Field Geology Name _____
Basic geology tools

A. Finding your stride/pace in meters. (5pts)
Why? Knowing your double pace is a relatively effective way to measure linear distances in the field. With practice you should be able to achieve an error of less than 3m over the course of 100m.
Establish your pace length by -
1. Start with your feet together
2. Walk along the 100m taped course – use a normal stride and count the number of times your left foot hits the ground.
3. While walking look forward, have another person watch the end of your walk and say end as you pass the 100m mark, so you are less likely to unconsciously adjust your steps towards the end.
4. Record your number of steps.
5. Repeat steps 1-4, at least 6 times. Calculate an average.

1 = 2 = 3 = 4 = 5 = 6 =

Avg. =
Your average should be within two double steps (left foot counts) of the average. Create a table for a rapid conversion of double steps to meters 1 through 10 by 1 meter and 10 through 100 by 10m.
e.g.

Double paces	Meters	Double paces	Meters
1	1.7	10	16.6
2	3.3	20	33.3
3	5.0	30	50.0
4	6.6	40	66.4
5	8.3	50	83.0
6	10.0	60	100
7	11.6	70	116.6
8	13.3	80	133.2
9	15.0	90	150.0
10	16.6	100	166.0

Once graded, make a photocopy of this and or write into an easily accessible area of your field journal.

- We should try and see if the pedometer/steps function on an app like I-health would be more or less accurate…

Attempt 1 = (Pace method)_____

Attempt 2 = (Tape method _____

Briefly discuss the advantages and disadvantages of the pace versus tape method -
2. Compass (5pts)

Draw and label a diagram of a Silva compass and identify if your compass measure in quadrants or azimuth. Why – it is important to understand the components of your compass – and important geologic tool.

My compass measures directions in _____.

3. Taking compass bearings (5 points)
Why – Will allow you to characterize the geography of geologic features with respect to each other. I.e. measure the direction to or from a location… From campus to map - A) Hold your compass at eyelevel with the string and mirror pointing at you. B) Identify the feature of interest, C) Adjust the mirror so you can see the azimuth values while still able to view the feature of interest through the sight window, D) Turn the compass dial until the red magnetic needle is aligned with the red magnetic needle 'home', E) The read and record the desired feature's azimuth. Dr. Heinzel will provide instructions of what to measure.

From campus to map

Attempt 1 = _____

Attempt 2 = _____

Attempt 3 = _____

From map to campus (A. Align the compass edge between the two points of interest, B. Adjust the compass dial so that the black N-S grid lines follow the map's N-S lines, C. read and record the desired azmuth between the two points of interest.

Attempt 4= _____

Attempt 5 = _____
4. Measuring strike and dip (3pts)

Why – Allows geologists to begin to characterize the structural geology of a mapping area. As well as provide a means to accurately identify an area's stratigraphy. How to: A) Use the right and rule to identify the direction of strike and dip, B) to measure strike align the compass edge parallel to the direction of strike and follow the method explained in 3 with the exception of laying the mirror flat/parallel to the base plate. *Protip – If the surface of the outcrop is rugged lay a book down upon the outcrop to average out the bumps.
Measuring Dip and Dip direction; C) Place the compass perpendicular to strike with the clinometer scale on the BOTTOM closest to the outcrop, D) Measure and record the inclination of dip

Attempt 1 = _____

Attempt 2 = _____

Attempt 3 = _____

5. Measurement with the Jacob Staff (field book, p. 229-232) (4 pts)
Why – Allows a geologist to measure the true thickness of geologic strata and in turn provides an accurate stratigraphic (physical) characterization. Location Dome Hill.

Attempt 1 (@no dip) _____

Attempt 2 (@ 40degree dip) _____

6. Triangulation – (4 points)
Why – A method that allows you to locate your position on a topographic map, by placing three bearing measurements upon a site specific map.