Key idea: Light

Yr 6

Animals see objects when light is reflected off that object and enters their eyes **Y6**

Animals see light sources when light travels from the source into their eyes **Y6**

Light reflects of all objects (unless they are black). Non-shiny surfaces scatter the light so we don't see a single beam. **Y6**

Light travels in straight lines **Y6**

Yr 4

Shiny materials reflect light beams better than non-shiny materials **Y3**

Beams of light bounce off some materials (reflection). **Y3**

Transparent materials let light through them and opaque materials don't let light through **Y3**

Yr 2

There must be light for us to see. Without light it is dark **Y1**

We need light to see things even shiny things **Y1**

Light comes from a source **Y1**

How we see

What happens when light hits objects?

How light travels

Applications and activities related to new NC – BOLD ITEMS MUST BE TAUGHT

- That light travels in straight lines underpins many phenomena that need to be explored. It might help pupils to communicate their ideas by drawing light as arrows showing direction. For example how mirrors are arranged to help us se round corners, driving mirrors that give different views and periscopes. How curved mirrors distort, shrink and magnify images.
- **Pupils could hypothesise why shadows change size when the relative positions of the light source, object and screen change. Pupils could explore what happens to shadows when there is more than one light source and then try to explain their observations**
- **Children should find patterns that determine the size of shadows and use these to construct simple shadow clocks and sundials.** They might explore why some people think that structures such as Stonehenge might have been used as astronomical clocks.
- Pupils could explore how the pupil changes size in different light conditions.

- Pupils should investigate problems that allow them to see light reflecting off different materials. They could investigate which reflective materials reflect light the best. They don't need to know yet that non shiny materials reflect light so it is sensible to look at how light beams behave.
- There are relatively few ideas in years 3 and 4 related to light, it might be sensible to teach these ideas through materials by investigating reflectiveness.
- Pupils should investigate problems that help them to understand the differences between transparent, translucent (knowledge of vocabulary not essential) and opaque objects and possibly compare the degree to which materials have these properties e.g. best curtains for blocking light, brightest candles or torches, do expensive sunglasses better at blocking light than cheaper ones?.
- They need to explore what happens when light is removed, or blocked to form shadows. They could investigate what happens to shadows when the material becomes better at blocking light (e.g. shadow puppets), they could investigate the best natural conditions for good shadows to form.

- Pupils need to experience complete darkness to make them realize that without light we can't see anything. Exploring questions like 'how can we find a lost shiny penny? 'are helpful because they bring out the misconception that shiny reflective objects shine in the dark.
- **Pupils should be warned never to look directly at the sun, even through sunglasses.**