

GP 3 Overall grade of Merit

Q1.a, b, c Achieved for all answers (recall)

Q1.d Not Achieved (incorrect term)

Q1. e Not Achieved (no statement of different planets orbit at different speeds and therefore unable to link this with appearance of the planet reversing direction)

Q2. a Merit (correctly identified Moon as having Earth's shadow cast on it reinforced with diagram showing convergence of light rays to cast shadow on Moon).

Q2.b Excellence (recognised that the Moon orbits the Earth and is illuminated by the Sun and that at different positions different parts of the Moon is lit up)..

Q2.c Not Achieved (failed to recognise that the Moon rotates although did mention it's orbit of the Earth).

Q2.d Achieved (recall)

Q2.e Excellence (due to diagram showing the Earth orbiting the Sun, the Earth's tilt and comment of both poles being parallel to the Sun with supporting diagram).

Q3.a Achieved (gave comparison of image quality). To go onto Merit the candidate would have had to give mention specific types of information and for Excellence contrast specific types of information from both types of devices.

Q3.b Achieved (specific valid example given ie HST)

Summary: needed 1 more Merit to gain an overall Excellence grade. See GP3 script for underlined key phrases.

The candidate failed to

- 1) recognise that space orbiters collect information about a specific planet
- 2) recognise that the time for the Moon to orbit the earth is the same as for the Moon to rotate once on its axis.

You are advised to spend 20 minutes answering the

QUESTION ONE: THE SOLAR SYSTEM

- (a) What name is given to the curved path that a planet takes

Orbit

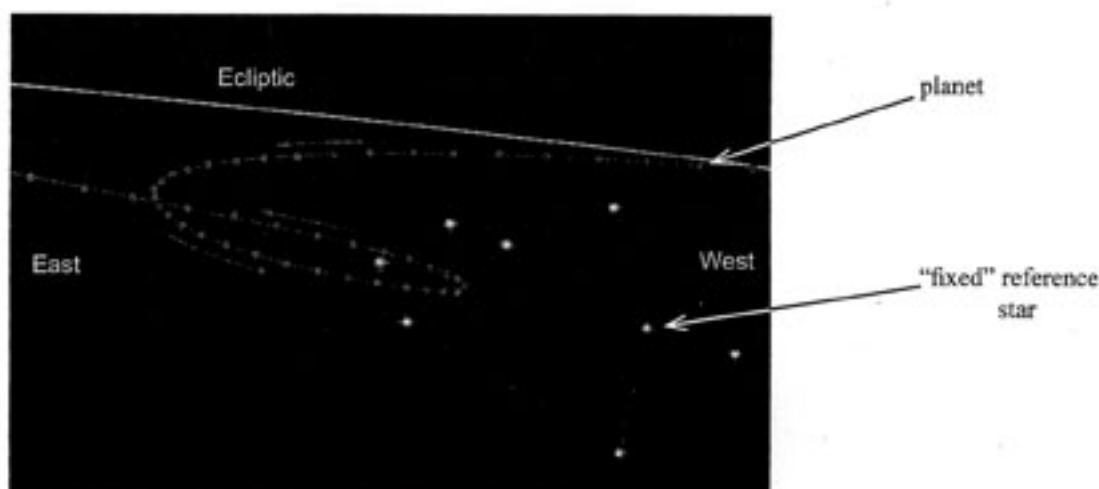
- (b) Name the planet whose path around the Sun is **not** in the same plane as all the other planets.

Pluto

- (c) Name the largest planet in our solar system.

Jupiter

All planets travel around the Sun in the same direction. Sometimes, a planet viewed from Earth appears to have reversed its direction of motion, as shown in the diagram below.



- (d) Name the term used to describe the motion of a planet as shown in the above diagram.

Elliptical orbit.

- (e) Explain why a planet when viewed from Earth appears to have reversed its direction of motion.

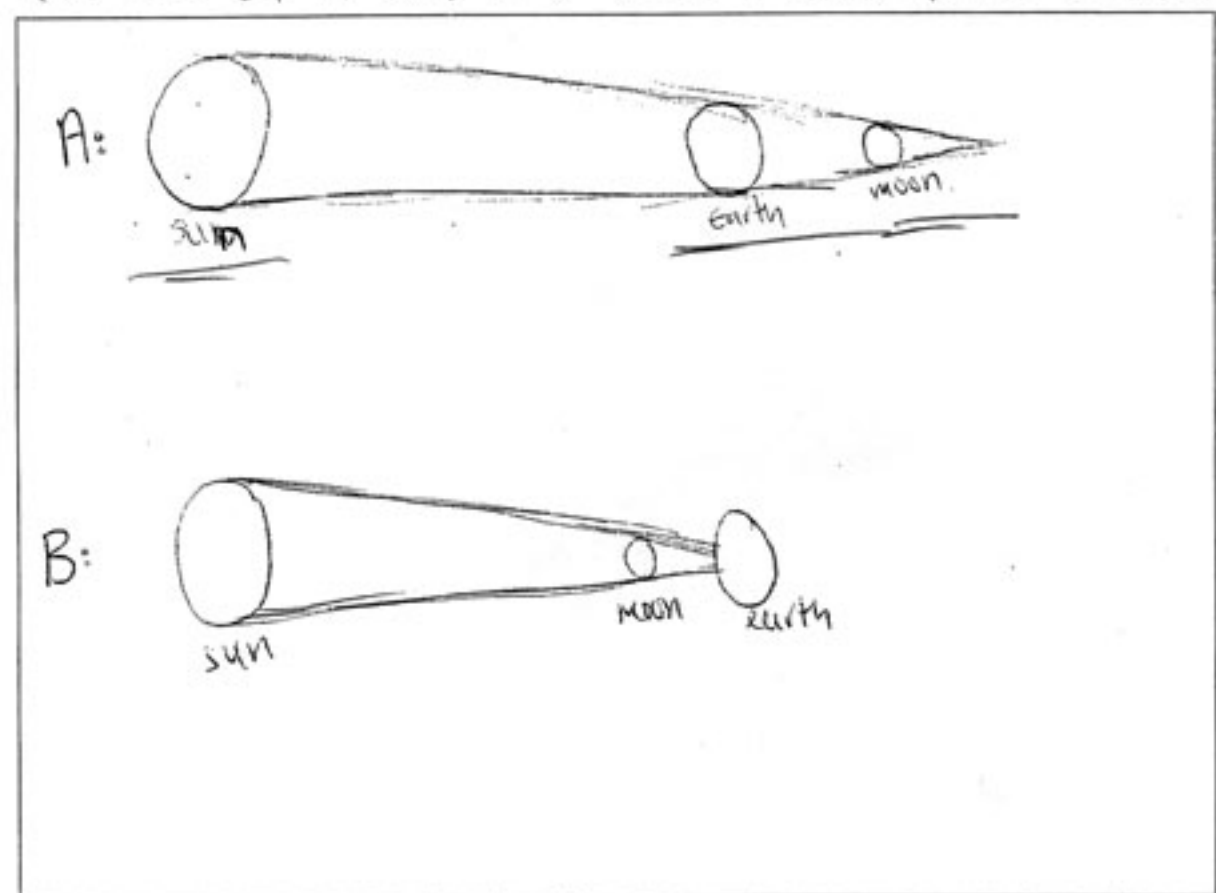
Because when a planet orbits the sun quite often we see it pass through our sky. so we think that it passes through and then reverses back the same way that it came but in actual fact it is doing a kind of loop in the sky but to use it looks like it reverses.

QUESTION TWO: MOONS

- (a) Explain what causes an eclipse of the Moon. A diagram should be included in the space provided below.

In diagram A ~~we~~ we have a Lunar eclipse. This occurs when the earth falls between the sun and the moon. The earth is casting a shadow on the moon when it is in its full moon ~~is~~ phase.

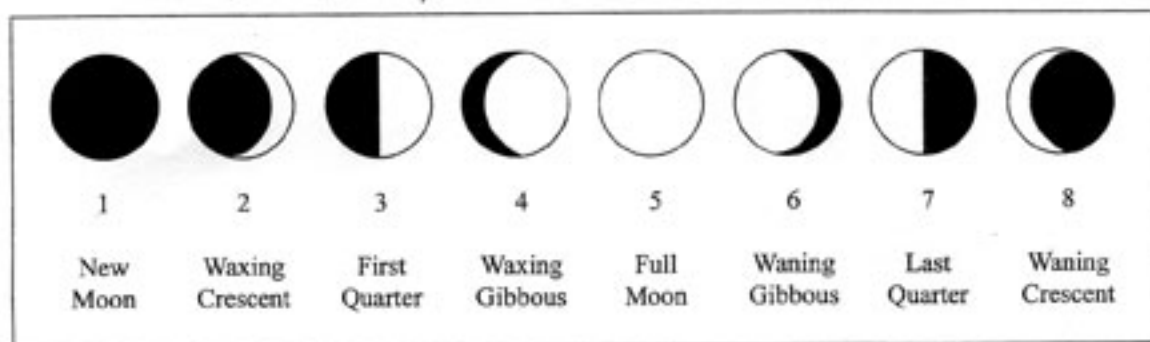
In diagram B we have a solar eclipse. This occurs when the moon falls between the sun and earth. It is in its new moon phase.



and only part of the illuminated side of the moon is visible from earth. So that is what causes eclipses.

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- (b) The following diagram illustrates the phases of the Moon.



Discuss the cause of the Moon's phases.

When the moon orbits the earth the size of how much of the moon is lit up changes. The sun never changes where it is positioned in the sky and so one side of the moon will always be lit up and the other won't. So you may think that it would just look the same no matter where it is in the orbit but when you are on earth you see different parts lit up and in dark so that is how we see different phases of the moon.

- (c) Explain why the same side of the Moon always faces the Earth.

Because when the moon orbits the earth it doesn't rotate on its axis. In a way it is like that one side of the moon is a magnet to the earth. It is attracted to the earth so that one side will always stay facing it. Even though one side is facing the earth all the time one side will still be dark and one side will still be light.

- (d) Name THREE planets, other than the Earth, that have moons.

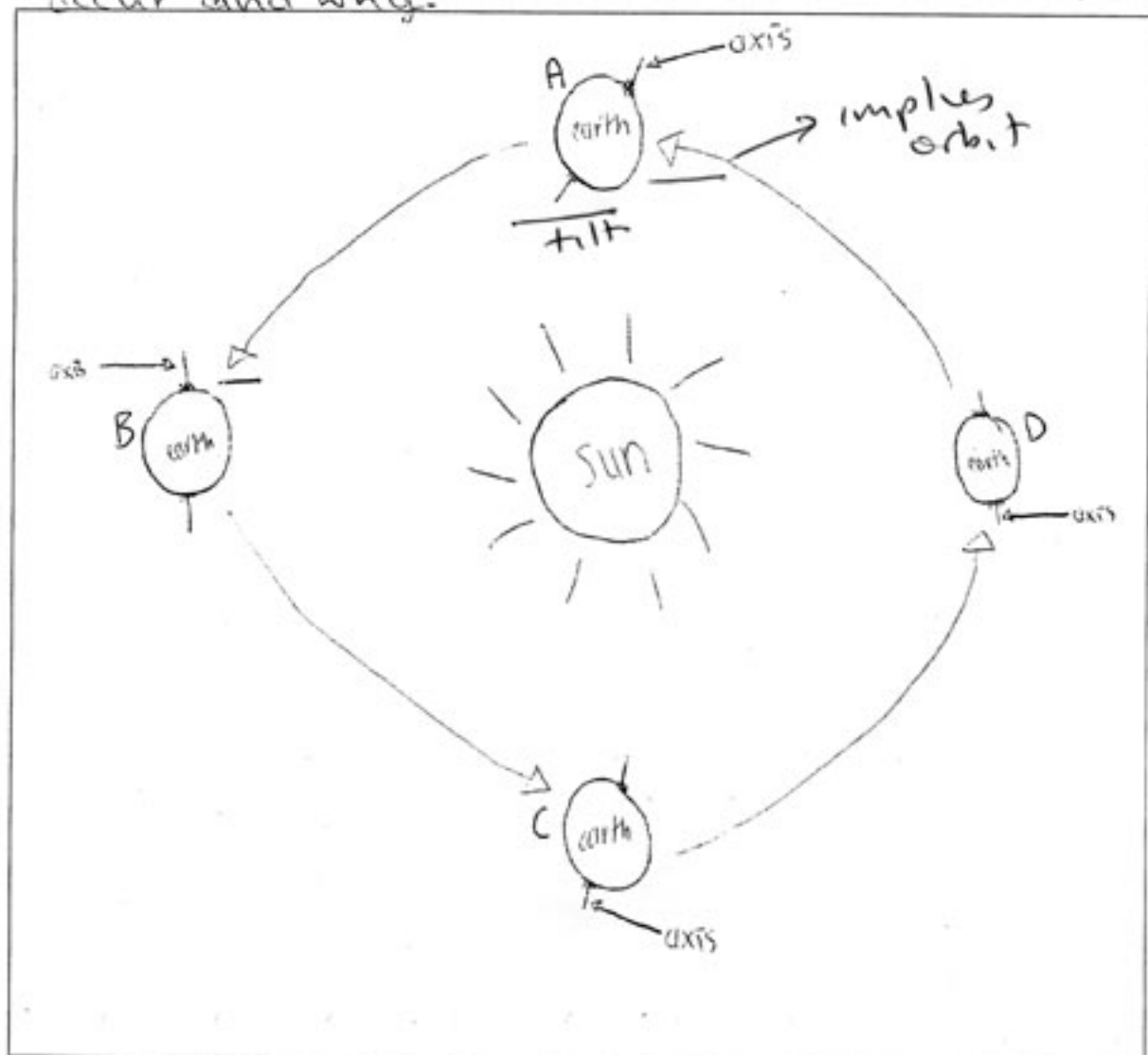
- (i) Jupiter
(ii) Saturn
(iii) Mars

An equinox is when day and night are of equal length. There are two equinoxes in a year. One equinox occurs in spring, and the other in autumn.

- (e) Use the position and movement of the Earth to discuss **how** and **why** the two equinoxes occur.

In diagram A as you can see the earth is tilted on its axis and one pole is facing the sun and the other pole is facing away. That is the same in diagram C as you can see and so that is how we get winter & summer.

In diagram B, both poles on earth are parallel to the sun so both the south pole and the north pole are getting equal amount of daylight as dark. It is the same in diagram D and so this is when we get spring & autumn. So in the diagram it shows ~~use~~ where the two equinoxes occur and why.



QUESTION THREE: SPACE EXPLORATION

Scientists use a variety of methods to gather information about the solar system.

- (a) Compare and contrast the type of information gathered by space orbiters, such as the Mars Reconnaissance Orbiter, and Earth-based light telescopes.

Most people agree that space orbiters are better than the earth-based light telescopes, which to some degree is true. There are many positives and some negatives to both of these devices.

Space orbiters = these could probably be the most efficient because they are up in space and they have the whole of space all around them so they would get a clearer view than from down on earth.

The only negative thing about these is that they are very expensive to build and to use. It costs a lot.

Light telescopes = These won't be able to see as much as the space orbiters because they are restricted by how far away they are. They are ~~is~~ much cheaper to buy which is always a bonus.

So as you can see they both have + & - and they are two different things that do the same job.

- (b) State ONE other method used to gather information about the solar system.

A space satellite like Hubble. They are up there for a very long time but they are very good and reliable and are used to gather very important information for scientists.