

ACK!



I got a zit!





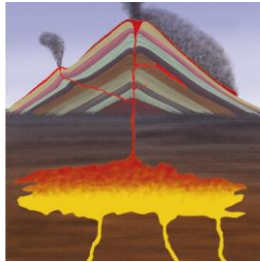


Early internal heat has to escape...
somewhere!

Molten Material

Magma

Molten mixture of rock-forming substances, gases, and water from the mantle.

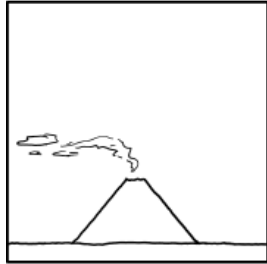


Lava

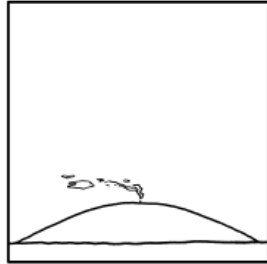
When magma reaches the surface.



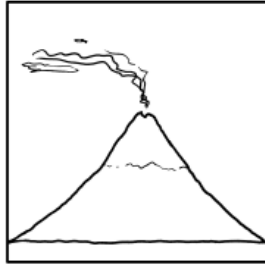
A GUIDE TO VOLCANO TYPES



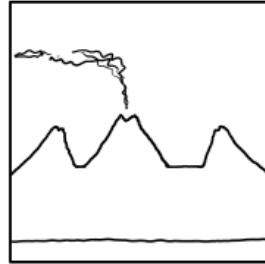
CINDER CONE



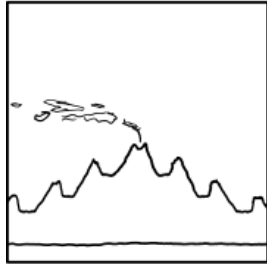
SHIELD VOLCANO



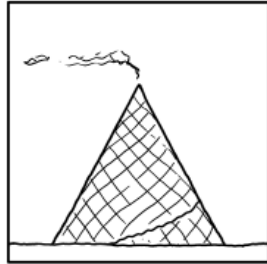
STRATOVOLCANO



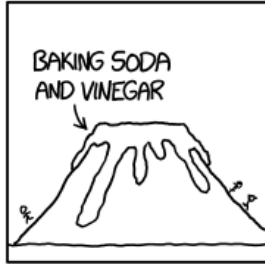
SOMMA VOLCANO



METASOMMA VOLCANO



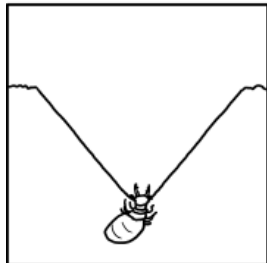
WAFFLE CONE



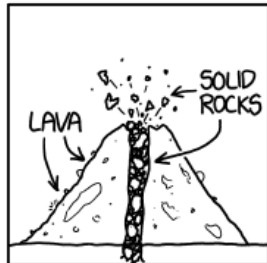
SCIENCE FAIR CONE



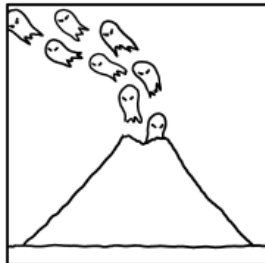
DOOT CONE



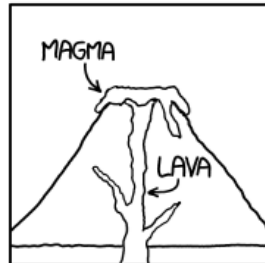
ANTLION



INVERSE VOLCANO



GHOST VENT



PEDANT'S BANE

Types of Volcanoes

Composite

Made of alternating layers of lava flows and ash falls. Tend to be cone-shaped and tall.

Cinder Cone

Mixture of bombs, ash, and cinders. Tend to erode quickly.

Shield

Slow, steady eruptions that build up over a broad area. Tend to be extremely large.

Lava Plateau

Long cracks in the crust where lava floods an area repeatedly over many years.

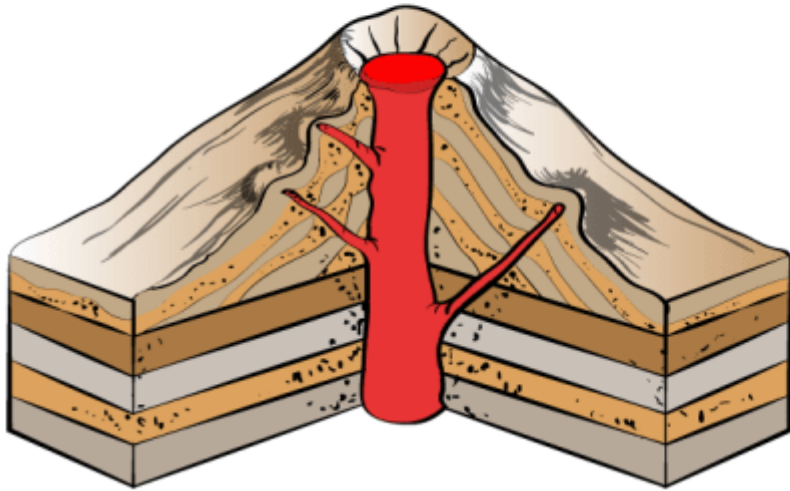
Lava Dome

Small masses of lava that cannot flow any great distance so lava piles over and around its vent.

Caldera

When an explosive eruption occurs and the roof of the magma chamber collapses.

COMPOSITE VOLCANO (AKA STRATO)

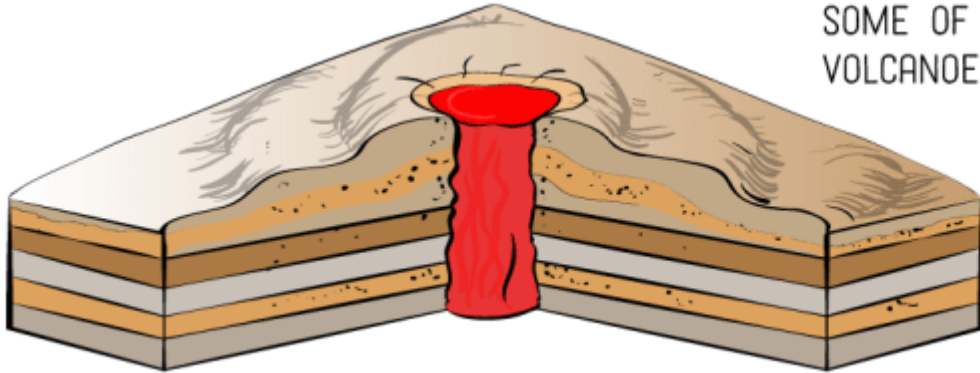


OVER MULTIPLE ERUPTIONS, THE ACCUMULATION OF BOTH EXPLOSIVE ACTIVITY AND LAVA FLOWS FORM THE STEEP, SWEEPING SIDES OF THIS VOLCANO. AS IT AGES, MULTIPLE CHANNELS TO THE SURFACE CAN SPLINTER OFF OF THE CENTRAL VENT, INFLUENCING ITS SHAPE.



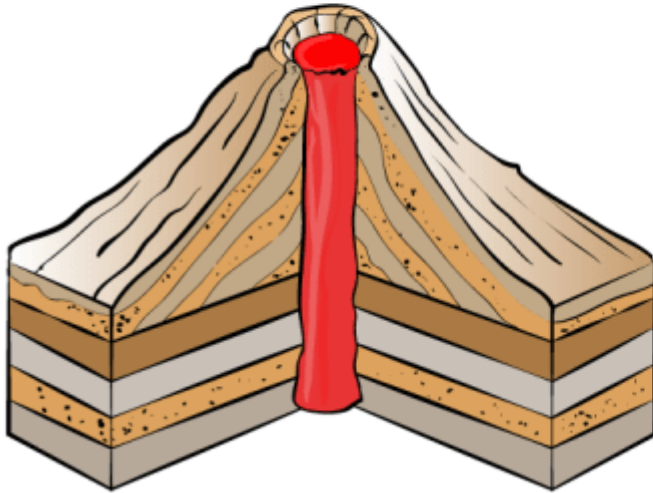
SHIELD VOLCANO

OVER MULTIPLE ERUPTIONS, LONG, FLUID LAVA FLOWS FORM BROAD LAYERS, WHICH ACCUMULATE INTO SOME OF THE WORLD'S LARGEST VOLCANOES.





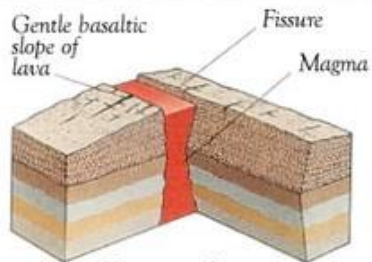
CINDER CONE VOLCANO (AKA SCORIA CONE)



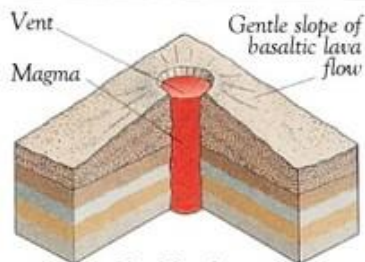
FORMS WHEN EXPLOSIVE ACTIVITY THROWS MAGMA INTO THE AIR, WHICH COOLS INTO CINDERS AND SETTLES AROUND THE VOLCANO'S OPENING. THESE EMERGE IN JUST A FEW YEARS DURING ONE ACTIVE PERIOD; AFTERWARD, THEY ARE USUALLY EXTINCT, BUT THEY MAY OCCUR ON THE SIDE OF A LARGER VOLCANO.



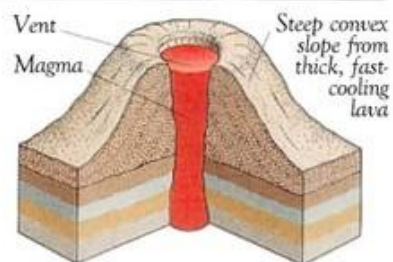
TYPES OF VOLCANO



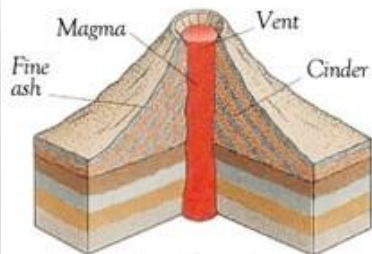
Fissure volcano



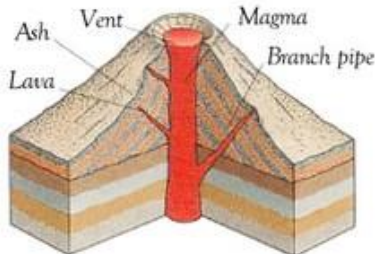
Shield volcano



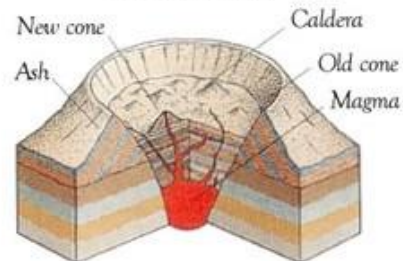
Dome volcano



Ash-cinder volcano



Composite volcano



Caldera volcano

Volcanic Eruptions

Quiet

Low in silica so the magma is thin and runny. Trapped gasses will bubble out gently.



Explosive

High in silica so the magma is thick and sticky. Trapped gasses will build up over time increasing the pressure.





Make a Volcano!

1

Gather Supplies

You will need baking soda and vinegar for the eruption and a bottle with paper for the land

2

Construct Structure

Create your volcano using the bottle as where the materials will go and then the paper to make it look like it is an actual mountain

3

Create Eruption!

Pour in the baking soda and then the vinegar to make a chemical reaction for your eruption (use food coloring if you want colors)

Make a volcano

Use these instructions to create your own volcanic eruption. Go through it once just normally, and then rinse out your bottle and changes something to see if you can make a more explosive eruption. How can you change things to make the eruption more quiet?

When you are done, add your picture to this Padlet:

<https://kyrenedigital.padlet.org/MissJohnson/vh03jt8dlrw5slqr>

- https://www.azscience.org/media/3300/vinegar_volcano.pdf
- <https://www.sciencefun.org/kidszone/experiments/how-to-make-a-volcano/>
- <https://www.nhm.ac.uk/discover/how-to-make-a-volcano.html>

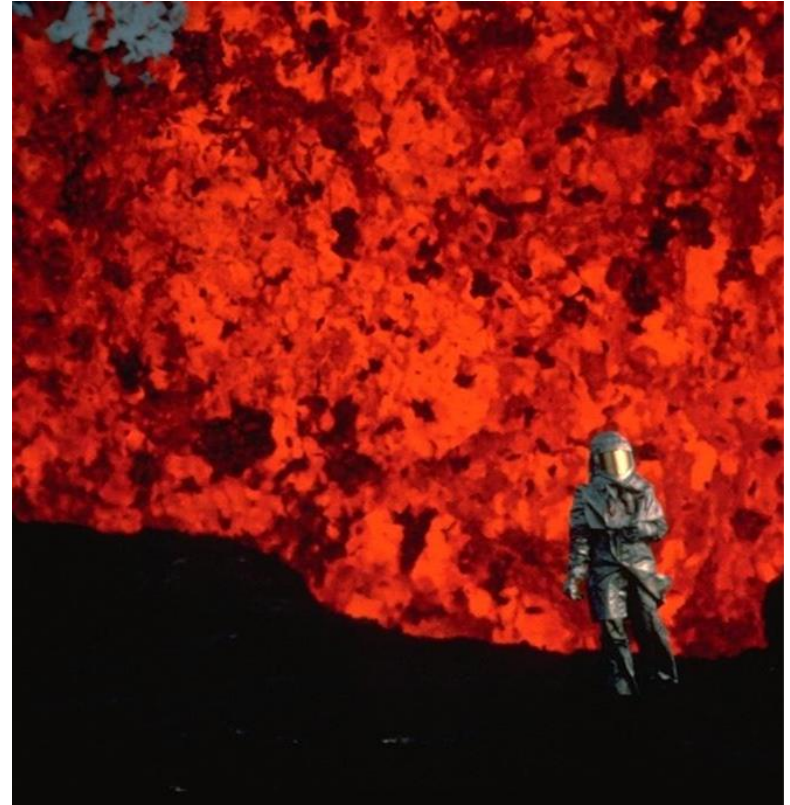
Don't have materials to make the eruption? Research into volcanos instead!

- <https://www.usgs.gov/programs/VHP>
- <https://divediscover.who.edu/plate-tectonics/>
- <https://volcano.si.edu/>
- <https://www.geolsoc.org.uk/Plate-Tectonics>
- <https://www.ready.gov/volcanoes>

Volcanologists

A geologist who focuses on understanding the formation and eruptive activity of volcanoes.

Source



Super Volcanoes

What makes supervolcanoes so super?

Should we be worried about them erupting and killing us all?

Supervolcanoes

Using the links and videos below, research into supervolcanoes. While you are researching, think about these questions:

1. Why is everyone talking about them?
2. Are they a threat or not?
3. How would you describe them to others who don't know about supervolcanoes?

What is the supervolcano? <https://www.yellowstonepark.com/things-to-do/yellowstone-supervolcano>

Where are they in the United States? <https://storymaps.arcgis.com/stories/d473985310594972b2e960f6234581b2>

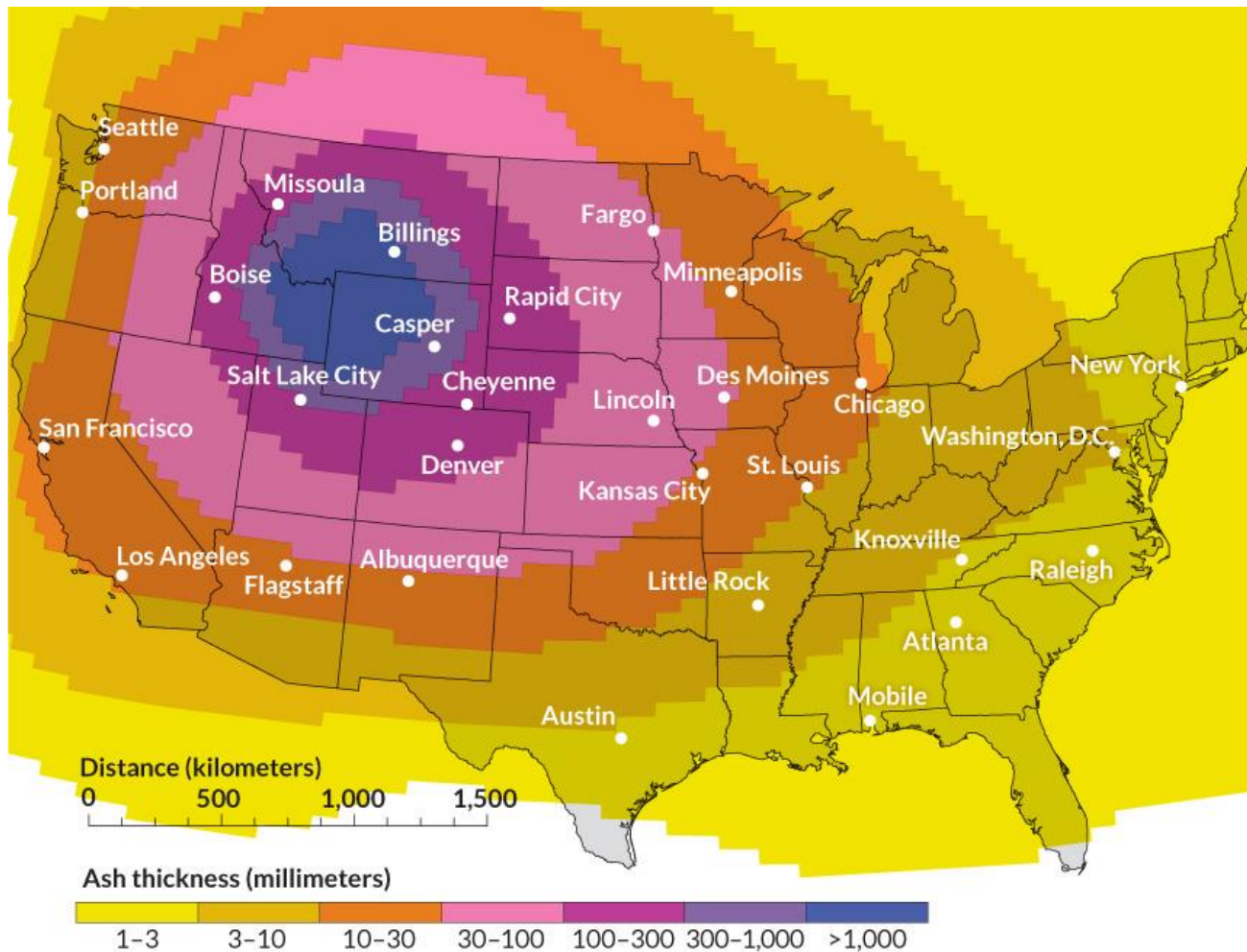
When will the Yellowstone supervolcano erupt again? https://www.usgs.gov/faqs/yellowstone-overdue-eruption-when-will-yellowstone-erupt?qt-news_science_products=0#qt-news_science_products

What would happen if the Yellowstone supervolcano erupted again? https://www.usgs.gov/faqs/what-would-happen-if-a-supervolcano-eruption-occurred-again-yellowstone?qt-news_science_products=0#qt-news_science_products

Done early? Check out supervolcanoes on other planets as well! <https://earthsky.org/space/martian-super-volcanoes-lasting-millions-years/>

Or check out more about Yellowstone National Park: <https://www.nationalgeographic.org/education/classroom-resources/learn-at-home/summer-road-trip-yellowstone/> and

<https://www.nps.gov/gis/storymaps/cascade/v1/index.html?appid=ee0b10d44b6843b18ccf829c2891ed01> and <https://www.nps.gov/yell/learn/photosmultimedia/webcams.htm>



Volcanic Hazard

A volcanic hazard refers to any potentially dangerous volcanic process that puts human lives, livelihoods, or infrastructure at risk of harm.

Source

Volcanic Hazards

Lahar

A slurry of pyroclastic material, rocky debris, and water.

Pyroclastic Flows

Avalanches of hot ash, rock, and gas that move at high speeds.

Volcanic Gas

Eruptions emit water vapor, carbon dioxide, sulfur dioxide, hydrogen sulfide, and carbon monoxide.







A new

understanding of
volcanic gases

**How are these seen in
real life eruptions?**

Two Famous and Modern Eruptions

1980 - Mt. St. Helens



2010 - Eyjafjallajökull





Mt. St. Helens before and after

Want to learn more?
Watch *Surviving the
Mount Saint Helens
Disaster* on Disney+

Why are volcanic hazards the dangerous part of volcanic eruptions?

Time to analyze media!

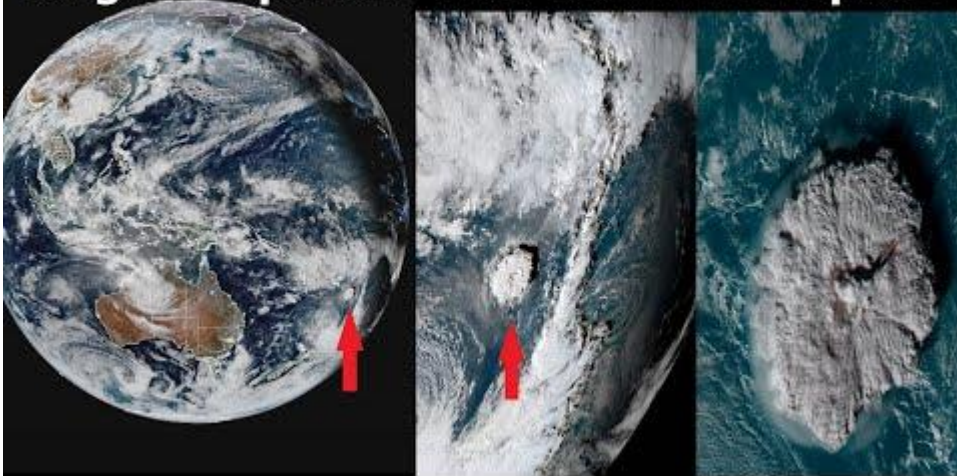
**Analyze this video for
accurate and inaccurate
information about volcanoes.**



**Now let's talk about
real eruptions!**

Anyone remember
the Tonga volcanic
eruption that
happened last year?

Largest Explosion Ever Seen From Space!



Anyone remember
the Tonga volcanic
eruption that
happened last year?



Source: Japan's Meteorological Agency, Seismology Section of Fiji Mineral Resources Department, US National Weather Service, New Zealand's National Emergency Management Agency, Australia's Bureau of Meteorology, Instituto Oceanográfico y Antártico de la Armada del Ecuador, Chile's National Emergency Office of the Ministry of the Interior and Public Security, Vanuatu's National Disaster Management Office, Samoa Meteorological Service
Graphic: Henrik Pettersson, CNN

Eruption!

1.

Volcanic eruption

<https://reliefweb.int/disaster/vo-2022-000005-ton>

2.

Pressure Wave

<https://www.nytimes.com/interactive/2022/04/14/upshot/tonga-pressure-wave.html>

3.

Hits multiple places

<https://weather.com/news/news/2022-01-15-tsunami-hawaii-california-alaska-tonga-fiji-volcano-eruption>

Research into an Eruption

Pick either a well known eruption or a lesser known eruption and research into it.

Once you have researched into it, analyze the eruption for what types of volcanic hazards were produced during the eruption.

Answer the Google Classroom question about the volcanic hazards that occurred from your chosen volcanic eruption.

Have extra time? Research into another volcanic eruption!

Volcano research

Research into a volcanic eruption of the past and use your knowledge of volcanic hazards to analyze which types of volcanic hazards happened during your volcanic eruption that you chose.

You can use well known eruptions to research into (Mt. St. Helens, Pompeii, etc.) or choose a lesser known eruption (<https://seismic-explorer.concord.org/>) but make sure to research enough into that eruption that you know what types of hazards happened.

Done early? Check out this podcast about the recent eruption of Hawaii's Mauna Loa volcano <https://www.npr.org/2022/12/06/1141036296/what-makes-hawaiis-erupting-volcanoes-special> and why it is special.

What types of volcanic hazards happened during the volcanic eruption you researched into?



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WHAT ARE VOLCANOES?