COMPUTING – YEAR 3/4 KNOWLEDGE ORGANISER

What I should already know:

-Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.

-Create and debug simple programs.

-Use logical reasoning to predict the behaviour of simple programs.

-Use technology purposefully to create, organise, store, manipulate and retrieve digital content.

-Recognise common uses of information technology beyond school.

-Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

What I will learn by the end of the units:

Simulations
To find out what a simulation is and understand the purpose of simulations.
To explore a simulation, making choices and discussing their effects.
To work through and evaluate a more complex simulation.

Graphing
To enter data into a graph and answer questions.
To solve an investigation and present the results in graphic form.

Skills I may use from other subjects

Maths: Use my knowledge of measurement, graphs and tally charts.

Literacy: I can use my reading and comprehension skills to further my knowledge of simulations.

Science: Use my knowledge of observations and collecting data.

KEY RESOURCES

Locked Out
A lively dog causes problems for Mariza, her baby brother Sam and her mum.

The Dark Side of Elpmis
Trainee astronauts get ready for a mission to the planet Elpmis.

Key Vocabulary

Analysis A detailed examination of something.

Evaluation To judge the value, condition or effectiveness of something.

Decision The act or result of making a choice after careful thought.

Modelling The act of representing something, often on a smaller scale.

Simulation A program that models a real-life situation. They let you try things out that would be too difficult or dangerous to do in real life.

Axis A fixed horizontal or vertical reference line for the measurement of coordinates or to plot data in a graph.

Row Horizontal (across the page) divisions of a piece of work.

Chart A diagram that represents data. Charts include graphs and other diagrams such as pie charts or flowcharts.

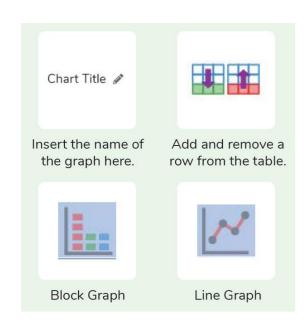**Column** Vertical (down the page) divisions of a piece of work.

Investigation A formal inquiry or systematic study.

Tally Chart A way of recording how often something happens by counting in fives.

Graph A diagram that represents data. There are specific layouts for graphs including bar graphs and line graphs.

Sorting Organising data by a rule such as alphabetical or numerical.

Data A collection of information, especially facts or numbers, obtained by observation, questions or measurement to be analysed and used to help decision-making.

Recall and Remember!

Add information to your knowledge mind map regularly to help you to reflect on, and remember what you have learnt throughout the unit. At the end of the unit, work in a small group to create a fun quiz on purple mash for your friends to complete!

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Chart Title ✏

Insert the name of the graph here.

Add and remove a row from the table.

Vertical Bar Chart

Horizontal Bar Chart

Block Graph

Line Graph

Pie Chart

Data entry table

Key Skills I will learn and use

I will be able to analyse problems.
I will give opinions and respond to ideas.
I will ask questions and discuss with my peers.
I will gain an understanding of the principles and concepts of computer science.

Opportunities for teaching diversity, equality and

expanding cultural capital:

A visit to a local museum of computing.
Significant people – Computing pioneers embedded in subject journey.
E-safety champions
Internet Safety Day
Computing club

Key Computing Concepts

- Coding
- Information technology
- Data handling
- **Vocabulary**

What I will know by the end of the Key Stage:

Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.

Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.

Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.

Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration.

Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.

Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Key Knowledge

What is a computer simulation? A program that models a real-life situation. They let you try things out that would be too difficult or dangerous to do in real life.

What kind of simulations are there?
Some simulations represent dangerous situations for training such as flying in space, carrying out medical operations or piloting an aeroplane. Others simulate activities for fun, such as racing simulations.

Are there any problems with simulations?
Simulations are often too simple; and unexpected problems can still occur in real life that are difficult to simulate. Simulations can also be very expensive.

What is a graph?
A diagram representing part of a set of data. Graphs can be drawn by hand or on the computer. There are different types of graphs.

What are the frame lines on the graph called?
They are the axes. The axis that goes up and down (vertical) is called the 'y' axis and usually shows the amount. The axis that goes across (horizontal) is called the 'x' axis and shows what is being measured.

What different kinds of graphs are there?
There are lots of different types of graphs including line graph, bar chart and pie chart.