

Component 1 – Paper 1 exam for Topics 1, 2, and 3

Topic 1: Hazardous Earth

KEQ 3 - Why do the causes and impacts of tectonic activity and management of tectonic hazards vary with location?



Instructions

1. You will need to use either your Kerboodle login, revision guide, the knowledge organisers that are on the ClassCharts post, or the department's website: <http://www.fulstonmanorgeoggers.weebly.com>
2. You are to read carefully the task set on each page and then complete the task in full sentences where expected.
3. If you get stuck, remember the three Bs - Book, Brain, Boss!

Book - Check your resources first (Kerboodle, revision guide, knowledge organiser, website)

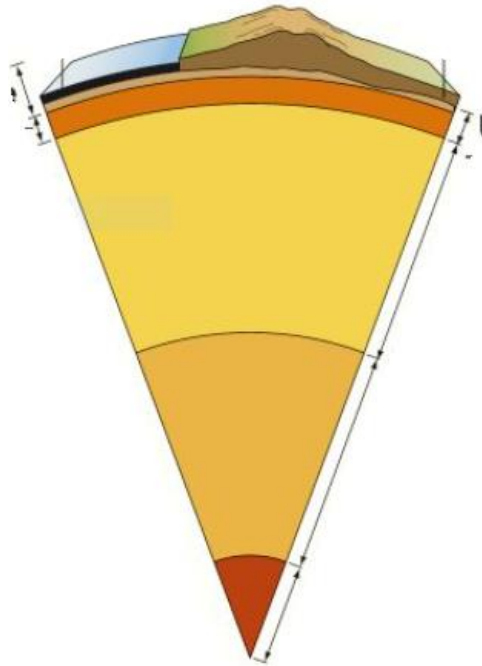
Brain - Think it through, you may really already know but are doubting yourself

Boss - email your teacher or message them on ClassCharts

Lesson 6: Structure of the Earth

Task 1: Read pages 34-35 from your Kerboodle Textbook. If you can't access this, please read over this page from [bitesize](#) (revision page 1).

Now, using what you have learnt, label the details of the structure of the earth onto the diagram below.



TASK 2: In your own words, explain the difference between continental and oceanic crust (you may use diagrams to help you) - plus this [video](#)

TASK 3: Read this passage, and then, below, summarise how convection currents work making sure you use diagrams to support your answer. You can also use this [video](#) to support you with your diagrams (first part of the video will help you the most)

The inner core is so deep and is under such huge pressure that it stays solid. The outer core is liquid because it is under lower pressure. As heat rises from the core, it creates **convection currents** in the liquid outer core and mantle (see Figure 1). These vast mantle convection currents are strong enough to move the tectonic plates on the Earth's surface. Earth scientists now think that the convection currents that move the Earth's plates are not as deep-seated as shown in Figure 1. However, they are still forceful enough to move very large 'slabs' of crust. The convection currents move about as fast as your fingernails grow. Radioactivity in the core and mantle is the engine of plate tectonics.

My answer (writing and diagrams)

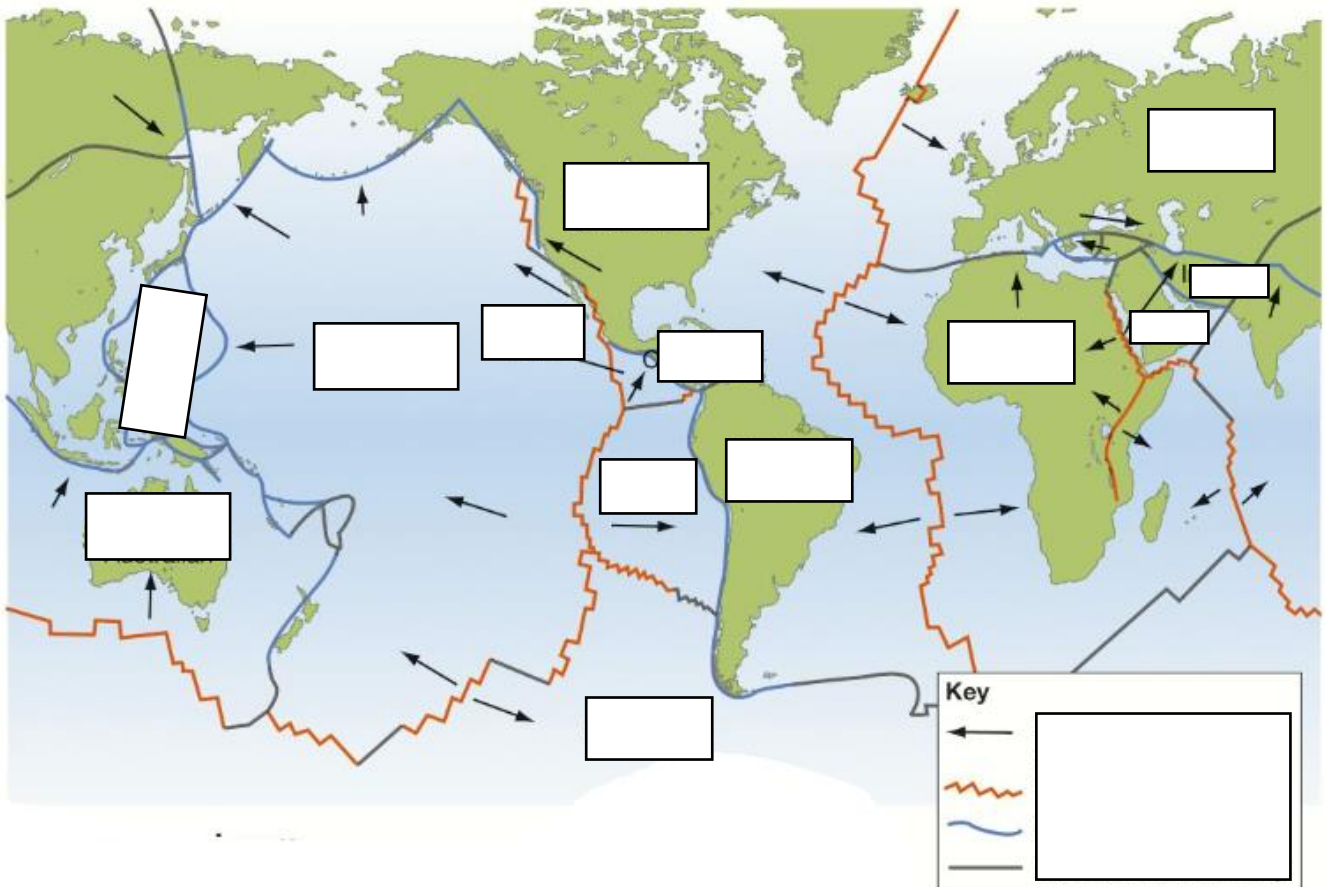
TASK 4: Answer this exam question;

Other than the mantle, explain the properties of **two** of earth's internal layers (4 marks)

Lesson 7: Investigating Plate Boundaries

TASK 1: Read pages 38-39 from your Kerboodle Textbook. If you can't access this, please read over this page from [bitesize](#) (revision page 2 and 3).

TASK 2: Label the tectonic plates and complete the key:




TASK 3: Complete the sentences

Divergent plate boundaries are formed when two plates move _____.

Convergent plate boundaries are formed when two plates move _____.

Conservative (Transform) plate boundaries are formed when two plates
_____.

TASK 4: Watch the [video](#) and use page 40 from the kerboodle book to complete the table below

	Convergent (Collision)	Convergent (Destructive)	Divergent (Constructive)	Transform (Conservative)
Diagram(s)				
Description	2 continental plates colliding forms _____	1 continental and 1 oceanic forms a _____ zone. The oceanic subducts beneath the continental because it is (more/less) dense	Occur in the oceans causing _____ Magma rises and forms new igneous rock. This cools when it reaches the _____. It builds up over time forming a _____.	
Type of hazard(s)		Earthquakes and Volcanoes		Earthquakes
Real life example	Himalayas. Formed as the Indian and Eurasian continental plates push into each other			

TASK 5: Which type of plate boundary do you think is the most dangerous to live on. Explain why.

Plenary Challenge: Why aren't the Hawaiian Islands found **on** a plate boundary? Use this [video](#) to help you.

Lesson 8: Volcanoes and Earthquakes

TASK 1: Watch the [video](#) and answer the questions below;

- 1) How many active volcanoes are found across the world?
- 2) Where are most volcanoes located?
- 3) How many of the planet's volcanoes are contained around the Pacific Ring of Fire?
- 4) What are the main types of volcanoes?
 - 1 -
 - 2 -
 - 3 -
 - 4 -
- 5) When magma breaks through the crust what does it become known as?
- 6) What is a pyroclastic flow?
- 7) What does the VEI stand for?
- 8) When and where was the largest known eruption?
- 9) What are the benefits of volcanic ash?

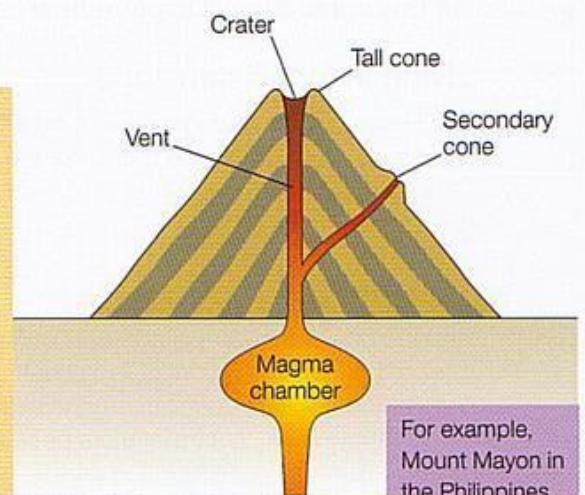
TASK 2: Using the diagrams and information below, complete the table with the correct information

Volcanoes

There are two main types of volcano.

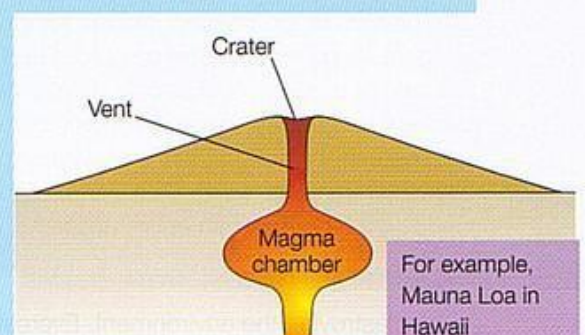
Composite volcanoes

- ◆ They're found at destructive plate margins. When the oceanic plate sinks into the mantle and melts, it forms magma. Magma mixed with sea water then rises up through cracks in the Earth's crust and erupts at the surface – forming volcanoes (page 11).
- ◆ Composite volcanoes have steep sides, and are made up of alternate layers of ash and lava.
- ◆ The lava is sticky, so it doesn't flow far. It's also acidic.
- ◆ Eruptions can be violent – expelling steam, ash, lava and rock – but they don't happen very often.



Shield volcanoes

- ◆ They're found at constructive plate margins. As the two plates move apart, magma rises up from the mantle. Some magma is forced to the surface through a vent – forming a volcano.
- ◆ Shield volcanoes have a wide base and gently sloping sides.
- ◆ The lava is runny and flows a long way. It's also basic (that's the opposite of acidic).
- ◆ There can be frequent eruptions, but they're not violent.



	Composite/strato-volcano	Shield Volcano
What type of plate boundary? Name me an example		
Lava Characteristics		
Geographical features (e.g. steep slopes)		
Real life example?		

TASK 3: Read the information below about Earthquakes

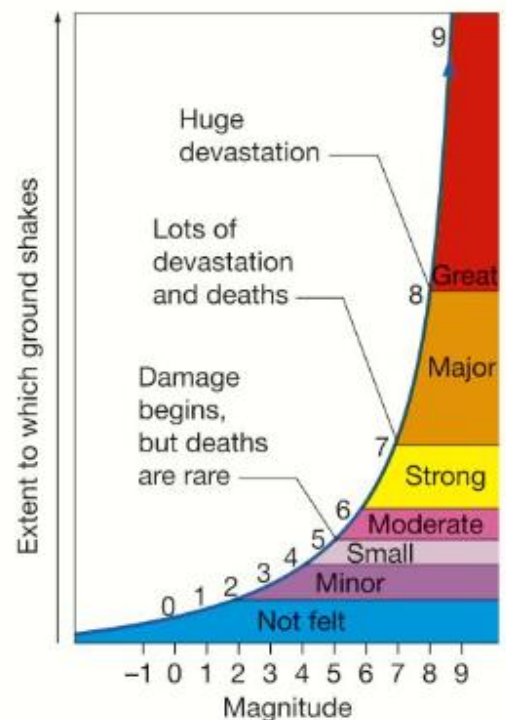
Why is the ground shaking?

Earthquakes can't be predicted. They start without warning and can be catastrophic. An earthquake is a sudden release of energy. Underground, tectonic plates try to push past each other along fractures – building up pressure which is suddenly released, sending out pulses of energy.

The power of an earthquake (how much the ground shakes) is its **magnitude**. A **seismometer** measures this using the **Richter scale** (Figure 1).

The scale is logarithmic. A magnitude 6.0 quake is 10 times more powerful than a magnitude 5.0.

Energy travels outwards from the **focus** (origin) as earthquake waves, see Figure 2. The shallower the focus, the more destructive the earthquake. The location on the earth's surface above the focus is the **epicentre**, which experiences most shaking.



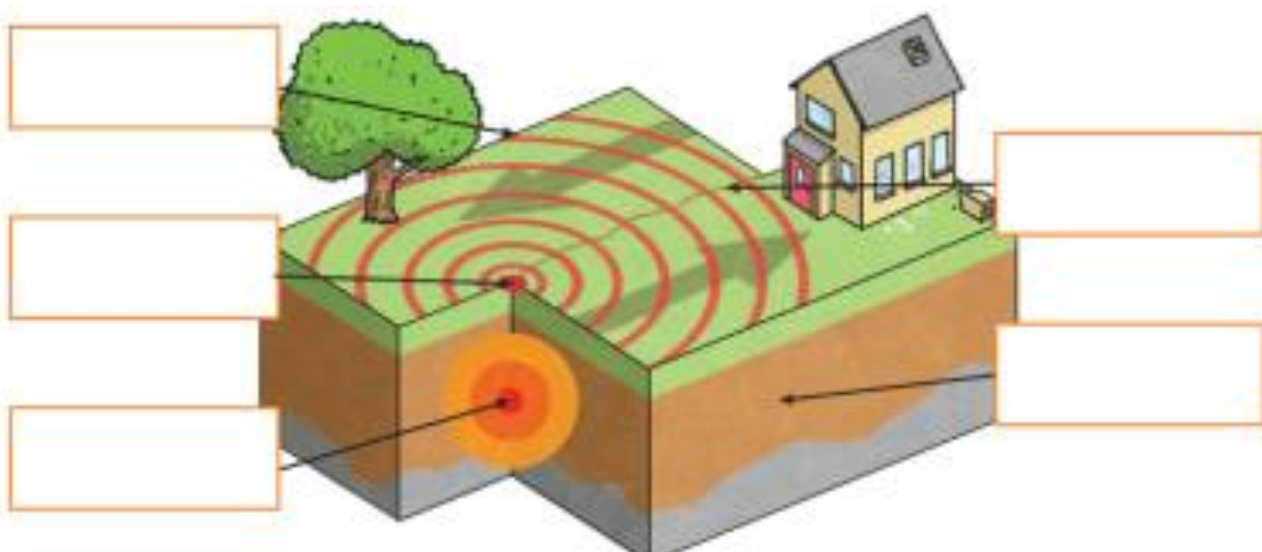
Now, using the table of information below, create a series of images to illustrate the different types of damage at each level of the richter scale.

Richter scale no.	No. of earthquakes per year	Typical effects of this magnitude
< 3.4	800 000	Detected only by seismometers
3.5 - 4.2	30 000	Just about noticeable indoors
4.3 - 4.8	4 800	Most people notice them, windows rattle.
4.9 - 5.4	1400	Everyone notices them, dishes may break, open doors swing.
5.5 - 6.1	500	Slight damage to buildings, plaster cracks, bricks fall.
6.2 - 6.9	100	Much damage to buildings: chimneys fall, houses move on foundations.
7.0 - 7.3	15	Serious damage: bridges twist, walls fracture, buildings may collapse.
7.4 - 7.9	4	Great damage, most buildings collapse.
> 8.0	One every 5 to 10 years	Total damage, surface waves seen, objects thrown in the air.

My illustrations

TASK 4: Watch the following [video](#), and label the diagram below.

earth's crust / epicentre / focus / fault line / tectonic plate



Challenge: What human influences have an impact on the number of deaths that result from an earthquake?

TASK 5: Watch this TED Ed [video](#) about Tsunamis.

Explain the difference between normal waves and Tsunami waves

Plenary: "Gimme 5!"

Give me 5 quick facts you have learnt from this lesson

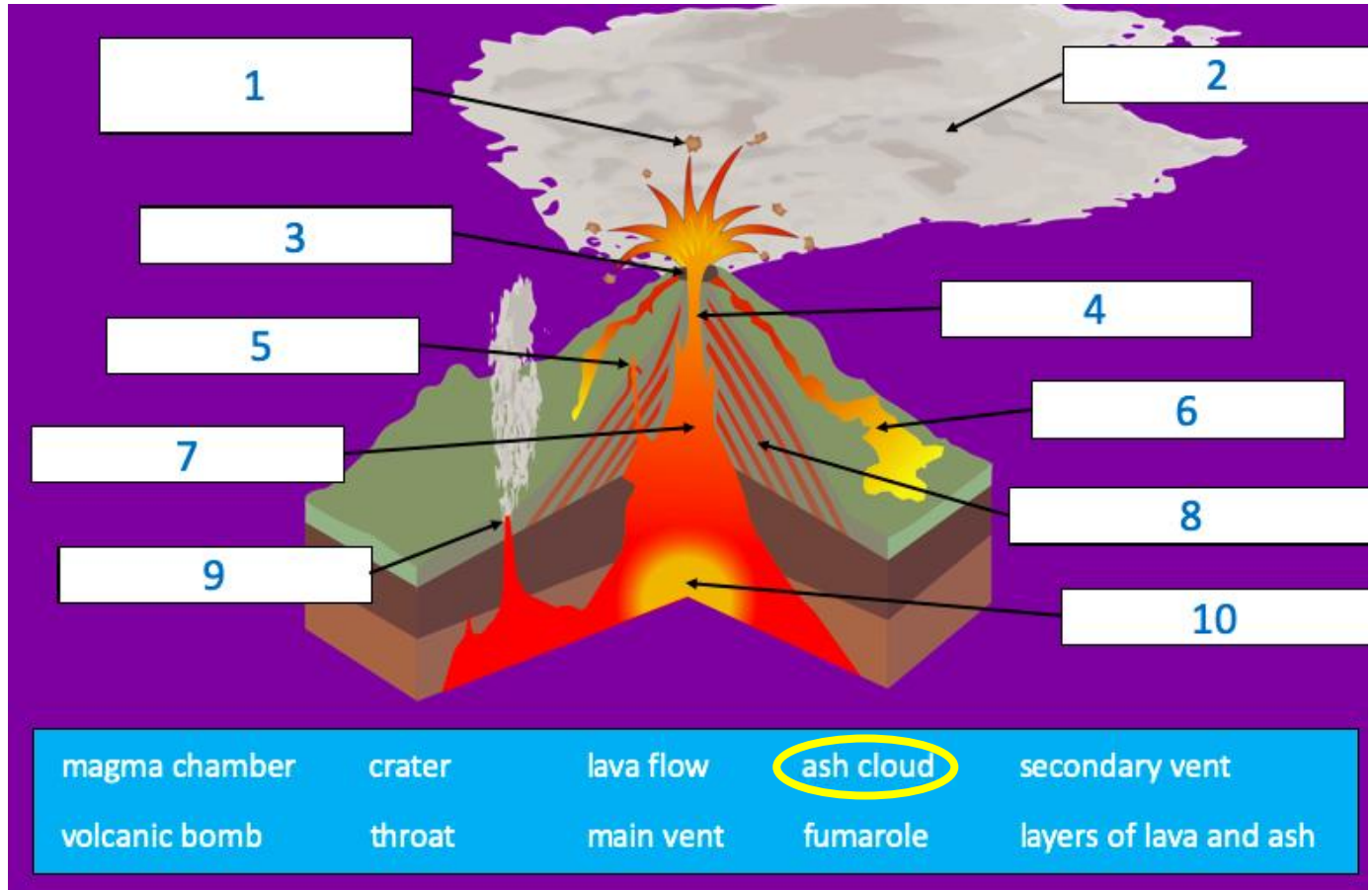
- 1 -
- 2 -
- 3 -
- 4 -
- 5 -

Lesson 9: Developed and Developing World

Volcanoes (CASE STUDIES)

Mt Nyiragongo and Mt Sakurajima

TASK 1: Correctly match the number to the label to show the structure of a volcano



TASK 2: Circle the words above that you think are volcanic HAZARDS (one example shown)

TASK 3: Define the following keyterms:

Primary effects =

Secondary effects =

CASE STUDY 1:

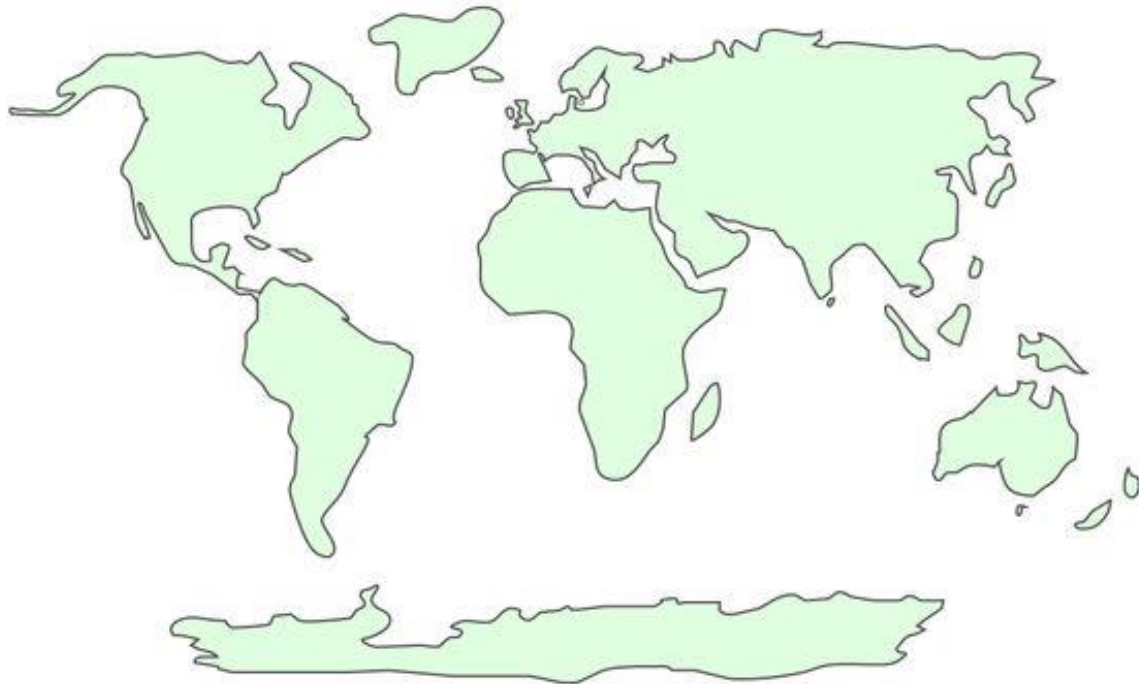
DEVELOPED WORLD

Country: Japan

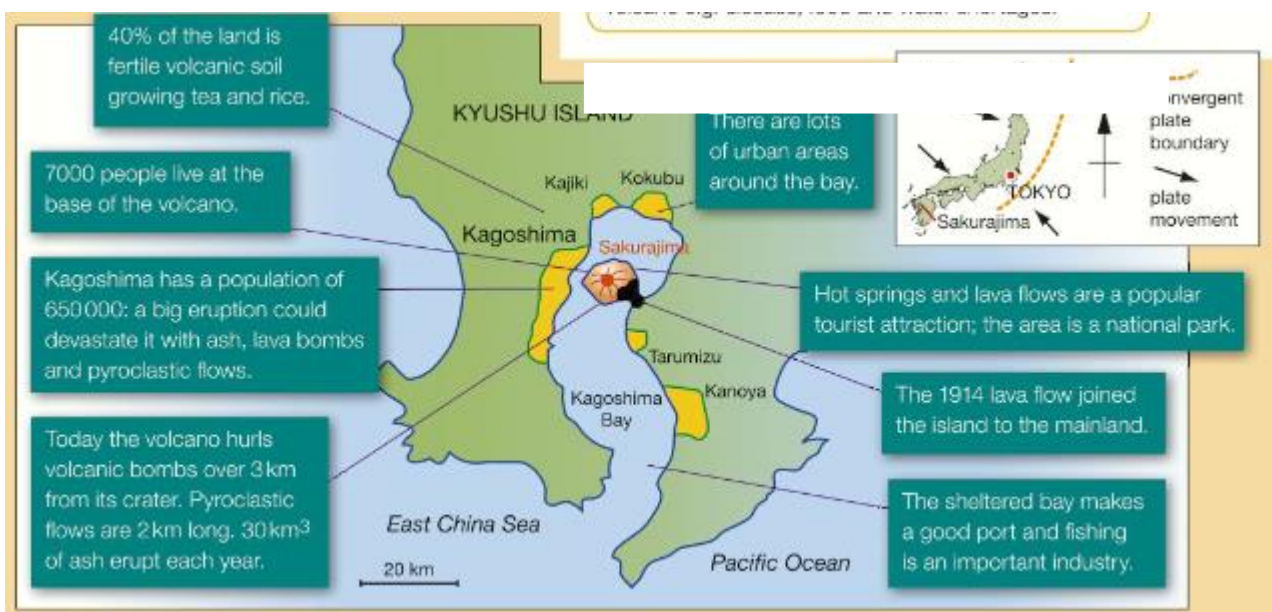
Name: Mount Sakurajima

When: Ongoing

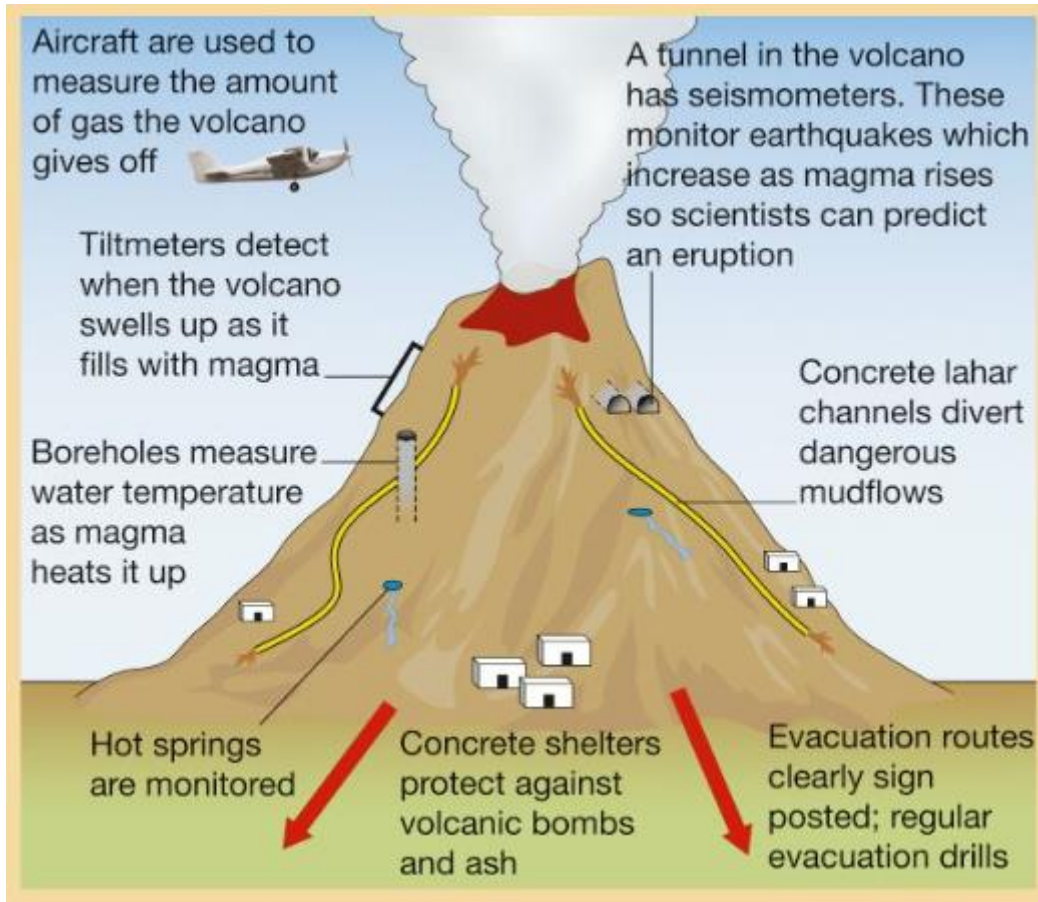
TASK 1: Highlight/circle on the map of the world, the location of this volcanic eruption



TASK 2: Next to each of the impacts below, place a + or a - to show if it is a positive or a negative impact of the eruption



TASK 3: Highlight the methods of prediction in one colour and protection in another colour



CASE STUDY 2:

DEVELOPING WORLD

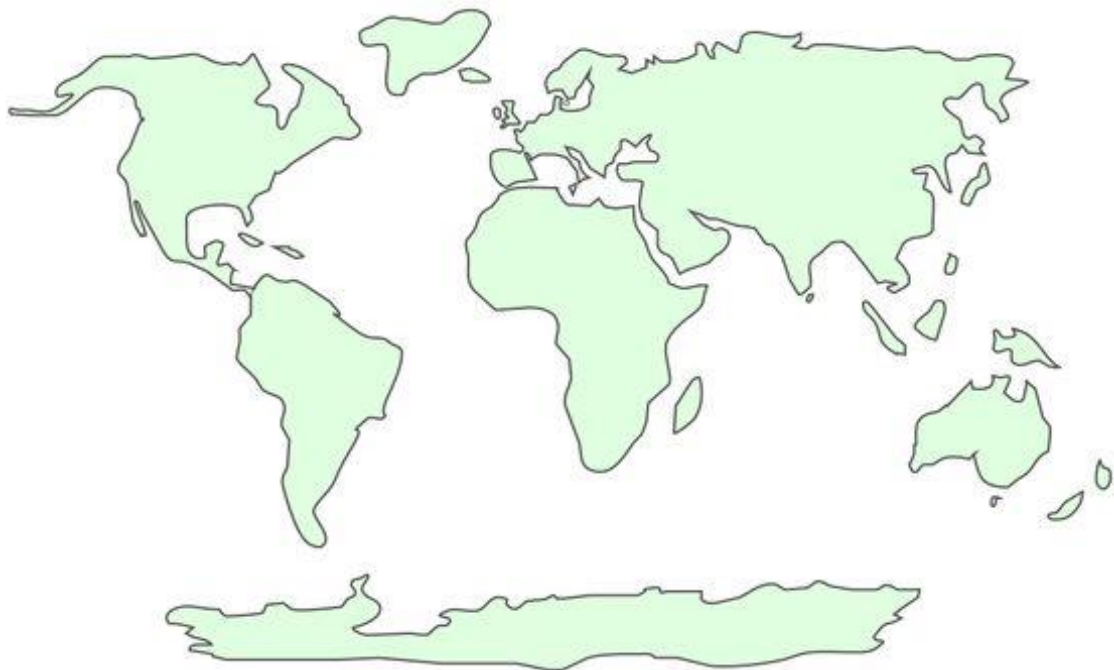
Country: Democratic Republic of Congo (DRC)

Name: Mount Nyiragongo

When: January 2002

Death toll: 100

TASK 1: Highlight/circle on the map of the world, the location of this volcanic eruption



TASK 2: Sort the following impacts into social, economic and environmental (you can highlight, code or label)

12 500 homes were destroyed by lava flows and earthquakes

Poisonous gases caused acid rain which affected farmland and cattle - many farmers lost income

400 000 people were evacuated and had to move to overcrowded refugee camps

Due to poverty, most people could not afford to rebuild their homes

Disruption in the mains water supplies caused concern about the spread of disease

100 people died, mostly from poisonous gas and getting trapped in lava

Over 120 000 people were left homeless

	Mt Sakurajima, Japan	Mt Nyiragongo, DRC
Volcano type	Steep-sided stratovolcano (or composite cone) over 1000m high.	Stratovolcano over 3400m, high but less steep than Mt Sakurajima.
Magma type	Andesite. High gas content, high viscosity.	Basalt. Low gas content, very low viscosity.
Explosivity	VEI 4-5	VEI 1
Hazards	Lava flows, volcanic bombs, pyroclastic flows, ash fall. Erupts almost continually, but with major eruptions once every 200–300 years.	Lava flows and gas emissions. Contains a lava lake within its crater, which can drain causing huge, fast-moving lava flows.

A simple comparison table above

TASK 3: Exam practice

Assess the importance of the primary and secondary impacts of **either earthquakes or volcanoes** in an emerging or **developing** country. (8)


Named emerging or developing country

Examiners comments:

Frequently, candidates laid out paragraphs for **each category of impacts**, which allowed accurate AO2 knowledge and understanding to be displayed clearly. Generally, they went on to **judge the severity/significance of the impacts** against each other in a summative paragraph, which gave them access to AO3 credit.

The better Level 3 answers tended to **assess** the importance of their chosen impacts **throughout** the text, so demonstrating a more **holistic** approach. Successful candidates finalised their answer with a **decision** as to which type of impacts were worse and why. Sometimes, they re-iterated what they considered to be to the most important aspect or why they believed this to be so.

Less frequent was a final paragraph that brought in a new piece of strong evidence that reinforced the decision very coherently in support of the argument. These candidates tended to achieve 8/8



Before embarking on your answer, underline the type of country required by the question.

