

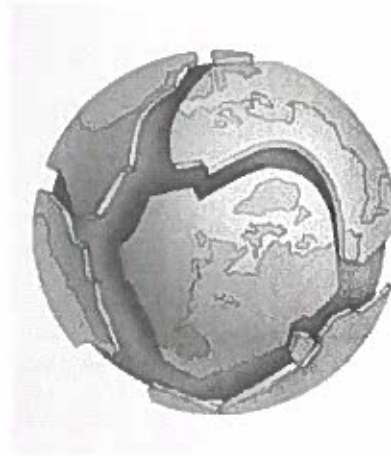
Team Name _____

Team # _____

Dynamic Planet

Holt Invitational

2/24/18



Keys

Score _____ / ~~120~~ 120

Rank _____

Dynamic Planet

Key

Matching

Match the term or name to its correct definition or description. Terms may be used once, more than once, or not at all. (1 point each).

- | | | |
|----------------------|----------------------|-----------------------|
| A. Alfred Wegener | H. Alexander Du Toit | O. Paleontological |
| B. Asthenosphere | I. Harry Hess | P. Dan McKenzie |
| C. Convection | J. Lithosphere | Q. Pangea |
| D. Deep Ocean Trench | K. Mid Ocean Ridge | R. SeaFloor Spreading |
| E. Arthur Holmes | L. Paleoclimate | S. Tectonic plate |
| F. Isostasy | M. Paleomagnetic | T. Laurentia |
| G. Basal Drag | N. Pahoehoe | U. Aa |

- D 1. An area where seafloor is being returned back into the mantle of the Earth.
- O 2. Evidence for Continental Drift that includes fossils of animals that were at one time living in various locations on Earth.
- L 3. Evidence for Continental Drift that includes information pointing to change in climates within a continent's history.
- M 4. Evidence for Seafloor Spreading that allows scientists to compare the ages of rocks by using the alignment of the magnetic domains within the rocks.
- K 5. Geologic features on the ocean floor where new ocean floor is being created as the seafloor spreads.
- S 6. The brittle crust of the Earth has broken into these pieces that move over time.
- J 7. The layer of the Earth which includes the crust and the solid brittle part of the upper mantle.
- U 8. lava that has a rough, jagged, spiny, and generally clinkery surface
- Q 9. The name of the past supercontinent that contained all of our current continents in one land mass.
- B 10. The plastic like layer of rock that is part of the Earth's upper mantle, the tectonic plates float on top of this layer.
- I 11. The scientist, who through the use of radar, discovered mid ocean ridges and deep sea trenches.
- C 12. The transfer of thermal energy caused by warm fluids rising and cool fluids sinking due to their density.
- P 13. credited with the final version of the Plate Tectonic theory.
- H 14. South African geologist who theorized the existence of Laurasia and Gondwana.
- T 15. large continental craton that forms the ancient geological core of the North American continent.
- G 16. Plate movement due to friction between the asthenosphere convection currents and the lithosphere.
- F 17. Gravitational equilibrium between the lithosphere and asthenosphere.
- N 18. lava that in solidified form is characterized by a smooth, billowy, orropy surface
- A 19. The meteorologist who proposed the theory of Continental Drift.
- E 20. British geologist that suggested that thermal convection currents in the mantle move the continents.

Multiple Choice:

C

1. Which best describes the circumstances by which "gravitational collapse" occurs?

- A. As the mountain is being built by collision, the lesser the downward force on the base of the mountain, causing horizontal escape of the base rocks.
- B. As the mountain erodes away, the greater the downward force on the base causing horizontal escape of the base rocks.
- C. The higher the mountain, the greater the downward force on the base causing horizontal escape of the base rocks.
- D. The lower the mountain, the lesser the downward force on the base causing horizontal escape of the base rocks
- E. none of the above

D

2. Which of the following can trigger a tsunami?

- A. undersea earthquakes
- B. undersea landslides
- C. the eruption of an oceanic volcano
- D. all the above
- E. none of the above

C

3. According to the idea of "isostatic adjustment," what would happen if a weight is added to the top of the crust?

- A. It will respond by uplifting the crust higher
- B. It will have no effect on the crust at all
- C. It will respond by sinking the crust downward
- D. It will force the crust into the mantle to start a subduction zone
- E. None of the above

E

4. Which plate boundary has NO earthquakes?

- A. Divergent
- B. Convergent
- C. Transform
- D. All of the above
- E. None of the above

D

5. Which of these is an instrument NOT used to measure a tsunami?

- A. Seismograph
- B. Ocean buoys
- C. Tide gauge
- D. Barometer
- E. Satellite altimetry

B

6. Mountain-building activity in the present-day Rocky Mountains occurred during this phase of the Cordilleran orogeny:

- A. Sonoma
- B. Laramide
- C. Nevadan
- D. Sevier
- E. None of the above

b

E 7. Hot seawater in hydrothermal vents does not boil because

- A. it's mixed with minerals
- B. temperature is below boiling point
- C. magma that heats the seawater is not hot enough
- D. seawater cannot boil
- E. of the extreme pressure at the depths

C 8. The production of magma is favored by an increase in _____ and _____, and a decrease in _____.

- A. pressure, water content, heat
- B. pressure, heat, water content
- C. heat, water content, pressure
- D. solar heat, water content, pressure
- E. solar heat, pressure, water content

D 9. The orogenies that made the Appalachian Mountains along the eastern United States occurred because of

- A. Transform faulting
- B. Ocean-ocean collision
- C. Oceanic-continent collision
- D. Continent-continent collision
- E. None of the above

E 10. Which of these features must be present for a hydrothermal vent to form at a subduction zone?

- A. Fine grained minerals
- B. Ocean-continent collision
- C. Transform fault
- D. Low pressure
- E. seawater percolating down through fissures in the ocean crust

B 11. Which of earth's layers is the thickest?

- A. Crust
- B. Mantle
- C. Outer core
- D. Inner core

A 12. Earth's inner core is?

- A. A dense ball of solid metal
- B. A layer of molten metal
- C. A layer of hot rock
- D. A layer of rock that layers the earth

A 13. The similarities in the rock layers between South America and Africa is which of the types of evidence for continental drift?

- A. Geologic
- B. Paleontologic
- C. Paleomagnetic
- D. Paleoclimate

A 14. The way that South America and Africa apparently fit together as if they were two pieces of the same puzzle, would be which type of evidence for continental drift?

- A. Geologic
- B. Paleontologic
- C. Paleomagnetic
- D. Paleoclimate

A 15. Mountain ranges that appear to be the same age and possibly part of one ancient mountain range, would be which type of evidence for continental drift?

- A. Geologic
- B. Paleontologic
- C. Paleomagnetic
- D. Paleoclimate

B 16. *Glossopteris* plant fossils found in South America, Africa, India, Australia and Antarctica, would be which type of evidence for continental drift?

- A. Geologic
- B. Paleontologic
- C. Paleomagnetic
- D. Paleoclimate

D 17. Glacial deposits in South America, Africa and India, would be which type of evidence for continental drift?

- A. Geologic
- B. Paleontologic
- C. Paleomagnetic
- D. Paleoclimate

C 18. The alignment of magnetic domains within bands of rock on the ocean floor, would be which type of evidence for continental drift?

- A. Geologic
- B. Paleontologic
- C. Paleomagnetic
- D. Paleoclimate

A, or B 19. Rock layers in North America and Europe that could only be formed by tropical plants, would be which type of evidence for continental drift?

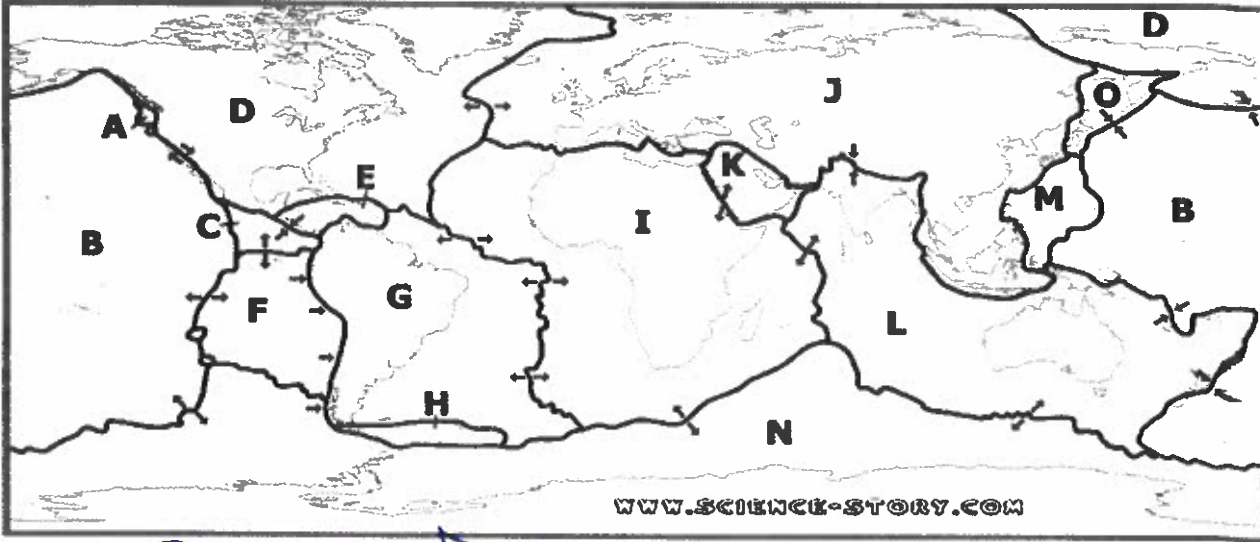
- A. Geologic
- B. Paleontologic
- C. Paleomagnetic
- D. Paleoclimate → possibly

A 20. Continental drift was not widely accepted when it was first proposed because ____.

- A. Wegener couldn't explain why or how the continents moved
- B. continental landmasses were too big to move slowly over Earth's surface
- C. magnetic and sonar data proved that Wegener's hypothesis was incorrect
- D. mantle convection currents weren't in motion at that time



Identify plates in the diagram below



- A. Juan de Fuca
- B. Pacific
- C. Cocos
- D. N. American
- E. Caribbean
- F. Nazca
- G. S. American
- H. Scotia Plate
- I. African
- J. Eurasian
- K. Arabian
- L. Indo-Australian
- M. Philippine Plate
- N. Antarctic
- O. Okhotsk

Short Answers:

1. What two metals make up most of the inner core?

Iron + Nickel

2pts

2. What is a mixture of gas, ash, and rock that moves quickly down the slope of a volcano called?

Pyroclastic Flow

3. What is the name of the scale used to measure the intensity of an earthquake?

Mercalli Scale

4. Africa's "Great Rift Valley" was created by what type of plate boundary?

Divergent

5. Name the process that makes solid ground behave like a fluid.

Liquifaction

6. What is the name of the earliest known landmass (3 billion years old)?

Vaalbara (or Ur)

7. What was the name of the ocean that surrounded the most recent supercontinent?

Panthalassa

8. When discussing volcanic eruptions what is the VEI?

Volcanic Explosivity Index

9. What instrument is used to study earthquakes, and who invented the earliest one of these instruments? (Hint: He was Chinese) (2 points)

Seismometer (seismograph) - Zhang Heng

11. Who created the first maps of the seafloor using data provided by Hess and Heezen? (First and last names)

Mary Thompson

12. What is another name for the North American Craton?

Laurentia

13. A fragment of crustal material formed on, or broken off from, one tectonic plate and accreted onto another plate.

Terrane

14. Magma or molten rock that has reached the surface of the Earth.

Lava

15. This layer of the Earth composes ~85% of the Earth's volume and it is made primarily of silicate rock rich in magnesium and iron.

Mantle

Completion

1. Catastrophism is the theory that states that many features of the landscape were created by rapidly forming events.
2. Uniformitarianism is the theory that states that changes in the earth's crust during geological history have resulted from the action of continuous and uniform processes.
3. The oceanic crust is primarily made up of this basic type of rock Basalt.
4. Mount Everest, the highest mountain on earth, is made of marine limestone and is part of the Himalayan mountain chain. The elevation of the limestone to such a great height is primarily the result of: convergence.
5. The San Andreas fault is a strike slip fault.
6. Pangea was surrounded by an ocean called Panthalassa.
7. The boundary between the crust and mantle is called Mohorovicic Discontinuity (Moho Boundary).
8. List 3 types of evidence which supported the Theory of Seafloor Spreading:
 - A. Pillow lava
 - B. age of rocks
 - C. magnetic reversals
9. Name the sea that was located between Gondwana and Laurasia Tethys.
10. What was the name of the Supercontinent that came before Pangaea _____
11. Name the type of lava shown below _____



12. Name the type of fault shown in the picture

Normal fault

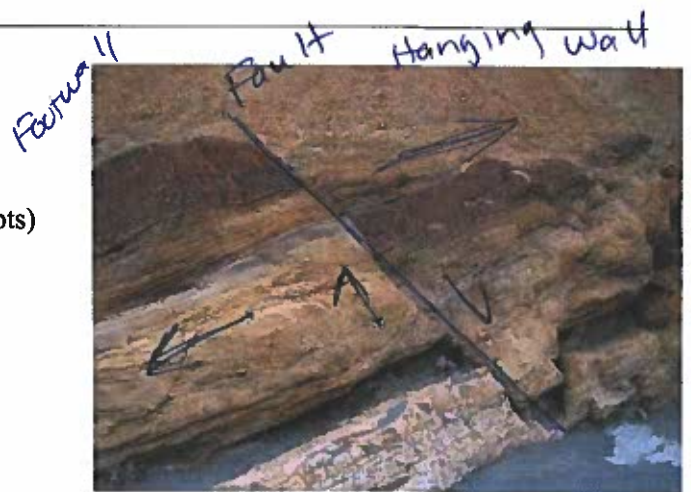
13. Identify the fault, hanging wall, and footwall in the picture. (3pts)

14. Which type of stress force causes this type of faulting?

Tension

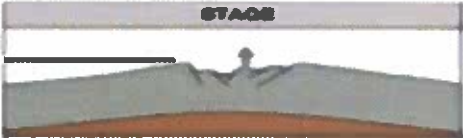


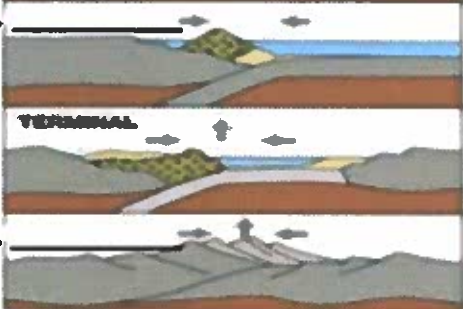
15. At which type of plate boundary might you find this fault at?

Divergent



* Tie breaker #1

Identify the Cycle Below: Wilson Cycle - 1 PT

	STAGE	MOTION	PHYSIOGRAPHY	EXAMPLE
7.		1. _____	Complex system of linear rift valleys on continent	East African rift valleys
	JUVENILE			
8.		Divergence (spreading)	2. _____	Red Sea
9.		3. _____	Ocean basin with continental margins	Atlantic and Arctic Oceans
10.		4. _____	Island arcs and trenches around basin edge	Pacific Ocean
	TERMINAL			
		Convergence (collision) and uplift	5. _____	Mediterranean Sea
		6. _____	Young to mature mountain belts	Himalaya Mountains

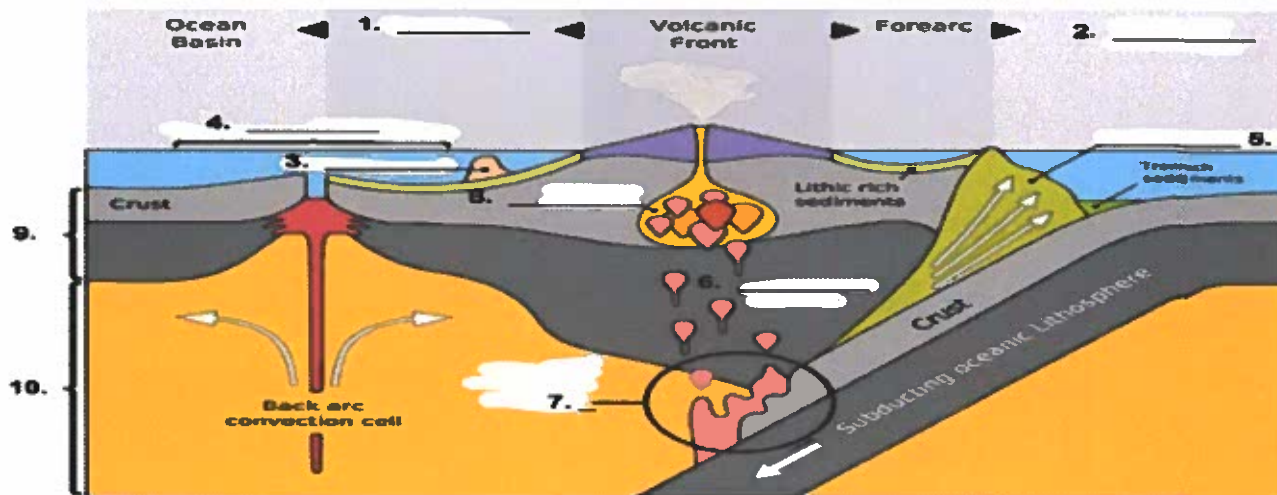
Complete the table for 1-6

1. Uplift
2. Narrow seas with matching coasts
3. Divergence (spreading)
4. Convergence (subduction)
5. Narrow, irregular seas w/ young mountains
6. Convergence + uplift

Identify the stage 7-10

7. Embryonic
8. Mature
9. Declining
10. Suturing

Identify the parts and mechanisms of the subduction zone below



1. Backarc Basin
2. Ocean Basin
3. Carbonate reef
4. Back arc spreading center
5. Accretionary Wedge
6. Ascending diapirs
7. Zone of Fractional Melting
8. Magma chamber
9. Lithosphere
10. asthenosphere

The breaker #2

Identify the layers of the Earth

- A. Crust
- B. Mantle
- C. Core
- D. Ocean
- E. Lithosphere
- F. Asthenosphere
- G. Mesosphere
- H. Outer core
- I. Inner core

