Name_____ Class _____ Date _____

Skills Worksheet

Directed Reading

Section: Volcanoes and Plate Tectonics

_____ 1. What can cause some of the most dramatic changes to Earth's surface?
a. solar activity
b. tides
c. geysers
d. volcanic eruptions

_____ 2. The cause of many volcanic eruptions is the movement of
a. Earth's mesosphere.
b. Earth's inner core.
c. Earth's tectonic plates.
d. Earth's oceans.

_____ 3. The movement of tectonic plates is driven by Earth's
a. mantle.
b. internal heat.
c. internal forces.
d. internal pressure.

_____ 4. Scientists can learn more about volcanic eruptions by studying
a. temperatures within Earth.
b. temperatures in Earth's atmosphere.
c. temperatures on Earth's surface.
d. the movements of migrating animals.

_____ 5. Combined temperature and pressure in the lower part of Earth's mantle keeps the rock
a. at its melting point.
b. below its melting point.
c. from reaching its melting point.
d. above its melting point.

FORMATION OF MAGMA

_____ 6. Despite high temperatures, most of the mantle remains solid because of the
a. large amount of ice above the mantle.
b. space between the rock.
c. large amount of pressure from the surrounding rock.
d. lack of pressure from the surrounding rock.

_____ 7. Sometimes Earth's solid mantle and crust melt to form
a. magma.
b. mesosphere.
c. petroleum.
d. mineral elements.

_____ 8. Which of the following is NOT a way that magma can form?
a. The temperature of the rock in the mantle rises above the melting point of the minerals that the rock is composed of.
b. Excess pressure is removed from rock that is above its melting point.
c. The addition of fluids, such as water, increases the melting point of some of the minerals in the rock.
d. The addition of fluids, such as water, may decrease the melting point of some of the minerals in the rock.

VOLCANISM

_____ 9. Magma rises upward through the crust because
a. the magma is less dense than the surrounding rock.
b. the magma is denser than the surrounding rock.
c. the magma is the same density as the surrounding rock.
d. the surrounding rock is porous.

_____ 10. As bodies of magma rise toward the surface and melt surrounding rock,
a. they become smaller.
b. they become larger.
c. their size remains the same.
d. they disperse.

_____ 11. As magma rises and is forced into cracks in the surrounding rock,
a. large blocks of rock can break off and melt.
b. large blocks of rock can hold the magma inside.
c. large rocks are blown apart.
d. the magma disperses.

_____ 12. Lava flows from an opening in Earth's surface called a
a. depression.
b. geyser.
c. vent.
d. blowhole.

In the space provided, write the letter of the definition that best matches the term or phrase.

_____ 13. volcanism

_____ 14. lava

_____ 15. volcano

a. a vent or fissure in Earth's surface through which magma and gases are expelled

b. any activity that includes the movement of magma toward or onto Earth's surface

c. magma that flows onto Earth's surface; the rock that forms when lava cools and solidifies

MAJOR VOLCANIC ZONES

_____ 16. Volcanoes erupt on Earth's surface
- a. mostly in random locations.
- b. in all mountainous areas.
- c. only along the Pacific coast.
- d. mostly near tectonic plate boundaries.

_____ 17. A major zone of active volcanoes encircling the Pacific Ocean is called
- a. the Giant Pacific Earthquake Zone.
- b. the Pacific Ring of Volcanoes.
- c. the Pacific Ring of Fire.
- d. the Pacific tectonic plate.

_____ 18. The Pacific Ring of Fire is also one of Earth's major
- a. flood zones.
- b. hurricane zones.
- c. drought zones.
- d. earthquake zones.

_____ 19. Many volcanoes are located along
- a. reduction zones.
- b. subduction zones.
- c. earthquake zones.
- d. continental zones.

_____ 20. One tectonic plate moves under another in
- a. a reduction zone.
- b. a subduction zone.
- c. an earthquake zone.
- d. a continental zone.

_____ 21. When a plate of oceanic lithosphere meets a plate of continental lithosphere, the oceanic lithosphere
a. moves over the continental lithosphere.
b. becomes continental lithosphere.
c. moves beneath the continental lithosphere.
d. moves through the continental lithosphere.

_____ 22. On the ocean floor, along the edge of a continent where a plate is subducted,
a. a deep trench forms.
b. a shallow trench forms.
c. a narrow trench forms.
d. a wide trench forms.

_____ 23. At a subduction zone, a plate that consists of continental lithosphere
a. buckles and folds to form a mountain on the edge of the continent.
b. buckles and folds to form a line of mountains along the edge of the continent.
c. creates a line of earthquakes along the edge of the continent.
d. creates a line of denser oceanic lithosphere.

_____ 24. As an oceanic plate sinks into the asthenosphere, water can combine with crust and mantle material and
a. increase the melting point of the rock.
b. decrease the melting point of the rock.
c. cause no change in the melting point of the rock.
d. cause rock to solidify.

_____ 25. When magma rises through the lithosphere to Earth's surface,
a. volcanic mountains form along the tectonic plate.
b. volcanic ash builds up along the tectonic plate.
c. lava creates mountains along the tectonic plate.
d. lava destroys mountains along the tectonic plate.

_____ 26. When two plates with oceanic lithosphere at their boundaries collide,
a. both plates subduct, forming a trench.
b. one plate subducts, forming a trench.
c. magma never reaches the surface.
d. magma is trapped in the resulting trench.

_____ 27. If a plate with oceanic lithosphere collides with another plate and subducts,
a. magma cannot form because no additional fluids are introduced into the mantle.
b. magma forms as fluids are introduced into the mantle.
c. magma cannot reach the surface.
d. magma sinks deep into ocean trenches.

_____ 28. When oceanic lithosphere subducts beneath oceanic lithosphere, magma rises to the surface to form an
a. island chain.
b. island cone.
c. island arc.
d. island trench.

_____ 29. Which of the following is an example of the early stages of an island arc?
a. Aleutian Islands
b. Faroe Islands
c. Channel Islands
d. islands of Japan

_____ 30. As island arcs become larger, they join to form one landmass, such as the islands that make up the
a. Solomon Islands.
b. Aleutian Islands.
c. Channel Islands.
d. islands of Japan.

31. Describe what happens as magma comes to the surface where plates move apart at mid-ocean ridges.

32. Why do humans not notice most volcanic eruptions that take place along mid-ocean ridges?

33. What is happening in Iceland, where volcanic eruptions occur along a part of the Mid-Atlantic Ridge that is above sea level?

Use the numbers 1 through 4 to show the sequence of volcano development in a hot spot.

_____ 34. Volcanoes form in the interior of a tectonic plate.

_____ 35. Columns of hot solid material called mantle plumes rise and reach the lithosphere.

_____ 36. Magma rises to the surface and breaks through the overlying crust.

_____ 37. A mantle plume reaches the lithosphere and spreads out.

38. Describe what happens to volcanic activity as the lithospheric plate above a mantle plume continues to drift.

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39. Describe how a line of hot-spot volcanoes might have formed, if individual volcanoes do not have any particular age relationship to each another.

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INTRUSIVE ACTIVITY

In the space provided, write the letter of the description that best matches the term or phrase.

_____ 40. igneous rock

_____ 41. plutons

_____ 42. dikes

_____ 43. batholiths

a. rock that forms when magma cools within Earth

b. small tubular plutons, which may be only a few centimeters wide

c. large formations of igneous rock that form as magma cools and solidifies inside Earth's crust

d. large plutons that cover an area of at least 100 km^2 when exposed on Earth's surface