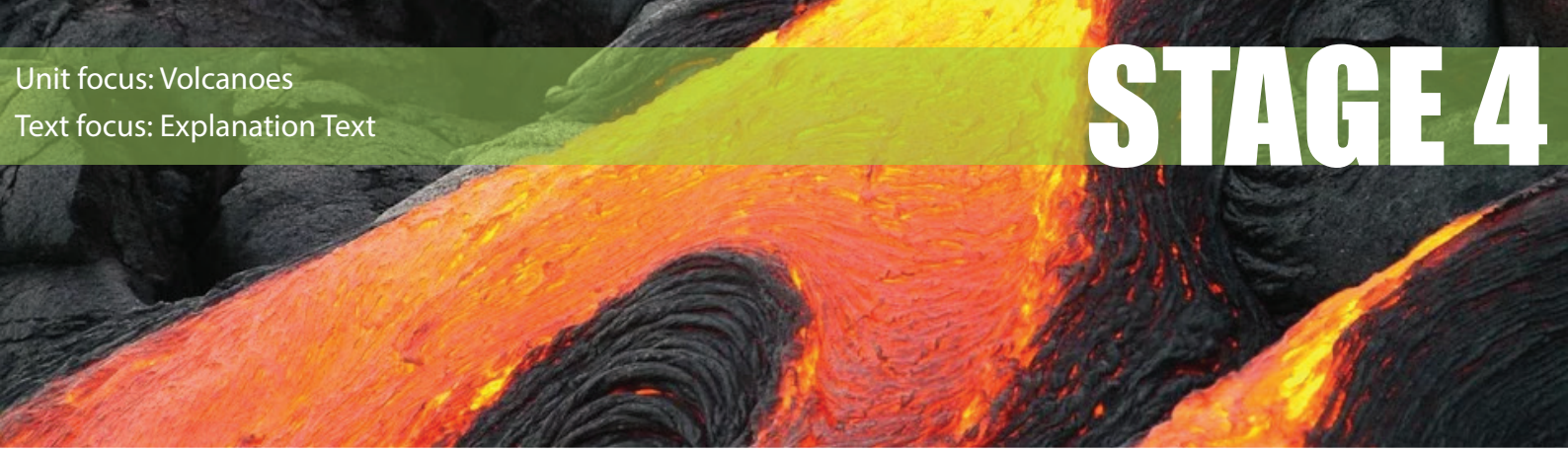


Enormous Eruptions

Volcanoes have fascinated and terrified people across the globe for thousands of years. Most of the time, they don't pose a threat. However, every so often they erupt and wreak devastation across the land. When this happens, some are more devastating than others. These are the top 5 most deadly volcanic eruptions ever recorded (for historical eruptions such as Mount Vesuvius, it is impossible to know how many people died).

5 Unzen (Japan) in 1792

Mount Unzen erupted in a big way in 1792. The explosion triggered an earthquake which set off the landslide. It swept through the city of Shimabara before hitting the Ariake Sea. This set off a tsunami which killed even more people. There is still evidence of the landslide today. About 15,000 people died in total.

Nevado del Ruiz (Colombia) in 1985 4

The eruption of the Nevado del Ruiz volcano in 1985 destroyed the town of Armero. Two separate explosions caused a river of mud and ash to wash down the mountain and bury it. A further mudslide also tore through the town of Chinchiná. More than 25,000 people were killed altogether.

3 Mount Pelée (Martinique) in 1902

When a volcano is showing signs of erupting nowadays, scientists are often able to warn people in time. There were no such warning systems in 1902 when Mount Pelée exploded. A break in the crater wall allegedly caused insects and snakes to flee into the town of St. Pierre, but this has never been confirmed. A giant blast tore apart the mountain and buried the town within minutes.

Most of the 30,000 people living in St. Pierre at the time died. This number was even higher than it needed to be because many people fled from the countryside. They mistakenly thought they would be safer there after the volcano erupted.

Krakatau (Indonesia) in 1883 2

One of the biggest eruptions in recorded history blew ash so high into the atmosphere that it fell over 500 miles away in Singapore. There were several explosions in total, two of which were so loud they could be heard at several points around the world. It is believed that the eruption was the loudest sound ever heard on Earth. The explosions set off a series of giant waves which engulfed the shores of Indonesia and killed over 35,000 people.

Enough dust was thrown into the atmosphere to block out the sun and lower the temperature of the Earth. Vivid red sunsets were seen as far away as New York. There is still an open vent on Krakatau that continually erupts; however, it is not considered dangerous.

1

Tambora (Indonesia) in 1815

Only 68 years before it would be devastated by Krakatau, Indonesia was rocked by the largest eruption ever recorded. So much ash, sulphur and other gases were thrown into the atmosphere that it blocked sunlight for months. It was nicknamed the "year without a summer". Crops failed everywhere due to the lack of light. Places as far away as Europe and North America experienced snow in the summer. Disease was rampant, and nearly 80,000 people died from starvation and illness.

RETRIEVAL FOCUS

1. How many people were living in St. Pierre?
2. How long after the eruption at Tambora was the disaster at Krakatau?
3. What was significant about the explosions at Krakatau?
4. Which was the earliest eruption?
5. What killed most people after the eruption in Tambora?

VIPERS QUESTIONS

S Give two reasons why the number of people who died in the Mount Pelée disaster was so high.

I Why was 1815 nicknamed the "year without a summer"?

V Which word tells you that the vent at Krakatau never stops erupting?

V What mental image does the phrase "engulfed the shores" give you?

P Do you think there would be more or fewer deaths if a volcano erupted now? Why?

VIOLENT VOLCANO

May 19th 1980.

The most destructive volcanic activity in American history rocked the state of Washington yesterday. Fifty-seven people lost their lives, and tens of thousands more have been impacted by the devastating eruption of Mount St. Helens. Located in the south-west of the state, there have been warnings of seismic activity for the past few months.

Scientists at the University of Washington have been monitoring earthquake activity near to the site since March. An earthquake measuring 4.2 was logged below the volcano on 20th March. Another was recorded three days later. This was the start of a series of continuous tremors. These continued until 27th March. Then, a large explosion at the peak of the volcano released steam nearly 2,000 metres into the air. More eruptions were observed over the following weeks until they stopped abruptly on 22nd April.

Two days ago, scientists noticed that the north side of the volcano had bulged out by nearly 140 metres. A scientist at the university told us that this indicated magma was rising towards the summit.

Volcanologist, David Johnston, had been stationed on the side of the mountain to check for any changes. He woke up just before dawn yesterday and radioed in his daily report. There was no new information to report.

Less than two hours later, a magnitude-5.1 earthquake shook the volcano. Mr Johnston radioed through a final message saying, “This is it!” The earthquake caused a crack in the rock within minutes and Mount St. Helens exploded. Mr Johnston was one of the first casualties.

It is our understanding that the build-up of pressure led to a more powerful explosion. The eruption caused a glowing cloud of superheated gas to blow out of the mountain face at supersonic speed. According to our contacts at the United States Geological Survey, everything within 8 miles of the blast would have been killed immediately. Anything within 19 miles would have been flattened by the shock-wave that followed. In total, an area of roughly 230 square miles was devastated by the initial blast.

Even as people were coming to terms with the initial eruption, a second was occurring at the summit. This explosion sent a cloud of ash 10 miles into the atmosphere. It is predicted to travel over a considerable distance in the coming days. Members of the public have been urged to avoid the ash wherever possible. It is estimated that hundreds of tons of ash could be produced in total.

It is unlikely that scientists will be able to determine the full extent of the damage to the local area until the aftermath of the eruption passes. Early reports indicate that a large portion of the mountain has been removed by the explosions.

Volcanologists are currently monitoring the area but do not expect any further activity from the volcano.

Photo credit: USGS/Robert Krimmel

VOCABULARY FOCUS

1. What does the word “impacted” mean in the first paragraph?
2. Which word tells you that tremors happened over and over again?
3. Why has the author described it as a “devastating eruption”?
4. If you were a member of the public, what impact would the use of the word “urged” have?
5. Find a word closest in meaning to “work out” or “find out information”.

VIPERS QUESTIONS

R	Where in Washington is Mount St. Helens?
V	Which word was important in finding the previous answer?
P	Why hasn’t the author given a precise measurement for how high the steam was released?
R	What was the job of the first person killed by the eruption?
E	The author has used lots of scientific language. What effect does this have on the reader?

Parts Of A Volcano

Volcanoes come in many shapes and sizes but they all have most of the same features. Some are too big to see from the ground. Yellowstone Park in North America is actually the crater of an enormous supervolcano. Most of the actual volcano is underground. The last time it erupted was over 640,000 years ago.

Other volcanoes are more recognisable: a mountain with a crater on the top. Some have more than one crater, as craters can form around the slopes of the volcano.

ASH CLOUD

Ash, rock and pumice are thrown high into the air during an eruption. The ash cloud was 20 miles high and entered the stratosphere when Mt. Vesuvius erupted in 79 AD. Ash particles are very small and can travel a significant distance in the wind.

CRATER

The crater of a volcano is the opening caused by volcanic activity. It is normally formed the first time a volcano erupts and is found at the end of a vent. During an eruption, magma rises out of the craters. Pressure builds up when a crater is blocked which results in an explosive eruption. These can be much more dangerous.

VENT

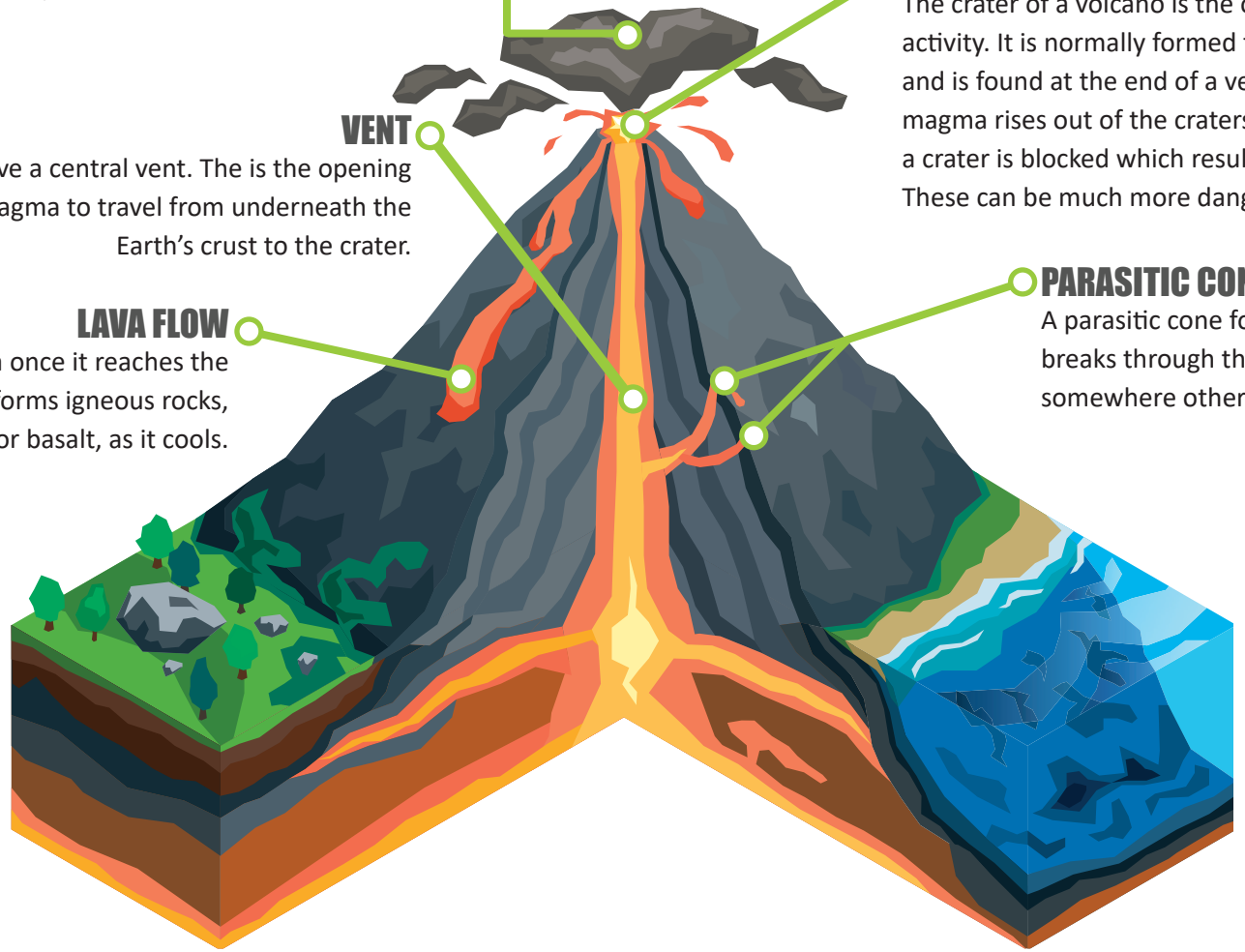
All volcanoes have a central vent. The is the opening that allows magma to travel from underneath the Earth's crust to the crater.

LAVA FLOW

Magma becomes lava once it reaches the Earth's surface. Lava forms igneous rocks, such as granite or basalt, as it cools.

PARASITIC CONE

A parasitic cone forms when magma breaks through the surface of the volcano somewhere other than the main crater.



RETRIEVAL FOCUS

1. Which type of volcano is Yellowstone Park?
2. Which volcano formed an ash cloud 20 miles high when it erupted?
3. Which type of vent do all volcanoes have?
4. When is a crater normally formed?
5. Find an example of a type of igneous rock.

VIPERS QUESTIONS

S	How does a parasitic cone form?
V	Find a word which means that something is easy to identify.
S	When does magma become lava?
V	What impression does the use of the prefix *super* in supervolcano give you?
E	How has the author used the layout to engage the reader?

Unit focus: Volcanoes
Text focus: Narrative

STAGE 4

Pompeii

Small pebbles rattled across the cobblestones. Birds took to the sky and shrieked a warning to the people bustling below. A little boy sat with his back against the wall of his house and watched the dust dance. Something big was happening underneath the street.

He tentatively placed his hand on the stones. They felt warm in the midday sun. He felt tremors in his fingertips. He thought to call for his mother, but she was out in the back, scrubbing their linen. Instead, he wandered along the street until it reached the city walls. His fingers idly traced the outline of the mortar as he slowly followed its curve towards the gate. Even the wall was shaking.

When he reached the open gate, the boy stopped and stared. To the north, he could make out the familiar sight of Mount Vesuvius. A vivid blue sky hung peacefully above it. Ever since he'd been little, he'd talked to his friends about climbing to the top. His mother had caught him talking about it once and scolded him. It was too dangerous, she'd said.

As he watched, the volcano seemed more prominent than before: more imposing. Suddenly, the world was filled with an almighty thunder. The boy clapped his hands to his ears and fell to his knees. When he looked up, the sky had disappeared. In its place, a thick grey blanket was being rolled out across the horizon.

The boy watched with his mouth agape as thousands of small black dots were tossed from the volcano's peak, like leaves in the wind. The grey blanket seemed unstoppable in the sky; the sun blinked out in its wake.

Terrified, the boy raced back to his house and grabbed his mother. In babbled words, he tried to explain what he'd seen, but she dismissed him. "Your head is stuck in the volcano," she moaned and returned to her washing.

Panicking, the boy raced back out into the street. It seemed as though night had fallen already. There was barely any light to see by, and the boy tripped and landed on his

back. As he stared up at the sky, a lump of rock the size of his fist ripped through the black cloud. Somebody screamed as it smashed through the roof of the house opposite.

Snowflakes started to fall from the sky. The boy stuck out his tongue instinctively, but these flakes were hot and dry and bitter. They fell faster than any snow he'd seen before. Even as he lay on the street, his hands were buried beneath a burning layer.

He screamed and stood up. Now more rocks were crashing into the streets. People were yelling incoherent words to each other, all of them blending into one barrage of noise. Most tried to run away, but the bitter snow was falling too quickly. Some were struck by falling debris and didn't get back up. Within seconds they were buried.

Somebody grabbed the boy from behind and embraced him. It was his mother. They raced back into the house. The beams in the roof were groaning under the weight of the ash. It didn't matter, it was better than being outside.

The boy silently sobbed into his mother's arms as they waited for whatever was going to happen, to happen.

VOCABULARY FOCUS

1. What has the author used the word "tentatively" in the second paragraph?
2. Find a synonym for the word "idly".
3. What do the phrases "vivid blue" and "hung peacefully" tell you about the sky?
4. If the volcano is more imposing, what impression does that give you?
5. What is debris in this context?

VIPERS QUESTIONS

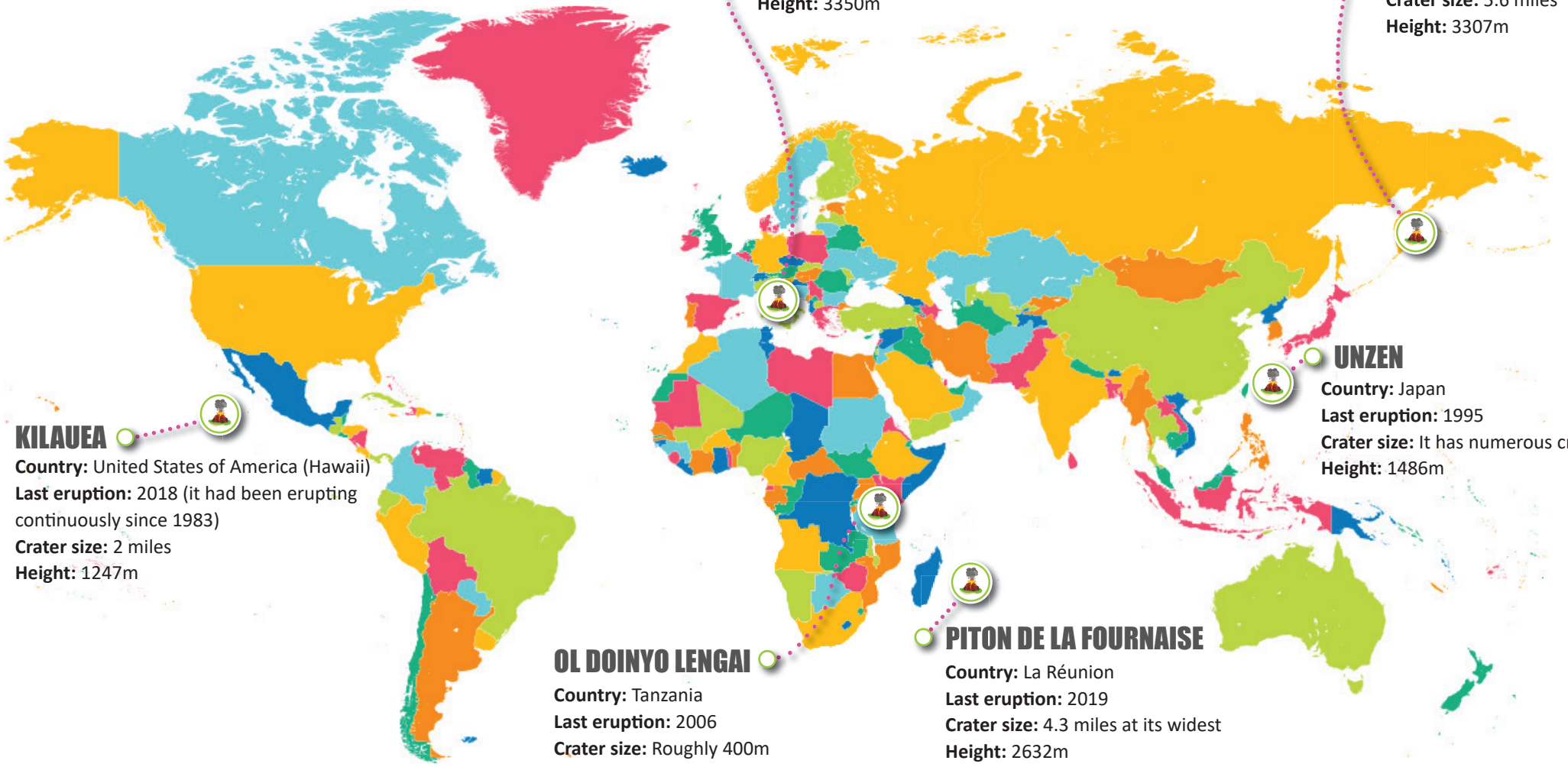
S	What clues were there that something was about to happen?
I	What were the snowflakes that the boy tried to taste?
R	What time of day is it? Copy a quote that supports this.
I	When it says "It seemed as though night had fallen already", what had happened?
P	Why did somebody scream when the first rock smashed into the house opposite?

Unit focus: Volcanoes
Text focus: Information Text

Volcanoes Of The World

STAGE 4

There are approximately 1,500 active volcanoes dotted around the world today. Most volcanoes form at the boundaries of tectonic plates (enormous slabs of rock that move about and form the Earth's crust). This map shows some of the most active volcanoes.



ETNA
Country: Italy
Last eruption: It is currently active and erupts roughly once a year
Crater size: There are four different sized craters
Height: 3350m

SHIVELUCH
Country: Russia
Last eruption: 2007
Crater size: 5.6 miles
Height: 3307m

UNZEN
Country: Japan
Last eruption: 1995
Crater size: It has numerous craters
Height: 1486m

KILAUEA
Country: United States of America (Hawaii)
Last eruption: 2018 (it had been erupting continuously since 1983)
Crater size: 2 miles
Height: 1247m

OL DOINYO LENGAI
Country: Tanzania
Last eruption: 2006
Crater size: Roughly 400m
Height: 2962m

PITON DE LA FOURNAISE
Country: La Réunion
Last eruption: 2019
Crater size: 4.3 miles at its widest
Height: 2632m

SUMMARY FOCUS

1. Which volcanoes have more than one crater?
2. Which volcano has been dormant (hasn't erupted) for the longest?
3. Order the volcanoes in order of height, from smallest to largest.
4. Of the volcanoes with crater measurements, which is the smallest?
5. Why hasn't Etna got a last eruption date?

VIPERS QUESTIONS

I	Why is the number of active volcanoes only given as "approximately 1,500"?
V	Which word tells you that volcanoes form on the edge of tectonic plates?
R	Which volcano is in the United States of America?
V	Find a word that tells you that Unzen has more than one crater.
R	Which volcano had been erupting for over 20 years before it stopped?

Answers - Enormous Eruptions:

1. 30,000
2. 68 years
3. They were the loudest sounds ever heard
4. Unzen (1792)
5. Starvation and illness/disease

S: There were no warning systems in place and people had moved into the town thinking it was safer

I: There was so much ash in the sky that the sun couldn't shine through/it was dark all year

V: Continually

V: Waves consuming/eating/devouring/smothering etc the shore

P: Look for answers that reference us having better warning systems now/reference to crops failing not being so severe with global trade. For more deaths, look for answers that reference more densly populated cities and living closer to volcanoes

Answers - Violent Volcano:

1. Something has happened to them as a result of the eruption
2. Continuous
3. It explains the impact clearly and adds drama for the newspaper
4. It makes it seem more urgent and important that I follow the advice
5. Determine

R: The south-west

V: Located

P: It would be impossible to measure accurately from a distance/it happened too quickly to measure

R: Volcanologist

E: It might make it harder to understand/it gives you more information and makes it feel more important

Answers - Parts Of A Volcano:

1. A supervolcano
2. Mt. Vesuvius
3. A central vent
4. During a volcano's first eruption
5. Granite or basalt

S: Magma breaks through the surface of the volcano somewhere other than the main crater

V: Recognisable

S: When it reaches the surface of the Earth

V: They are much bigger or more dangerous than normal volcanoes

E: The diagram shows inside a volcano so it is easy to see the separate parts. The headings make it easier to find information. The lines point to each section.

Answers - Pompeii:

1. It tells the reader that the boy was nervous/cautious when he touched the stones
2. Slowly/leisurely (any others from the dictionary if used)
3. There were no clouds and the sky was still/no wind
4. It seemed bigger/to tower above him
5. Rocks and ash falling from the sky

S: The pebbles were rattling/the dust danced/tremors in the cobblestones/birds flying off/the wall shaking/the volcano looked more imposing

I: Falling ash/pumice

R: Midday - They [the stones] felt warm in the midday sun (do not accept night time as this shows a misunderstanding later on)

I: The ash cloud had blocked out the sun and was covering the town

P: Somebody inside had been hit/killed/disturbed by it

Answers - Volcanoes Of The World:

1. Etna and Unzen
2. Unzen
3. Kilauea, Unzen, Piton de la Fournaise, Ol Doinyo Lengai, Shiveluch, Etna
4. Ol Doinyo Lengai
5. It erupts roughly once a year and so the last eruption date will change often

I: It is hard to track exactly when a volcano is active or extinct/there are lots of smaller volcanoes that are hard to count

V: Boundary(ies)

R: Kilauea

V: Numerous

R: Kilauea