Science at Teignmouth Primary School



We want our pupils to be curious about how the world works. They should accumulate key knowledge and conceptual understanding of Biology, Chemistry and Physics through different types of scientific enquiry, first-hand experience and classroom learning. They should understand and articulate how scientific concepts shape the world that they live in today and will affect the future. We want them to understand how their own actions impact their immediate environment and the wider world.



At Teignmouth Primary School we recognise the importance of Science in every aspect of daily life. As one of the core subjects taught in Primary Schools, we aim to give the teaching and learning of science the prominence it requires.

Science is the way we increase pupils' knowledge and understanding of our world. It is also the way we develop skills associated with science as a process of enquiry – a systematic way of approaching, asking and testing out questions. Science develops the natural curiosity of children, encourages respect for living organisms and the physical environment and provides opportunities for critical evaluation of evidence. These concepts link well with our Green Behaviours. Through linking science with outdoor learning, we show that science isn't just an abstract, academic discipline. It is what makes our world work in the ways that it does. We aim to show children, through these links, that science is all around us, all the time, and that we can understand ourselves and our world better through science. We can also ask better questions and answer them with more confidence if we have a scientific approach.

At Teignmouth Primary School, alongside the aims of National Curriculum, our science teaching offers opportunities for children to:

- develop scientific knowledge and conceptual understanding
- see that science happens outside of the classroom and how it applies to the real world outside
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them;
- be equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.
- develop the essential scientific enquiry skills to deepen their scientific knowledge.
- Use a range of methods to communicate their scientific information and present it in a systematic, scientific manner, including I.C.T., diagrams, graphs and charts.
- Develop a respect for the materials and equipment they handle with regard to their own, and other children's safety.
- Develop an enthusiasm for and enjoyment of scientific learning and discovery.

EYFS

We want Teignmouth Primary School pupils to ask questions about the world around them and talk about what they see and experience first-hand. We want them to show care and concern for living things and their environment. We want to them to begin to develop an awareness that simple, observable things, processes and changes are linked to larger scientific concepts. Science isn't taught as a separate subject in the EYFS but 'science seeds' are sown through many areas of the EYFS curriculum, especially Understanding the World – The Natural World. These 'seeds' will develop into more subject-specific science skills and knowledge as the children move up the school.

KS1

Teignmouth Primary School pupils will observe and experience the world around them through first hand observation and practical investigations. We want them to show curiosity - to ask and answer their own questions through scientific enquiry and use scientific terminology to communicate their ideas and findings. We want them to develop an awareness of the impact that they have on their immediate environment and thus on the wider world.

Lower KS2

Pupils will begin to broaden their scientific view of the world by exploring relationships and interactions (for instance, between everyday phenomena such as magnetism and sound), by studying living things and the environment and how they can have an impact on these. They will discuss, test and develop their own methods for investigating questions and preconceptions, including comparative and fair tests. They will use scientific terminology to draw and explain conclusions both verbally and in writing.

Upper KS2

Teignmouth Primary School pupils will deepen their understanding of scientific concepts. They will recognise how this helps them to predict and understand how the world operates through more abstract concepts. They will ask questions about scientific phenomena (such as light and electricity) and will be able to analyse these more systematically. They will know that scientific concepts, including their own, can change and develop over time. They will make independent investigation choices and present observations and finding in a variety of ways. They will understand that humans have both positive and negative impacts on the environment and how they can act sustainably for the future.

What Science is taught at Teignmouth Primary School?

This is an overview of what the year groups will cover in our 2-year rolling programme.

Our green behaviours are woven through the topics for each year group and can be seen on the curriculum maps.

Year A

	EYFS	Years 1 and 2	Years 3 and 4	Year 5/6
Autumn 1	Seasonal changes Observing Change	Living things and their habitats Learn about habitats, what they are and what lives in them. Learn what is living, dead and has never been alive. Identify plants and animals and learn what they eat.	<u>Electricity</u> Investigate simple series circuits using cells, buzzers, bulbs, switches and wires. Investigate insulators and conductors. Investigate switches and open/closed circuits.	<u>Animals including Humans</u> Investigate changes as we age.
Autumn 2	Seasonal changes Observing change Light and Dark	<u>Animals including Humans</u> Learn about the basic needs of animals, including humans, for survival, and that all animals have offspring that grow into adults	<u>Sound</u> Learn about how sounds are produced. Investigate patterns in pitch, volume, shape of objects, strength of vibrations and distance.	Properties and Changes in Materials Investigate reversible and irreversible changes. Investigate dissolving, mixing, filtering. Investigate chemical changes.
Spring 1	Seasonal changes Observing change Describing materials and textures	<u>Uses of everyday materials</u> Investigate the uses of everyday materials and what they are suitable for. Learn how some materials can be changed by bending, squashing etc.	<u>Electricity</u> Investigate simple series circuits using cells, buzzers, bulbs, switches and wires. Investigate insulators and conductors. Investigate switches and open/closed circuits.	<u>Forces</u> Investigate gravity, air resistance, water resistance and friction. Investigate the effects of pulleys and levers
Spring 2	Seasonal changes Observing change What do minibeasts eat? Mini beats from around the world. SRE week	<u>Plants</u> Learn that plants grow from seeds or bulbs and what plants need to grow healthily.	<u>Animals including Humans</u> Learn about teeth, the digestive system and food chains,	<u>Living things and their habitats</u> Investigate lifecycles in mammals, amphibians, insects and birds. Investigate reproductive processes in animals and plants.
Summer 1	Seasonal changes Observing change Growth and change	Living things and their habitats - revisit Learn about habitats, what they are and what lives in them. Learn what is living, dead and has never been alive. Identify plants and animals and learn what they eat. Look at different plants, animals and habitats	Living things and their habitats Investigate grouping and classifying living things. Learn that environments can change.	<u>Properties and Changes in Materials -revisit</u> Investigate reversible and irreversible changes. Investigate dissolving, mixing, filtering. Investigate chemical changes.
Summer 2	Seasonal changes Observing change – who eats who Floating and sinking	<u>Plants - revisit</u> Learn that plants grow from seeds or bulbs and what plants need to grow healthily – see how seeds have grown!	<u>States of Matter</u> Learn about solids, liquids and gases – what they are and why they occur. Learn about changes of state and evaporation and condensation in the	<u>Earth and Space</u> Learn about the Sun, the Earth, the Moon and the solar system. Learn that the planets are spherical and about their movements. Learn that the Earth's rotation explains day and night.

Year B

	EYFS	Years 1 and 2	Year 3/4 and 4	Year 5/6 and 6
Autumn 1	Seasonal changes Observing Change Respect and care for the natural environment	<u>Plants</u> Identify and name common wild and garden plants, Learn about the structure of flowering plants and trees. Seasonal changes will be taught all year	<u>Plants</u> Identify and describe the functions of different parts of flowering plants. Explore the requirements of plants for life and growth and how they vary from plant to plant.	<u>Animals including humans</u> Learn about the human heart and the circulatory system. Explore diet and exercise and how nutrients are transported within the body.
Autumn 2	Seasonal changes Observing change Light and Dark	Everyday materials. Identify materials and realise that objects are made from different materials Describe and group materials based on their properties. Investigate which materials are better at keeping us warm.	Animals Including Humans Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat.	Light Learn about light, how it travels and how it enables us to see. Find out about shadows.
Spring 1	Seasonal changes Observing change Describing materials and textures	Animals including humans. Identify and name common animals. Identify carnivores, herbivores and omnivores. Learn about the structure of birds, mammals and reptiles. Learn the names of body parts and senses associated with them.	<u>Forces and Magnets</u> Investigate magnets and magnetism; that magnets can exert force at a distance, that they have poles, that poles can attract or repel. Group materials according to whether they are attracted to magnets. Investigate how things move on different surfaces.	Evolution and Inheritance Learn about how living things have changed over time and how inheritance and adaptation lead to evolution.
Spring 2	Seasonal changes Observing change What do minibeasts eat? Mini beats from around the world. SRE week	Everyday materials revisited Investigate why some materials float and some don't. Investigate why boats can float when made out of materials that sink.	<u>Rocks</u> Find out about different types of rocks and compare their properties. Discover how fossils are formed and find out about soils.	Living things and their habitats. Describe how to classify living things, including microorganisms. Give reasons for how we classify things. Find out about the discoveries of Alexander Fleming
Summer 1	Seasonal changes Observing change Growth and change	<u>Plants revisited</u> Identify and name common wild and garden plants, Do we see the same ones s we did in the autumn? Do they look the same? Why or why not?	Light Learn about light, how it travels, how it allows us to see and how shadows are formed.	Light revisited Revisit the shadow investigations that we did earlier in the year. Do we get the same results? Why or why not?
Summer 2	Seasonal changes Observing change – who eats who Floating and sinking	Animals including humans revisited. Identify and name common aquatic animals and amphibians. Identify aquatic carnivores, herbivores and omnivores. Learn about the structure of amphibians and fish and compare them to other animals we have learned about.	<u>Plants revisited</u> Do plants look different at this time of year compared to in the autumn? How? Why is this? Do they grow better at this time of year? Why do we think that is?	<u>Electricity</u> Learn how to use electrical symbols for circuit diagrams. Investigate and explain variations in how electrical components function including the effect of multiple cells.

Science Green Behaviour Curriculum Map

This is how our green behaviours link into our science curriculum

	<u>Curiosity</u>	<u>Responsibility</u>	<u>Respect</u>	<u>Resilience</u>	<u>Independence</u>	<u>Honesty</u>
<u>EYFS</u>	They make observations of animals and plants		children know about similarities and differences in relation to places, objects, materials and living things.			
<u>KS1</u>	enable pupils to experience and observe phenomena encouraged to be curious and ask questions about what they notice.	performing simple tests	identifying and classifying	recognising that they can be answered in different ways	using different types of scientific enquiry use simple scientific language	gathering and recording data to help in answer questions
<u>LKS2</u>	broaden their scientific view of the world around them exploring everyday phenomena They should ask their own relevant questions about what they observe observing changes over time	setting up simple practical enquiries, comparative and fair tests	identifying differences, similarities or changes related to simple scientific ideas and processes	make some decisions about which types of scientific enquiry are likely to be the best ways of answering them	use some scientific language, first, to talk about and, later, to write about what they have found out.	They should draw simple conclusions using straightforward scientific evidence to answer questions or to support their findings.
<u>UKS2</u>	develop a deeper understanding of a wide range of scientific ideas exploring and talking about their ideas; asking their own questions about scientific phenomena	carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information	begin to recognise that scientific ideas change and develop over time	select the most appropriate ways to answer science questions using different types of scientific enquiry identifying scientific evidence that has been used to support or refute ideas or arguments.		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.

Science Vocabulary

Working Scientifically	Plants	Animals including humans	Everyday materials	Seasonal changes
Questions	Names of locally found garden plants	Names of common animals – fish, birds etc.	Object	Season
Answers	/ wild plants	Meat-eaters	Material	Autumn
Equipment	/ flowering plants / trees	Plant feeders	Wood	Winter
Results	Vegetable	Habitat adaptation	Plastic	Spring
Sort	Name of plants/vegetables grown	Wild animals	Glass	Summer Weather
Explore	Leaf / leaves	Pets	Metal	Names of common weather features
Observe	Flower	Senses	Solid	Days
Similar	Blossom	Hear/hearing	Liquid	Hours
Similarities	Petal	See/seeing	Gas	Months Light
Egg timers	Fruit	Touch / touching	Water	Dark
Ruler	Berry Root	Taste/tasting	Rock Rough smooth	Shadow Moon movement Day
Tape measure	Bulb	Body parts	Bright / shiny	length
Metre stick	Seed	Mouth	Dull / dim	
Beaker	Trunk	Head	Absorbent	
Measure	Branch Stem stalk Wild plants	Body	Waterproof	
Record	Garden plants	Neck	Bendy	
Group	Flowering plants	Arms	Stiff	
Test	Deciduous	Eyebrows	Soft	
Compare	Evergreen	Eyelashes	Hard	
Describe	Bark	Legs	Squashing	
Different		Elbows	Stretching	
Differences		Knees	See through	
Collect Evidence		Face	Names of common materials	
Data		Eyes	Textures (describing words for	
Table		Ears	different textures)	
Chart		Teeth	Reflection	
Classify		Wing	Properties	
Identify		Claw	Transparent	
Observe changes of time		Tail	Opaque	
Notice patterns		Beak	translucent	
Notice relationships		Fur		
Secondary sources		Feather		
Hand lenses		Fin		
Communicate		Scales		
		Amphibians Invertebrate		
		Reptiles		
		Mammals		
		Carnivores predator prey		
		Herbivores		
		Omnivores		

Working scientifically	Living things and their	Plants	Animals including	Use of everyday
	habitats		humans	materials
Scientific enquiry	Living	Seedling	Adult	Man-made
Similarities	Alive	Growth	Young	Natural
Differences	Dead	Healthy	Baby	Describe features of change
Observations	Move	Water	Toddler	– pushing / pulling
Keys	Grow	Light	Child	Suitable
Bar charts	Breathe	Mature plant Temperature	Teenager	Use / useful Characteristics
Thermometer	Have young	Shoot	Grow	Properties
Data logger	Needs	Fully grown	Offspring	Rigid
Changes over time	Heat	Wither	Survival	Flexible
Identify	Habitats	Soil	Basic needs – water, food, air	Strong
Classify	Conditions	Earth	Food types	Weak
Evidence	Adaptation	Hot/cold Nutrients	Hygiene	Reflective
Conclusion	Food chain	Germinate / germination	Infection	Non-reflective
Prediction	Name micro-habitats	Pollination	Exercise	Transparent
Magnifying glass	–log, bush Describes conditions	Seed dispersal	Unhealthy	, Opaque
Microscope	–damp, dark etc	Bark	Reproduction	Translucent
Comparative tests	Food chain		Life cycle	Shape
Fair test	Carnivore invertebrate Herbiyore		Heart rate	Changes
Careful	Omnivore		Nutrition	Suitability
Present	Name local habitats – pond,			, purpose
Data	life processes			1 1
Results	Reproduce			
Support/Not support	Respire			
Systematic	Excrete Producer predator prev			
Accurate	Consumer			
Disprove	Sources of food			
Notice relationships	Seashore			
Notice relationships	Rainforest			
	Micro-habitat			
	Conditions			
	Depends on/suited to			

Working	Plants	Animals including	Rocks	Light	Forces and Magnets
scientifically		humans			
Scientific enquiry	Part	Nutrition calorie	Rock	Light	Force
Similarities	Role	Nutrients processed	Stone	Light source	gravity
Differences	Temperature	Dietary fibre	Pebble	Names of light sources,	Push / pull
Observations	Absorb	Balanced diet	Boulder	torch etc	Direction of force Air
Keys Daw also ante	Soil	Carbohydrate sugar	Absorb water	Dark / darkness	resistance streamlined
Bar charts	Well-drained	Protein	Let water through	Reflect	Float / sink
	Fertiliser	Vitamins	Soil	Reflective	Friction
Changes over time	Nutrients	Minerals	Fossil	Mirror	Force-meter
Identify	Plant life cycle	Fat	Grains	Shadow	Magnet
Classify	Transported	Skeleton	Crystals	Block / absorb	Magnetic force
Evidence	Pollination	Muscles	Layers	Direction of light	Strength
Conclusion	Seed formation	Support	Texture lava	Transparent	Attract
Prediction	Seed dispersal Structure	Protection	Molten magma	Opaque	Repel
Magnifying glass	Function	Movement	Name properties of	Translucent	Poles
Microscope	Plant tissues	Brain	such as hard, soft	Bright	North pole
Comparative tests	Pores	Blood vessels	Name common	Dim Light beam sunlight	South pole
Fair test	Competition for	Heart	rocks/soil	Speed of light	Bar magnet
Dresent	resources	Skull	types, marble, chalk,	Emit	Ring magnet
Data	Organic	Ribs	clay, sandy Erosion	Light spectrum	Button magnet
Results	Camouflage	Spine Vertebrates	Strata		Horse-shoe magnet
Support		Invertebrates	Particles		Name common
Not support	Climate	Endoskeleton	Physical properties		magnetic and non-
Systematic	Conservation	exoskeleton	Porous		magnetic materials
Accurate	Habitat	Backbone	Permeable /		Constant force
Disprove	Species	Joints	impermeable		Non-constant force
Notice relationships		Sockets	Liquid		Newton meter
Pressure		Bones	Solid gas		Newton
		Tendons			

Working	Forces and	Living things	Animals including	States of matter	Sounds	Electricity
scientifically	Magnets	and their	humans			
		habitate				
	-		Disection			
Increase	Force	Classification keys	Digestive system	Air	Sound	Electricity
Decrease	Gravity	Environment	Saliva	Oxygen	Sound source	Electrical device /
Accurate	Mass	Fish	Oesonhagus	Powder	Noise	appliances
Appearance	mineral	Reptiles	Stomach	Grain / granular	Vibrate / vibration	Mains
Notice	Push / pull	Amphibians	Small intestine	Changes state	Travel	Plug
relationships	Direction of force	Mammals	Large intestine	Gaseous	Sound wave	Components
Systematic	Air resistance	Birds	Absorb into blood stream	Particles	Pitch	Conductor
Disprove	streamlined Float /	Vertebrates	Swallowing	Water vapour	Volume	Insulator
	sink	Invertebrates	Chewing	Water cycle	Loud / quiet	Circuit
	Friction	Human impact	Rectum Anus	Heating /cooling	Tune	symbol
	Force-meter	Plant groups (trees,	Faeces	Degree Celsius	High / low	Cell
	Magnet	grasses, flowering	Consumer Des de terre anni i serre de seleiteres	Melt	Echo	Battery
	Magnetic force	and non-flowering	Predator carnivore nerbivore	Freeze	Tuning fork	Wire
	Strength	plants)	Prev	Boil	Insulation insulator	Bulb
	Attract	invertebrates	Producers	Evaporation	Instrument	Switch
	Repel	Organism	Canines	Condensation	Percussion	Buzzer
	Poles	Population	Incisors	Energy transfer	String	Motor Connection Electrical
	North pole	Deforestation	Pre-molars	Solidify	Brass	/ simple circuit
	South pole	Development	Molars	Boiling point	Woodwind	Complete circuit
	Bar magnet	Pollution	Cavities	Precipitation	Tunes instrument Strength	Closed circuit
	Ring magnet	Positive human	Dentine	Transpiration	of vibrations Reflection of	Open circuit
	Button magnet	impact	Plaque	Forces of attraction	sound	Positive
	Horse-shoe magnet	Negative human	Pulp-cavity		Absorb	Negative
	Name common	impact	Tooth decay		Cochlea	Crocodile clip
	magnetic and non-	Variation	Gums		Decibel	Series circuit terminal
	magnetic materials	characteristics	Nerves		Ear canal/drum	
	Constant force	Camouflage	Enamel		Ossicles	
	Non-constant force	Adaptation	Chemical enzymes breakdown		Pinna	
	Newton meter		food		soundproof	
	Newton		Gastric juices			
	Orbit		Reabsorption of water			
	Pivot		Endo/exo parasite			
	streamline		HOST NUTRIENT			

Working scientifically	Living things	Animals	Properties and changes of	Earth and Space	Light
	and their	including	materials		
	habitats	humans			
Opinion	life cycles	puberty	Solubility	Earth	Light source
Fact	mammal	life cycle	Electrical conductivity	Planets	Names of light sources,
Variables	amphibian	gestation	Thermal conductivity	Sun	torch etc
Independent variable	insect	growth	New material Buoyancy	Solar system	Dark / darkness
Dependent variable	bird	reproduce	suspension	Moon	Reflect
Controlled variable	reprocess	baby	Dissolve	Celestial body	Reflective
precision	nlants	fertilisation	Solution	Axis / axes	Mirror
Classification keys	animals	toddler	Soluble	Night / day	Shadow
Scatter graphs	vegetable garden	child	Insoluble	Mercury	Block / absorb
Line graphs	flower border	teenager	Solute	Mars	Direction of light
Notice relationships	reproduction	adult	Solvent	Neptune	Transparent
Support	plants:	old age	Burning	Venus	Opaque
Degree of trust	sexual,	life expectancy	Rusting	Orbit	Translucent
Causal relationships	asexual	adolescence	Gas given off mixture	Elliptical orbit	Bright
Refute	dnimais:	early adulthood	Filtering	Revolve	Dim Light beam sunlight Speed of
	lifecycles around	middle adulthood	Sieving	Shadow clocks	light
	the world	late adulthood	Reversible change	Sundials	Emit
	rainforest	childhood	Irreversible change	Asteroids	Light spectrum
	oceans		Hard to reverse	Geocentric model Heliocentric	straight line,
	desert		Combustion	model	visible spectrum,
	prehistoric		Oxidisation	Sphere / spherical	light source,
	similarities		Chemical reaction	Rotation	light,
	amerences		Residue	Spin	beam,
			Filtrate	Phases of moon Jupiter	reflect,
				Saturn	torch,
				Pluto	opaque,
				Uranus	shine,
				Time zones	shadow,
				Comets	absorption,
				Galaxy	sun,
				Meteors	prism,
				Light years	refraction,
				Equinox	reflection,
				Asteroid	shade,
				Atmosphere	translucent,
				Comet	daylight,
				Crater	transparent,

		Dwarf planet	crest,
		Lunar	trough,
		Meteoroid	wavelength,
		Satellite	frequency,
		Star	law of reflection, plane mirror,
		Universe	natural light,
			transmit,
			absorb,
			lens,
			magnetic,
			cornea,
			pupil,
			iris,
			retina,
			rod,
			cone,
			pigment,
			particles,
			direction,
			penumbra.
			umbra,
			ultraviolet.
			wave,
			electromagnetic spectrum.
			infrared,
			electromagnetic wave, particle-
			wave theory.
			point light source.
			extended light source, photon.

Working scientifically	Living things and their	Properties and changes of	Earth and Space	Light
	habitats and Animals	materials		
	including humans			
Opinion	Reproduction	Solubility	Earth	Light source
Fact	Sexual	Electrical conductivity	Planets	Names of light sources,
Variables	Asexual	Thermal conductivity	Sun	torch etc
Independent variable	Germination	New material Buovancy	Solar system	Dark / darkness
Dependent variable	Pollination	suspension	Moon	Reflect
Controlled variable	Birth	Dissolve	Celestial body	Reflective
precision	Fertilisation	Solution	Axis / axes	Mirror
Classification keys	Puberty	Soluble	Night / day	Shadow
Scatter graphs	Seed dispersal	Insoluble	Mercury	Block / absorb
Line graphs	Seed formation	Solute	Mars	Direction of light
Notice relationships	Pollen	Solvent	Neptune	Transparent
Support	Stamen	Burning	Venus Orbit	Opaque
Degree of trust	Stigma	Rusting	Elliptical orbit	Translucent
Causal relationships	Anther	Gas given off mixture	Bevolve	Bright
Refute	Filament	Filtering	Shadow clocks	Dim Light heam sunlight Speed of
herate	Style	Sieving	Sundials	light
	Sepal	Beversible change	Asteroids	Emit
			Geocentric model Heliocentric model	Light spectrum
	Føgs	Hard to reverse	Sphere / spherical	straight line
	Live young	Compustion	Potation	visible spectrum
	Egg Cell	Ovidication	Spin	light source
	Embryo	Chamical reaction	Spiri Dhasas of moon Junitor	light
	Ovary	Residue	Saturn	hear
	Placenta	Filtrate	Duto	pealli,
	Penis	Filtrate		tereb
	Testes		Time conce	torch,
	Vagina		Time zones	opaque,
	Uterus Diantiata a guanidar planta		College	shine,
	Plantiets e.g.: spider plants		Galaxy	snadow,
	Chromosomes		Meteors	absorption,
	Ovum		Light years	sun,
	Zvgote		Atmosphere	prism,
	Fallopian tubes		Comet	retraction,
	Gestation		Crater	reflection,
	Hormones		Dwarf planet	shade,
	Adaptation		Lunar	translucent,
	Evolution		Meteoroid	daylight,
	Extinct		Satellite	transparent,

to be address as		
Inneritance	Star	crest,
Natural selection	Universe	trough,
Species		wavelength,
Variation.		frequency,
		law of reflection, plane mirror,
		natural light,
		transmit,
		absorb.
		lens.
		magnetic,
		cornea.
		, liquq
		iris.
		retina,
		rod,
		cone,
		pigment,
		particles,
		direction,
		penumbra,
		umbra,
		ultraviolet,
		wave,
		electromagnetic spectrum, infrared,
		electromagnetic wave, particle-wave
		theory,
		point light source,
		extended light source, photon.