

Knowledge Organisers – Year 6 – Term 4

Science

Light - Term 4 Knowledge Organiser!

Suggested Significant People

Beyond living memory...

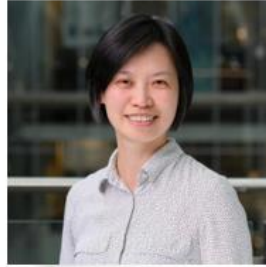
Ibn al-Haytham (965 – 1040)



Arabian physicist & mathematician who proved light travels in straight lines

Within living memory...

Jo Shien Ng (1975 - present)



Malaysian professor whose research helps to develop electro light detection



Because light travels in straight lines, when it hits an object, it is blocked. It can't bend around the object so it casts a shadow.



Vocabulary

Tier 2: beam, ray, shadow, cast, object, reflect, light source,

Tier 3: energy, distortion, factor, *incident ray*, reflected ray, *angle of incidence*, angle of reflection, normal line, phenomenon, refraction, spectrum, prism

Disciplinary (non-statutory): causal relationship, classification key, comparative test, conclusion, control, diagram, enquiry, equipment, evidence to support/refute, fair test, graph (scatter/bar/line), information-record, measurement, observation, pattern, prediction, repeat reading, research, results, secondary source, table, variable

Geography

Knowledge organiser

Key Vocabulary	Definition
North America	A large continent where the countries of Canada, the USA and Mexico are located.
United States of America (USA)	The name for the country in North America that consists of fifty states and the District of Columbia. It is bordered by Canada in the north and Mexico in the south.
State	An area with a government that can make decisions and pass laws for that area. In the USA, the states are joined in political union.
Mississippi River	One of North America's major rivers, a source of fresh water, transport and irrigation.
Biome	A community of plants and animals that have common characteristics reflecting the environment in which they live.
Urbanisation	The increase in number of people living in cities.



Canada	Mexico	United States of America
Capital: Ottawa	Capital: Mexico City	Capital: Washington DC
Flag shows maple leaf representing cultural heritage and natural resources of Canada. The colour red represents hope and prosperity. The colour white represents peace and neutrality.	Flag shows national coat of arms, based on the Aztec symbol for Tenochtitlan (now Mexico City) the centre of the Aztec Empire. It shows an eagle sitting on a cactus eating a serpent, as Aztec legends tell of a command to build a city at the place where an eagle is found eating a serpent. Red, white and green are the colours of the national Mexican army.	Flag shows fifty white stars representing the fifty states of America. Thirteen red stripes represent the thirteen British colonies that declared independence from the Kingdom of Great Britain and became the first states.

↔ Gateway

Hook the pupils into learning
Establish *Gateway keys*

↔ Pathway

Teach and repeat *Mastery keys*
Practise and apply in new contexts
Identify *Feature keys*

↔ Writeaway

Plan (sequence, section, share with a friend)
Write
Check against *Mastery keys*



Pathways to Write

National curriculum skills for this unit:

Spoken language:

- Ask relevant questions
- Build vocabulary
- Give well-structured descriptions, explanations and narratives
- Use spoken language: speculating, hypothesising, imagining and exploring ideas
- Participate in **discussions**, presentations, performances, **role play**, **improvisations** and debates

Reading comprehension:

- Identify and discuss themes and conventions
- Check sense, discuss understanding and explore meaning of words in context
- Ask questions to improve understanding
- Predict from details stated and implied
- Identify how language, structure and presentation contribute to meaning
- Evaluate authors' language choice
- Distinguish between fact and opinion
- Retrieve, record and present information from non-fiction
- Participate in discussion about books
- Provide reasoned justifications for views

Writing composition:

- Identify the audience for and purpose of writing
- Note and develop initial ideas, drawing on reading and research
- Enhance meaning through selecting appropriate grammar and vocabulary
- Use organisational and presentational devices to structure texts
- Propose changes to vocabulary, grammar and punctuation to enhance effects and clarify meaning
- Use consistent and correct tense
- Choose the appropriate register
- Proof-read for spelling and punctuation errors

Outcome: Recount - Biography

Writing outcome:

To write a multi-modal biography of Jacques Cousteau in the style of the 'Great Adventurers' text

Greater depth writing outcome:

To add a section entitled 'How Jacques Cousteau inspired me' linked to his role in the conservation debate

Additional writing opportunity:

Pupils plan and write an imaginary adventure story



Pathways to Write keys

Gateway keys (non-negotiables/basic skills)	↔ Mastery keys (year group national curriculum expectations)	Feature keys (vocabulary, manipulating sentences and tense, structure)
<ul style="list-style-type: none">• Extend the range of sentences with more than one clause by using a wider range of conjunctions, including <i>when, if, because, although</i>• Organise paragraphs around a theme• Use fronted adverbials• Choose appropriate pronouns or nouns within and across sentences to aid cohesion and avoid repetition• Use punctuation at Y4 standard correctly	<ul style="list-style-type: none">• Use relative clauses beginning with <i>who, which, where, when, whose, that</i> or an omitted relative pronoun• Use a wider range of devices to build cohesion• Use a colon to introduce a list and use semi-colons within lists• Use hyphens to avoid ambiguity	<ul style="list-style-type: none">• Select the appropriate style to engage the audience• Use direct and reported speech to express a range of viewpoints• Use verb tenses consistently and correctly• Use real life facts, including dates and place names• Use thematic language specific to the subject• Use formal language appropriately

Computing

Big Data 1

Barcode	A machine-readable code of lines and numbers, printed on an item and scanned to identify the item and information about it.
Boolean	A form of data, which consists of (true) 1s and (false) 0s values.
Brand	The mark or logo that identifies the object as belonging to a particular establishment or person.
Commuter	Someone who travels between places on a frequent basis, for example between work and home.
Contactless	Devices or codes that can be read wirelessly or without the need to touch surface-to-surface, object-to-object.
Data	Information used for a specific purpose or investigation.
Data privacy	The right to keep information private and away from those you do not wish to have access.
Encrypt	To secure information by converting it into a code made up of letters, numbers and symbols which cannot be understood by those that do not have access.
Infrared waves	The red section of the electromagnetic spectrum, which is invisible to the eye but can transmit small amounts of data.
NFC	Near Field Communication. Enables data transmission between 2 devices up to 4cm away. NFC is often used for contactless payments from devices such as smart watches.
QR code	Quick Response code. Is presented in a similar way to a bar code and when scanned, can take you to a specific website or provide information.
Radio waves	Invisible electromagnetic waves that can transmit information via an antenna, which converts the electrical signal it receives into another format, for example, a sound wave.
RFID	Radio Frequency Identification is a device that uses radio signals to check where something or someone is.
Signal	A voltage, current or electromagnetic wave that is either sent or obtained.
Systems or data analyst	A person who manages, sorts, analyses and models data to identify key trends and solve problems within a system.
Transmission	When something is passed or sent to another place.

Key facts

Infrared light can be used to:

- > Transmit small amounts of data, such as a remote control beaming the instruction to turn the TV on and off or change channel.
- > Provide warmth from electrical heaters.
- > Heat up and cook food.
- > Detect heat through thermal imaging cameras.



How do barcodes help libraries track book borrowing?



1. Choose a book to borrow from the library and find the barcode.
2. Take it to the self-scan to check the book out of the library.



3. The system will warn the librarian that your book is almost due back.
4. Return and scan the book to check it back in to the library.