**Science 8 Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**12.2 Features of Plate Tectonics (Part 1) Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. The Earth is over \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ km thick
	1. It is believed to be composed of \_\_\_\_\_\_\_\_\_\_\_\_ distinct layers
2. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the Earth’s outermost layer.
	1. There are two main types
		1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ crust is made from a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ type of rock called granite
		2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ crust is made from a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, dark rock called basalt
	2. Earth’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ crust is made of several large, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ but \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ chunks of rock known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plates.
		1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plates form the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is made up of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and the uppermost \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		2. There are about \_\_\_\_\_\_\_\_\_\_\_\_\_ major tectonic plates and many smaller ones.
3. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is Earth’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ layer and makes up \_\_\_\_\_\_\_\_\_\_\_\_ percent of Earth’s volume
	1. It is mostly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and can be divided into two sections
		1. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mantle is composed of partly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rock (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) that flows like thick toothpaste
		2. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mantle is made of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, dense material
	2. the asthenosphere refers to the partly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ layer in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mantle.
		1. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the asthenosphere can vary
		2. this may be due to large quantities of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ elements such as uranium whose \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ heats up the mantle in certain spots.
	3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ currents in the mantle result when the hotter, less \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, material in the mantle \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, then sinks again, only to be reheated
		1. mantle \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is believed to be one of the driving forces behind \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ movement
		2. Currents in the asthenosphere move the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plates above, and the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ move with them
4. The layer below the mantle is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ core
	1. the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ core is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and is composed mainly of a mixture of iron and nickel.
	2. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ core is at Earth’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
		1. It is a sphere \_\_\_\_\_\_\_\_\_\_\_\_\_\_ km in diameter, composed mainly of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and some \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
		2. temperatures at the core range from 5000ºC to 6000ºC, but the high \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ at the core keep the iron \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
	3. Scientists believe that the inner and outer cores \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ at different speeds and may be responsible for Earth’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ field.
5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of magma
	1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ currents of magma eventually reach Earth’s surface at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ centres.
		1. a spreading centre in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is called a spreading \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ridge
		2. a spreading centre on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is less common, and is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ valley.
	2. Magma \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as it reaches the surface and becomes “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_” rock.
		1. The new material at a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pushes older material aside, and the tectonic plates move \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from the ridge.
			1. This process is called a ridge \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	3. Eventually one plate will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ into another plate.
		1. If a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ oceanic plate collides with a continental plate, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ oceanic plate will dive deep under the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ continental plate
			1. This is known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ zones, typically experience large \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ eruptions.
		3. as the edge of a tectonic plate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ deep into the mantle, it \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the rest of the plate with it.
			1. This process is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pull.
	4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ currents, ridge \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, slab \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ helps keep tectonic plates in motion.

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**12.2 Features of Plate Tectonics (Part 2) Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Types of plate interactions
	1. a plate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a region where two tectonic plates are in contact
	2. There are three main types of plate interaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (spreading apart), \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (moving together), and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (sliding by).
		1. The way in which tectonic plates interact depends on two main factors:
			1. the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of plate
			2. the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the plates are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ relative to one another
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plate boundaries
	1. These are areas where tectonic plates are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ apart
		1. Plates that are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ apart are known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plates.
	2. The Mid- Atlantic Ridge is a system of spreading ridges separating the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and Asia.
		1. It is the largest \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ range on Earth, with the greatest amount of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ activity.
	3. diverging plates at the East \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Rift are slowly breaking \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ into pieces.
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plate boundaries
	1. This occurs where tectonic plates \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
		1. Plates that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plates.
		2. depending on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the converging plates \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ vary
	2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ -\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plate convergence
		1. the dense \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plate is forced to slide beneath the less dense \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plate.
			1. A deep underwater \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, forms where the tectonic plates make contact
			2. As the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plate moves deeper, large pieces \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ off.
			3. Much of this \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ material \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and crystallizes into large \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ masses below the surface of the continental plate.
		2. If conditions are right, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can work its way to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, forming cone-shaped volcanoes.
			1. E.g. in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ subduction zone the Juan deFuca Plate (an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plate) subducts below the North American Plate (a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plate).
			2. This resulted in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the west coast
		3. The force of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ between oceanic and continental plates creates \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ranges as the continental rock crumples and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
			1. E.g. British Columbia’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Mountains and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Mountain Range.
		4. Sometimes colliding plates resist the force of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ currents, ridge \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and slab \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
			1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ builds as long as the plates remain \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in place.
			2. When the released \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ result in an earthquake.
	3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ -\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plate convergence
		1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ also occurs where two oceanic plates converge
		2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ will cause one plate to be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than the other, and the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plate will slide deep into the mantle.
			1. The convergence may produce a long chain of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ islands known as a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ island arc
			2. The islands of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and the Aleutian Islands of Alaska are examples of volcanic island arcs.
			3. these regions can experience \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of various magnitudes.
	4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ -\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plate convergence
		1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ does not occur due to the plates’ similar \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		2. instead their \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ fold and crumple, forming great mountain ranges.
			1. the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, formed as a result of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ continent colliding with the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ continent,
			2. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ continue to increase in elevation by several centimetres per \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ due to the movement of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ tectonic plate northward.
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plate boundaries
	1. Convection currents in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ often cause tectonic plates to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ past each other.
		1. This mostly occurs near ocean \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and is known as a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plate boundaries
	2. since rock \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ past rock, no \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or volcanoes form but \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ may result.
		1. A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ breaks in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ layers due to movement on either side
			1. a transform \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ occurs a transform \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		2. E.g. the San Andreas Fault in California is due to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Pacific Plate sliding past the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ North American Plate.
5. plate tectonic theory has greatly helped scientists to understand where and how often \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ occur
	1. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (plural \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) is the location \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Earth where an earthquake starts.
		1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ release begins at the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
	2. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the point on Earth’s surface directly above the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		1. E.g. an earthquake with an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 200 km southwest of Vancouver can have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 40 km underground.
		2. Earthquakes occur at various \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, depending on the type of tectonic \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ interaction involved.
	3. Scientists classify \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ according to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the foci
6. Energy released by an earthquake produces vibrations known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ waves.
	1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the study of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ waves.
		1. Seismologists have studied how waves \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ through Earth’s interior to determine the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of Earth’s layers.
	2. Seismic waves which travel underground are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ waves,
		1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ waves (P-waves) travel at about 6 km/s through Earth’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
			1. They are the first waves to arrive
			2. P-waves can travel through \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
			3. P-waves cause the ground to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and stretch like a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the direction in which the wave is travelling.
		2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ waves (S-waves) are also known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ waves travel at about 3.5 km/s.
			1. S-waves can travel through \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, not \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
			2. S-waves and cause the ground to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and stretch at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ angles to the direction of the wave’s motion.
			3. S-waves usually cause \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ structural damage than P-waves because S-waves are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
	3. Body waves travel \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than surface waves and are usually the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy waves felt after the actual earthquake.
	4. L-waves are seismic waves which travel along the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		1. L-waves roll along Earth’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ like \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in a pond.
7. The movement of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ waves through Earth’s interior is affected by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the different layers.
	1. The waves \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ off of some layers, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ up or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ down in others, or are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (bent).