Year 6 Maths Knowledge Organiser – Autumn 2

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Key Vocabulary

- numerator
- denominator
- equivalent
- factors
- mixed numbers
- multiples
- proper fractions
- improper fractions
- tenths
- hundredths
- thousandths
- integer

Simplify Fractions

We can use our knowledge of equivalent fractions to **simplify fractions**. To find the simplest form of a fraction, we divide the numerator and denominator by their highest common factor.

$\frac{12}{18}$ Factors of 12: 1, 2, 3, 4, 6, 12
Factors of 18: 1, 2, 3, 6, 9, 18

$\frac{12}{18} \overset{\div 6}{\underset{\div 6}{}} = \frac{2}{3}$

Compare and Order Fractions

To **compare** and **order** fractions, we need to find a common denominator or numerator.

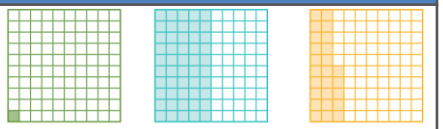
$\frac{10}{12}$ $\frac{5}{9}$

$\frac{10}{12} = \frac{5}{6}$ so $\frac{5}{6} > \frac{5}{9}$

These fractions have been ordered from smallest to greatest. Their equivalent fractions using common numerators are shown beneath.

$\frac{8}{18}$ → $\frac{4}{9}$ $\frac{12}{15}$ → $\frac{4}{5}$ $\frac{18}{7}$ → $1\frac{4}{7}$

Decimals as Fractions



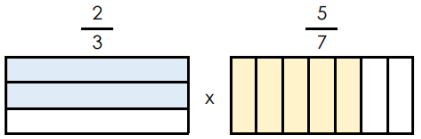
$\frac{1}{100} = 0.01$ $\frac{50}{100} = \frac{1}{2} = 0.5$ $\frac{25}{100} = \frac{1}{4} = 0.25$

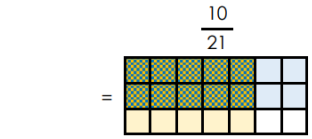
Multiply Fractions by Fractions

To **multiply fractions by fractions**, we multiply the numerators together and multiply the denominators together.

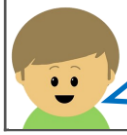
$\frac{2}{3} \times \frac{5}{7} = \frac{10}{21}$

We can use area models to represent multiplication calculations visually.





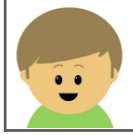
We can multiply fractions by fractions to find fractions of fractions.



$\frac{4}{5}$ of $\frac{2}{3} = \frac{4}{5} \times \frac{2}{3} = \frac{8}{15}$

Three Decimal Places

Our knowledge of place value helps us to identify the value of each digit in numbers with up to 3 decimal places.



"There are 2 ones, 1 tenth, 3 hundredths and 6 thousandths. The number is 2.136"

Divide Fractions by Integers

To **divide fractions by integers**, we divide the numerator by the whole number.

If the numerator is a multiple of the integer, then this is nice and simple!

$\frac{6}{11} \div 3 = \frac{2}{11}$

If the numerator is not a multiple of the integer, then we could use diagrams to help us.

$\frac{3}{4} \div 2 = \frac{3}{8}$

We could also find an equivalent fraction with a numerator that is a multiple of the integer to help us divide the fraction equally.

$\frac{8}{13} \div 6$

$\frac{8}{13} = \frac{24}{39}$

$\frac{24}{39} \div 6 = \frac{4}{39}$

We can use our knowledge of multiplying fractions by unit fractions to help us divide fractions by integers.

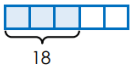
$\frac{8}{9} \div 4 = \frac{8}{9} \times \frac{1}{4} = \frac{8}{36} = \frac{2}{9}$

Find the Whole

We can find the whole amount using the known value of a fraction.

To do this, we divide the known value by the numerator and multiply this by the denominator.

Jane ate $\frac{3}{5}$ of a box of strawberries.
She ate 18 of them altogether.



$18 \div 3 = 6$ so $\frac{1}{5} = 6$

$6 \times 5 = 30$ so the whole is 30

There were 30 strawberries in Jane's box.

Multiply and Divide by 10, 100 and 1,000

When we multiply by 10, each digit moves 1 place to the left. When we multiply by 100, each digit moves 2 places to the left. When we multiply by 1,000 each digit moves 3 places to the left.

$0.824 \times 1{,}000 = 824$

100s	10s	1s	0.1s	0.01s	0.001s
		0	8	2	4
8	2	4			

When we divide by 10, 100 and 1,000 each digit moves the same number of places to the right.

$759 \div 1{,}000 = 0.759$

100s	10s	1s	0.1s	0.01s	0.001s
7	5	9			
		0	7	5	9

We use 0 as a place holder where needed.

Adding and Subtracting Fractions with the Same Denominator

$\frac{4}{7} + \frac{2}{7} = \frac{6}{7}$

$\frac{8}{11} - \frac{3}{11} = \frac{5}{11}$

Year 6 English Knowledge Organiser – Autumn 2

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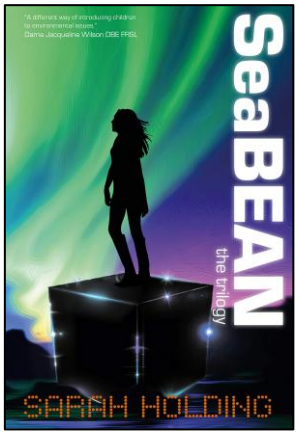
Core Texts



SeaBEAN
Sarah Holding

Students will look at a range of genuine persuasive texts in a range of different formats.

Features of Text Type: Creating a New Chapter

The term 'seabean' refers to a drift seed of the same name that can travel thousands of miles by ocean. Holding calls them, *'nature's very own time travellers, carrying a secret'*, which gave her the inspiration for the story.

The story itself focuses on 11-year-old Alice, who lives on the remote island of St. Kilda in Scotland. When a mysterious large, black, metal box (the C-Bean Mk.3), washes up on the island's shore, Alice's life is changed forever. She soon discovers that the futuristic, high-tech C-Bean is, amongst other things, a device that travels across space and time. The C-Bean transports Alice and her classmates around the world on incredible adventures, where they discover environmental issues that lead them to question the world in which they live.

Features of Text Type: Persuasion

Persuasion can come in many different forms and text types *(e.g. letters, leaflets, posters, speeches, adverts, brochures)*.

A range of **layout devices** can be used to organise material, for emphasis, and to further add to the persuasive purpose:

Emotive images can be used to evoke positive or negative feelings about the subject.

The use of colours and lines to create visual sections, supported by **headings and subheadings,** help the reader navigate the text and find the information they are looking for.

Infographics can provide instant visual representation of information or data.

Paragraphs and **bullet points** break material down into easy-to-read chunks to maintain the reader's attention.

Typographical emphasis (e.g. the use of bold, italic or underlined text or the use of different fonts and text sizes) are used to draw the reader's eye to key parts of the text.

Year 6 Science Knowledge Organiser – Autumn 2

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Key Vocabulary	
adaptation	features that help organisms survive in its environment.
camouflage	be hidden by blending in with the surroundings (things around it).
evolution	the process where organisms (animals and plants, for example) change over very long periods of time.
extinct	when an entire species dies out, we say that the species is extinct
fossil	fossils are the preserved remains of living things that lived over 10,000 years ago
genome	Information that is passed down from the parents to the offspring (the young) and controls how the young develops.
inheritance	the process whereby the genetic material passes from the parents to the offspring
palaeontology	the study of fossils and the evolution of life on Earth

Adaptations

Organisms are adapted to the environments that they live in. Adaptations can be:

- **behavioural**, how an organism acts or behaves. For example, a monkey will use a tool to gather food.
- **structural**, physical characteristics, usually on the outside. For example, a cactus has spines to prevent it being eaten.
- **physiological**, internal characteristics. For example, skunks and stinging nettles produce toxins to keep other organisms away.

Variation

All individuals in a species show variation. This can be caused by:

- **inherited characteristics** from parents (such as eye colour),
- by the **environment** (such as scars),
- or by **both** (such as height).

Evolution by natural selection

Organisms change over time by the process of **natural selection**:

There is **variation** between individuals in a species. This might be inherited or environmental or both. → Those that are better **adapted** to the **environment** have an **advantage** and are more likely to survive. → Those that survive are more likely to **reproduce**. → Those that reproduce can pass on the **advantageous inherited** characteristic to their **offspring**.

Scientists have lots of evidence that proves the theory of evolution by natural selection. For example, the **fossil record** shows the evolution of horses clearly.

Over a very long time and many generations, organisms **evolve** (change) by natural selection.

Year 6 Geography Knowledge Organiser – Autumn 2

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Key Vocabulary

enhanced greenhouse effect	the unnatural warming of the planet due to increased greenhouse gases in the atmosphere
climate change	any change in long-term weather patterns
finite	will run out in the future
fossil fuels	store of energy, formed over millions of years from dead plants and animals
infinite	will not run out in the future
irrigation	channels of water used to water crops
greenhouse gases	gases that trap heat within the atmosphere
renewable	something that can be replenished
wind farm	multiple wind turbines in one location
Thames Barrier	a flooding defence in London, UK

Climate change – adaptations and mitigation strategies

Adaptations do not stop climate change from happening, they are ways we can live with the effects of **climate change.** These include **building houses on stilts, floating farms, eating drought resistant crops** and **using solar irrigation.**

Mitigating climate change involves reducing or even reversing the effects of climate change and global warming. This can **only** be done by **reducing greenhouse gases** in the atmosphere.

Renewable energy – wind power

Once built, wind turbines do not produce any **greenhouse gases** or pollutants. They are a **renewable source** of energy. Wind turbines need a **high average wind speed.** This could be on top of a hill or in a wide-open space. However, wind turbines can be loud and can disrupt migrating birds.

In the UK, the largest proportion of our renewable energy is generated from **wind power.**

Plastic problem

What's the problem?

- Producing plastics creates **greenhouse gases**, which contributes to global warming.
- Plastics take hundreds of years to break down. They can **kill organisms** directly or indirectly (by destroying habitats).

What is the solution?

- **Reduce** the amount of plastic you use.
- **Reuse** the plastic that you do use.
- **Recycle** the plastics that you use.

Relative impacts

Some actions to reduce greenhouse gases have bigger impacts than others. This can be measured in carbon dioxide emissions (kgs).