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| **Parklands Primary School - Science** | |
| **Topic: Light** | **Year 6** |

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| **What should I already know?** | | | | | What I should know by the end of the unit. | |
| * Certain things produce **light**, usually by burning (e.g. the sun) or **electricity** (e.g. street **lights**) * Shiny materials do not make **light** but do reflect it. * **Shadows** are caused when certain materials block **light**. * **Light** travels in straight lines. When **light** is blocked by an **opaque** object, a **dark shadow** is formed. * The further away the **light source** is, the smaller the **shadow** is. The closer the **source** of the light, the bigger the shadow. | | | | | * How light travels to your eyes. * The process by which we see. * Why shadows are the same shape as the object that makes them. * How a mirror works. * How binoculars work. | |
| Scientific Learning | | | | | | |
| How do we see? |  | How does  **light**  travel? | | * **Light** travels in a straight line. * When you place a torch on a table in a **dark** room, the beam   travels in a straight line.   * **Reflection** is when **light** bounces off a surface - this changes the direction in which the **light** travels. | |
| Scientific Enquiry | | | | | | |
| * Because **light** travels in straight lines, when there is an **opaque** object blocking the **light**, a **shadow** is formed. * These **shadows** have the same shape as the objects that cast them.      * The size of a **shadow** changes as the **light source** moves. | | | * What happens when light is **reflected** from different **surfaces**? What happens when light is **reflected** from a **mirror**? What happens when the **angle** of the **mirror** (or **light source** changes?) * Draw diagrams to show how **light** travels and what happens when **light** is **reflected** from a **mirror.** * Draw diagrams to show how we see. * Design an experiment to measure **shadow** length by changing a variable. Show your results in a line graph to show the relationship between distance of **light**   **source** and **shadow** length. Explain your findings using scientific vocabulary.   * Create **shadow** puppets to show how **light** travels and to demonstrate that a **shadow** has the same shape as the object that casts them. * Make a periscope and explain how it works using diagrams and scientific   vocabulary. Use the idea that **light** appears to travel in straight lines to explain how it works.   * Research how **mirrors** are used in different contexts (e.g. rear view mirrors, on a dangerous bend) and explain why and how they work. * Explain why objects look bent in water. * Explore different contexts in which **light** travels including rainbows, colours   on soap bubbles and coloured filters. | | | |
| angle the direction from which you [look](https://www.collinsdictionary.com/dictionary/english/look) at something  dark the absence of **light**  dim **light** that is not **bright**  electricity a form of [energy](https://www.collinsdictionary.com/dictionary/english/energy) that can be carried by [wires](https://www.collinsdictionary.com/dictionary/english/wire) and is used for [heating](https://www.collinsdictionary.com/dictionary/english/heat) and lighting, and to provide power for machines  emits to **emit** a sound or [**light**](https://www.collinsdictionary.com/dictionary/english/noise) means to produce it  light a **brightness** that lets you see things  mirror a [flat](https://www.collinsdictionary.com/dictionary/english/flat) piece of glass which **reflects light**, so that when you [look](https://www.collinsdictionary.com/dictionary/english/look) at it you can see yourself **reflected** in it no longer  has any living members, either in the world or in a particular place  opaque if an object or substance is **opaque**, you cannot see through it | | | reflects sent back from the **surface** and not pass through it  shadows a dark shape on a **surface** that is made when something [stands](https://www.collinsdictionary.com/dictionary/english/stand) between a **light** and the **surface**  source where something comes from  surface the [flat](https://www.collinsdictionary.com/dictionary/english/flat) [top](https://www.collinsdictionary.com/dictionary/english/top_1) part of something or the outside of it  torches a small **electric light** which is powered by batteries and which you can [carry](https://www.collinsdictionary.com/dictionary/english/carry)  translucent if a material is **translucent**, some **light** can pass through it  transparent if an object or substance is transparent, you can see through it | | | |

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| Question 4: How do we see an  object? | Start of  unit: | End  of  unit: |
| Light reflects off the object and  enters our eyes |  |  |
| Light travels from our eyes and  reflects off the object |  |  |
| Light reflects off our eyes and  enters the object |  |  |

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| Question 2: Shadows are formed when: | Start of unit: | End of unit: |
| light is let through an object |  |  |
| light reflects off an object |  |  |
| it is dark |  |  |
| light cannot travel through an  object |  |  |

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| Question 1: When light bounces off a surface, it is: | Start of unit: | End of unit: |
| absorbed |  |  |
| dissolved |  |  |
| reflected |  |  |
| bounced |  |  |

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| Question 3: The word that best describes an object that does not allow light to travel through it is: | Start of unit: | End of unit: |
| transparent |  |  |
| translucent |  |  |
| opaque |  |  |

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| Question 5: A child says that a shadow takes the shape of the light source. Is this true or false? Explain your reasoning. | Start of unit: | End of unit: |
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| Question 6: Describe how the mirrors in a periscope allow us to see. | Start of unit: | End of unit: |
| Image result for simple periscope diagram |  |  |

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| Question 7: You design an experiment to test the size of a shadow that is cast by a light source. Name one thing you will keep the same. Name one thing you will change. | Start of  unit: | End  of  unit: |
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| Question 8: Look at the graph above. What was the approximate length of the shadow when the object was 35cm away from the light source? | Start of unit: | End of unit: |
| Question 9: Look at the graph above. Approximately, how far away from the light source was the object when the length of the shadow was 25cm long? | Start of unit: | End of unit: |
| Question 10: Write a conclusion about what the line graph is showing using scientific vocabulary. | Start of unit: | End of unit: |