

Task 1

Use the following words to complete the sentences about the properties of the different types of rock.

cool crystals gaps grains hard layers
pressure porous scratched

Sedimentary rocks are made up of separate _____. Sedimentary rocks are _____: they allow air and water in between gaps between the grains. Sedimentary rocks can be _____ easily because they are soft.

Igneous rocks are _____ and durable. Almost all types of igneous rocks are made from _____; there are no _____ between the crystals so they are not porous. The size of the crystals depends on how long the igneous rock took to _____.

Metamorphic rocks are also made from crystals and are not porous. Metamorphic rock is formed when other types of rock are put under high _____ and temperature, and for this reason often contain _____ of crystals.

Task 2

Look at the four rocks on the photo support sheet.

In the spaces below, state whether the rock is igneous, sedimentary, or metamorphic and explain how you can tell from the photo.

Rock 1:

Rock 2:

Rock 3:

Rock 4:

Task 3

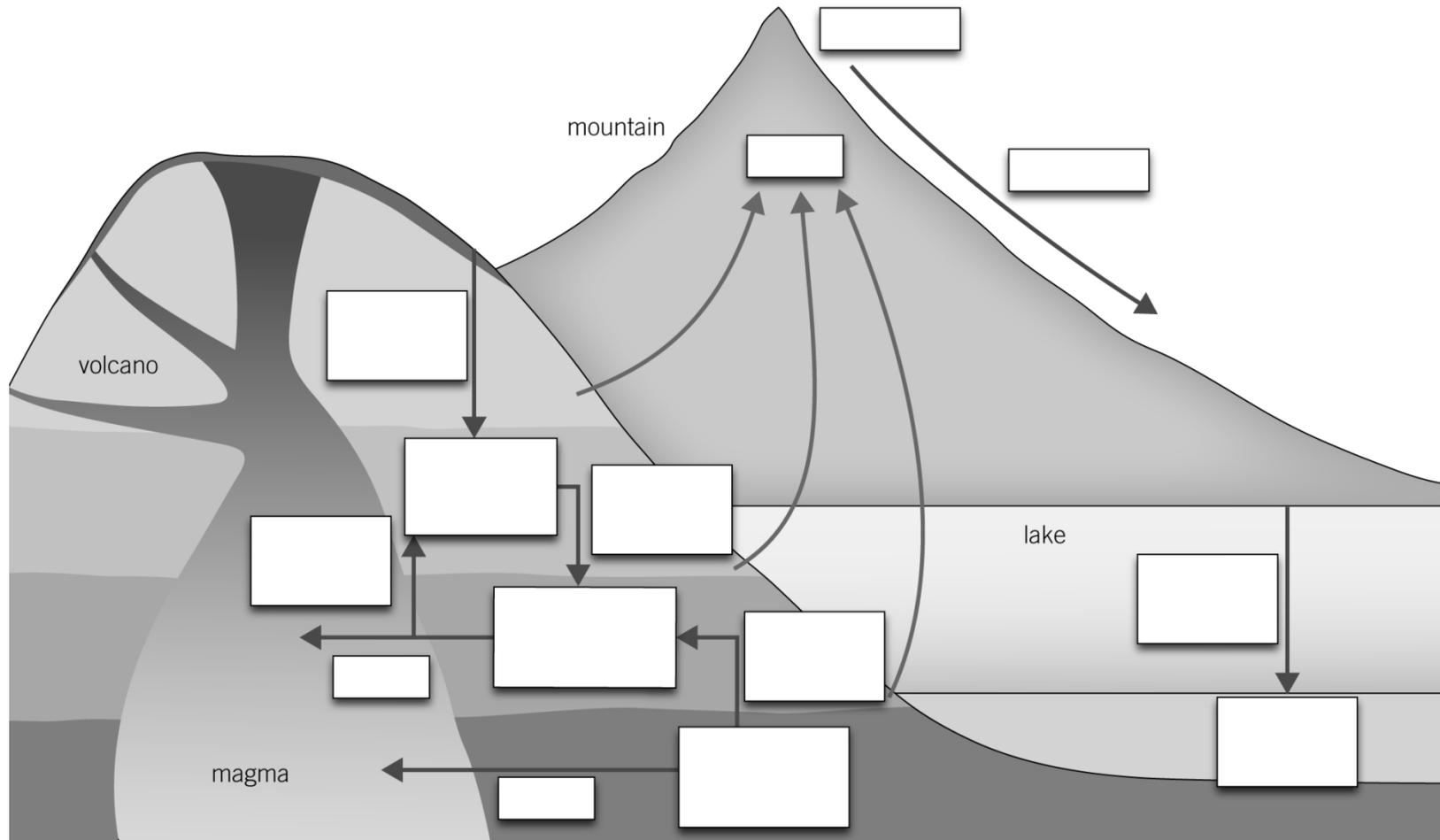
Match each term to the correct definition.

weathering	weathering that happens when plants and animals break up rock
erosion	when water gets into a crack in a rock and repeated freezing and thawing of the water breaks the rock
chemical weathering	occurs when acid rain breaks up rock
biological weathering	a general term used to describe when rock is broken up into smaller pieces
freeze–thaw	the breaking of rocks into small pieces and their movement away from the original rock

Task 4

Complete the diagram of the rock cycle using the labels. Each word can be used more than once.

- cooling and freezing heating and pressure melting magma volcano
 mountain weathering transport deposition compaction or cementation
 uplift lake sedimentary rock metamorphic rock igneous rock



Task 5

Look at the following table of distances to nearby stars.

The distances are given in metres and in light years.

Name of star	Distance to star in metres	Distance to star in light years
Alpha centauri	40 000 000 000 000 000	4.3
Barnard's star	56 000 000 000 000 000	5.9
Sirius	81 000 000 000 000 000	8.6

State what a light year is and explain why light years are a more preferable unit than metres for measuring astronomical distances.

Task 6

Look at the following data for the length of time space probes travelled for to reach the planets they were investigating.

Space probe	Planet	Time to travel to planet
Juno	Jupiter	5 years
Cassini	Saturn	7 years
Mariner 5	Venus	5 months
Mars Express	Mars	7 months

The table below shows approximately how long it takes for a signal to be transmitted from a probe at a planet back to Earth.

Planet	Length of time for the signal to reach the Earth
Jupiter	30 minutes
Mercury	5 minutes
Neptune	4 hours

1 a Why does it take so long for spacecraft to travel to planets, and for signals to be sent back from those planets?

b Compare the time it takes for a spacecraft to travel to a planet with the time it takes a signal to travel the same distance. Why are the times different?

2 Suggest how the length of time it takes for space craft to travel to other objects in the Solar System will affect the missions.

3 The signal takes 4 hours to reach the Earth from Neptune, what possible issues could this cause a space mission?

Astronomers use telescopes to make observations of objects outside of the Solar System. It takes light 4.2 light years to travel from the nearest star to the Earth. A typical star exists for 10 billion years. Light from furthest galaxies takes 13 billion light years to travel to the Earth.

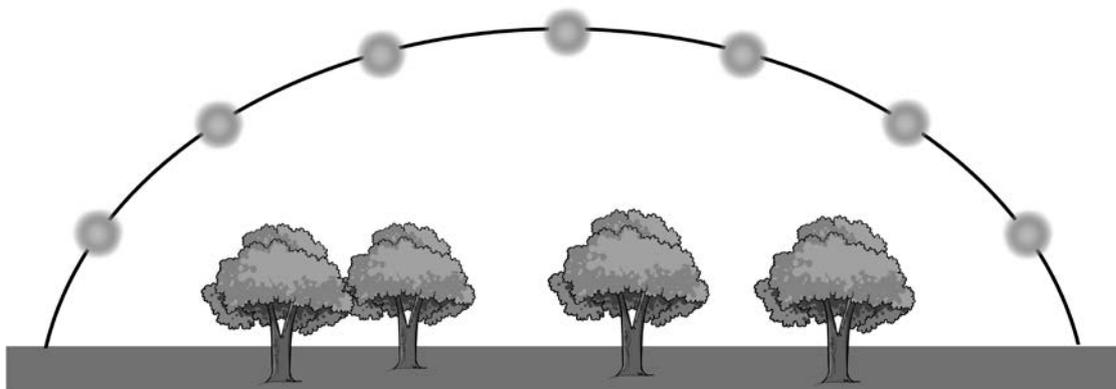
- 4 Describe the problems that these distances create for astronomers investigating the Universe.

Task 7

Different parts of the Earth experience different amounts of sunlight over the course of the year.

The diagram below show the path of the Sun as it moves across the sky during the spring in the UK.

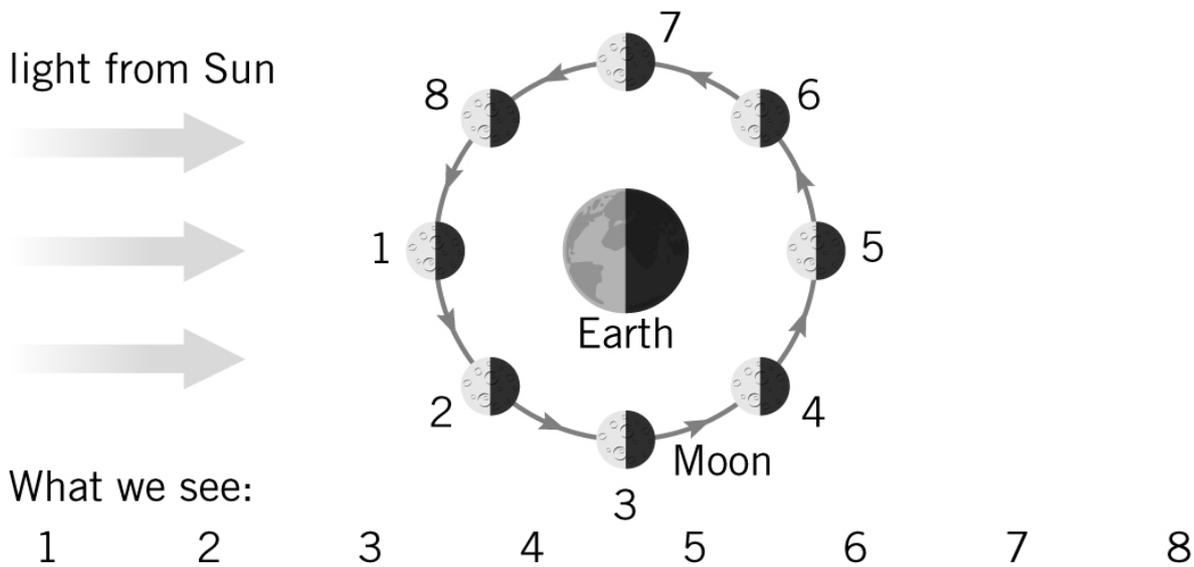
Draw two more lines on the diagram to show how the Sun moves across the sky during the summer and winter in the UK.



Explain why it is winter in Australia when it is summer in the UK.

Task 8

Complete the diagram to show the phases of the Moon we see when the Moon is at different positions around the Earth.



Describe what causes the moon to have different phases as it orbits the Earth.
