|  |  |  |  |
| --- | --- | --- | --- |
| **Light** | **Working Scientifically** | | |
| * Can they recognise that light appears to travel in straight lines? * Can they 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? * Can they explain why their shadow changes when the light source is moved closer or further from the object? * Can they explain that we see things because light travels from light sources to our eyes or from light sources to object s and then to our eyes? * Can they use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them? | **Planning** | **Obtaining and presenting evidence** | **Considering evidence and evaluating** |
| * Can they explore different ways to test an idea, choose the best way, and give reasons? * Can they vary one factor whilst keeping the others the same in an experiment? Can they explain why they do this? * Can they plan and carry out an investigation by controlling variables fairly and accurately? * Can they make a prediction with reasons? * Can they use information to help make a prediction? * Can they present a report of their findings through writing, display and presentation? | * Can they explain why they have chosen specific equipment? (incl ICT based equipment) * Can they decide which units of measurement they need to use? * Can they take measurements using a range of scientific equipment with increasing accuracy and precision? | * Can they find a pattern from their data and explain what it shows? * Can they suggest how to improve their work and say why they think this? * Can they report findings from investigations through written explanations and conclusions? * Can they report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations? |
| **Challenge** | | | |
| * Can they explain how different colours of light can be created? * Can they use and explain how simple optical instruments work? (periscope, telescope, binoculars, mirror, magnifying glass, Newton’s first reflecting telescope) * Can they explore a range of phenomena, including rainbows, colours on soap bubbles, objects looking bent in water and coloured filters. | * Can they choose the best way to answer a question? * Can they make a prediction which links with other scientific knowledge? * Can they identify the key factors when planning a fair test? | * Can they plan in advance which equipment they will need and use it well? * Can they make precise measurements? * Can they record their measurements and observations systematically? | * Can they explain how they could improve their way of working? * Can they draw conclusions from their work? |