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Additions to the NC
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Maths/Science
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The state st	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
1. Graphica	cy Skills						
Key and Symbols	Use symbols on imaginary map	Use basic symbols in a key Use own symbols on imaginary map	Use and construct basic symbols in a key Begin to understand the need for a key. Use class agreed symbols to make a simple key <i>Recognise and identify</i> <i>basic OS symbols</i>	Use keys to build knowledge/research Start to understand complex keys e.g. size of symbol for quantity Start to understand contour lines	Use complex keys to build knowledge e.g. making quantitative estimates based on size of symbol Begin to recognise symbols on an OS map Understand contour lines	Start to create complex keys using mathematical concepts e.g. size of symbol for quantity Use/recognise OS map symbols	Create complex keys Use atlas symbols
Read maps	Using simple map to move around the outdoor area Picture maps Recognise a map is about a place	Use a simple picture map to move around the school Use picture maps and globes	Follow a route on a plan view map. Use an infant atlas to locate places Find land/sea on globe Use large scale OS maps	Use maps, Junior atlases and globes to locate and start to describe features Follow a route on a map with some accuracy (e.g whilst orienteering) Use large scale OS maps	Use the contents and index of a Junior atlas Follow a route on a large scale map. Use large and medium scale OS maps Use oblique and aerial views	Use maps and atlases, globes and digital/computer mapping to locate and describe features Use index and contents page within atlases Compare maps with aerial photographs. Find/recognise places on maps of different scales. (E.g. river Nile) Use medium scale land ranger OS maps	Follow a short route on an OS map. Describe features shown on OS map. Explain how types of map give different perspectives / show prejudice (e.g. the Peters Projection)
			Use simple grid references to locate squares on a map (e.g. A1, D7)	Use 4 figure grid references to build knowledge (number/letter)	Start to use 6 figure grid references Confident use 4 figure grid references to build knowledge (number/letter)	Use six figure grid references to build knowledge	Use latitude and longitude on atlas maps. Recognise world map as a flattened globe

	Discuss perspective when looking at map of outside area	Use relative vocabulary (e.g. bigger/smaller, like/dislike)	Begin to spatially match places (e.g. recognise UK on a small scale and larger scale map)	Work out simple distances from a map (e.g. aerial distance, or along a straight road)	Use scale to reasonably estimate distances (e.g. along waterways /roads)	Relate differently scaled maps to each other	Use a scale to measure distances.
					Start to explain ideas using a thematic approach to maps	Explain ideas using a thematic map for reference	Confidently use distribution/thematic maps to illustrate an idea or discussion
Draw maps / plans	Drawing basic map as part of topic	Draw around objects to make a plan Draw picture maps of imaginary places and from stories	Draw a simple map of a real or imaginary place. (e.g. add detail to a sketch map from aerial photograph) Look down on objects to make a plan view map	Create a sketch map (e.g. of a short route, or a building plan with simple symbols) with features in the correct order Begin to draw a sketch map from a high viewpoint Start to draw to scale (positive integer scaling and simple correspondence linked to maths)	Make a map of a short route experienced, with features in correct order Draw a sketch map from a high viewpoint Make a simple scale drawing Create a scale bar Draw cross-sections (harder integer correspondence linked to maths) Draw a map or plan from a description	Start to draw thematic maps based on their own data Draw a sketch map using symbols and a key Draw a plan view map with some accuracy Create a map from FW measurements Scale by simple fractions	Design and draw distribution/thematic maps based on their own data Begin to draw plans of increasing complexity Draw a plan view map accurately
Digital maps		With support, do a simple location or post- code search online	Use digital technologies: <i>zoom</i> <i>in/out on a map</i> Begin to highlight and annotate digital maps	Start measuring distance on Digimaps 'Zoom' for purpose and explain the scale Annotate digital maps with text/labels	Accurately measure distance, including non- linear distances Annotate digital maps with markers, text, photographs, hyperlinks etc Use digital maps for a purpose (e.g. select, 'screengrab' & paste into .pub/.ppt/.doc	Use linear and area measuring tools Start to use digital maps (and selections from them) at different scales, to illustrate a point)	Use linear and area measuring tools accurately Use careful selections from digital maps to illustrate points verbally (e.g. within .ppt) or in written form (e.g. .pub, .doc)
Charts and graphs (Maths NC)		Tallies and simple tables	Pictograms, tally charts, block diagrams, simple tables	Bar charts (e.g. not blocks); use more complex tables	Time graphs and other graphs Use discrete data and continuous data	Complete and interpret tables, including timetables Calculate the mode and range	Read, interpret and use pie charts and line graphs Calculate the mean

Use images	Use photographs and recognise places from their photograph	Explain the difference between image types e.g. photo, drawing Use photographs (incl aerial photos) to recognise basic features (e.g. school on satellite view)	Start to understand the purpose of different image types Use aerial photographs and plan perspectives to recognise landmarks and basic features	Begin to use aerial and oblique photographs Understand and explain the reliability / purpose of different picture types	Compare the context & purpose (reliability) of different photographs Use digital technologies to alter photos/images Use satellite images, oblique and aerial photographs	Use digital technologies to photos/images explain the imp reliability)
2. Fieldwor	k and Practical Skills	·	·	·	·	•
Use a compass		Use NSEW for simple navigation e.g. in a rectilinear maze in the playground	Use NSEW to describe locations and routes on a map	Start to use eight points of a compass and link to magnets and poles Use 4 compass points to follow /give	Confidently use the eight points of a compass	Convert betwee compass points azimuth bearin
		Describe position, direction and movement (Up, down, left/right, forwards/backwards)	Connect idea of turns to right angles	directions Start to use idea of degrees to measure turns	Use concepts of acute/obtuse angles, i.e. increasingly understanding turns	Draw angles up
Observe / measure	Make observations about where things are e.g. within school.	Begin to use first-hand observations about where things are e.g. within school or local area. using senses	Use first-hand observations	Start to evaluate own observations, and compare them with others'	Evaluate own observations and compare them with others'	Collect and reco evidence unaid
	Investigate their surroundings		Make appropriate observations about why things happen.	Start to estimate length and distance	Make reasonable estimations of length and distance; start to estimate mass, capacity and angle	Estimate length distance, mass, capacity, angle, estimate tempe and area Measure straig distance on a p
	Children use everyday language to talk about size, compare quantities and objects	Measure to nearest 10cm, e.g with metre stick painted in 5cm blocks	Measure to nearest cm and g. Use litres and °C for temperature	Measure to nearest mm, nearest 10ml, and 45° for angle Convert between units e.g. m to cm	Start to understand inches and miles, stone and pounds, Fahrenheit	Measure angles nearest degree Use approximate equivalences be metric and imp
			Scales in divisions of ones, twos, fives, tens where the numbers are given	Start to understand the concept of area Use scales in ones, twos, fives and tens where numbers may be missing	Understand the concept of area Use more complex scales where some numbers may be missing	Calculate area, understand vol

alter and act (e.g.	Carefully select images for a purpose (e.g. as evidence, or to show reliability)
en eight and gs	Show awareness of the 16- point compass rose, and compass quadrant bearings
to 360°	
ord ed	Collect and record evidence unaided
n, ; start to erature ht line	Make reasonable estimations of length, distance, mass, capacity, angle, area and temperature
lan.	
s to the	
te etween erial	Fluency with converting units, including between metric and imperial
stat to ume	Calculate area and volume

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Locate		Use simple locational	Use simple locational	Secure use of left and			
		language to describe	language (secure use of	right from any			
		(e.g. near, far, NSEW)	left/right from own	perspective (e.g. with			
			perspective)	an upside-down map)			
				Locate places on larger			
				scale maps			
Record		Make simple	Make sophisticated	Begin to collect and	Take quantitative and	Start to group	Group and redraft
		recordings e.g lists tallies and simple	recordings e.g. frequency tables	record evidence	qualitative notes about observations	observations and collected data while in	observations in the field into useful formats like tables,
		tables where the		Tales simals astes i s	Chart to include	the field, into complex	diagrams, flow charts,
		template is given		Take simple notes I.e.	Start to include	tables, alagrams and	sketches, jottea graphs
				using appreviations,	continuous aata	JIOW CHARTS	Marke entrylations in the field
				deliberate misuse of	Males simple		Make calculations in the field
				grammar etc.	IVIAKE SIMPLE		. <i>e.g</i> mean averages
				Use sketch maps,	field		
				cubdivided lists atc			
				Subulvided lists etc			
2 Acadomia							
3. Academic	SKIIIS	1	1	1	I	I	
Ask questions	Teacher led enquiries,	Ask and answer simple	Show curiosity by	Begin to ask/initiate	Ask and respond to	Begin to suggest	Suggest questions for
	to ask and respond to	questions about what	voluntarily asking	geographical questions.	questions and offer their	questions for	investigating
	simple closed	they have seen or	questions about what		own ideas.	investigating	
	questions	heard	they have seen, heard	Start to frame			Regularly ask and answer
			or read	questions and answers	Ask and answer	Ask and answer	perceptive questions in
				in Geographically valid	Geographically valid	Geographically valid	Geographically valid ways
				ways (eg about	questions (eg about	questions (eg about	
				change/difference)	cause and effect,	significance, relevance,	
					reliability, change	reliability,	
Discern			Start to make	Select information	Note connections,	Explain the usefulness,	Thoughtfully organise
relevance			selections, eg from or	according to relevance	contrasts and trends and	reliability and	information by relevance, and
			within sources of	(i.e. spot the 'main'	use these to order by	relevance of	politely critique others
			information	landmarks)	relevance	information	
							Analyse evidence and draw
				Analyse evidence and	Analyse evidence and	Analyse evidence and	conclusions e.g. from field
				begin to draw	draw conclusions e.g.	draw conclusions e.g.	work data on land use
				conclusions e.g. make	make comparisons	compare historical	comparing land
				comparisons between	between locations	maps of varying scales	use/temperature, look at
				two locations using	photos/pictures/maps	e.g. temperature of	patterns and explain reasons
				photos/ pictures,		various locations -	behind it
				temperatures in		influence on	
				different locations.		people/everyday life	
						Coloct o man from	
						Select a map for a	
						Specific purpose. (E.g.	
						Taiwan OS man to find	
						legal village	
						local village.)	

Use sources (from History NC)	Use information pictures as sources of information.	Explain the difference between fiction and non-fiction Use information books/pictures as sources of information.	Identify ways that	Explain the difference between primary and secondary data Use NF books, stories, atlases, pictures/photos and internet as sources of information.	Recognise that	Begin to use primary and secondary sources of evidence in their investigations. Begin to use atlases to find out about other features of places. (e.g. find wettest part of the world) Begin to explain how	Use primary and secondary sources of evidence in their investigations. Use atlases to find out about other features of places. (e.g. mountain regions, weather patterns) Start to understand the idea of 'tertiary' sources data Explain and critique the way
		ways we can find out about the world (eg books, museums, atlases, photographs)	and represented (eg fiction, images, maps)	are different ways to represent Geographical information, and that these might inform opinions and beliefs	vary depending on the source, and begin to suggest reasons for this	are often interpreted to support opinions	and interpreted to support opinions
4. Vocabula	ary	· · ·					
for Skills and Fieldwork	Children use everyday language for position and distance	map compass point direction N S E W near far up down far further high(er) underneath centre, (quarter/half) turn, (anti-)clockwise position direction (from Maths NC) see sight smell hear etc (from Sci NC)	atlas key symbol scale environment surroundings left right beyond contains further furthest higher lower route map plan mass weight capacity volume set square (from Maths NC)	atlas globe grid reference NE SE SW NW area contour (square miles etc) <i>population</i> parallel <i>coordinates</i> <i>easting</i> northing degrees, acute & obtuse angle (from Maths NC)	sort classify property base spherical cylindrical (and other 3D shapes for FW description) concave convex symmetrical reflect construct sketch protractor translation rotation survey questionnaire interpret (from Maths NC)	diagonal protractor, reflex angle, rotation symmetry <i>(from Maths</i> <i>NC)</i>	NNE ENE ESE etc (16 point compass rose isn't official at primary) radius diameter circumference concentric arc intersecting plane cross- section (for FW descriptions, from Maths NC)
for Locational Knowledge	Children know about similarities and differences in relation to places, objects, materials and living things	Europe Africa Asia, North & South America, Antarctica Australia Pacific Atlantic Indian Arctic Antarctic (Southern) England London Scotland Edinburgh Wales Cardiff, Northern Ireland, Belfast	Continent Alternatives: Australasia Oceania Sahul Zealandia Eurasia, Afro-Eurasia Oceans: N & S Atlantic Irish Republic/Eire (Dublin) Seas: English Channel, North Sea, Irish Sea, Celtic Sea	Regions: North East, North West, Yorkshire and the Humber, West Midlands, East Midlands, East Anglia, (Greater) London, South East, South West Orkney Shetland Hebrides archipelago authority council government borough district administration municipality Arctic Circle, Antarctic Circle, tropics/tropical hemisphere (from Maths NC)	time zone federation union autonomy sovereign state province Name and locate European countries and capitals Name and locate Russia, Moscow, St Petersburg Name and locate (with their capitals): Canada USA (also New York, San Francisco, LA) Mexico Brazil Argentina Panama isthmus Identify location of China Japan Australia India Pakistan Israel Egypt Nigeria Kenya, South Africa	latitude longitude Equator, N&S Hemisphere, Tropics of Cancer & Capricorn, Prime/Greenwich Meridian Name and locate remaining countries and capitals of the Americas Identify countries and cities on other continents that are of interest to children eg Bangladesh Indonesia Malaysia Singapore, New Zealand, Madagascar	Name and locate countries/cities on other continents that might be / have been in the news: Afghanistan Iran Iraq, Saudi Arabia, Yemen, North & South Korea, Hong Kong, Zimbabwe Sudan

for Place Knowledge	Talk about features of their own immediate environment	area same different point Learn names of some places within/around the UK. E.g. Home town, cities, countries e.g. Wales, France	similarity difference Locate and name on UK map major features e.g. London, River Thames, home location, seas	region, case study, contrast compare	trend	erosion	
for Human		city town village	office port harbour	settlement <i>locality</i>	economic activity, trade	distribution (of natural	economy, zone/sphere of
Geography		factory farm house shop weekend journey abroad capital country object	estuary bay channel material artificial natural	community culture energy renewable minerals function (inter)national canal waterway amount worth expensive million billion (i.e. for population but not in much detail yet; million is Y5 Maths NC, billion not at all)	links, land use, finance retail municipal industrial employment infrastructure, arable pastoral, mixed farming, carrying capacity, statistics contiguous impact settlement waste sewage pollution, sound pollution	resources etc) arrive depart statistics timetable, line graph, bar line chart, mode range maximum minimum outcome million (from Maths NC - so understand more than in Y3)	influence, demographic recurring quantities scale proportion ratio
for Physical Geography		beach cliff coast forest hill mountain sea ocean river soil valley continent month year season summer autumn winter spring weather hot cold desert (vaguely; i.e. more detail at Y3) rain gauge, wind sock, wind vane	vegetation seasonal daily (weekly monthly etc) fortnight January February (etc) island peninsula poles equator temperature thermometer habitat, life cycle, food chain, food web	rivers mountains, natural resources, characteristic climate zones, vegetation belts (forest, grassland, tundra, desert, ice sheet) climate soil tropical temperate igneous metamorphic sedimentary pressure heat crystals fossil organic	volcano earthquake epicentre zenith focus tectonic biome vegetation region dominant environmental anemometer barometer water cycle, precipitation evaporation condensation	topography erosion stock stack column cave cliff wave force friction gravity	adaptation evolution, survival of the fittest