Name Period Date

Unit	Handout
3	20

Lesson 7: Investigating Faults with Models

Purpose:	Investigate the effects of applying a force to a model of a fault. Relate the interaction of forces at boundaries to the occurrence of earthquakes.
Guiding Questions:	- How does force relate to plate movement? - How are earthquakes explained by plate movement?

Instructions: Obtain a fault box and prepared masking tape. Ensure that it is setup according to the instructions on page 99.

1. Predict what you believe will happen with the amount of force needed to move the block as you increase the number of Velcro strips.

2. Conduct your activity as instructed on pages 100-101, begin with step 7. What happens to the tape as you pull on the block? (Try this with different amounts of Velcro, too!)

3. What happens to the houses that are on top of the moving plate? (Again, try this with different amounts of Velcro!)

4. This part is just for information before you move on to steps 8-14. You will collect your data in the form of Newtons. A Newton (N) is a measurement of force. Specifically, it measures how much force is needed to accelerate 1kg of mass at $1m/s^2$. For example, Mr. Ower has a mass of 80kg. If someone wants to accelerate me at a constant rate of $2m/s^2$, it would take 160N of force to do so.

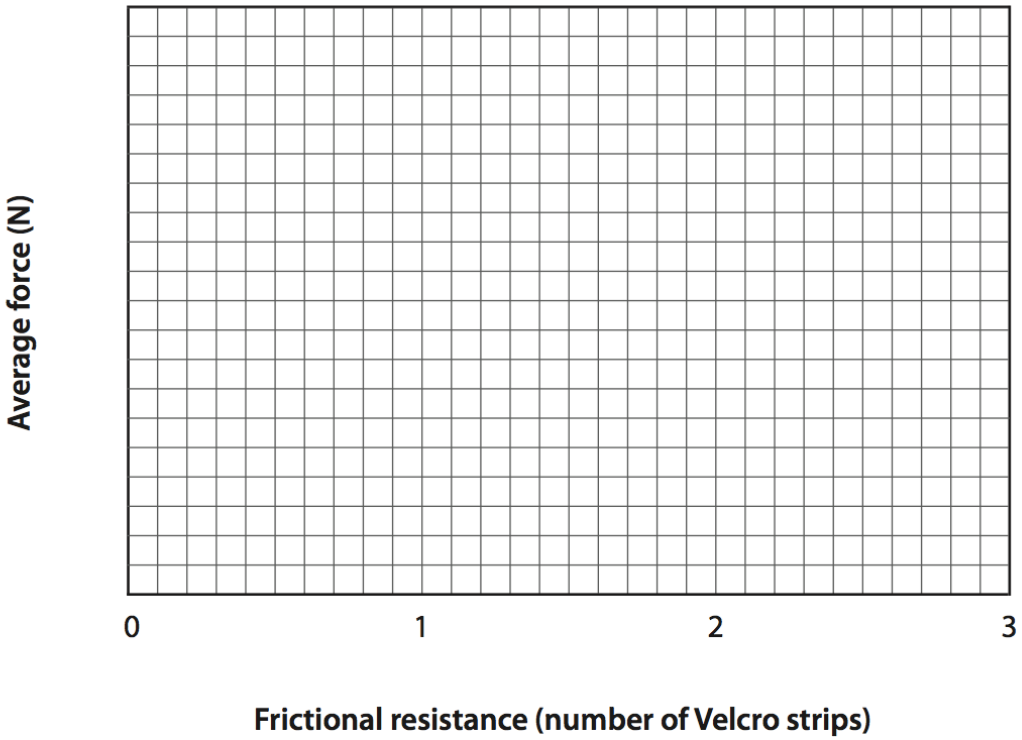
5. Record your collected data in the table on the back of this page. No outliers are permitted in your table. This means if you data set contains 1, 1, 1, 9, 1, you would need to retest the 9 and not include it in your data.

Table 1 Force to Move a Block Along the Fault

Frictional Resistance (number of Velcro® strips)	Force (N) Needed to Move the Block			
	Trial 1	Trial 2	Trial 3	Average
0				
1				
2				
3				

6. Having calculated your data, you will need to graph it on the following page. Which type of graph will work best: line graph, bar graph, scatter plot, etc.? Why? (Hint: think about what each type of graph shows.)

Average Force Required to Move a Block Along the Fault



7. Using the graph above, write a statement that describes the relationship between the frictional resistance and the average force needed to move the block.

Instructions: Use your data from your investigation to answer the following questions. Full and complete sentences are required.

1. How did the amount of friction along the fault affect the amount of force needed to rupture the fault? Use data from your lab to support your answer.

2. Under what conditions did the blocks rupture more abruptly?

3. Under what conditions did the block slip (move slowly) but not rupture?

4. Under what conditions were the biggest earthquakes produced? Use data to support your answer.

5. Think about what happened with the masking tape. Is there any sign on the earth's surface that the earth is moving slowly beneath the crust? Look at Figure 7.3 on page 101 and use the caption to help you answer this question.

6. Write a definition for the term fault.

7. What type of fault was the model? Explain. See pages 94-97 for types of faults.