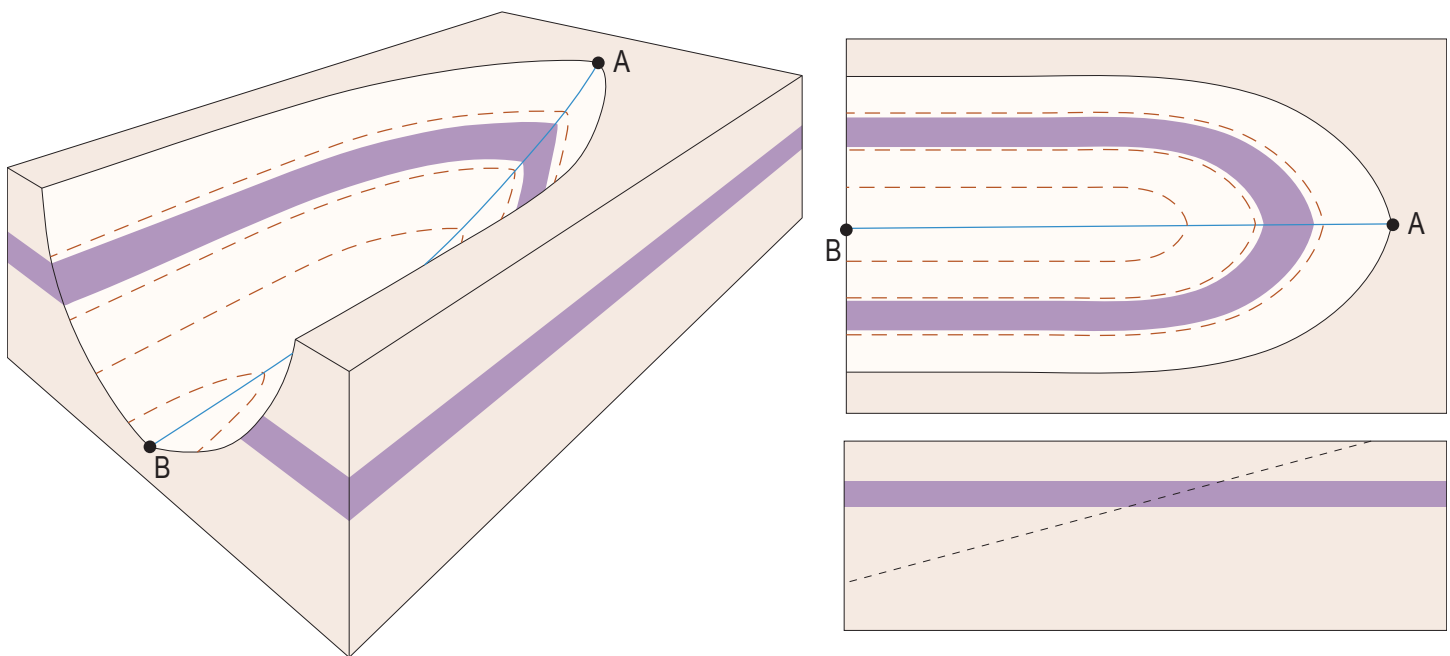
LEARNING OBJECTIVES: This activity reinforces skills associated with analyzing intersections of planar geological surfaces (bedding surfaces, faults, unit contacts) with the ground surface as defined by topographic contours, including plotting vertical contacts, calculating strike and dip, measuring the thickness of units, and plotting dipping contacts.

SUBMITTING YOUR WORK: This exercise will be graded for completion. For credit, please create a single PDF document containing clean scans of all pages in this assignment booklet. Upload your PDFs using the appropriate assignment on the Canvas site.

Part 1: Rule of Vs practice

Please compare and contrast the block diagrams below with the SketchFab models of the Rule of Vs wooden blocks provided and refresh your memory on the characteristic patterns created by the intersections of planar geologic surfaces with topography. Once you've looked them over, place the number of the wooden block model that best corresponds with (or contains elements that match) in the empty boxes beneath the diagrams below.

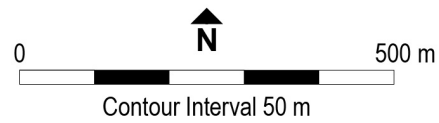
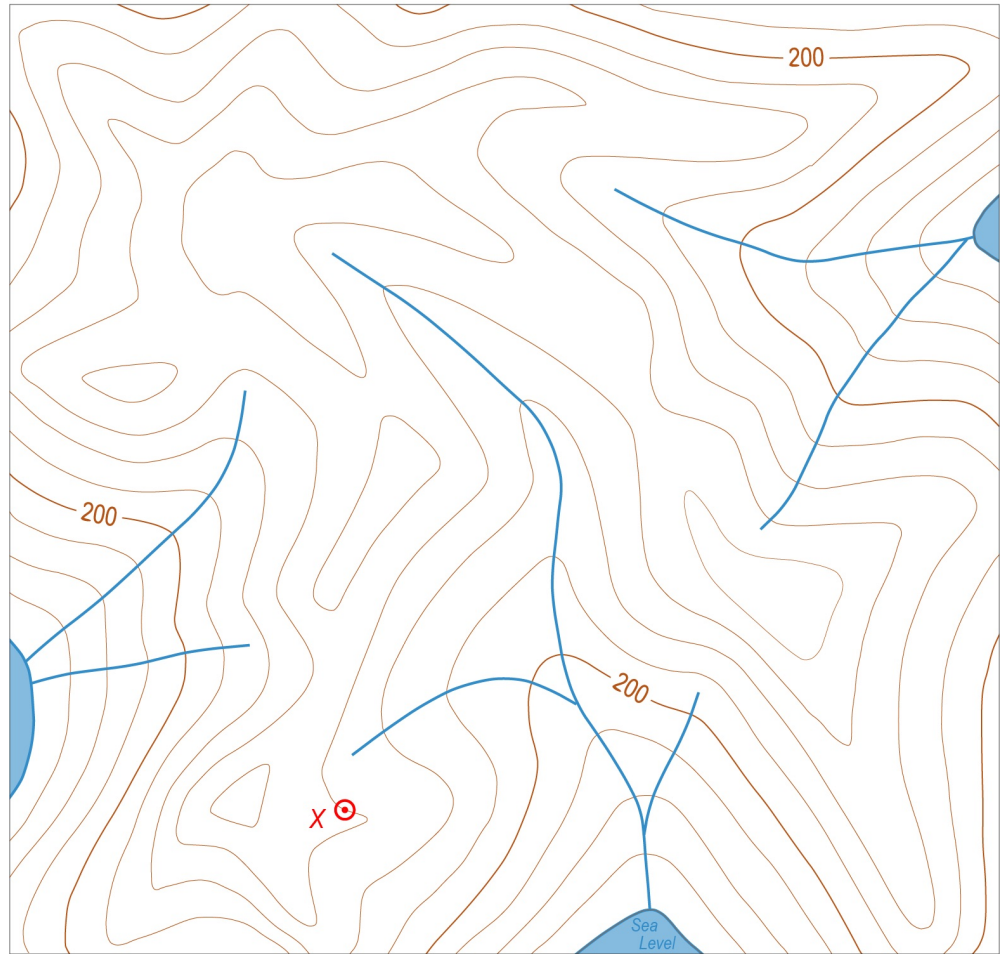
- No. 88a: <https://skfb.ly/6TsPr>
- No. 88b: <https://skfb.ly/6TsOO>
- No. 88c: <https://skfb.ly/6TsPO>
- No. 88d: <https://skfb.ly/6TsOz>



Please use the SketchFab model of topo block No. 122 to help you complete questions 1-6 on the following pages.

Block No. 122

- Block No. 122: <https://skfb.ly/6TsQR>
1. Assign elevation values to every contour line on the map at right using a contour interval of 50 m.
 2. The X (in the southern half of the map) indicates a location of one point on the western margin of a vertical igneous dike with planar sides. The dike is 50 m thick, and both of its margins have a strike of 045. Sketch the contacts between the dike and the country rocks, and use a colored pencil shade the areas where igneous rocks would crop out.
 3. A horizontal, 50 m thick coal bed occurs in this region. The base of the coal bed has an elevation of 250 m. Please use a different colored pencil to shade in all of the areas where you would find outcrop exposures of the coal horizon.

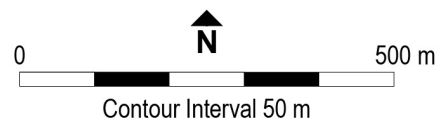
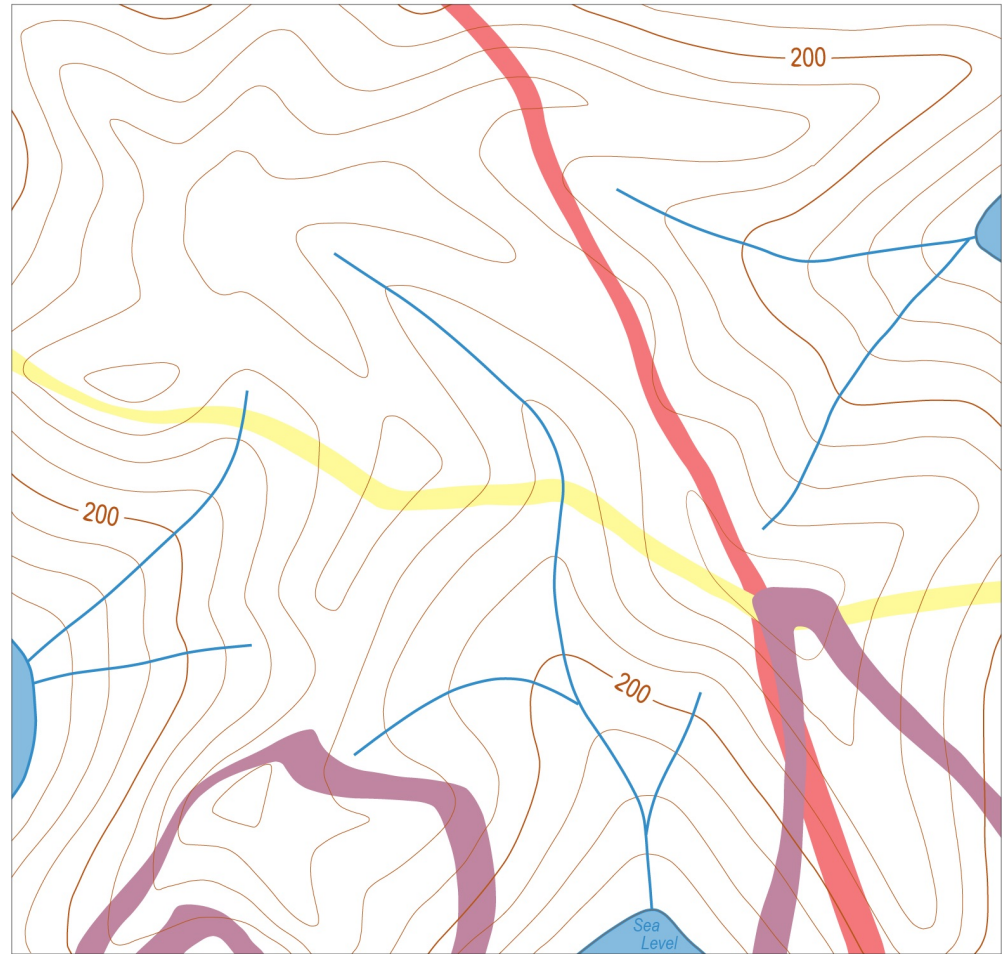


Determine the strike and dip of the colored layers in the map at right using the intersections of their outside margins (contacts) with topographic contours. For each of the following questions, be sure to use the same margin (contact) of the layers in your work!

For full credit, show all of your calculations neatly in the space provided below, write your strike and dip using the proper format (eg., 175/15 W), and draw a box around your final answer.

4. Determine the strike and dip of the red layer
5. Determine the strike and dip of the yellow layer
6. Determine the strike and dip of the purple layer

Block No. 122



Calculating thickness: determine the thickness of the colored layers using the strike and dip data provided and the intersections between contacts and topographic contours.

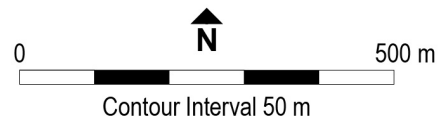
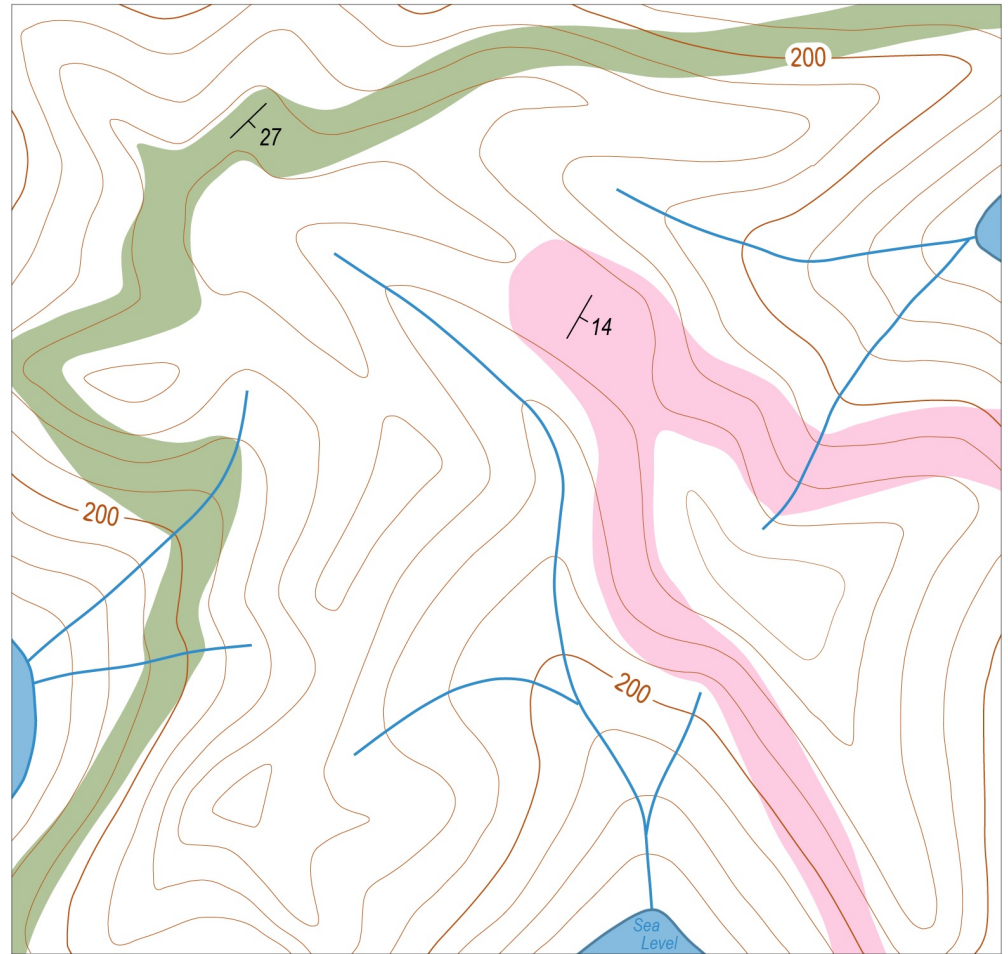
Please note that while the following questions (7-10) use the topography from Topoblocks No. 121 and No. 122, they are based upon include new geological surfaces that do not appear in the original wooden blocks. You may wish to use the SketchFab models to visualize topography, but don't be misled by the old planes!

- No. 121: <https://skfb.ly/6TsQN>
- No. 122: <https://skfb.ly/6TsQR>

For full credit, please show all of your calculations neatly in the space provided below and draw a box around your final answer.

7. Green layer
8. Pink layer

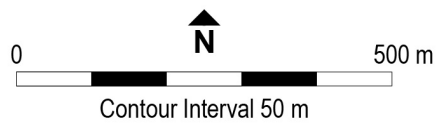
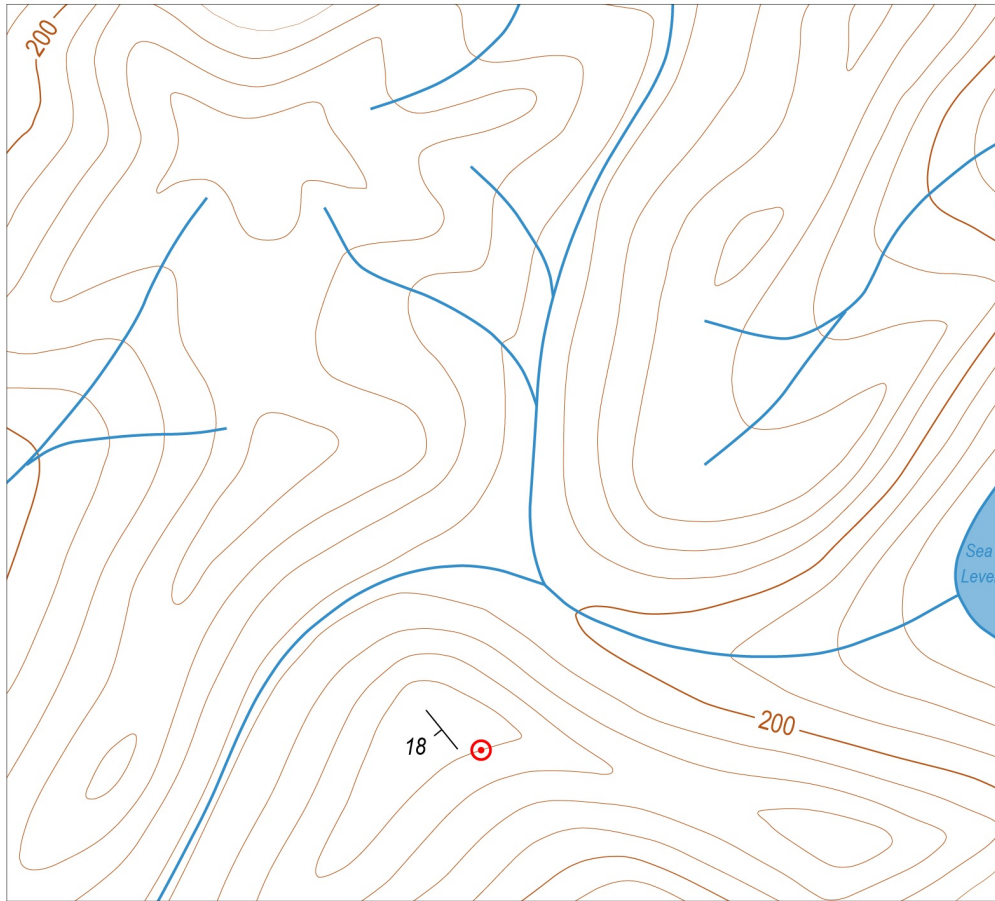
Block No. 122



Plotting contacts: An outcrop between two units is exposed at the red dot on the following maps. The closest bedding attitude measurement (strike & dip) is shown. Assuming a planar contact parallel to bedding, use the skills you've developed in questions 1-8 to plot the traces of the contacts across these two maps.

9. Block 121

Block No. 121



Block No. 122

