KS2: MEDIUM TERM PLANNER
Data Y6

Pupils should be taught to:

- *interpret and construct pie charts and line graphs and use these to solve problems*
- *calculate and interpret the mean as an average*

The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships, and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping, and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.

‘Working and thinking scientifically’ is described separately at the beginning of the programme of study but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils should read, spell, and pronounce scientific vocabulary correctly. During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes, and skills through the teaching of the programme of study content:
planning different types of scientific enquiries to answer questions, including recognising, and controlling variables where necessary
taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar, and line graphs
using test results to make predictions to set up further comparative and fair tests reporting and presenting findings from enquiries, including conclusions, causal relationships, and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations identifying scientific evidence that has been used to support or refute ideas or arguments.

Prior Learning:	Future Learning: KS3
• The children decide how to record and present evidence. They record observations e.g., using annotated photographs, videos, labelled diagrams, observational drawings, labelled scientific diagrams or writing. They record measurements e.g., using tables, tally charts, bar charts, line graphs and scatter graphs. They record classifications e.g., using tables, Venn diagrams, Carroll diagrams and classification keys • . • Children present the same data in different ways to help with answering the question	• apply mathematical concepts and calculate results • present observations and data using appropriate methods, including tables and graphs • interpret observations and data, including identifying patterns and using observations, measurements, and data to draw conclusions • present reasoned explanations, including explaining data in relation to predictions and hypotheses • evaluate data, showing awareness of potential sources of random and systematic error • identify further questions arising from their results

Key Questions (*show how content and concepts link*) **Differentiated** Learning Objectives	**Teaching and learning activities** *(linked directly to objectives)*	**Resources** (*to help pupils reach the learning objectives)*	**Written and non -written outcomes** (*assessment including homework's)*
1) How can we create and read data tables? SCIENCE CAPITAL: *How does this lesson connect with children in my class? When would you use tables / data tables in your everyday life? Why are they useful?* **Science Working scientifically Skills:**	**Science reasoning task: explorify: What if:** We didn't use transport to get to school? - Explorify **Activity 1:** PowerPoint: handling data- why? How? **Activity 2:** share SATS style science data questions linked to heart rate, rocks and sports day etc. **Activity 3:** TP discuss how to answer these questions. Then answering questions independently. **Activity 4:** Work scientifically – come up with own enquiry question and discuss how to collect data and present.	**Activity 1:** PowerPoint **Activity 2:** SATS style science questions **Activity 3-** independent questions **Activity 4-** work books	**Assessment:** Pupils able to read tables to answer questions? **Homework:** To think of their own scientific question to collect data for.

Science Enquiry Type **Asking Questions**			
2) How can we read and answer questions about graphs? (Line graphs) SCIENCE CAPITAL: *How does this lesson connect with children in my class? What have you used line graphs for?* **Science Working scientifically Skills:**  **Science Enquiry Type** **Research/ observation/ asking questions**	**Science reasoning task: explorify: Who?** Katherine Johnson? - Explorify **Activity 1:** PowerPoint -discuss what line graphs are and answer questions in pairs. **Activity 2:** Independent answering of SATS style data questions. **Activity 3:** Use previous data and create line graphs and answer questions about/ create questions for others to answer.	**Activity 1:** Picture – question stem cards. **Activity 2:** PowerPoint What is evolution? - BBC Bitesize History KS2 | The Victorians: Charles Darwin | BBC Teach - YouTube **Activity 3:** question prompts.	**Assessment:** Pupils able to ask key question, research and find answers to them. **Homework:** Bar Charts - Maths frame
3) How can we read and answer questions about graphs? (bar/scatter graphs) SCIENCE CAPITAL: *How does this lesson connect with children in my class? Which previous experiments did you do that collected data in a bar chart?* Science Working scientifically Skills:  Science Enquiry Type **Comparative**	**Science reasoning task: explorify: Zoom in and zoom out** The mystery grows - Explorify **Activity 1:** PowerPoint- go through bar chat and scatter graph. **Activity 2:** work in pairs to answer questions related to graphs. **Activity 3:** use working scientifically skills and collect data and represent in appropriate bar chart/ scatter graph)	**Activity 1:** PowerPoint **Activity 2:** Data question and information given. **Activity 3:** websites given for research	**Assessment:** Are pupils able to use working scientifically skills? **Homework:** Tally Chart Games (softschools.com)

4) How to calculate mean, mode and range? SCIENCE CAPITAL: *How does this lesson connect with children in my class? Think about previous science experiments when have you used mean, mode and range? Why?* Science Working scientifically Skills:  Science Enquiry Type Research/ ask questions	**Science reasoning task: explorify: Odd one out** Small but powerful - Explorify **Activity 1:** PowerPoint to understand the difference between mean, median, mode and range. **Activity 2:** Answer questions linked to graphs and tables – finding mean, mode, range and median of data. **Activity 3:** create own data and represent in appropriate graphs.	**Activity 1:** PowerPoint **Activity 2**: various questions to answer **Activity 3**: working scientifically prompt sheet.	**Assessment:** Able to explain the difference between the different terms and their purposes?
5) **Design and describe your animal? How to create a tale?** SCIENCE CAPITAL: *How does this lesson connect with children in my class? Think about evolution which animal would you adapt? Which characteristics would you include and why?* Science Working scientifically Skills:  Science Enquiry Type **comparative**	**Activity 1:** PowerPoint **Activity 2:** list characteristics and select habitat. Use information to create a new species.	**Activity 1:** PowerPoint **Activity 2:** word list and word bank .	**Assessment:** Are pupils able to use evolutionary theory to support their character design?