

Take Out:

- pencil
- notebook
- highlighter

Steps to Ready:

1. Take out supplies.
2. Glue in notes and title them according to what is on my board.
3. Update your Table of Contents

All plate motion is caused by convection
currents in the mantle. When two plates
move apart this is a divergent boundary. This
puts tension stress in the crust which stretches it
until it cracks, causing a fault. As the plates slide apart,
the hanging wall falls down forming a normal fault.

When two plates collide, they form a convergent boundary. This collision puts compression stress in the crust. As the plates push together, the hanging wall slides up forming a reverse fault.

As two plates slide past each other they form a transform boundary. As they move it puts shearing stress in the crust. This forms a strike-slip fault.



Earthquakes

Learning Objective

Today, we will describe the parts of an earthquake and practice reading double line graphs.

Think about an earthquake you have seen on T.V., in the movies, newspaper, magazine article, or even in real life.

1. Where were you?
2. How did you know an earthquake was happening?
3. What happened to the buildings and things around you?
4. How did you feel before and after?



What is an earthquake?



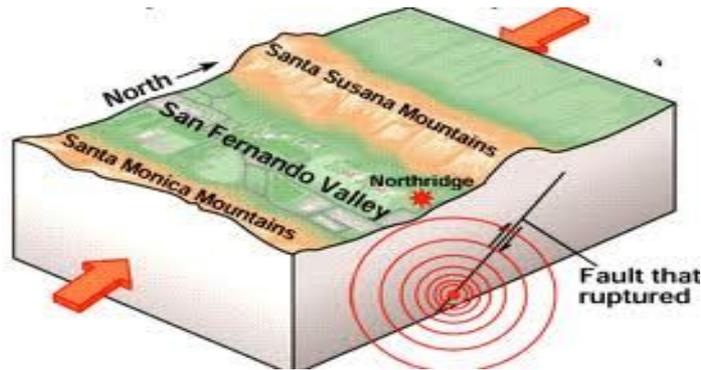
An earthquake is the shaking caused by rocks moving along a fault.



Highlight the word “earthquake” in your notebook.

How do earthquakes form? (p. 181)

Working with your partner, put the strips of paper in order.





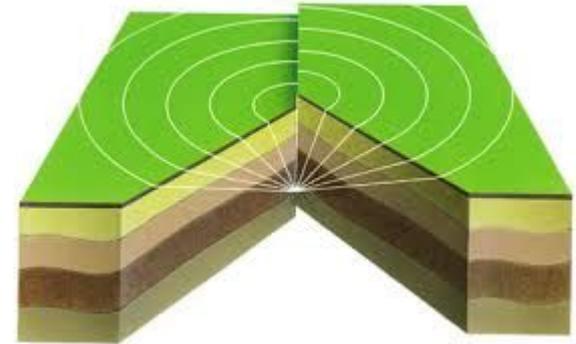
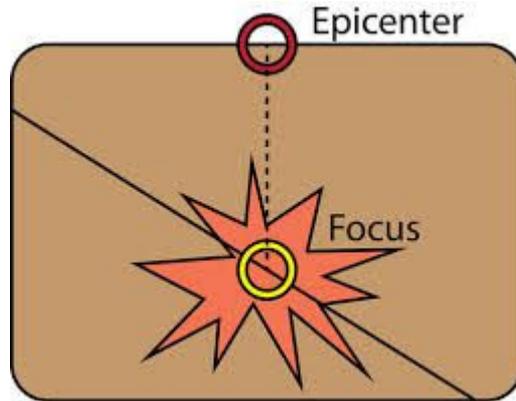
Parts of an Earthquake

There are 3 main parts of an earthquake:

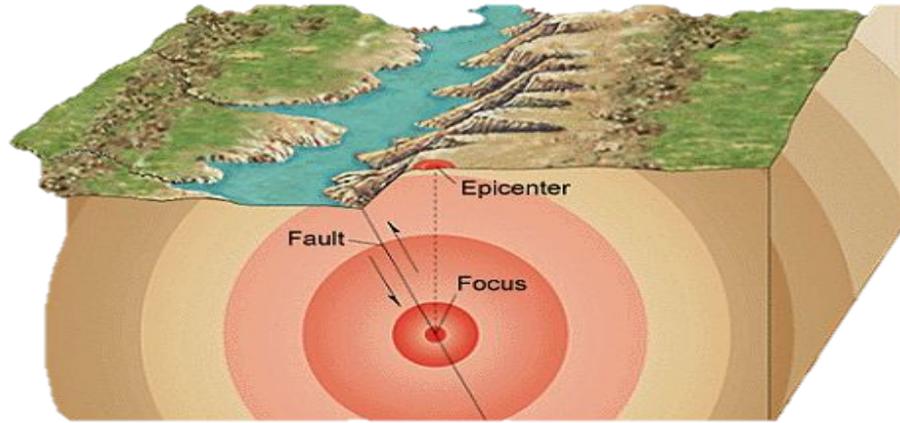
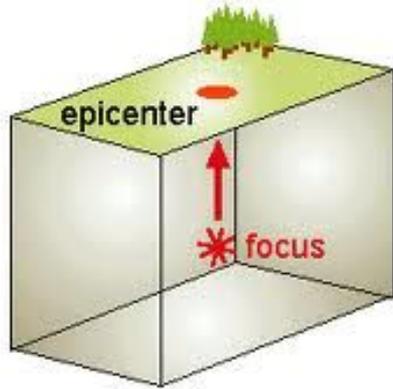
1. Focus

2. Epicenter

3. Seismic Waves



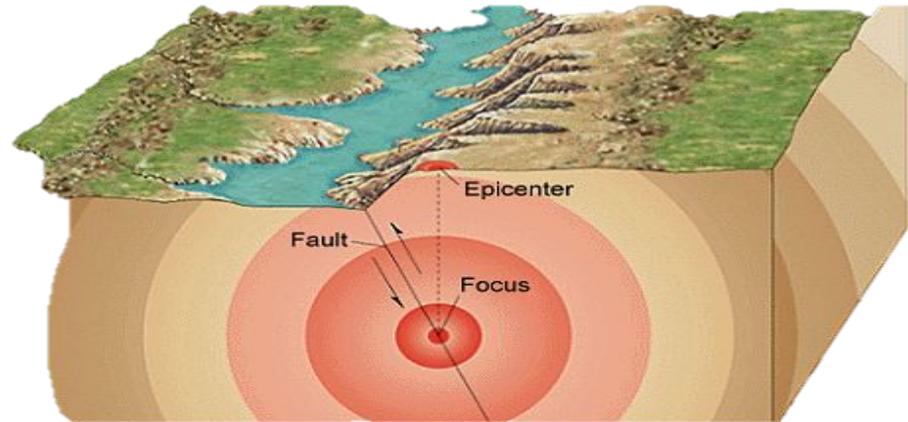
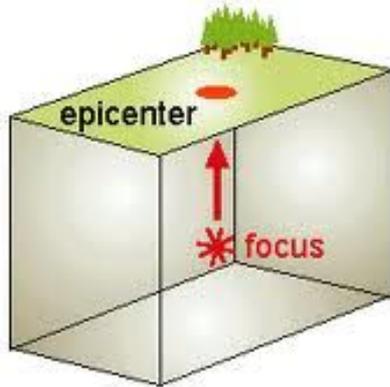
1. The focus is the point in Earth's crust where rock breaks under stress and cause an earthquake.
 - This is where the earthquake starts in the crust.



Highlight the words “focus”

2. The epicenter is the point on Earth's surface above the focus.

- This is where the earthquake starts on the surface of the Earth.
- It usually suffers the most damage in an earthquake.



Highlight the word “epicenter”

Pair-Share

How are the focus and epicenter similar?

They are both where an earthquake starts.

- The focus and epicenter are similar because _____.
- Both the focus and the epicenter _____.

Pair-Share

How are the focus and epicenter different?

The focus is inside the crust and the epicenter is on the surface of the Earth.

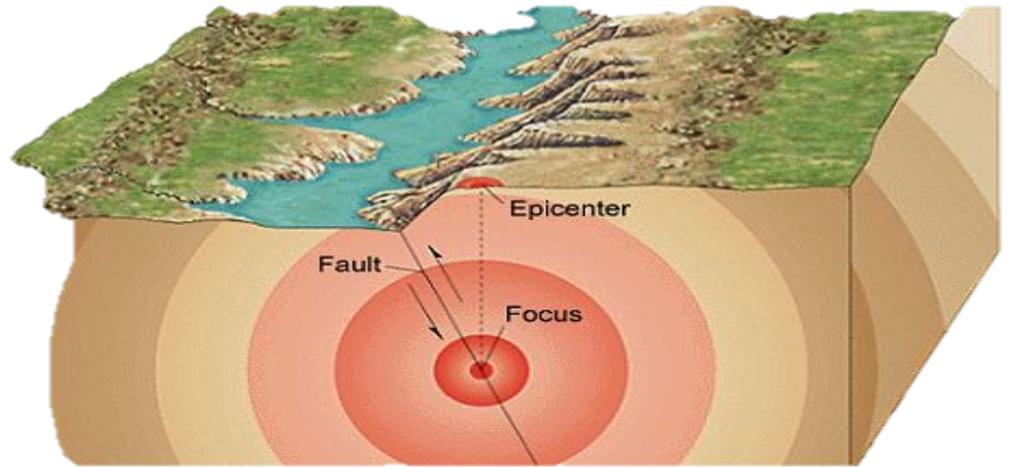
- The focus _____, but the epicenter _____.
- The focus _____, whereas the epicenter _____.

Draw it!

Draw a picture of a section of the crust.

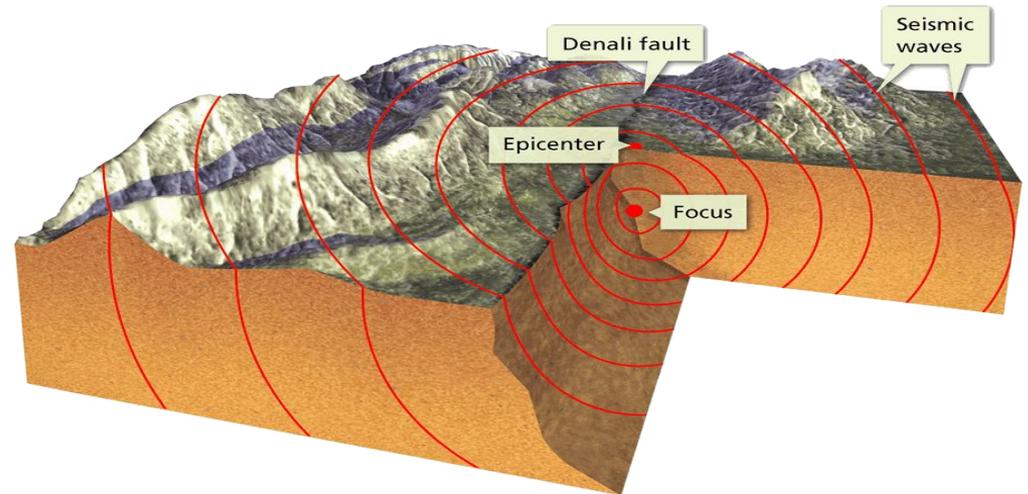
Label the following:

- *lithosphere*
- *fault*
- *epicenter*
- *focus*



3. Seismic waves are vibrations that carry energy released by an earthquake through the Earth.

- They travel away from the focus in all directions.
- They can travel through all the layers of the Earth and across the surface.



Below your seismic waves notes....

Copy the data table below:

Type of Wave	Time (sec.)
P-Wave (Forward and back)	
S-Wave (Side to side)	

Mini-Activity: How do seismic waves travel?

Materials:

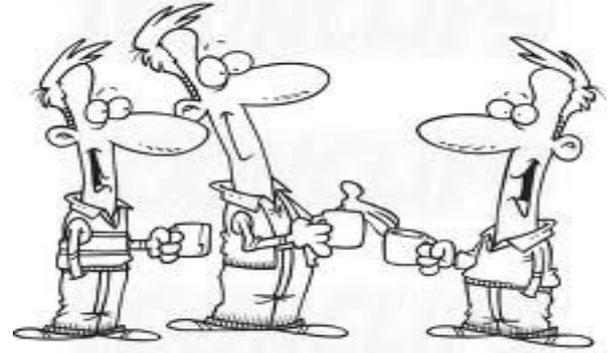
- notebook
- pencil
- slinky
- timer (phone)
- meter stick

★ Assign a letter: A, B, C, D to each member of your table.

Mini-Activity: How do seismic waves travel?

1. Student A - Hold one end of the slinky.
2. Student B – Measure 4 meters from student A. Student C stand there.
3. Student C – Hold the other end of the slinky, gather 4 coils then release.
4. Student D – Time and record the data.
5. Student A – Jerk one end of the slinky from side to side.
6. Student D – Time and record the data. Then, share the data with the rest of your table.

Discuss



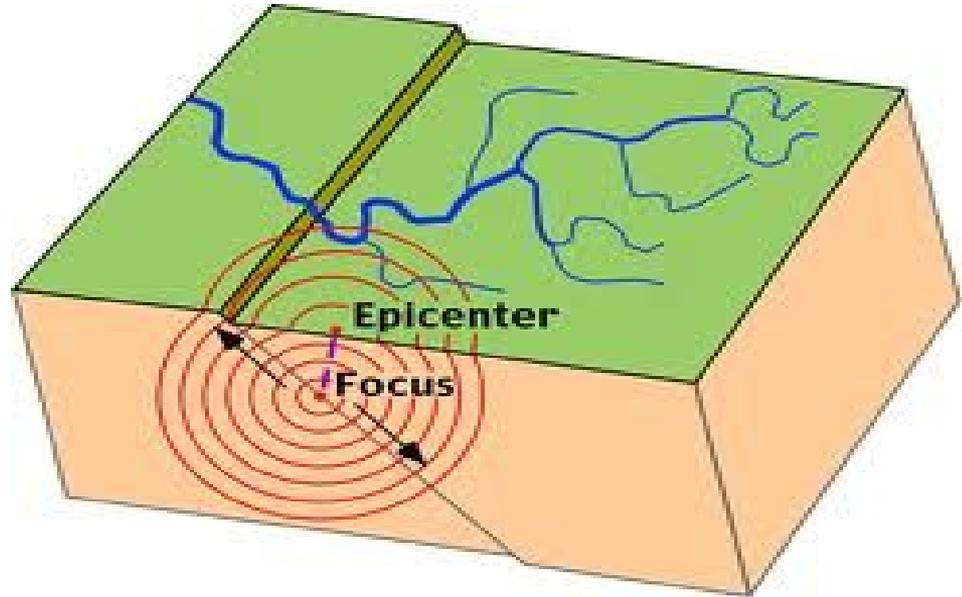
1. Which wave traveled faster?
2. How can you explain the difference in time difference?

There are three types of seismic waves:

1. P waves

2. S waves

3. Surface waves



p. 182-183

Type of Seismic Wave	Speed	Description (How does it affect the ground/buildings?)	What can it travel through?	Amount of Damage	Drawing
P waves (primary)					
S waves					
Surface waves					

Type of Seismic Wave	Speed	Description (How does it affect the ground/buildings?)	What can it travel through?	Amount of Damage	Drawing
P waves (primary)	fastest				
S waves					
Surface waves					

Type of Seismic Wave	Speed	Description (How does it affect the ground/ buildings?)	What can it travel through?	Amount of Damage	Drawing
P waves (primary)	fastest	- compress and expand ground - can damage buildings			
S waves					
Surface waves					

Type of Seismic Wave	Speed	Description (How does it affect the ground/ buildings?)	What can it travel through?	Amount of Damage	Drawing
P waves (primary)	fastest	<ul style="list-style-type: none">- compress and expand ground- can damage buildings	solids and liquids		
S waves					
Surface waves					

Type of Seismic Wave	Speed	Description (How does it affect the ground/ buildings?)	What can it travel through?	Amount of Damage	Drawing
P waves (primary)	fastest	- compress and expand ground - can damage buildings	solids and liquids	least	
S waves					
Surface waves					

Type of Seismic Wave	Speed	Description (How does it affect the ground/ buildings?)	What can it travel through?	Amount of Damage	Drawing
P waves	fastest	<ul style="list-style-type: none">- compress and expand ground- can damage buildings	solids and liquids	least	
S waves (secondary)					
Surface waves					

Type of Seismic Wave	Speed	Description (How does it affect the ground/ buildings?)	What can it travel through?	Amount of Damage	Drawing
P waves	fastest	- compress and expand ground - can damage buildings	solids and liquids	least	
S waves (secondary)	medium				
Surface waves					

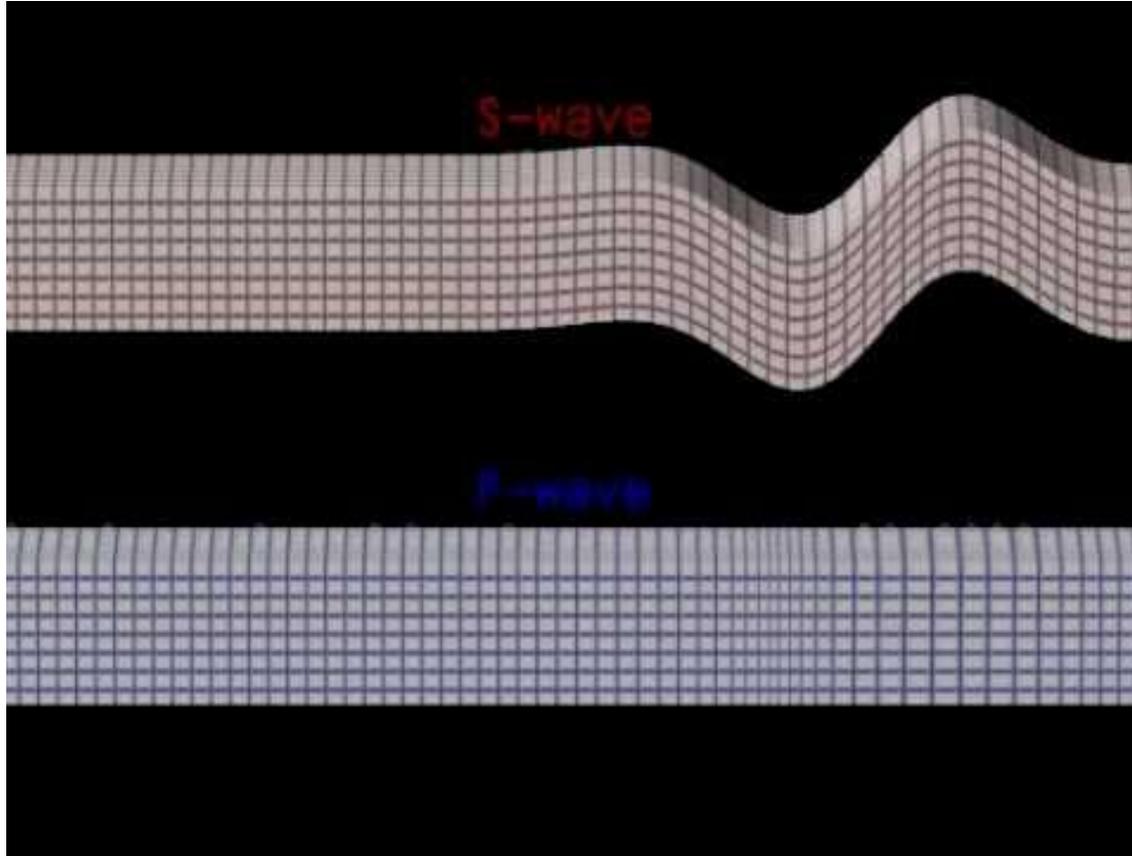
Type of Seismic Wave	Speed	Description (How does it affect the ground/ buildings?)	What can it travel through?	Amount of Damage	Drawing
P waves	fastest	<ul style="list-style-type: none"> - compress and expand ground - can damage buildings 	solids and liquids	least	
S waves (secondary)	medium	<ul style="list-style-type: none"> - crust shakes side to side and up and down 			
Surface waves					

Type of Seismic Wave	Speed	Description (How does it affect the ground/ buildings?)	What can it travel through?	Amount of Damage	Drawing
P waves	fastest	<ul style="list-style-type: none"> - compress and expand ground - can damage buildings 	solids and liquids	least	
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Surface waves					

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Surface waves					

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Surface waves					

Let's see what P waves and S waves look like...



Pair-Share

Look at the data table from the Slinky Seismic Wave Activity.

1. Which waves represent P-waves? How do you know?

_____ *represents P-waves because* _____.

Pair-Share

Look at the data table from the Slinky Seismic Wave Activity.

2. Which waves represent S-waves? How do you know?

_____ *represents S-waves because* _____.

Type of Wave	Time (sec.)
Forward and back (P-waves)	
Side to side (S-waves)	

Type of Seismic Wave	Speed	Description (How does it affect the ground/ buildings?)	What can it travel through?	Amount of Damage	Drawing
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S waves (secondary)	medium	- crust shakes side to side and up and down - shakes structures violently	solids	medium	
Surface waves	slowest				

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P waves	fastest	- compress and expand ground - can damage buildings	solids and liquids	least	
S waves (secondary)	medium	- crust shakes side to side and up and down - shakes structures violently	solids	medium	
Surface waves	slowest	- can roll ground in waves			

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P waves	fastest	<ul style="list-style-type: none"> - compress and expand ground - can damage buildings 	solids and liquids	least	
S waves (secondary)	medium	<ul style="list-style-type: none"> - crust shakes side to side and up and down - shakes structures violently 	solids	medium	
Surface waves	slowest	<ul style="list-style-type: none"> - can roll ground in waves - shake buildings side to side 			

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S waves (secondary)	medium	<ul style="list-style-type: none"> - crust shakes side to side and up and down - shakes structures violently 	solids	medium	
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S waves (secondary)	medium	<ul style="list-style-type: none"> - crust shakes side to side and up and down - shakes structures violently 	solids	medium	
Surface waves	slowest	<ul style="list-style-type: none"> - can roll ground in waves - shake buildings side to side 	solids	most	

Pair-Share

What type of seismic wave would you be most worried about in an earthquake? Why?

- I would be most worried about _____
because _____*