Crucial Knowledge Organiser

Fractions (A)

Simplify Fractions

$$\frac{9}{12}$$

$$\frac{9}{12} = \frac{3}{4} \quad (\div 3)$$

Factors of 9:
1, **3**, 9

Factors of 12:
1, 2, **3**, 4, 6, 12

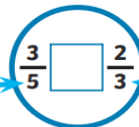### Compare and Order Fractions

Use the Common Denominator

$$\frac{3}{5} \square \frac{2}{3}$$

Multiples of 5:
5, 10, **15**

Multiples of 3:
3, 6, 9, 12, **15**

$$\frac{3}{5} = \frac{9}{15} \quad (\times 3)$$

$$\frac{9}{15} < \frac{10}{15}$$

$$\frac{2}{3} = \frac{10}{15} \quad (\times 5)$$
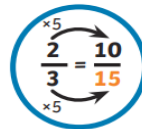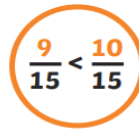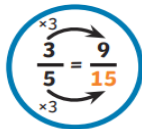
Adding and Subtracting Proper Fractions

Same Denominators

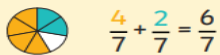$$\frac{4}{7} + \frac{2}{7} = \frac{6}{7}$$

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

Different Denominators

$$\frac{2}{7} \quad \frac{3}{5}$$

Multiples of 7: 7, 14, 21, 28, **35**
Multiples of 5: 5, 10, 15, 20, 25, 30, **35**

$$\frac{2}{7} = \frac{10}{35}, \quad \frac{3}{5} = \frac{21}{35}$$

$$\frac{10}{35} + \frac{21}{35} = \frac{31}{35}$$

$$\frac{9}{10} \quad \frac{1}{4}$$

Multiples of 10: 10, **20**
Multiples of 4: 4, 8, 12, 16, **20**

$$\frac{9}{10} = \frac{18}{20}, \quad \frac{1}{4} = \frac{5}{20}$$

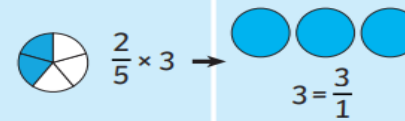$$\frac{18}{20} - \frac{5}{20} = \frac{13}{20}$$

Fractions (B)

Multiplying Proper Fractions

Multiplying Fractions by Fractions

$$\frac{1}{2} \times \frac{1}{3} = \frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$$

Multiplying Fractions by Whole Numbers

$$\frac{2}{5} \times 3 \rightarrow \qquad 3 = \frac{3}{1}$$

$$\frac{2}{5} \times \frac{3}{1} = \frac{6}{5} = 1\frac{1}{5}$$

Dividing Fractions by Whole Numbers

$$\frac{2}{5} \div 2 = \frac{1}{5}$$

Multiplication and division are the inverse of one another so:

÷ 2 is the same as × $\frac{1}{2}$

$$\frac{2}{5} \times \frac{1}{2} = \frac{2}{10}$$

Converting units

Time

Minute 1 minute = 60 seconds

Hour 1 hour = 60 minutes

Day 1 day = 24 hours

Week 1 week = 7 days

Year 1 year = 12 months = 52 weeks = 365 days

Metric to Imperial Conversions

metric (new)	imperial (old)
2.5 centimetres	1 inch
1 kilogram	2.2 pounds
4.5 litres	1 gallon

centimetres — (÷ 2.5) → inches
inches — (× 2.5) → centimetres

litres — (÷ 4.5) → gallons
gallons — (× 4.5) → litres

kilograms — (÷ 2.2) → pounds
pounds — (× 2.2) → kilograms

Crucial Knowledge Organis-
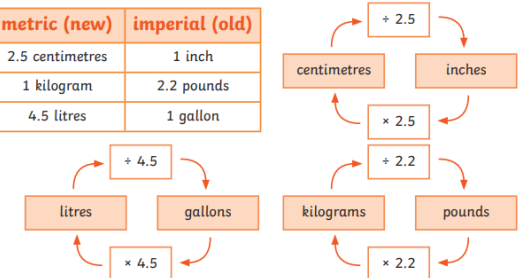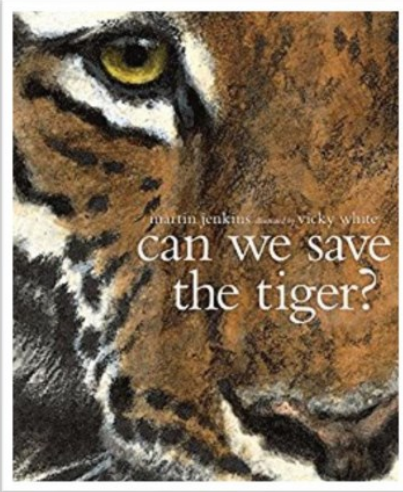
Writing Outcome

To create a booklet based on an amazing animal (hybrid text type including information,

explanation and persuasion)

NC Word List – Years 5 and 6		Developing Vocabulary	
according	frequently	originally	Panthera tigris
bargain	government	especially	breeding
category	hindrance	including	grassland
committee	interfere	affected	swampy
communicate	parliament	definitely	appetite
controversy	persuade	exactly	disease
develop	signature	fewer	rancher
disastrous	sincerely	particular	prairies
exaggerate		accidentally	captive/captivity
		probably	predator
		managed	conservation(ists)
		unfortunately	population

These are the writing 'keys' which we aim to use in our Y6 writing.

🔑 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)
• Use expanded noun phrases to convey complicated information concisely • Apply persuasive language • Use passive verbs • Link ideas across paragraphs using a wider range of cohesive devices • Use clear organisational features	• **Enhance meaning through selecting appropriate grammar and vocabulary** • **Use modal verbs and adverbs to indicate degrees of possibility** • **Use brackets, dashes or commas to indicate parenthesis**	• Use concise word choices • Select language to appeal to the reader • Clarify technical vocabulary • Adapt formality to suit purpose and audience • Provide well-developed factual information for the reader • Manipulate style for specific purpose and audience (hybrid text) • Include a summarising statement

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Punctuation and Grammar

♦ **Preposition, conjunctions** and **adverbs** to express - time, place and cause.

♦ **Expanded noun phrases**, to describe nouns.

♦ **Fronted adverbials**, to begin sentences in a descriptive way, telling us how, when or where

♦ **Modal verbs** and **adverbs** to indicate degrees of possibility— **certainly, definitely, maybe, surely, clearly, obviously, perhaps, probably and undoubtedly**

♦ **Parenthesis** is a word, phrase or sentence that is put in writing as extra information or an afterthought. It can be shown using brackets, dashes or commas.

Barack Obama (who was born in 1961) is a former President of the USA.

Albert the alien, *who was feeling hungry,* went for his lunch break.

Make sure you tune the strings—something you should do daily- before you play.

Crucial Knowledge Organiser

Mammals have **hearts** with four chambers. Notice how the blood that has come from the body is **deoxygenated**, and the blood that has come from the lungs is **oxygenated** again. The blood isn't actually red and blue: we just show it like that on a diagram.

to body
from body
to lungs
from lungs
from body

deoxygenated blood ➡️ ⬅️ **oxygenated blood**
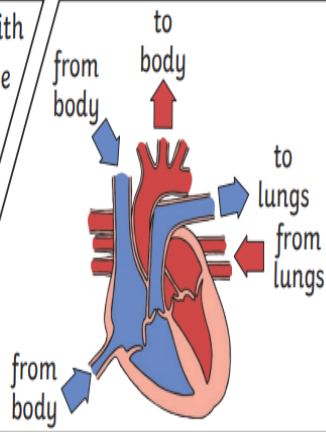
Capillaries are the smallest **blood vessels** in the body and it is here that the exchange of water, nutrients, oxygen and carbon dioxide takes place.

Arteries carry **oxygenated blood** away from the **heart**.

arteries   veins
capillaries
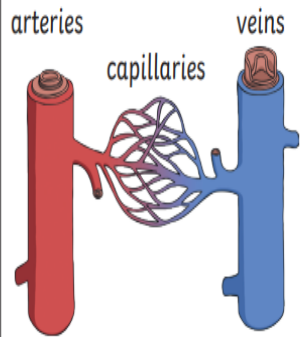
Veins carry **deoxygenated blood** toward the **heart**.

If you linked up all of the body's blood vessels, including arteries, capillaries, and veins, they would measure over 60,000 miles.

Key Vocabulary

|	
circulatory system	A system which includes the heart, veins, arteries and blood transporting substances around the body.
heart	An organ which constantly pumps blood around the **circulatory system**.
blood vessels	The tube-like structures that carry blood through the tissues and organs. Veins, arteries and capillaries are the three types of blood vessels.
oxygenated blood	**Oxygenated blood** has more oxygen. It is pumped from the **heart** to the rest of the body.
deoxygenated blood	**Deoxygenated blood** is blood where most of the oxygen has already been transferred to the rest of the body.

The **heart** pumps blood to the lungs to get oxygen.

It then pumps this **oxygenated blood** around the body.
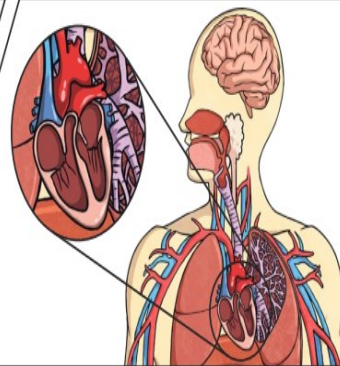
Regular exercise:

- strengthens muscles including the heart muscle;
- improves circulation;
- increases the amount of oxygen around the body;
- releases brain chemicals which help you feel calm and relaxed;
- helps you sleep more easily;
- strengthens bones.

It can even help to stop us from getting ill.

The liquid part of blood contains water and protein. This is called plasma.
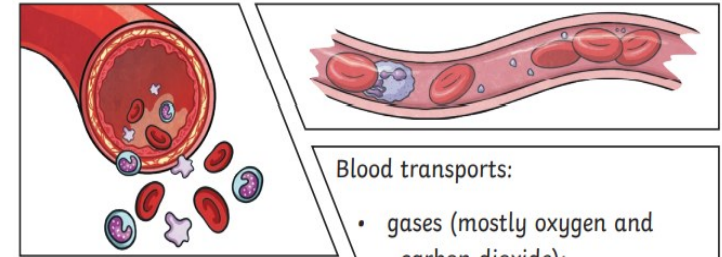
Blood transports:

- gases (mostly oxygen and carbon dioxide);
- **nutrients** (including water);
- waste products.

Plasma is liquid. The other parts of your blood are solid.

Red blood cells carry oxygen through your body.

Platelets help you stop bleeding when you get hurt.

White blood cells fight infection when you're sick.

Drugs, **alcohol** and smoking have negative effects on the body.

A healthy diet involves eating the right types of **nutrients** in the right amounts.

Key Vocabulary

drug	A substance containing natural or man-made chemicals that has an effect on your body when it enters your system.
alcohol	A **drug** produced from grains, fruits or vegetables when they are put through a process called fermentation.
nutrients	Substances that animals need to stay alive and healthy.

Crucial Knowledge Organiser

Unit: 6.2
Online Safety

Key Learning

- To identify benefits and risks of mobile devices broadcasting the location of the user/device.
- To identify secure sites by looking for privacy seals of approval.
- To identify the benefits and risks of giving personal information.
- To review the meaning of a digital footprint.
- To have a clear idea of appropriate online behaviour.
- To begin to understand how information online can persist.
- To understand the importance of balancing game and screen time with other parts of their lives.
- To identify the positive and negative influences of technology on health and the environment.

Key Questions

Why do I need to be aware of the dangers of being online?

Although the Internet is a brilliant resource for learning and entertainment some people use the Internet to cause you harm. Being aware of these dangers can help keep you safe and protect your privacy.

What is meant by my digital footprint?

The term digital footprint is used to describe the traces that people leave behind when they have visited a website or used social media. Your digital footprint is unique to you.

Why is it important to think about how much time use a screen for?

Using a screen can help you surf the Internet or enjoy computer games but you need to be careful how much time you spend using a screen. For instance, using a screen at night can damage your sleep patterns. Turn your screen off regularly and enjoy the world outside.

Key Resources

purple mash

2Investigate | 2DIY | 2DIY3D | Free code gorilla

Unit: 6.3
Spreadsheets

Key Learning

- To use a spreadsheet to investigate the probability of the results of throwing many dice.
- To use a spreadsheet to calculate the discount and final prices in a sale.
- To use a spreadsheet to plan how to spend pocket money and the effect of saving money.
- To use a spreadsheet to plan a school charity day to maximise the money donated to charity.
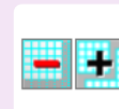
Key Resources

purple mash

9 × 3 =
2Calculate

Key Images
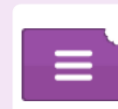
Open, close or share a file	Save your work	Open a previously saved file	Increase or decrease spreadsheet size
Advanced mode	Formula Wizard	Format Cell Toolbox	Charts
Totals toolbox	Image Tools	Controls Toolbox	Move
Dice	Equals	Count	

Crime and Punishment

Crucial Knowledge Organiser

Chronological Understanding

Children will learn;

•To summarise what they know about different British time periods.

•The theme of crime and punishment and how it evolved in Britain chronologically.

Historical Enquiry

Children will learn;

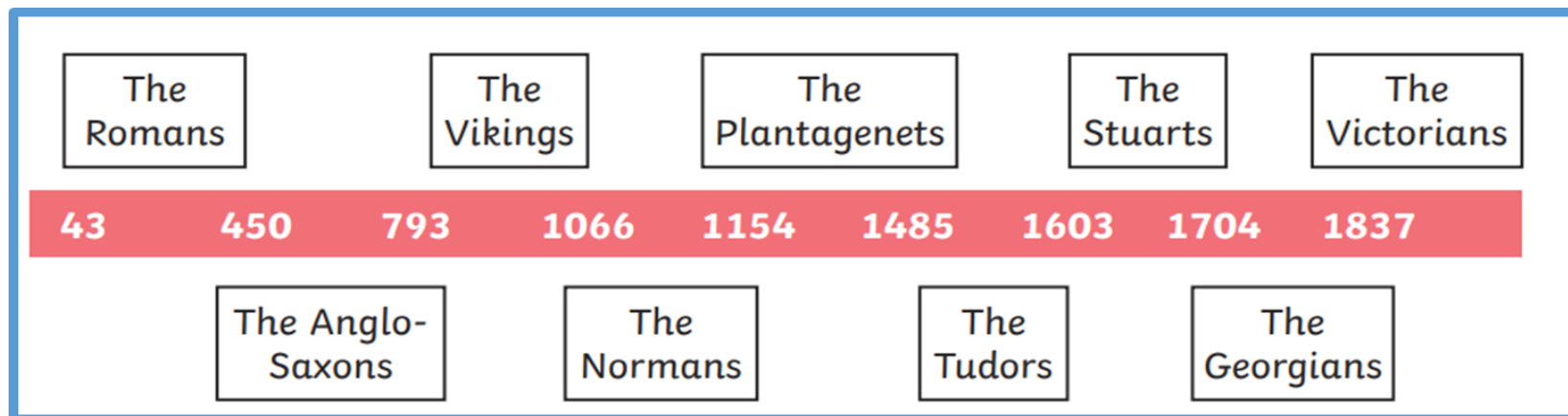•To use extracts from historical fiction to identify and explore aspects of crime and punishment in that era

Crime and Punishment
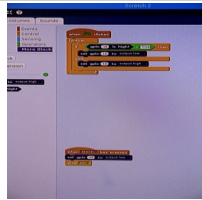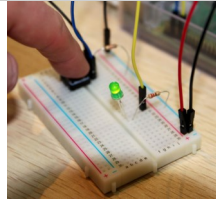
Historical Understanding

Children will learn;

•sort cards with different crimes, detections and punishments into different time periods, based on their understanding of the past.

•Children will look at the features and changes in crime and punishment in Britain in the Roman, Anglo-Saxon, Viking, medieval, Tudor, early modern period, Victorian and the modern day.

•Children look at how aspects of crime and punishment changed and evolved in Britain since the Roman period.

The Romans	The Vikings	The Plantagenets	The Stuarts	The Victorians

43	450	793	1066	1154	1485	1603	1704	1837

The Anglo-Saxons	The Normans	The Tudors	The Georgians

CRIME & PUNISHMENT

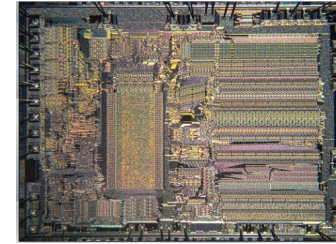# Year 6 Design and Technology — Autumn 2
Programming Pioneers

Crucial Knowledge Organiser

- I can explain how computers and computer programs are used in a variety of products (washing machines and traffic lights).

- I can explain how modern memory chips work to store information (setting switches in or off positions).

- I know what a computer engineer is and what they do.

- I can describe some examples of how computer hardware and software specialists work together to create new products (Alan Turing—computers with German messages for military commanders during WW2).

- I can describe the typical design process for computer-controlled electronic products.

Make

- I can write an algorithm to suggest how various appliances might work.

- I can develop and build a prototype pedestrian crossing using computer programming.

- I can develop, model and communicate ideas for an embedded system which monitors and controls a door, room or both.

- I can debug errors in an algorithm.

- I can select and use electronic components to construct a prototype of an embedded computer-controlled room system.

Evaluate

- I can evaluate my design for a computer-controlled system and consider the views of others to improve my work.

- I can suggest ways to change an algorithm to improve a system.

What have we learned about monitoring and controlling products using computers?

What have we learned about debugging and improving our designs?