

GP 2 Overall grade of Achieved

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

Q1. e Merit (recognised different planets orbit at different speeds and **linked** this with appearance of the planet reversing direction / moving backwards).

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

Q2.b Achieved (due to knowledge that Moon orbits the Earth). To go onto Excellence the candidate would have had to recognise that the Moon is illuminated by the Sun and related a specific Moon phase to the orbit/illumination concepts.

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

Q2.d Achieved (recall)

Q2.e Achieved (due to recognition that Earth orbits the Sun). To go onto Excellence the candidate would have had to mention the Earth's tilt and noted that The Earth's tilt at equinox is perpendicular to a line joining Sun & Earth OR used a diagram to illustrate this point.

Q3.a Achieved (gave comparison of image quality and a reason for this). 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 Not Achieved (sound telescopes; probably confused with radio telescopes)

Summary: needed 3 x Merit as well as the 8 Achieved already gained. See GP2 script for underlined key phrases.

The candidate failed to

- 1) use accurate, labelled diagrams to explain concepts relating to Moon phases and equinoxes
- 2) relate the position of the illuminated Moon to specific phases
- 3) recognise that space orbiters collect information about a specific planet
- 4) relate the Earth's axial tilt and orbit of the Sun to seasons and equinoxes
- 5) 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

QUESTION ONE: THE SOLAR SYSTEM

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

orbit

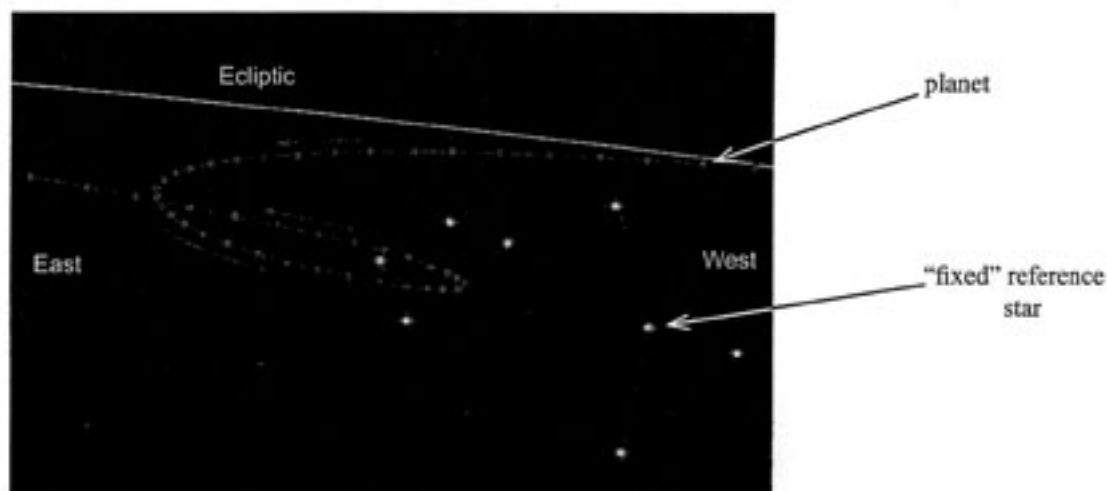
- (b) Name the planet whose path around the Sun is **not** in the same plane as all the other planets.

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.

retrograde motion

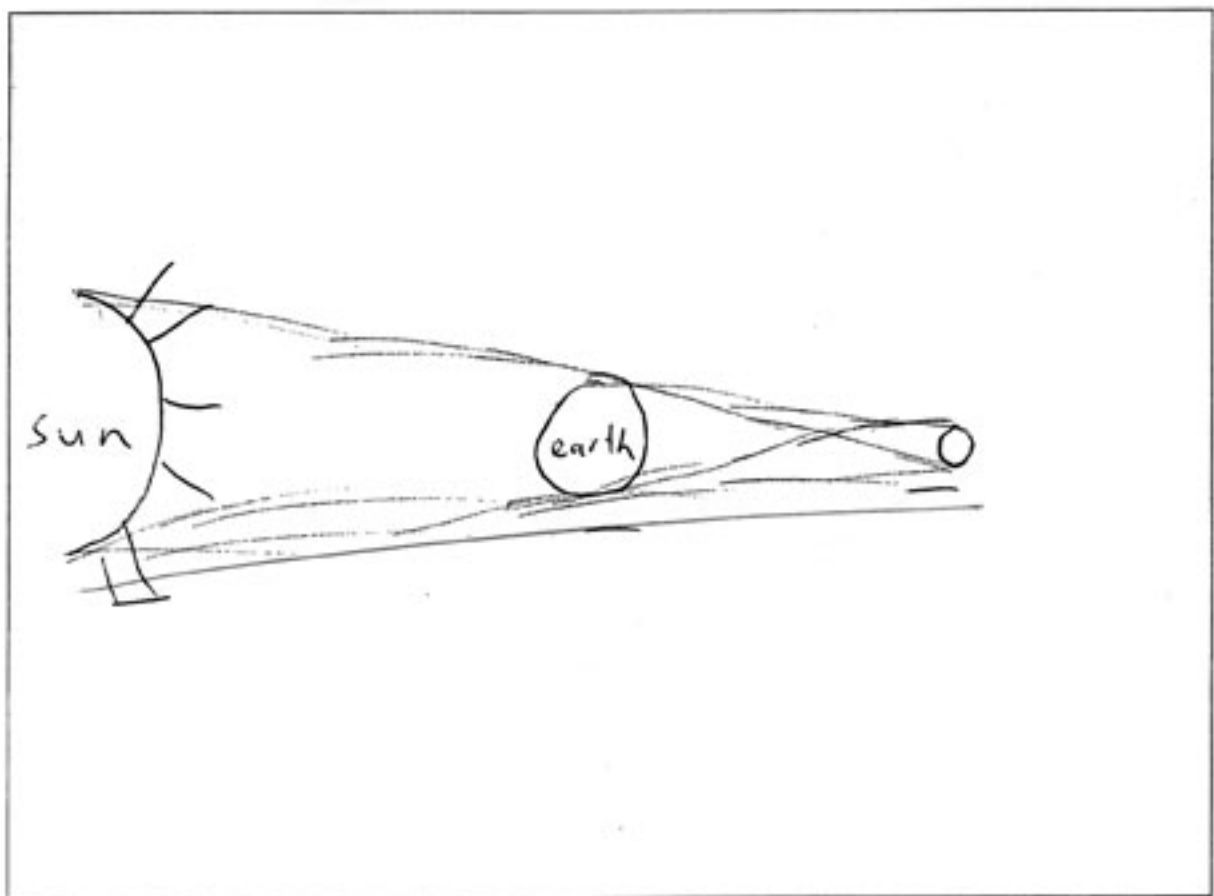
- (e) Explain why a planet when viewed from Earth appears to have reversed its direction of motion.

it is in front of the planet Earth and then planet Earth overtakes it. Earth is an inner, fast moving planet and has a short orbit while the planet that appears to have reversed its direction is an outer, slow moving and has a longer orbit than Earth.

QUESTION TWO: MOONS

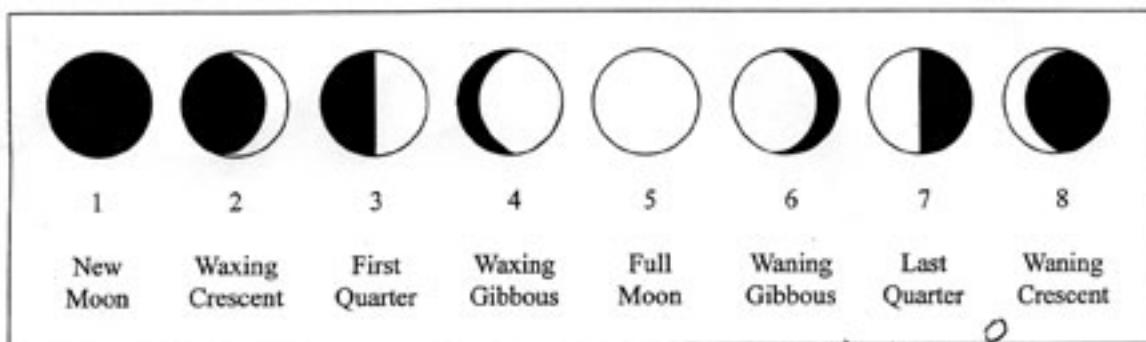
- (a) Explain what causes an eclipse of the Moon. A diagram should be included in the space provided below.

An eclipse of the moon is caused when the shadow of Earth is casted on the moon. It's also caused because the moon is in the umbra of the moon. Since there is no light on the moon it's impossible to see.



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



Discuss the cause of the Moon's phases.

The Moon's phases are caused by it orbiting around the Earth. Because the sun doesn't change its place in the solar system and the Earth orbits it and the moon orbits Earth. When the moon is in the direction of the sun it appears as a ^{new} moon whilst when it's in front of us but not in front of the sun it appears as a waxing moon.

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

The same side of the Moon always faces the Earth because the moon does not rotate.
 → does rotate

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

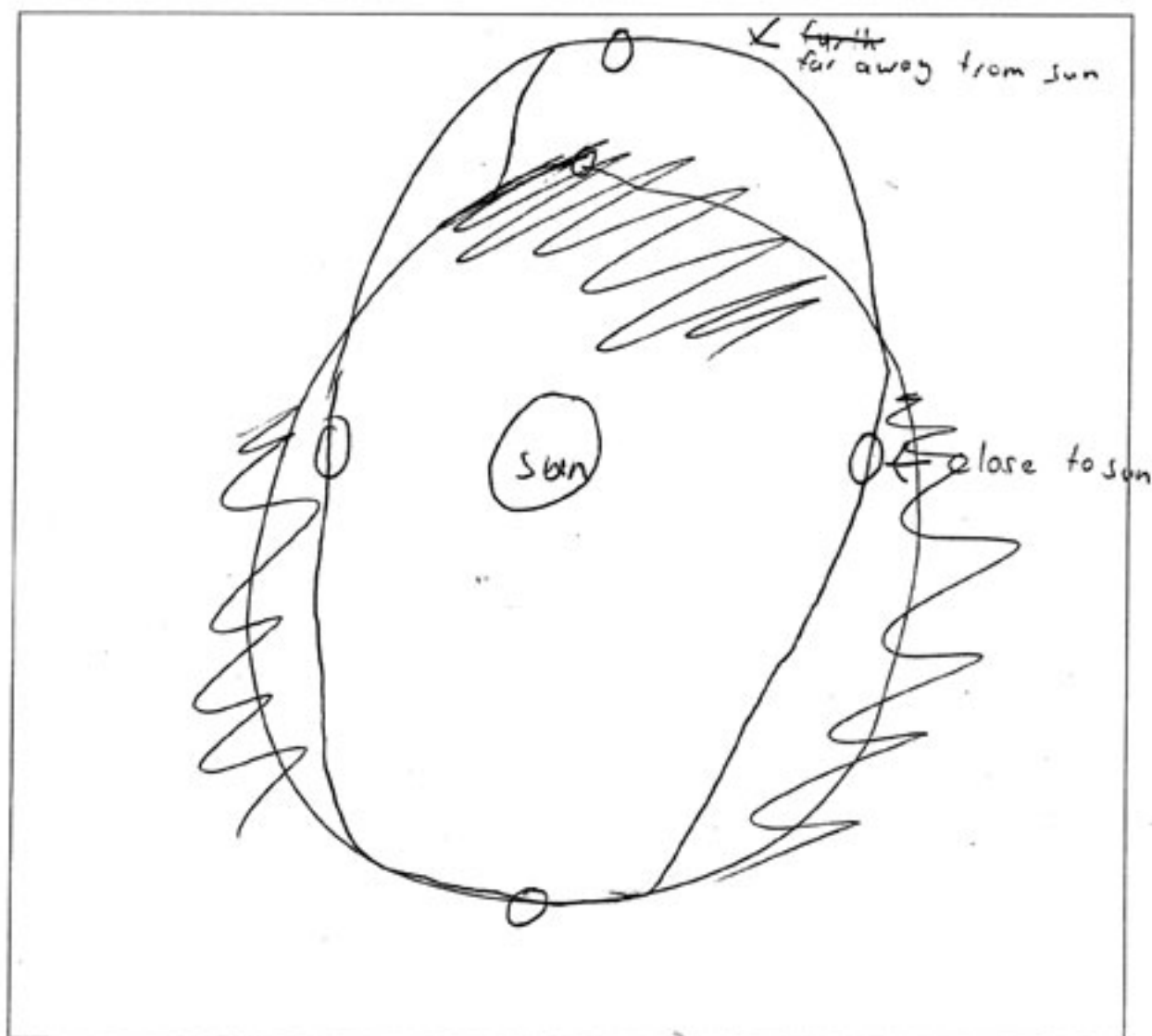
- (i) Jupiter
 (ii) Saturn
 (iii) pluto

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.

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

The Earth ~~rotates~~ ^{orbits} the sun. The Earth also moves closer and further away from the sun. The further the way we are from the sun the less sunlight we receive whilst the closer we are the more sun we receive. The further we are from the sun the more night time there is whilst the closer we are to the sun the more day time there is.

no tilt.



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**.

With a space orbiter you would get a much clearer image than those of an Earth-based light telescope. This is because in space ~~you~~ there is no pollution and atmospheric gases or street lights that affect clarity. Also you could use sp telescopes in space all day long because you don't rotate and there is only dark whilst on Earth, telescopes are really only effective at night time.

no specific information eg atmosphere.

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

Sound telescopes - sonar