Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_ Block \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Stratigraphy Project**

**Stratigraphy** is the branch of geology that studies rock layers and layering. Nicholas Steno, “The Father of Stratigraphy” suggested that geology is not totally chaotic but instead preserves a chronological record of Earth’s history and past life in its layers. With Steno’s contributions we now have the following laws of stratigraphy:

* **Law of Superposition** – In undisturbed rock layers, the oldest layer lies at the bottom and the youngest layer at the top.
* **Law of Cross-Cutting** – An igneous intrusion (lava) that cuts through existing rock is always younger than that disturbed rock.
* **Law of Unconformity** – A surface that has a significant gap, layers missing, from its rock record due to erosion or non-deposition. ( )
	+ **Disconformity** – An eroded surface between sedimentary layers that are parallel to each other.
	+ **Angular Unconformity** – Younger strata overlie an erosional surface on tilted or folded rock layers.
	+ **Nonconformity** – When igneous rocks are eroded and covered by younger sedimentary or volcanic rock.

**Procedure:**

1. Draw and create as many cross-sections as needed to determine your final project grade (**Maximum = 260 pts**)
2. **Identify each diagram**.
3. **Create a key** (**10 pts**) to identify each rock type.
	1. Each rock type should also have its own color.
4. **Use a ruler** to measure each layer accurately.
5. **Label and identify each of the parts** of the diagram correct:
	1. Oldest layer/youngest layer
	2. Disconformity/Nonconformity/Unconformity
	3. Angular Unconformity
	4. Foot Wall/Hanging Wall
	5. Fault Plane
	6. Igneous Intrusion
	7. Rock Layer Depths

**Rock Types**:

**Cross-Sections**

1. **Simple Cross-Section (10 pts)**



**Bottom** 2 cm of sandstone

 4 cm of dolostone

 6 cm of limestone

 2 cm of conglomerate

 5 cm of silt stone

**top** 3 cm of shale

1. **Simple Cross-Section (20 pts)**

**Bottom** 6 cm of dolostone

 4 cm of limestone

 **An igneous intrusion**

 2 cm of conglomerate

 4 cm of shale

 **An igneous intrusion**

 6 cm of sandstone

 **An igneous intrusion**

 4 cm of Breccia

**top** 2 cm of silt stone

1. **Normal Fault (25 pts)**
* **The Foot Wall**

**Bottom** 2 cm of silt stone

 4 cm of conglomerate

 4 cm of limestone

 2 cm of shale

**Top** 4 cm of dolostone

* **The Hanging Wall**

**Bottom** 4 cm of limestone

 2 cm of shale

**Top** 4 cm of dolostone

1. **A Graben (35 pts)**
* **Each Foot Wall**

**Bottom** 2 cm of sandstone

4 cm of conglomerate

 6 cm of dolostone

**Top** 2 cm of limestone

* **The Hanging Wall**

**Bottom** 1 cm of conglomerate

 6 cm of dolostone

**Top** 2 cm of limestone

1. **Angular Unconformity followed by a Simple Cross-Section (30 pts)**
* **Angular Unconformity – 16 cm in width**

**Bottom** 4 cm shale

4 cm rock salt

 4 cm conglomerate

**Top** 4 cm rock gypsum

* **Simple Cross-Section**

**Bottom** 2 cm of conglomerate

**Top** 4 cm of dolostone

1. **Reverse Fault (25 pts)**
* **The Hanging Wall**

**Bottom** 3 cm of shale

3 cm of conglomerate

 3 cm of sandstone

 3 cm of rock salt

**Top** 3 cm of dolostone

* **The Foot Wall**

**Bottom** 3 cm of conglomerate

 **A Disconformity**

3 cm of rock salt

**Top** 3 cm of dolostone

1. **Angular Unconformity – Simple Cross-Section (50 pts)**
* **Angular Unconformity – 21 cm in width**

**Bottom** 3 cm of shale

 3 cm of rock gypsum

 3 cm of limestone

 3 cm of sandstone

 3 cm of breccia

 3 cm of shale

**Top** 3 cm of sandstone

* **Simple Cross-Section**

**Bottom** **An igneous intrusion**

 4 cm of limestone

 6 cm of shale

 2 cm of breccia

 4 cm of sandstone

 **An igneous intrusion**

 2 cm of conglomerate

 2 cm of sandstone

**Top** 2 cm of limestone

1. **Simple Cross-Section (15 pts)**

**Bottom** 4 cm of limestone

 6 cm of sandstone

 2 cm of conglomerate

 **A disconformity**

 4 cm of limestone

 2 cm of shale

**Top** 2 cm of breccia

1. **Simple Cross-Section (40 pts)**

**Bottom** 2 cm of **nonconformity – igneous**

 2 cm of sandstone

 2 cm of conglomerate

 2 cm of sandstone

 2 cm of limestone

 A 10 cm wide **angular unconformity** (2 cm wide each) of:

* + - * Conglomerate (oldest), sandstone, breccia,

shale, and limestone (youngest)

4 cm of rock gypsum

2 cm of shale

2 cm of dolostone

2 cm of limestone

**Top An igneous intrusion**