CAIE Physics IGCSE

Topic 6.1 - Earth and the Solar System

Flashcards

What is the duration of one complete rotation of the Earth on its axis?

What is the duration of one complete rotation of the Earth on its axis?

24 hours

How does the Earth's rotation cause the periodic cycle day and night?

How does the Earth's rotation cause the periodic cycle day and night?

As the Earth rotates, the position of each place on Earth relative to the sun changes, causing a periodic cycle of day and night every 24 hours.

Which part of the Earth experiences day?

Which part of the Earth experiences day?

The half of the Earth's surface facing the Sun at that point in time.

Which part of the Earth experiences night?

Which part of the Earth experiences night?

The half of the Earth's surface facing away from the Sun at that point in time.

Why does the Sun appear to move across the sky from east to west?

Why does the Sun appear to move across the sky from east to west?

The rotation of the Earth is anticlockwise.

How long does it take for the Earth to orbit the Sun?

How long does it take for the Earth to orbit the Sun?

Approximately 365 days

What causes the seasons on Earth?

What causes the seasons on Earth?

The tilt of the Earth's axis, combined with its orbit around the Sun, results in varying intensity and duration of sunlight exposure over the 365 days.

When is it summer/spring in a hemisphere?

When is it summer/spring in a hemisphere?

During the half of the orbit in which it is tilted towards the sun, so daylight hours are more than hours of darkness.

How do the hemispheres experience seasons differently?

How do the hemispheres experience seasons differently?

On the half of the orbit in which it is tilted towards the sun, so daylight hours are more than hours of darkness.

How long does it take for the Moon to orbit the Earth?

How long does it take for the Moon to orbit the Earth?

Approximately one month

How do objects in our solar system become visible from Earth?

How do objects in our solar system become visible from Earth?

By the light they reflect from the Sun

What is the speed of light?

What is the speed of light?

3 × 10^8 m/s.

How can the time taken for light to travel between objects in the Solar System be calculated?

How can the time taken for light to travel between objects in the Solar System be calculated?

time =distance/ speed of light

What causes the phases of the Moon?

What causes the phases of the Moon?

The amount of reflected sunlight visible from Earth changes as the Moon orbits the Earth.

What is the new Moon phase?

What is the new Moon phase?

When the sunlight is only on the half of the Moon not visible from Earth

What is the full Moon phase?

What is the full Moon phase?

When the sunlight covers the half of the Moon visible from Earth.

What are the quarter Moon phases?

What are the quarter moon Moon phases?

When the sunlight covers half of the surface of the Moon visible from Earth, and half of the surface which is not visible.

What is a gibbous moon?

What is a gibbous moon?

When most of the surface of the Moon visible from Earth is illuminated.

What is a crescent moon?

What is a crescent moon?

When most of the surface of the Moon visible from Earth is not illuminated.

What is our solar system composed of?

What is our solar system composed of?

- The Sun
- The eight planets
- The minor planets (dwarf planets, asteroids)
- Comets
- Natural satellites (moons)

What are the eight planets (in ascending distance from the Sun)?

What are the eight planets (in ascending distance from the Sun)?

- Mercury
- Venus
- Earth
- Mars
- Jupiter
- Saturn
- Uranus
- Neptune

Which planets are rocky and small?

Which planets are rocky and small?

- Mercury
- Venus
- Earth
- Mars

Which planets are gaseous and large?

Which planets are gaseous and large?

- Jupiter
- Saturn
- Uranus
- Neptune

What model explains the difference in the composition of the planets?

What model explains the difference in the composition of the planets?

The **accretion model** of Solar System formation

- Inner planets formed from heavier elements due to higher temperatures nearer the Sun
- Outer planets formed from lighter elements in cooler regions further away from the Sun

What are minor planets?

What are minor planets?

Bodies that orbit the sun but do not have a gravitational field strong enough to pull in all nearby objects.

Examples include dwarf planets and asteroids

What are natural satellites?

What are natural satellites?

Bodies that orbit planets rather than the Sun.

An example is the moon.

Is gravitational field strength higher on the surface of the gas giants or rocky planets?

Is gravitational field strength higher on the surface of the gas giants or rocky planets?

The strength of a gravitational field at a planet's surface depends on mass.

Mass is higher on the surface of the gas giants so they have greater gravitational field strength.

How does gravitational field strength change with distance from a planet's surface?

How does gravitational field strength change with distance from a planet's surface?

As distance increases, strength decreases

How can the average speed of a body in orbit be calculated?

(supplement)

How can the average speed of a body in orbit be calculated? (supplement)

velocity = (2 × π × average radius of orbit) / orbital period.

How does distance from the Sun affect a planet's orbital properties? (supplement)

How does distance from the Sun affect a planet's orbital properties?(supplement)

Planets further from the Sun have larger orbital distances, longer orbital durations, slower orbital speeds, and lower surface temperatures.

What is the shape of the orbits of bodies around the Sun?

(supplement)

What is the shape of the orbits of bodies around the Sun?(supplement)

Bodies orbit the Sun in elliptical orbits, which are oval-shaped.

How does the conservation of energy relate to orbital speed? (supplement)

How does the conservation of energy relate to orbital speed? (supplement)

As the orbital radius decreases, gravitational potential energy decreases and is converted to kinetic energy, increasing orbital speed.