Geologic Maps

Activity 1: Strike and Dip

Name:_________________________  Lab Section:_________  Date:__________

1. Label the arrows in Fig. 1 with either strike or dip.

Fig. 1

a. The two map views in Fig. 2 show the outcrop pattern of a single rock layer. The angle of the strike is shown on each map. Enter the two possible quadrant designations for the strike on the blanks below the maps.

Fig. 2

__________________________  ________________________
__________________________  ________________________
2. Each of the six map views in Fig. 3 shows the outcrop pattern of a different rock layer. On each unit, draw the strike-and-dip symbol (you can choose either dip direction). Determine the strike of each layer and enter it in the blanks above each map. Give the strike in quadrant notation (e.g., S32°E) on the top blank. Enter it in azimuthal form (e.g., 122°) on the bottom blank. If you want, you can use the strike Java applet to assist you.

Fig. 3

Strike:  
Strike:  
Strike:  

(a)  
(b)  
(c)  

Strike:  
Strike:  
Strike:  

(d)  
(e)  
(f)  

*strike Java applet*
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3. Figure 4 shows six blank maps. Above each map is the strike of a rock unit. Use this strike to draw the unit on the map. If you want, you can use the strike Java applet to assist you.

Strike: S85°W (265°)

Strike: N10°E (10°)

Strike: S42°E (138°)

Strike: N4°W (356°)

Strike: N48°E (48°)

Strike: S65°E (115°)

(a) (b) (c)

(d) (e) (f)

Fig. 4
4. Figure 5 shows five block diagrams illustrating different orientations of a planar strata. On the top of each block, draw the proper strike-and-dip symbol. Estimate the dip of the layer for (b), (d), and (e) and write it next to the dip symbol. If you want, you can use the strike and dip Java applet to assist you.

5. The block diagrams in Fig. 6 will help you visualize in three dimensions. Each block provides incomplete information about some rock layer as it would show on cubes cut from the Earth’s crust. The top of each block is a horizontal surface. The other two visible sides are cross sections formed when the cube was cut from the crust. Complete the subsurface view on the blank face(s) of each block.
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6. On each of the block diagrams in Fig. 7, draw a rock layer with the strike and dip indicated above each block. Label each rock layer with its appropriate strike-and-dip symbol.

![Block diagrams](a) STRIKE: NS  
Dip: 90°

![Block diagrams](b) STRIKE: NS  
Dip: 25°W

![Block diagrams](c) STRIKE: NS  
Dip: 75°E

![Block diagrams](d) Strike: EW  
Dip: 55°N

![Block diagrams](e) STRIKE: EW  
Dip: 90°

![Block diagrams](f) STRIKE: EW  
Dip: 20°S

Fig. 7

7. Your instructor may supply you with a geologic map. If so, answer the following questions.

a. What is the name of the map? ______________________________________
b. What is the scale of the map? ______________________________________
c. What is the youngest geologic unit exposed on the map?  
   ______________________________________
d. What is the oldest geologic unit exposed on the map?  
   ______________________________________
e. What is the magnetic declination for the map?  
   ______________________________________
f. What is the age of the geologic unit at (a)?  
   ______________________________________
g. What is the rock exposed at (a)?  
   ______________________________________
h. What is the dip of the bed at (b)?  
   ______________________________________
i. What is the strike of the bed at (b)?  
   ______________________________________
j. Are there any unconformities on the map?  
   ______________________________________