Hawes Primary School - Progression in disciplinary knowledge and enquiry skills

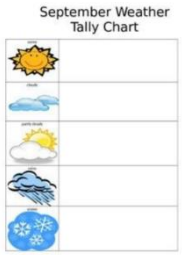
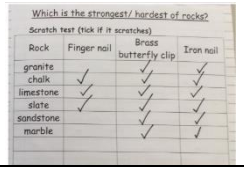
Conceptual knowledge: magnification - the process of enlarging the apparent size, not physical size, of something

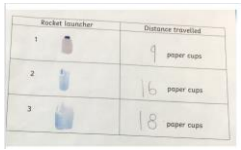
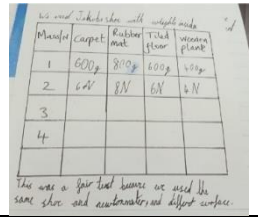
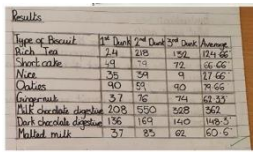
Procedural knowledge	**Reception**	**Y1**	**Y2**	**Y3**	**Y4**	**Y5**	**Y6**
How to use magnifying equipment	Explicitly taught to use a magnifying pot – understand that the lid makes the content look bigger/easier to see 	Explicitly taught how to use a magnifying sheet 	Explicitly taught how to use hand lens – it is important that the magnifier is held at the correct distance from the object. 1. Place the magnifier close to the object. 2. Always look through the centre of the magnifier 3.Bring it slowly towards you until you get the clearest image.	Continue to refine use of a hand lens	Explicitly taught to use visualiser to: • look at fine detail • time lapse photography to **observe over time** • reporting back to class	Explicitly taught to use a microscope using varying levels of magnification 1. know the parts of a microscope 2. Rotate low power objective into place 3. Place slide on stage with the specimen over the hole 4. Secure Look through the eyepiece and adjust objective lens	Continue to refine use of a microscope

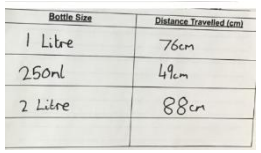
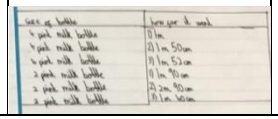
Progression in disciplinary knowledge and enquiry skills

Enquiry skill: recording

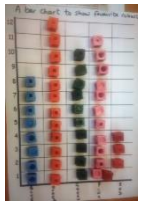
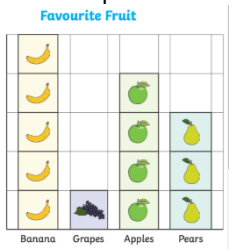
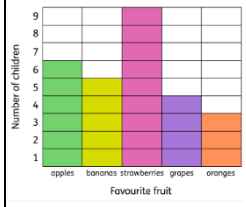
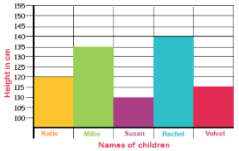
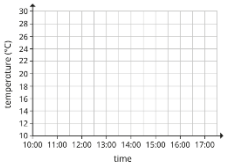
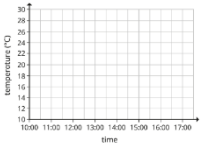
Procedural knowledge	**Reception**	**Y1**	**Y2**	**Y3**	**Y4**	**Y5**	**Y6**
How to record: drawings	Draw pictures of what they do/what they observe Teacher scribe When appropriate children to add labels/captions	Draw and label pictures Add given captions Given labels for teacher made diagrams	Draw and label pictures Add own captions Label teacher made diagrams	Explicitly taught to draw and label more scientific diagrams	Draw and label more scientific diagrams	Continue to refine drawing and labelling of more scientific diagrams	

How to record: tally charts	Teacher made tally chart with headings and pictures Explicitly taught how to use 	Pre-drawn table with headings and equipment given – explicitly taught how to complete 	Pre-drawn table with headings and equipment given 	Pre-drawn table with headings	Pre-drawn table without headings	Draw on tally charts

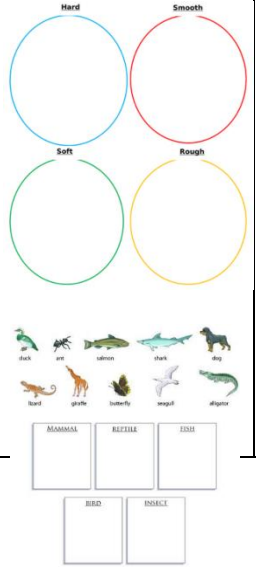
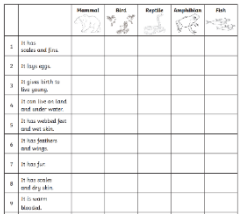
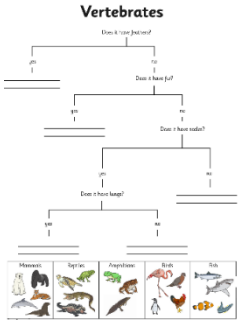
Procedural knowledge	**Reception**	**Y1**	**Y1 and 2**	**Y3**	**Y4**	**Y5**	**Y6**
How to record: tables	Explicitly taught how to complete: • Pre-drawn table • Headings given • Equipment given • Unit of measure given • Non-standard unit of measure 	Explicitly taught how to complete: • Pre-drawn table • Headings given • Equipment given • Unit of measure given • Non-standard unit of measure • Standard units (cm) when appropriate (post maths unit)	Explicitly taught how to complete: • Pre-drawn table • Headings given • Equipment given • Unit of measure given • Standard units: m/cm, ml/l, g/kg, ˚C (post maths unit)	Explicitly taught how to complete: • Pre-drawn table • Headings given • Standard unit of measure • Pre-drawn table • Headings given • Standard unit of measure	• Pre-drawn table • Headings given • Standard unit of measure • Pre-drawn table • Headings given • Standard unit of measure • Recorded over a period of time • More narrative 	• Child drawn table • Headings created by child • Standard unit of measure – more accurate • Recorded over a period of time 	As year 5 but including averages when appropriate (post maths unit) 

				• Recorded over a period of time  			

Procedural knowledge	Reception	Y1	Y2	Y3	Y4	Y5	Y6

How to record: charts and graphs to show discrete and continuous data		Prepared block graphs using blocks, counters etc where each block represents 1 	Prepared pictographs and block graph to colour with axis pre-labelled  	Prepared bar chart axis 	Prepared bar chart where each block represents more than 1 Prepared line graphs to complete using data gathered 	Create own chart/graph to show discrete data with given labels Prepared line graphs to complete using data gathered – when appropriate, draw own (post maths unit) 	Create own chart/graph to show discrete data Draw own line graph

Procedural knowledge	**Reception**	**Y1**	**Y2**	**Y3**	**Y4**	**Y5**	**Y6**

How to record: classification	Sorting hoops – teacher led	Sorting hoops – child led including labels	Drawn sorting diagrams to cut and stick or draw	Simple charts – moving to child written headings	Simple branch diagrams with questions given	Begin to construct own questions	Draw own independently
							

Enquiry skill: measuring

Procedural knowledge	**Reception**	**Y1**	**Y2**	**Y3**	**Y4**	**Y5**	**Y6**
How to use read scales on a variety of equipment	Non-standard units only	Ruler (cm) (post maths unit)	Ruler/metre stick (cm/m) (post maths unit)				
		Sand timer (minutes)	Stopwatch (minutes)	Stopwatch (minutes and seconds)		Taking a pulse (stopwatch)	
					Measuring cylinders and beakers (ml/l)		
			Thermometer (˚C) (post maths unit)	Force meter (N)		Force meter (N)	
	Learning Through Landscapes equipment						