

Fast or Slow?

Land and water features can change at different speeds.

WG.9.b "describing major physical and environmental features and how geography may change over time;"

NAME _____

DATE _____

RAPID CHANGE

A rapid geographic change happens in seconds, minutes, or days. It can quickly reshape land or water.

A meteor impact makes a crater in seconds.

GRADUAL CHANGE

A gradual geographic change happens over many years or longer. Small changes add up over time.

A coral reef grows outward a tiny amount each year.

1 SORT _____ 8 items

For Part 1, circle RAPID or GRADUAL for each change, then for Part 2, choose two items and explain which time clue helped you classify each one.

- | | | |
|--|-----------------------------|-------------------------------|
| 1. A hurricane strips sand from a beach overnight. | ☐ RAPID | ☐ GRADUAL |
| 2. A volcanic eruption sends lava across a valley in hours. | ☐ RAPID | ☐ GRADUAL |
| 3. A river cuts a canyon deeper over millions of years. | ☐ RAPID | ☐ GRADUAL |
| 4. An earthquake shifts a coastline in seconds. | ☐ RAPID | ☐ GRADUAL |
| 5. Waves widen a sea cave over many centuries. | ☐ RAPID | ☐ GRADUAL |
| 6. Wind wears down a rock formation over thousands of years. | ☐ RAPID | ☐ GRADUAL |
| 7. A landslide covers a stream in minutes. | ☐ RAPID | ☐ GRADUAL |
| 8. Sediment slowly builds a delta over centuries. | ☐ RAPID | ☐ GRADUAL |

2

PROVE IT

Explain your thinking

Pick two items from Part 1. For each one, tell how you knew where it belonged.

ITEM # _____ HOW I KNEW _____

ITEM # _____ HOW I KNEW _____

3

MAKE YOUR OWN

One of each

Write one new RAPID change and one new GRADUAL change. Include a time clue in each example.

RAPID _____

GRADUAL _____

CHALLENGE

Write two sentences about one place that changes first rapidly and then gradually. Name the type of change in each sentence. Then apply the idea to this regional case: Anak Krakatau is a volcanic island in Indonesia. On December 22, 2018, the volcano erupted and part of it collapsed, changing the island's shape during that event (NASA). Describe the physical feature and its change. Classify that collapse as rapid or gradual and explain using the time clue. Use separate paper if needed.

PART 1 • SORT

#	ITEM	CATEGORY	WHY
1	A hurricane strips sand from a beach overnight.	RAPID	Overnight is a short time, so the beach changes rapidly.
2	A volcanic eruption sends lava across a valley in hours.	RAPID	Hours is a short time, so the land changes rapidly.
3	A river cuts a canyon deeper over millions of years.	GRADUAL	Millions of years shows a gradual change.
4	An earthquake shifts a coastline in seconds.	RAPID	Seconds shows a rapid change.
5	Waves widen a sea cave over many centuries.	GRADUAL	Many centuries shows a gradual change.
6	Wind wears down a rock formation over thousands of years.	GRADUAL	Thousands of years shows a gradual change.
7	A landslide covers a stream in minutes.	RAPID	Minutes shows a rapid change.
8	Sediment slowly builds a delta over centuries.	GRADUAL	Centuries and slowly show a gradual change.

PART 2 • PROVE IT

Accept any explanation that names the deciding feature from the rule box for the chosen item.

PART 3 • MAKE YOUR OWN (SAMPLE ANSWERS)

- **RAPID:** A flash flood shifts a river channel in a few hours.
- **GRADUAL:** Tree roots slowly break apart rock over many years.

Challenge: A volcanic eruption quickly creates a new island, a **RAPID** change. Over many years, rain and streams slowly cut channels into the island, a **GRADUAL** change. Regional response: The feature is a volcanic island in Indonesia. Part collapsed during the December 22 eruption, changing its shape. This is rapid change during an event, rather than small changes accumulating over many years.

Answers: 1 **RAPID**, 2 **RAPID**, 3 **GRADUAL**, 4 **RAPID**, 5 **GRADUAL**, 6 **GRADUAL**, 7 **RAPID**, 8 **GRADUAL**. For Part 2, students should cite a time clue such as seconds, hours, centuries, or millions of years. Require the regional explanation as well as the original response. Regional source: NASA Photojournal, ASTER Images Post-eruption Anak Krakatau Volcano (2019).