Part 1. Fill in the blank / short answer (write your answers on the blank lines at left)

1. List the three fundamental energy sources (driving mechanisms) for Earth processes.
   
2. True or False: The only sources of dissolved ions in seawater are those that are dissolved in rivers that drain to the oceans.
   
3. The center of the earth, composed of iron and nickel, is referred to as the __________. This is surrounded by solid rock the the __________. The outermost portion of the earth's lithosphere is referred to as the __________.
   
4. What two heat transfer processes are operating inside the earth?
   
5. List the two types of crust that occur at the Earth's surface.
   
6. When travelling away from a mid-ocean spreading center, the age of the ocean floor (increases, decreases, stays the same) increases.
   
7. The term ________ zone refers to the average distribution of earthquake foci that mark the position of a subducting plate.
   
8. The recording of ancient magnetic fields of the Earth in rocks is referred to as ________.

Part 2. Short Answer Essay / Lab Problems

7. Sketch, label, and briefly discuss the three types of plate tectonic boundaries.

8. According to Newton's second law, a mass of 1 kg is accelerated 1 m/sec² by a force of 1 N. What would be the acceleration of 125 kg acted on by a force of 157.2 N? SHOW ALL OF YOUR WORK AND UNIT ALGEBRA.

\[ f = ma \]
\[ a = \frac{F}{m} = \frac{157.2 \text{ N}}{125 \text{ kg}} = 1.26 \text{ m/s}^2 \]

9. A ship with sonar detection is investigating the depth of the western Pacific. The speed of sound in water is 1450 m/sec. The travel time from the ship to the ocean floor and back is 4.3 seconds. What is the depth of the ocean floor in meters? What is the depth in fathoms? SHOW ALL OF YOUR WORK AND UNIT ALGEBRA.

\[ \text{Two-way time} = 4.3 \text{ sec} \]
\[ \text{One-way time} = 2.15 \text{ sec} \]
\[ \text{Depth} = \frac{1450 \text{ m/sec} 	imes 2.15 \text{ sec}}{2} = 1704 \text{ m} \]

10. A cross-sectional profile of the seafloor is drawn with a vertical scale of 1 in = 2000 ft and a horizontal scale of 1 in = 5 mi, what is the vertical exaggeration of the profile? Show all of your math work.

\[ \text{Vertical scale} = \frac{2000 \text{ ft}}{1 \text{ in}} = \frac{5 \text{ mi}}{1 \text{ in}} \]
\[ \text{Exaggeration} = \frac{5 \text{ mi}}{2000 \text{ ft}} = \frac{1.25 \text{ mi}}{5280 \text{ ft}} = \frac{1.25 \text{ mi}}{5280 \text{ ft}} \]

11. A map with bathymetry data is shown on the next page. Draw a series of isobaths using a contour interval of 200 m.
