

# November 30, 2015

**29** Which statement about sexual reproduction is correct?

- A** Two gametes combine during sexual reproduction.
- B** Sexual reproduction is only used by organisms in the animal kingdom.
- C** An organism divides into two equal parts during sexual reproduction.
- D** Sexual reproduction is only used by single-cell organisms.

**30** Engineers plan to develop a new drill for use on oil rigs. What should the engineers do first in order to develop the new drill?

- F** conduct research on features for the new drill
- G** build a prototype of the new drill
- H** determine the materials needed to build the new drill
- J** design a computer model of the new drill

**1. Use textbook to support your answer.**

**2. Write down page number where information is found.**

# Chapter 10 Lesson 1

I can discuss evidence that explains how lithospheric plates move at centimeters per year.

**SPI 0707.7.5** Recognize that lithospheric plates on the scale of continents and oceans continually move at rates of centimeters per year.

# What Mastery Looks Like

**12** Scientists theorize that the Atlantic Ocean is slowly increasing in width. Which is the best approximation of the rate at which lithospheric plates beneath the Atlantic Ocean are moving?

- F** 2 millimeters per year
- G** 2 centimeters per year
- H** 2 meters per year
- J** 2 kilometers per year

**Do not use your book. Use background knowledge only. Explain your reasoning!**

**48** Which geological feature most likely forms when two continental tectonic plates collide?

- F** desert
- G** beach
- H** mountain range
- J** deep trench

# Essential Questions

- What is continental drift?
- What evidence supports continental drift?
- At what speed does continental drift occur?

# Continental Drift

- When you hear the term, *continental drift*, what do you think?
  - Discuss with your group.
  - Be ready to share.
- [Video](#)
- Continental Drift: the gradual movement of the continents across the earth's surface through geological time.

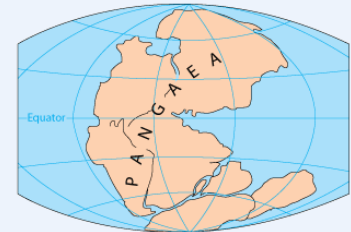
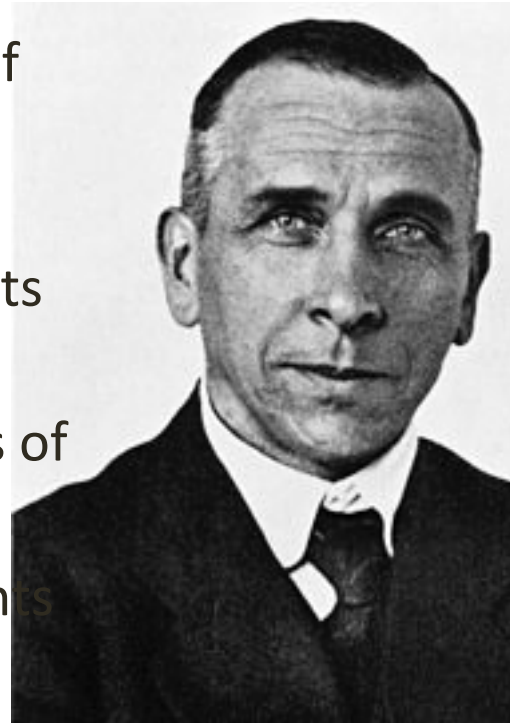


- Do you notice any other continents that seem like they could fit together?



# Pangaea

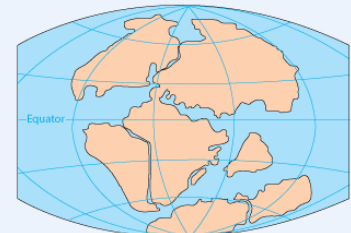
- Alfred Wegener, a German meteorologist, thought that the fit of the continents was more than just a coincidence.
- He theorized that all of the continents fit together at some point.
- In 1912, he proposed the hypothesis of continental drift.
- Wegener suggested that all continents once were connected as one large landmass called Pangaea. He said they broke apart about 200 million years ago.
- Pangaea means “all land.”



PERMIAN  
250 million years ago



TRIASSIC  
200 million years ago



JURASSIC  
145 million years ago



CRETACEOUS  
65 million years ago



PRESENT DAY

# Controversy

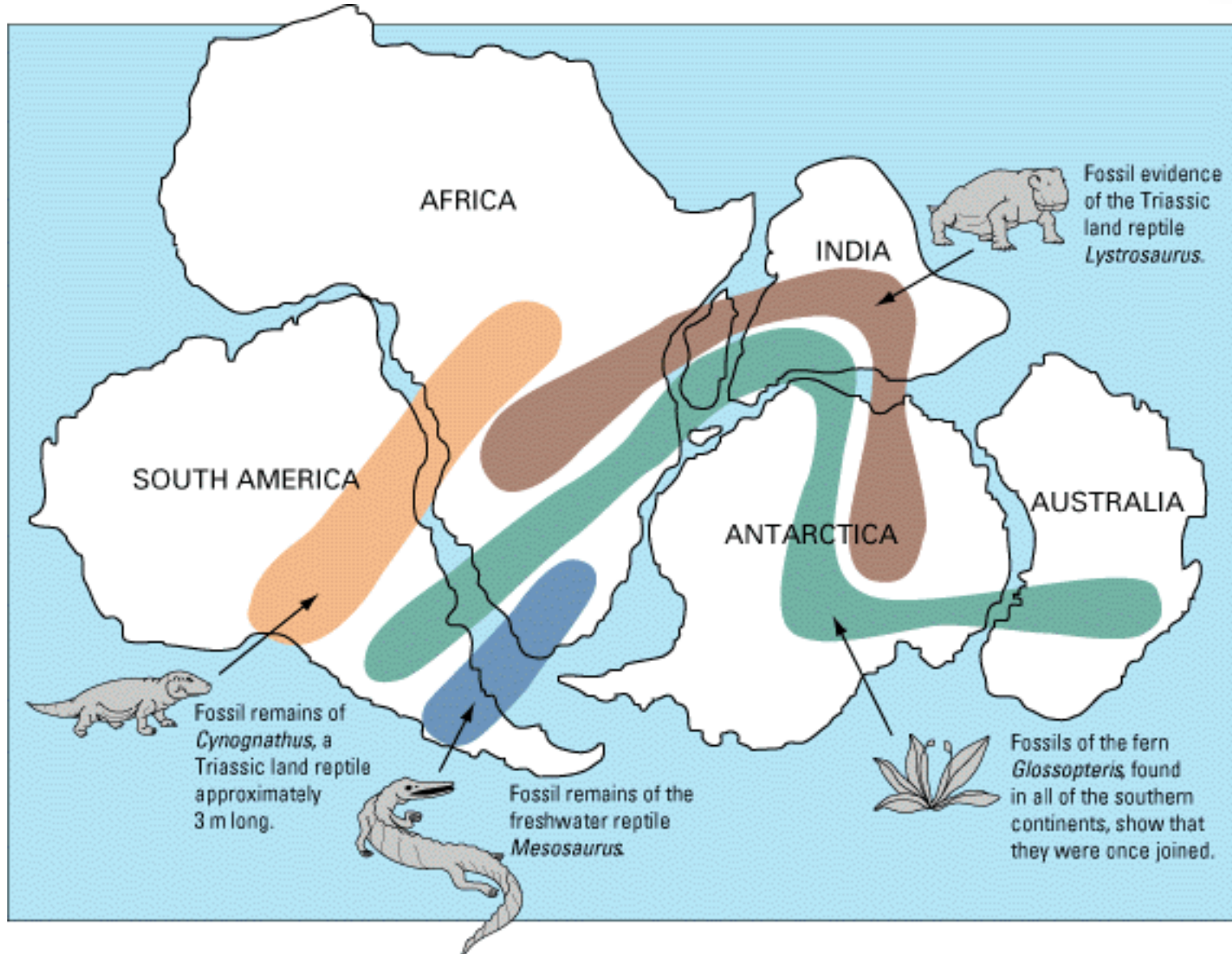
- Wegener's ideas were not accepted until after his death.
- Why do you think his theory was so controversial?
  - He couldn't explain how the continents drifted apart.
- He suggested that the continents plowed through the ocean floor, driven by the spin of Earth.
- Other experts strongly disagreed with his explanation.
- Eventually, other observations supported Wegener's theory.
- So, what would you need to prove this theory? What would it take to get you to believe Wegener? Discuss with your group.



# Fossil Evidence

- We have the puzzle-like fit of the continents, but other evidence also supports continental drift.
- Fossils!
- Fossils of the reptile Mesosaurus have been found in South America and Africa.
- Why is this significant?
- How could the reptile have been on two different continents separated by an ocean? Table Discuss (Round Robin )
- Wegener hypothesized that this reptile lived on both continents when they were joined

# Fossil Map



# Fossil Evidence

- Glossopteris, a plant fossil, has been found in Africa, Australia, India, South America, and Antarctica.
- This also supports Wegener's theory.



# Climate Clues

- Wegener also used continental drift to explain evidence of changing climates.
- Fossils of warm weather plants were found on an island in the Arctic Ocean.
  - Wegener believes this island drifted from tropical regions to the arctic.
- Wegener also used continental drift to explain evidence of glaciers found in temperate and tropical areas.
  - Glacial deposits are found in South America, Africa, India, and Australia. This shows that parts of these continents were once covered by glaciers.
  - Wegener thought that these continents were connected and partly covered with ice near Earth's south pole.

# Rock Clues

- If the continents were connected, then rocks that make up the continents should be the same in locations where they were joined.
- Parts of the Appalachian Mountains are similar to those found in Greenland and Western Europe.
- Eastern South America and western Africa also have similar rocks.



# How did it happen?

- Wegener couldn't explain how, why, or when.
- The idea suggested that lower-density, continental material somehow had to plow through higher-density, ocean floor material.
- The force behind this was thought to be the spin of Earth on its axis. This was quickly rejected.
- We will talk about seafloor spreading...next.

# Exit Ticket

- <http://www.brainpop.com/science/earthsystem/platetectonics/>
- Take out your white boards!

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