

Physics Sticky Knowledge Progression



(KSVs to Sticky Knowledge and Vocabulary)

Year group / title / term				Physics Sticky Knowledge									
Year Groups	Lesson 1	Lesson 2	Lesson 3 Le	esson 4	Lesson 5	Lesson 6			Assessment	Vocabulary			
F1		It what they see and fee	el: the weather							sun, rain, cloud, wind, snow, turn,			
Ongoing	-	ow things work Wind-up toys								wind, twist, turn, water, up, down			
Ongoing	Explore as	- Cogs Explore and talk about different forces they can feel shes up when pushing an object down											
Pent 2													
F2	Seasonal Changes: Understan	nd the effect of changin	ng seasons on their natural v	world						weather, hot, cold, warm, hibernate,			
Ongoing	Exploring Forces									Autumn, Winter, Spring, Summer,			
	Explore th		vater and begin to group ob	jects into th	ose that float and those	e that sink				float, sink, wood, paper, plastic,			
Advent 2			nple pushes and pulls nets and how they attract s	ome objects	and not others					attract, not attract, magnetic, metal,			
Lent 2										magnet			
Y1	<u>Autumn</u>		<u>Winter</u>		Spring		<u>Summer</u>			Autumn			
	Observe changes	across the four	Observe changes acro	ss the	Observe changes a	cross the		anges across		Winter			
Seasonal	seasons.		four seasons.		four seasons.		the four sea	asons.		Spring			
Changes	Observe and desc	th			Observe and descri	la a companie	01	al al a a a site a		Summer			
(All year)		ribe weather he seasons and how	Observe and describe associated with the se		associated with the		Observe an	a describe sociated with		Temperature Season			
	day length varies.		and how day length va		how day length var		the seasons			Season			
	day length valles.		and now day length va	ii ies.	now day length var	ics.	day length						
	K1 – Leaves chang	ge colour and drop	K2 – The temperature	becomes	K4 – In Spring, the I	eaves and	day icligati	anco.					
	from the deciduo		cold in Winter and the		blossom grow on th		K5 – You sh	ould never					
	Autumn.	ŭ	become darker much	•	trees.		look directl	y at the sun,					
							even with s	unglasses on.					
			K3 – In winter, we ofte										
			frost, snow, ice and ra	in.			K6 – During	the					

			Summer, we often have lots of sunshine. K7 – In summer, the temperature warms up and the days are lighter for longer.	
Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time. Ask questions such as: How do we know which season we are in?	Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time. Ask questions such as: How do we know which season we are in?	Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time. Ask questions such as: How do we know which season we are in?	Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time. Ask questions such as: How do we know which season we are in? Perform a simple investigation in order to understand that the Earth moves and as a consequence the sun changes position in the sky. Explain to someone what has been learned from an investigation they have been involved with and draw conclusions from the answers to the questions asked. Measures (within Year 1 mathematical limits) to help find out more about the investigations undertaken.	

- K1 Leaves change colour and drop from the deciduous trees during Autumn.
- K2 The temperature becomes cold in Winter and the days become darker much earlier.
- K3 In winter, we often have frost, snow, ice and rain.
- K4 In Spring, the leaves and blossom grow on the deciduous trees.
- K5 You should never look directly at the sun, even with sunglasses on.
- K6 During the Summer, we often have lots of sunshine.
- K7 In summer, the temperature warms up and the days are lighter for longer.

Y3	F2 – recap –	Compare how	Describe	Compare and	Notice that		Assessment	Force
	push and pull –	things move on	magnets as	group	some forces		Give children a	Friction
Forces and	floating and	different surfaces.	two poles.	together a	need contact		Selection of	Magnet
magnets	sinking			variety of	between two		magnetic and	Magnetic force
(Pentecost 1)			Observe how	everyday	objects, but		non-magnetic	Attract
	Explore forces		magnets	materials on	magnetic forces		materials.	Repel
	around us/		attract or	the basis of	can act at a		Children to	Poles
			repel each	whether they	distance.		group	Magnetic fields
			other and	are attracted			accordingly.	
			attract some	to a magnet,				
			materials and	and identify			Diagrams with	
			not others.	some			magnets and	
				magnetic			their different	
			Predict	materials.			poles. Children	
			whether two				to say whether	
			magnets will				they attract or	
			attract or				repel.	
			repel each				. 565	
			other,					
			depending on					
			which poles					
			are facing					
			are racing					
	Working	Working	Working	Working	Working			
	Scientifically	Scientifically	Scientifically	Scientifically	Scientifically			
	Keep an on-	Keep an on-going	Keep an on-	Keep an on-	Keep an on-			
	going record of	record of new	going record	going record	going record of			
	new scientific	scientific words	of new	of new	new scientific			
	words that they	that they have	scientific	scientific	words that they			
	have come	come across for	words that	words that	have come			
	across for the	the first time.	they have	they have	across for the			
	first time.		come across	come across	first time.			
ł	mot time.		Conne del 033	Conne del 033	mot time.			

							_
	Explain to a	for the first	for the first				
	partner why a test	time.	time.	Be prepared to			
	is a fair one.			change ideas as			
		Gather and	Be prepared	a result of what			
	Measure carefully	record	to change	has been found			
	(taking account of	information	ideas as a	out during a			
	mathematical	using a chart,	result of what	scientific			
	knowledge up to	matrix or tally	has been	enquiry.			
	Year 3) and add to	chart,	found out				
	scientific learning.	depending on	during a	Be confident to			
		what is most	scientific	stand in front of			
	Gather and record	sensible.	enquiry.	others and			
	information using			explain what has			
	a chart, matrix or	Present	Be confident	been found out.			
	tally chart,	findings using	to stand in				
	depending on	written	front of				l
	what is most	explanations	others and				
	sensible.	& include	explain what				
		diagrams.	has been				
	Use bar charts and	NA-1	found out.				
	other statistical	Make sense of					
	tables (in line with Year 3	findings and draw					
	mathematics	conclusions					
	statistics) to	which help					
	record findings.	them to					
	record illidings.	understand					
	Make sense of	more about					
	findings and draw	scientific					
	conclusions which	information.					
	help them to						
	understand more	Amend					
	about scientific	predictions					1
	information.	according to					
		findings.					1
	Amend predictions						l
	according to						1
	findings.						1
							1

- K1 A force is a push or pull that can make things change direction/speed.
- K2 Friction is a stopping force.
- K3 Magnets have two poles (north and south) and can attract or repel.
- K4 –Not all metals are magnetic.
- K5 The stronger the magnetic force the larger the magnetic field.

	ne stronger the mag	gnetic force the larger	the magnetic her	u.				
Y3	Recognise that	Notice that light is	Recognise	Find patterns			Assessment	Shadows
	they need light	reflected from	that shadows	in the way			Quiz	Light source
Light	in order to see	surfaces.	are formed	that the size			1.Why is it	Reflection
(Pentecost 2)	things and that		when the light	of shadows			important not	Opaque
	dark is the		from a light	change.			to look at the	Block
	absence of		source is				sun?	
	light.		blocked by an				2. How are	
			opaque	How does the			shadows	
	Identify light		object.	length of a			formed?	
	sources			shadow			3. Name 3	
				change during			surfaces that	
	Recognise that			a day?			light can be	
	light from the						reflected from.	
	sun can be						4. Explain how	
	dangerous and						the length of a	
	that there are						shadow	
	ways to protect						changes in	
	their eyes.						relation to the	
							height of the	
							sun.	
	Working	Working	Working	Working				
	Scientifically	Scientifically	Scientifically	Scientifically				
	Keep an on-	Keep an on-going	Keep an on-	Keep an on-				
	going record of	record of new	going record	going record				
	new scientific	scientific words	of new	of new				
	words that they	that they have	scientific	scientific				
	have come	come across for	words that	words that				
	across for the	the first time.	they have	they have				
	first time.		come across	come across				
		Use research to	for the first	for the first				
		find out how	time.	time.				
		reflection can help						
		us see things that	Ask questions	Observe at				
		are around the	such as:	what time of				
		corner.	Does the sun	day a shadow				

	Amend predictions according to findings.	is likely to be at its longest and shortest. To explain what has been found out, for example about how the shadow changes over the course of the day. Amend predictions according to findings.			
Sticky Knowledge					

- K1 Light from the sun can be dangerous and you should not look directly at it.
- K2 When a light source is blocked it forms a shadow.
- K3 Light is reflected from some surfaces.
- K4 When the sun is high in the sky, the shadows are short. When the sun is low in the sky, shadows are long.

 Recap Y3 Light | Construct a simple | Identify | Recognise |

14	Recap – 13 Light	Construct a simple	identity	Recognise			Assessment	series circuit
	sources – some	series circuit,	whether or	some				Cell
Electricity	need electricity	identifying and	not a lamp will	common			Name five	Wire
(Lent 1)		naming its basic	light in a	conductors			household	Bulb
	Identify	parts, including	series circuit,	and			appliances that	Appliance
	common	cells, wires, bulbs,	based on	insulators,			run on	Buzzer
	appliances that	switches and	whether or	and associate			electricity.	Switch
	run on	buzzers.	not the lamp	metals with				Conductor
	electricity.		is part of a	being good			Draw an	Insulator
			complete loop	conductors.			accurate simple	
			with a battery.				series circuit	
				Recognise			and label the	
				some			components.	
				common				
				conductors			From a given	
				and			set of diagrams	
				insulators,			– establish	
				and associate			whether the	

				this with whether or not a lamp lights in a simple series circuit.			series will work or not. From a given set of images – determine whether they are insulators or conductors and they will affect the circuit.	
Sc Ke gc ne w ha	Vorking cientifically deep an on- oing record of new scientific vords that they have come cross for the dirst time.	Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time.	which help them understand more about	Working Scientifically Keep an ongoing record of new scientific words that they have come across for the first time. Group information according to common factors e.g. materials that make good conductors or insulators. Use research to find out which materials make effective conductors and insulators				

		information	of electricity.			
		that has been	,			
		learned.				
		When making				
		predictions				
		there are				
		plausible				
		reasons as to				
		why they have				
		done so.				
		Able to amend				
		predictions				
		according to				
		findings.				
		Prepared to				
		change ideas				
		as a result of				
		what has been				
		found out				
		during a				
		scientific				
		enquiry.				
		. ,				
Sticky Knowled	σ _P					

- K1 Most household appliances run on electricity or batteries. Some can even be both, for example an alarm clock.
- K2 A simple series circuit needs a cell, two wires and a component, for example a bulb, in order to work.
- K3 A bulb will only light up if the series circuit creates a complete loop.
- K4 A switch will control whether a simple circuit is complete.
- K5 Insulators do not allow electricity to pass through them. Conductors allow electricity to pass through them.

Y4	Identify how	Recognise that	Find patterns	Find patterns	Recognise that		Assessment	Pitch
	sounds are	vibrations from	between the	between the	sounds get			Volume
Sound	made,	sound travel	pitch of a	volume of a	fainter as the		Describe how	Vibrations
(Pentecost 2)	associating	through a medium	sound and	sound and the	distance from		sounds are	Ear drum
	some of them	to the ear.	features of	strength of	the sound		made and how	Cochlea
	with something		the object	the vibrations	source		the ear can	Auditory
	vibrating.		that produced	that produced	increases.		hear them.	
			it.	it.				
							From a given	

	Modifie				set of images of instruments — order them according to pitch — low to high. Explain what the relationship is between volume and the strength of the vibration.	
Working Scientifically Keep an ongoing record new scientif words that thave come across for the first time. What do we mean by 'pit when it come to sound?	Keep an on-going record of new scientific words that they have come across for the first time.	Carry out tests to see,	Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time. Set up a fair test with more than one variable e.g. using different materials to cut out sound. Use bar charts and other statistical tables. Measure carefully (taking account of mathematical knowledge up to Year 4) and add to scientific learning. Gather and record information using a chart, matrix or tally chart, depending on what is most sensible.			

- K1 Sound is made from vibrations.
- K2 Vibrations create sound waves which travel through mediums (air, water) before reaching our ears.
- K3 The ear drums vibrate in a similar way to the original source of the vibration, allowing us to hear many different sounds.
- K4 The longer the object creating the sound, the higher the pitch.
- K5 The stronger the vibration, the louder the volume of the sound.

Y5	Recap Y3 Forces	Identify the effects	Identify the	Identify the	Recognise that		Assessment	Frictional force
		of air resistance	effects of	effects of	some			Gravity
Forces	Explain that	that acts between	water	friction that	mechanisms,		Label the	Air resistance
(Advent 1)	unsupported	moving surfaces.	resistance	act between	including levers,		forces acting	Water resistance
	objects fall		that acts	moving	pulleys and		on an	Levers
	towards the		between	surfaces.	gears, allow a		aeroplane.	Pulleys
	Earth because		moving		smaller force to			Gears
	of the force of		surfaces.		have a greater		Explain how air	Newton
	gravity acting				effect.		resistance	Streamline
	between the						affects the	
	Earth and the						speed and	
	falling object.						direction of a	
							moving object.	
							Explain how	
							streamlining	
							affects water	
							resistance.	
	Working	Working	Working	Working	Working			
	Scientifically	Scientifically	Scientifically	Scientifically	Scientifically			
	Keep an on-	Keep an on-going	Keep an on-	Keep an on-	Keep an on-			
	going record of	record of new	going record	going record	going record of			
	new scientific	scientific words	of new	of new	new scientific			
	words that they	that they have	scientific	scientific	words that they			
	have come	come across for	words that	words that	have come			
	across for the	the first time.	they have	they have	across for the			
	first time.		come across	come across	first time.			
			for the first	for the first				
	Use diagrams, as		time.	time.	Able to give an			
	and when		Canada anno	Cat a fain	example of			
	necessary, to		Create new	Set up a fair	something			
	support writing.		investigations which take	test when needed e.g.	focused on when supporting a			
	Use all		account of	which	scientific theory			
	measurements		what has been	materials	e.g. how much			
	as set out in		learned	create most	easier it is to lift			
	Year 5		previously.	friction?	a heavy object			
	mathematics		previously.	THE COOT!	using pulleys.			
	(measurement),		Is evaluative	Know what the	asing paneys.			
	including		when	variables are in				
	capacity and		explaining	a given				
	mass.		findings from	enquiry and				

Use other scientific when instruments as Clear about investigating e.g. finding out thermometer, rain gauge, spring scales (for enquiry and when made
instruments as needed e.g. thermometer, rain gauge, Clear about investigating e.g. finding out how effective brakes are
needed e.g. what has been thermometer, rain gauge, from recent thermometer brakes are
thermometer, rain gauge, from recent brakes are
rain gauge, from recent brakes are
spring scales (for enquiry and when made
Spring Scarces (101
measuring can relate this with different
Newtons). to other materials.
enquiries, Make
Create new where predictions
investigations appropriate. based on
which take information information
account of what Their gleaned from
has been explanations investigations.
learned set out clearly set out clearly
previously. why Their
something has explanations explanations
happened and set out clearly
its possible why
impact on something has
other things. happened and
its possible
impact on
other things.
Sticky Knowledge

- K1 Frictional force is any force that is caused due to friction e.g when you put on the brakes on your bike.
- K2 Gravity is the pulling force acting between the Earth and a falling object, for example when you drop something. Gravity pulls objects to the ground.
- K3 Air resistance is the force on an object moving through air e.g. a plane moving through the sky. Air resistance affects how fast or slowly objects move through the air.
- K4 Water resistance is the force on objects floating on or moving in water.
- K5 Levers, pulleys and gears allow a smaller force to have a greater effect.

Y5	Teach the	Describe the Sun,	Describe the	Describe the	Use the idea of		Using a given	Planet
	following	Earth and Moon as	movement of	movement of	the Earth's		diagram,	Orbit
Earth and	mnemonic for	approximately	the Earth, and	the Moon	rotation to		children to	Rotation
Space	learning the	spherical bodies.	other planets,	relative to the	explain day and		label the	Spherical
(Pentecost 2)	order of the		relative to the	Earth.	night and the		movements of	Gibbous moon
	planets		Sun in the		apparent		the Earth and	Crescent moon
	My Very		solar system.		movement of		moon relative	Waxing
	Excellent Mum				the Sun across		to the sun.	Waning
	Just Served Us				the sky.			Axis

Noodles.						Explain how day and night	
						occur and why	
						it looks like the sun moves	
						even though it	
						is stationary.	
Working Scientifically Keep an ongoing record of new scientific words that they have come across for the first time.	Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time. Frequently carry out research when investigating a scientific principle or theory.	Working Scientifically Keep an ongoing record of new scientific words that they have come across for the first time.	Working Scientifically Keep an ongoing record of new scientific words that they have come across for the first time. Able to present information related to scientific enquiries in a range of ways including using IT such as power- point and iMovie.	Working Scientifically Keep an ongoing record of new scientific words that they have come across for the first time.		is stationally.	

- K1 The Sun, Earth and Moon are spherical bodies.
- K2 The Sun is stationary.
- K3 The Earth rotates on its axis and takes 24 hours to complete one full rotation.
- K4 The Earth orbits the Sun and takes 365 days to complete one full orbit.
- K5 There are eight main phases of the moon.
- K6 Day occurs when the countries on earth are facing the sun. Night occurs when the countries on Earth are facing away from the sun.

Y6	Doggo VA	Compara and since	Compose seed	Compose seed			Accordence	Volts
10	Recap – Y4	Compare and give	Compare and	Compare and			Assessment	
E	simple circuits	reasons for	give reasons	give reasons			5 11	Filament
Electricity	and component	variations in how	for variations	for variations			Draw the	Short circuit
(Advent 1)	symbols.	components	in how	in how			component	Decibels
		function, including	components	components			symbols from a	Correlation
	Use recognised	the brightness of	function,	function,			given list:	
	symbols when	bulbs and the	including the	including the			Cell, bulb,	
	representing a	on/off position of	loudness of	power of			wires, buzzer,	
	simple circuit in	switches.	buzzers and	motors and			motor, switch	
	a diagram.		the on/off	the on/off				
		Associate the	position of	position of			How does the	
		brightness of a	switches.	switches.			amount of	
		lamp with the					components	
		number and	Associate the				added to a	
		voltage of cells	volume of a				simple circuit	
		used in the circuit.	buzzer with				affect it	
			the number				working?	
			and voltage of				Ü	
			cells used in				How does the	
			the circuit.				amount of cells	
			the on ourt.				added to a	
							simple circuit	
							affect it?	
							ancerie:	
	Working	Working Scientifica	ly					
	Scientifically	Keep an on-going re		tific words that				
	Keep an on-	they have come acro						
	going record of	,						
	new scientific	Know what the varia	bles are in a give	n enguiry and				
	words that they	can isolate each one	_	•				
	have come	San isolate eden one	e.rvestigati	.0.				
	across for the	Justify which variabl	e has heen isolate	ed in scientific				
	first time.	investigation.	e nas been isolati	La III Scientific				
	mst time.	investigation.						
		Able to record data	and present them	in a range of				
		ways including diagr		_				
		tables, scatter graph		• •				
				O. 040.				
		Make accurate pred	ictions based on i	nformation				
		gleaned from their in						
		investigations as a re	_	C. Cate Hev				
		investigations as a R	Juil.					

	Use all measurements as set out in Year 6			
	mathematics (measurement), including capacity,			
	mass, ratio and proportion.			
	mass, ratio and proportion.			
	Able to present information related to scientific			
	enquiries in a range of ways including using IT such			
	as power-point, animoto and iMovie.			
	Use a range of written methods to report findings,			
	including focusing on the planning, doing and			
	evaluating phases.			
	Clear about what has been found out from their			
	enquiry and can relate this to others in class.			
	Explanations set out clearly why something has			
	happened and its possible impact on other things.			
	Aware of the need to support conclusions with			
	evidence.			
	Use diagrams, as and when necessary, to support			
	writing and be confident enough to present findings			
	orally in front of the class.			
	Frequently carry out research when investigating a			
	scientific principle or theory.			
Sticky Knowledge	s are used to represent components in a circuit			

- K1 Recognised symbols are used to represent components in a circuit.
- K2 The more components that are added to a simple series circuit, the weaker the components will be.
- K3 The more cells that are added to a simple series circuit, the stronger the components will be.

Y6	Recap from Y3	Water (pencil) and	Explain that we see things	Use the idea	Assessment	Periscope
	Light	refraction.	because light travels from light	that light travels		refraction
Light			sources to our eyes or from	in straight lines	Label the key	Pupil
(Advent 2)	Recognise that		light sources to objects and	to explain why	parts of the	Lens
	light appears to		then our eyes.	shadows have	eye.	Cornea
	travel in			the same shape		Retina
	straight lines.		Periscope.	as the objects	Explain how we	Optic nerve
				that cast them.	light travels	cast

Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye.			e.g. a sharper light gives a sharper shadow. A dim light gives a blurred shape etc.		and how we see things. What shape do shadows cast?	
time. Set up a fair test Know what the v investigating. Justify which vari Able to record da classification key Make accurate p create new inves Use all measurer mass, ratio and p Able to present in IT such as power Use a range of w doing and evaluat Clear about what class.	when needed e.g. does ariables are in a given entable has been isolated in a given entable has been isolated in a and present them in s, tables, scatter graphs redictions based on infortigations as a result. Interportion and information related to solution and information related to solution and information and information phases. It has been found out from	light travel in straight lines? Inquiry and can isolate each one was scientific investigation. In a range of ways including diagram and bar and line graphs. In mathematics (measurement), in ientific enquiries in a range of ways including on the important of the important investigation.	when ms, labels, stigations and ncluding capacity, ays including using the planning, his to others in			

Aware of the need to support conclusions with evidence.			
Use diagrams, as and when necessary, to support writing and be confident enough to present findings orally in front of the class.			
Frequently carry out research when investigating a scientific principle or theory.			

- K1 Light travels in straight lines.
- K2 Objects are seen because they give out or reflect light into our eyes.
- K3 Shadows have the same shape as the objects that cast them.
- K4 The closer an object is to the light source, the larger the shadow it casts because it will block a larger area of the light, increasing its shadow size.