Laboratory Activity: **Fault Planes and Focal Mechanisms**
Due Date:
Materials: Clear plastic hemisphere (cover for Real World Globes) with degree graduations marked on interior, Real World interior work board, Assemble long wooden rod through back of interior work board (for strike). White equatorial ring of Real World Globes. Dry erase markers.

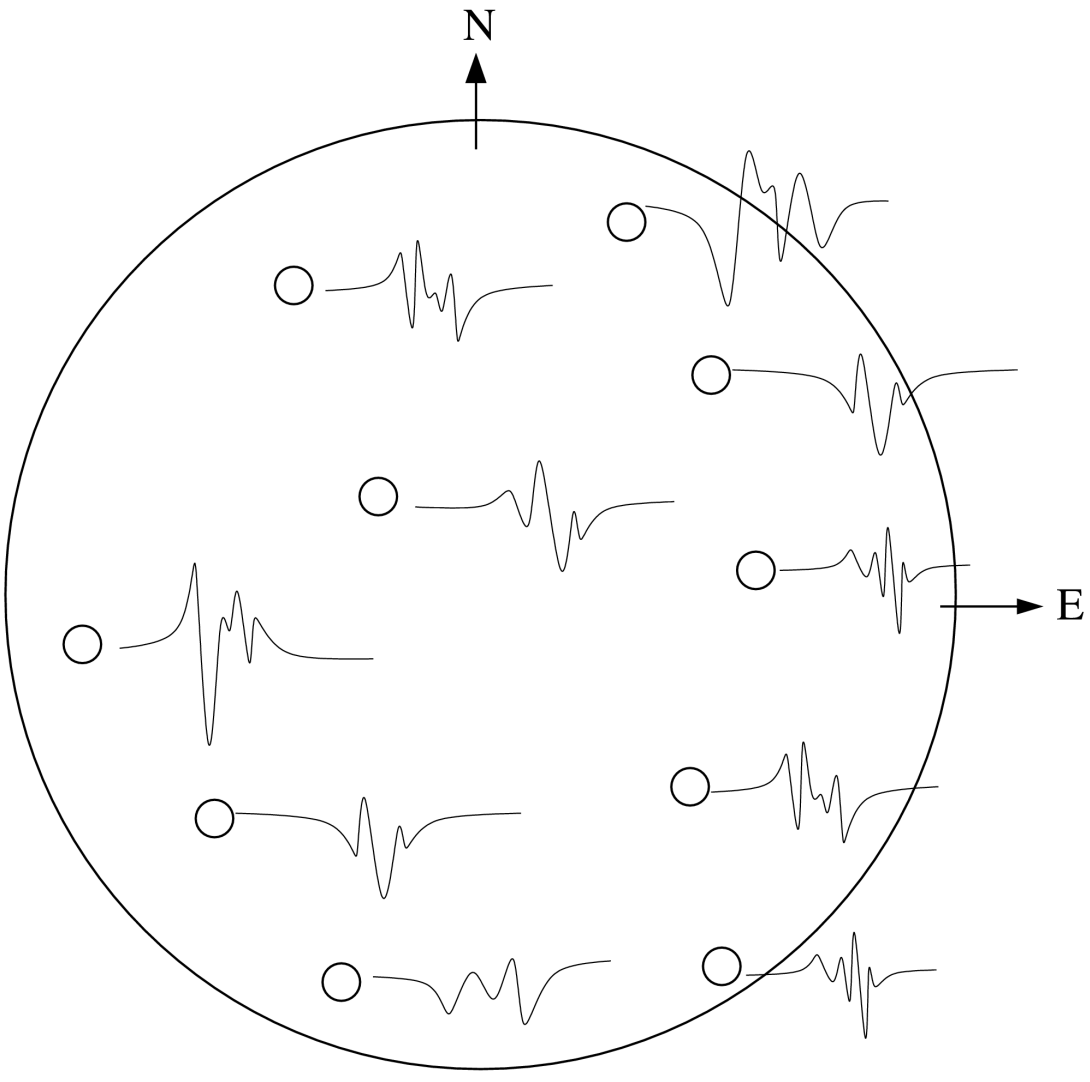
Name _____

1a.) In the beach ball diagram below (top view), seismometer stations are shown by an open circle. Fill in the circles where the seismogram shown indicates compressional motion. Leave the circles "open" and unfilled if they show dilitation (tension).

1b.) Draw great circles dividing the boundaries between compressional quadrants and tensional quadrants. Shade in the quadrants which are compressional.

1c.) Label the fault plane (s).

1d.) What type of fault does this beach ball diagram describe ? Draw a block diagram of this fault.



Use your clear plastic lower hemisphere bowl to answer the following questions.

1e.) Find the **strike** and **true fault dip angle** of the two possible fault plane solutions for #1 above. (Follow the steps below)

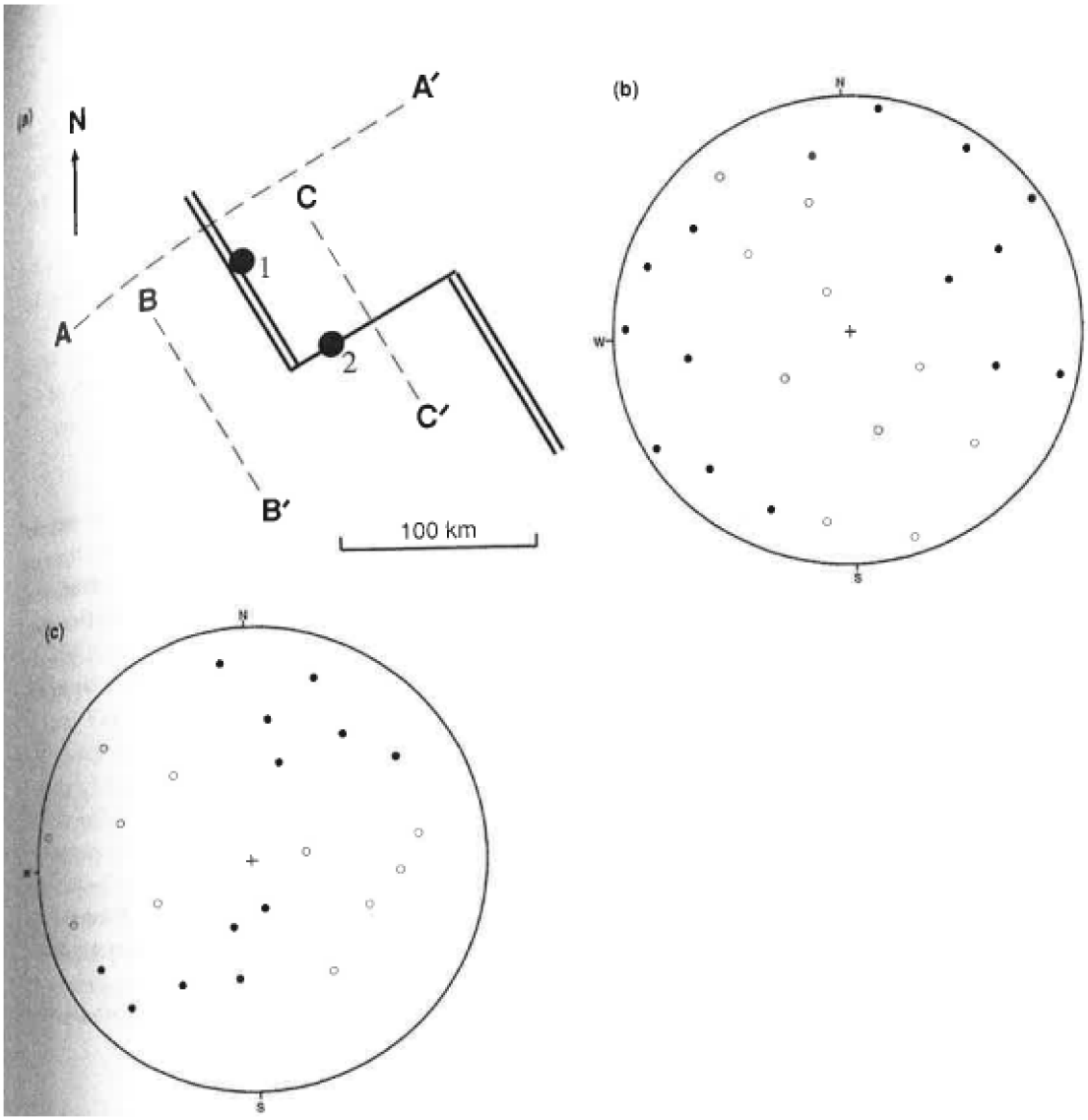
Step 1: Paste/tape a degree scale along the inside of your lower hemisphere along any diameter.
Step 2: Place the white degree ring ontop of the hemisphere lip/edge
Step 3: Place a long wooden rod in the eyelets behind the round workboard for the RealWorld Globes. Place the rod on top of the hemisphere, so the work board is flat in the horizontal plane (Imagine walking on this surface outside). Orient the rod to point in the direction of the **strike** of the fault plane.
Step 4: Tip the flat board (from horizontal) until it shows the fault dip angle indicated in your fault plane solution above (in problem #1d).

Repeat steps 2-4 to determine the auxiliary fault plane solution.

Give the Strike and Fault dip angle for both fault solutions.

	Strike	Fault Dip Angle
Fault plane solution 1:		
Auxiliary fault plane solution 2:		

2. Use the tectonic boundaries and first motion plots below to answer the following questions.



2a.) The diagram above shows 2 first motion plots for either point 1 or point 2 on the plate boundary shown. Determine which and draw an arrow the the appropriate point.

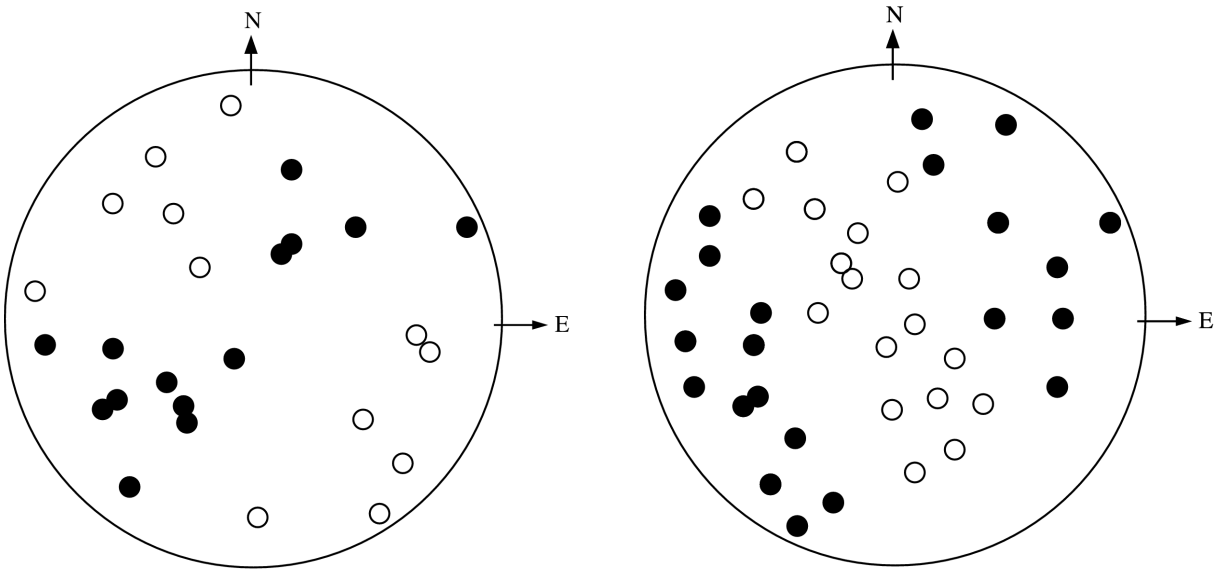
→ To do this – determine the fault plane solutions for each beach ball diagram by drawing great circles to separate the compressional and tensional quadrants.

→ Determine the fault strike and dip angles for each solution. Then do this for both beach balls.

	Strike	Fault Dip Angle	Fault Dip direction
Point #1:			
Fault plane solution 1			
Auxiliary fault plane solution 2			
Fault type:			
Point #2:			
Fault plane solution 1			
Auxiliary fault plane solution 2			
Fault type:			

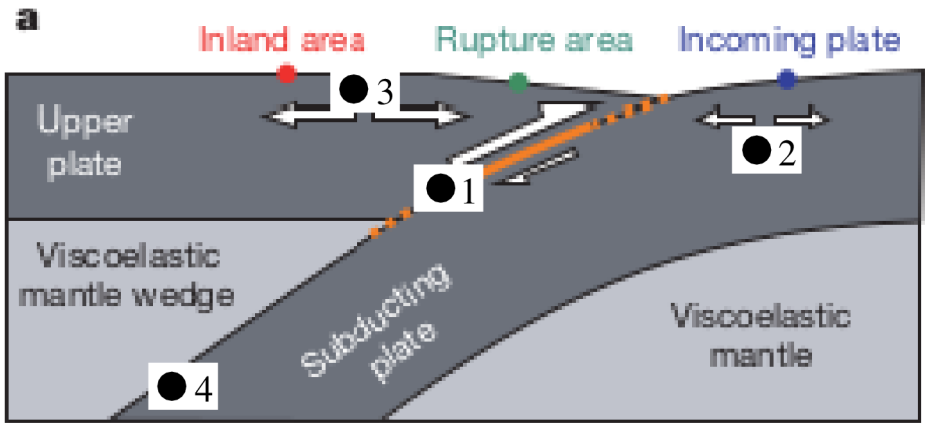
Can you determine which fault plane solution is most likely using the map ? Circle it.
2b.) Sketch the bathymetric profile for cross sections A-A', B-B', and C-C' below.

3. Use the diagram and beach balls given below to answer the following questions.



3a.) Determine the strike and true fault plane solutions for the 2 beach balls shown using your plastic lower hemisphere

	Strike	Fault Dip Angle	Fault Dip direction
Beach ball (left):			
Fault plane solution 1			
Auxiliary fault plane solution 2			
Fault type:			
Beach ball (right)			
Fault plane solution 1			
Auxiliary fault plane solution 2			
Fault type:			



3b.) Determine which point each beach ball may correspond to in the subduction zone boundary sketch above. (Note: One beach ball may apply to more than one point on the plate boundary sketc