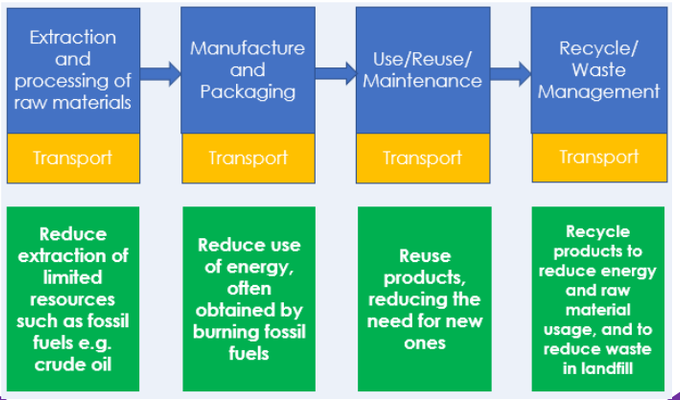
Year 9 Science: Term 5
Using Resources, Sound and Waves

Week 1

Reduce, reuse and recycle

Some products, such as glass bottles, can be **reused**. Glass bottles can be crushed and melted to make different glass products. Other products cannot be reused and so are **recycled** for a different use.



Week 2

Sources of information

How can you tell which information online is **true** and which is **false**? How can you determine which sources can be **trusted** and which might be spinning or twisting the truth?

Tell good sources **APART** from poor sources

Accuracy: *Is the information supported by **evidence**?*
*Can you **verify** the information using another source?*
*Does the reporting seem emotional or **biased**?*
Purpose: *Do the authors make their **intention** or purpose clear?*
*Is this information **fact** or **opinion**?*

Week 3

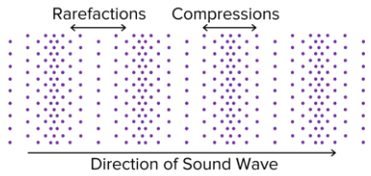
Types of Waves

There are two types of wave – **longitudinal** and **transverse** both transfer energy

Longitudinal waves all require particles, and the direction of energy is the same as the movement of the particles.

They are made up of compressions (where the particles are pushed close together) and rarefactions (where the particles are far apart.

With transverse waves the energy moves perpendicular to the direction of the wave. So if the wave moves up and down the energy goes to the left or right.



Week 4

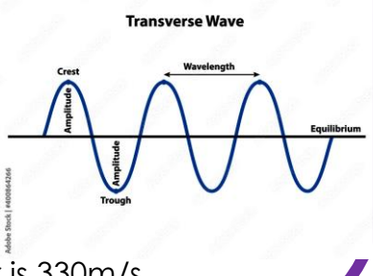
Velocity of Waves

Velocity means speed in a certain direction.
To calculate the velocity of a wave you need the following equation

$$Wavespeed = Frequency\ X\ wavelength$$

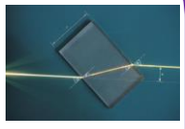
Frequency is the number of waves per second measure in hertz (Hz)

Wavelength distance between two identical points on the wave



The speed of sound in air is 330m/s

Week 5



Reflection and Refraction

When waves enter a new material, they change speed and therefore change direction. This is called refraction.

Reflection is when a light ray hits a reflective object and bounces off the surface.

The angle of incidence is equal to the angle of reflection. This is also known as the law of reflection

Reflection isn't just used on mirrors its also used for things such as fibre optics.

Key words:

Biodegradable - When a substance can be decomposed or broken down by microorganisms.

Displacement - A chemical reaction in which a more reactive metal takes the place of a less reactive metal in a compound.

Semi Permeable Membrane - A type of membrane that allows some molecules to pass through it but not others

Longitudinal - A wave in which the oscillations are parallel to the direction of energy transfer.

Transverse - A wave in which the oscillations are perpendicular to the direction of energy transfer.

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Week 1

Questions	Answers
State what the 'three Rs' stands for.	Reduce, reuse, recycle
Define a finite resource	A resource that is used more quickly than it is being created
Give examples of resources that can be recycled.	Glass, plastic, metals, clay ceramics, building materials
Explain why it is important to recycle plastic	Because plastic is non-biodegradable so it can end up damaging ecosystems
Describe the different things that can happen to a product at the end of its life cycle.	They can be reused, recycled, burned or sent to landfill

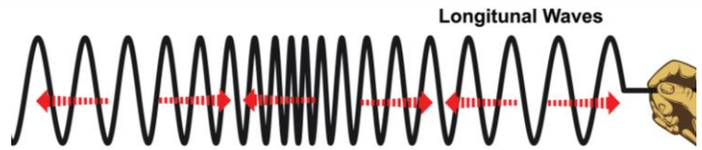
Water treatment plant

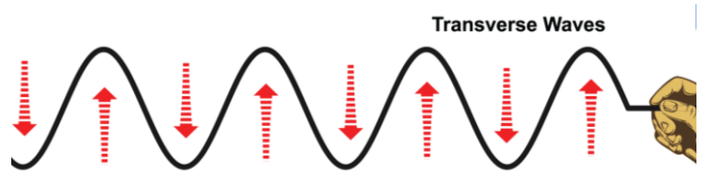
Week 2

Questions	Answers
What does plagarism mean?	Presenting another person's ideas or work as your own.
What is a good reason to trust a source of scientific information?	The information is written by a scientific expert and checked by other experts
What is bias?	It describes a point of view. This view might not take into account all available evidence.
Good sources should be supported by	Evidence which is accurate and peer reviewed.
Why do scientists peer review journals	To ensure that the evidence is reliable and accurate to avoid giving misinformation.

Week 3

Questions	Answers
What are the two types of waves	Transverse and longitudinal
What do all waves transfer	Energy
Give one example of a longitudinal wave.	Sound waves
Give one example of a transverse wave.	Light or water waves
How sound is produced in a guitar?	Vibrations in the guitar cause the air to vibrate, causing a sound wave





Week 4

Questions	Answers
Frequency = 50Hz Wavelength =3m Wavespeed =	Wavespeed = 50 x 3 = 150 m/s
What is the equation for wavespeed?	$Wavespeed = Frequency\ X\ wavelength$
What is the unit for frequency?	Hertz - Hz
Describe wavelength	Wavelength is the distance between two points on a wave.
Speed in a certain direction	The definition of velocity is

Week 5

Questions	Answers
Describe refraction?	When light crosses a boundary of different density. The light changes speed changing direction.
The law of reflection is	The angle of incidence is equal to the angle of refraction
Describe reflection	Reflection is when light bounces off on an object
Give two uses of reflection	Mirrors and fibre optics
What is refraction?	When light changes direction when it enters an object

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