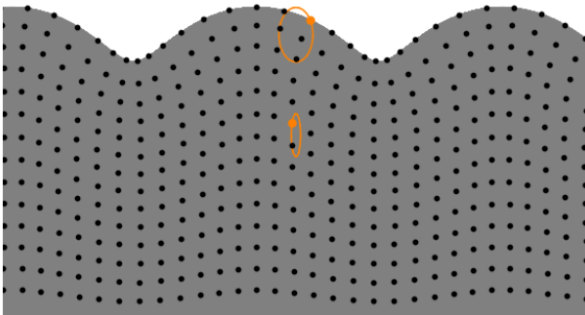
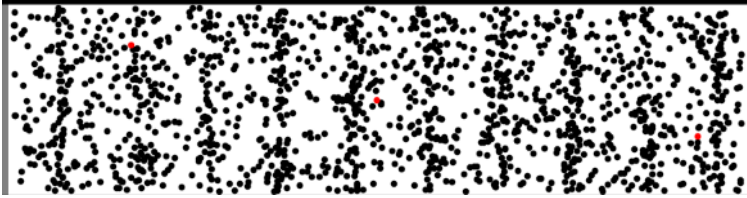


Section 10: Earthquakes

<http://www.acs.psu.edu/drussell/Demos/waves/wavemotion.html>



Section 10 Question: What are the origins of earthquakes and how is their energy transferred through the Earth?

What Do You See?
(cartoon)

What Do You Think?

Two students are debating about why earthquakes occur where they do.

Student 1: *Earthquakes occur where the faults are, so areas that have lots of faults also have lots of earthquakes. For example, California has a lot of faults, so it has a lot of earthquakes as well.*

Student 2: *That only partly answers the question because we need to know why faults occur where they do. Most faults occur along plate boundaries, so most earthquakes also occur along plate boundaries. It's the plate boundaries that determine where earthquakes occur.*

Do you agree with one or both students? Why?

What Do You Think Now?

Focus Question: How can energy transmission be shown in an earthquake?


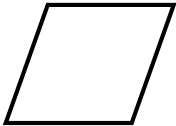
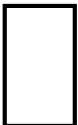

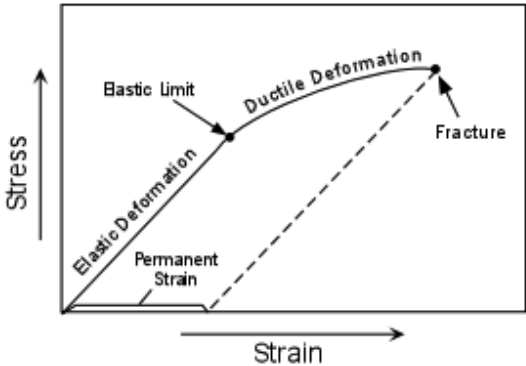
Explore Part A (Rupture and Rebound):

Explore Part B (Vibration):

Explain

RETURN TO WDYTN

DIGGING DEEPER

<i>Stress and Strain</i>																				
<ul style="list-style-type: none"> As plates move under the force of Plate Tectonics, stress builds in the rocks. Elastic deformation is a nonpermanent bending that recovers when the stress is removed. Elastic rebound is the release of energy from elastic deformation. Ductile deformation is permanent bending of a material after stress has been applied. When the fracture point is reached, rocks will break releasing large amounts of energy along a fault plane. Friction between rocks allows the buildup of stress over long periods of time. 	<p style="text-align: center;">Types of Stress</p> <div style="text-align: center; margin-bottom: 10px;">  </div> <div style="text-align: center; margin-bottom: 10px;">  </div> <div style="text-align: center; margin-bottom: 10px;">  </div> <div style="text-align: center;">  </div>																			
																				
<i>Earthquakes and Seismic Waves</i>																				
<ul style="list-style-type: none"> When large amounts of energy is released, seismic waves are generated. P-waves, and S-waves are created at the same time. When waves intersect the surface, they are called surface waves. 	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="padding: 5px;">Characteristics</th> <th style="padding: 5px;">P-Waves</th> <th style="padding: 5px;">S-Waves</th> <th style="padding: 5px;">Surface Waves</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">Velocity</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="padding: 5px;">Motion</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="padding: 5px;">Materials they travel through</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>				Characteristics	P-Waves	S-Waves	Surface Waves	Velocity				Motion				Materials they travel through			
Characteristics	P-Waves	S-Waves	Surface Waves																	
Velocity																				
Motion																				
Materials they travel through																				

Chapter 2, Section 10 E.B.C.
Earthquakes

Name: _____
Period: _____

Question (2)			
Claim 1 (2)			
A. Supporting Evidence (3)		B. Supporting Evidence (3)	
Claim 2 (2)			
A. Supporting Evidence (3)		B. Supporting Evidence (3)	
Analysis (6)			
	Claim <i>A statement or conclusion that answers the original question/problem.</i>	Evidence <i>Scientific data that supports the claim. The data needs to be appropriate and sufficient to support the claim.</i>	Analysis <i>A justification that connects the evidence to the claims. It shows why the data counts as evidence by using appropriate and sufficient scientific principles and vocabulary.</i>
0	Does not make a claim, or makes an inaccurate claim.	Does not provide evidence, or only provides inaccurate or vague evidence.	Does not provide an analysis, or only provides an irrelevant analysis.
1	Makes an accurate but vague or incomplete claim.	Provides vague evidence and does not include specific data.	Repeats evidence and links it to claim, but does not include specific scientific principles.
2	Makes accurate and complete claim.	Provides correct evidence but does not include specific data.	Connects all evidence to the claims using scientific principles or vocabulary but not both.
3		Provides correct evidence and includes specific data.	Connects all evidence to both claims using scientific principles and vocabulary.

CHECKING UP: Page 227, 1 through 4 (2 points each)

1.

2.

3.

4.

Some faults are frequently active and produce numerous small earthquakes. Other faults are rarely active but produce large earthquakes. Based on the investigations you completed, propose factors that might influence the number and size of earthquakes produced by a fault. (5 points)