



## ACTIVITY ON FAULTS, EARTHQUAKE AND SEISMIC WAVES

Name: \_\_\_\_\_  
Section: \_\_\_\_\_

Teacher: \_\_\_\_\_  
Date: \_\_\_\_\_

### Key Concept:

**FAULT** - It is a break or cracks in the Earth's crust usually caused by the stresses / forces of plate movements build up over a period. When faults suddenly move, earthquake may occur.

Types of Faults:

1.) **NORMAL FAULT**

☆ The two landmasses are pulled apart or extended caused by tension force. The hanging wall will move down relative to the footwall.

2.) **REVERSE FAULT**

☆ The two landmasses are pushed toward each other and are compressed caused by compression forces. The hanging wall will move up relative to the footwall.

3.) **STRIKE-SLIP FAULT**

☆ Rocks on either side of the fault surface are moving past each other horizontally. Shearing forces push on the rocks from different direction (left & right)

### I. Direction: Encircle the correct answer based on the information given above

| Fault Diagram | Types of Fault           | Types of Stress / Force   | Fault Description                                | Fault Movement                       |
|---------------|--------------------------|---------------------------|--------------------------------------------------|--------------------------------------|
|               | <b>Normal Fault</b>      | <b>Shear Stress</b>       | Hanging Wall moves down relative to the footwall | <b>Vertical</b><br><b>Horizontal</b> |
|               | <b>Reverse Fault</b>     | <b>Tension Stress</b>     | Hanging Wall moves up relative to the footwall   |                                      |
|               | <b>Strike-Slip Fault</b> | <b>Compression Stress</b> | Two landmasses move sideways                     |                                      |
|               | <b>Normal Fault</b>      | <b>Shear Stress</b>       | Hanging Wall moves down relative to the footwall | <b>Vertical</b><br><b>Horizontal</b> |
|               | <b>Reverse Fault</b>     | <b>Tension Stress</b>     | Hanging Wall moves up relative to the footwall   |                                      |
|               | <b>Strike-Slip Fault</b> | <b>Compression Stress</b> | Two landmasses move sideways                     |                                      |
|               | <b>Normal Fault</b>      | <b>Shear Stress</b>       | Hanging Wall moves down relative to the footwall | <b>Vertical</b><br><b>Horizontal</b> |
|               | <b>Reverse Fault</b>     | <b>Tension Stress</b>     | Hanging Wall moves up relative to the footwall   |                                      |
|               | <b>Strike-Slip Fault</b> | <b>Compression Stress</b> | Two landmasses move sideways                     |                                      |

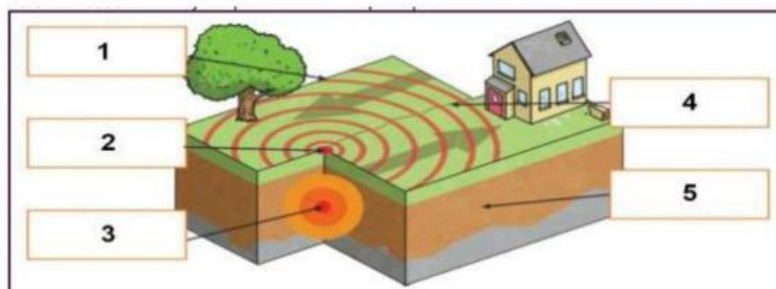
### Key Concept:

• **Earthquake** is the shaking of the ground caused by sudden motions along faults, or fractures in the Earth's crust.

### Parts of Earthquake

1. **Fault** - a fracture in the rocks that make up the Earth's crust.
2. **Epicenter** - the point at the surface of the Earth directly above the focus.
3. **Focus** (Hypocenter) - the point where an earthquake rupture starts within the earth.
4. **Plates** - massive rocks that make up the outer layer of the Earth's surface, and whose movement along faults triggers earthquakes.
5. **Seismic waves** - waves that transmit the energy by an earthquake.

### II. Direction: Identify the parts of the earthquake.



**Key Concept:**

- **Magnitude** measures the amount of energy released at the source of an earthquake. It is determined from measurement on seismographs. It is represented by Hindu Arabic Numbers (e.g. 2.0, 4.5, 7.8) on the Richter Scale.
- **Intensity** measures how strong the shaking generated by the earthquake as perceived and felt by people in a certain locality or the degree of damage it caused in the area. The intensity is generally higher near the epicenter. It is represented by Roman Numerals (e.g. II, IV, IX) determined by the Mercalli Intensity Scale which is used in USA and Canada.

**III. Direction:** Identify whether the following statements describe the magnitude or intensity of an Earthquake.

- \_\_\_\_ 1.) It measures the energy released at the source of the earthquake.
- \_\_\_\_ 2.) It is determined from measurements on seismographs.
- \_\_\_\_ 3.) It is measured the strength of shaking produced by an earthquake at a certain location.
- \_\_\_\_ 4.) It uses roman numerals such as I, II, and III.
- \_\_\_\_ 5.) It is expressed using Hindu-Arabic numerals 1 to 10

**Key Concept:**

An **active fault** is a fault that is likely to have another earthquake in the future. Faults are commonly considered to be active if there has been movement observed or evidence of seismic activity during the last 10,000 years. On the other hand, an **inactive fault** is the opposite; that is no seismic activity has been observed.

**IV. Direction:** Identify the following faults in the Philippines whether they are **ACTIVE** or **INACTIVE** faults.

- \_\_\_\_ 1.) **Marikina Valley Fault.**
- \_\_\_\_ 2.) **West Philippine Fault**
- \_\_\_\_ 3.) **Lubao Fault**
- \_\_\_\_ 4.) **Southern Mindanao Fault**
- \_\_\_\_ 5.) **Central Philippine Fault**

**Key Concept:**

- Seismic waves are waves of energy that travel through the earth and are recorded on seismographs.
- Primary waves (P-waves) travel faster, move in a push-pull pattern, travel through solids, liquids, and gases, and cause less damage due to their smaller size. They are compressional waves.
- Secondary waves (S-waves) travel slower, move in an up-and-down pattern or perpendicular, travel only through solids, and cause more damage due to their greater size. They are shearing waves.

**V. Direction:** Identify whether the following statements describe the P wave or S wave.

- \_\_\_\_ 1.) Can only move through solid
- \_\_\_\_ 2.) Can move through solids and liquids
- \_\_\_\_ 3.) Shake the medium in the direction in which they are propagating
- \_\_\_\_ 4.) Shake the medium perpendicular to which they are moving
- \_\_\_\_ 5.) They are compressional waves
- \_\_\_\_ 6.) They are transverse waves
- \_\_\_\_ 7.) They are Longitudinal waves
- \_\_\_\_ 8.) It can reach the inner core of the Earth

**VI. Direction :** Write **T** if the statement is true and **F** if it is false

- \_\_\_\_ 1. The primary wave is the slowest wave among the seismic waves.
- \_\_\_\_ 2. The secondary wave can travel through all states of matter.
- \_\_\_\_ 3. The most destructive wave is the surface wave.
- \_\_\_\_ 4. The primary wave is the first wave that can be detected.
- \_\_\_\_ 5. The two types of surface waves are the primary waves and Love waves.