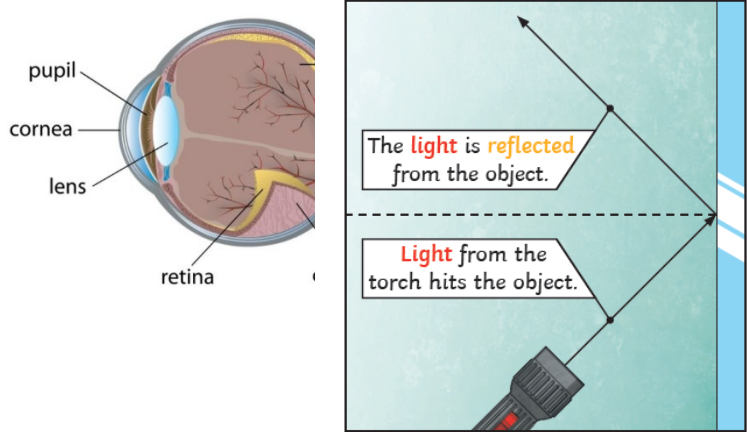
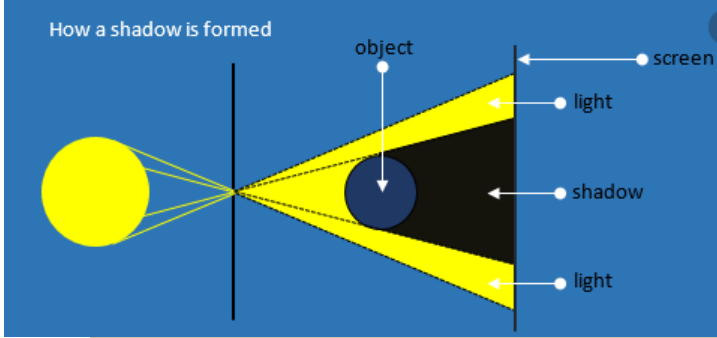


## Summer 1 OVERVIEW YEAR 3/4 – Science

### Summer 1 Book - The Iron Man - Technology in Action

Topic - Light	
<b>Assessment:</b>	<p>Twinkl End of Unit Light Assessment.            Teacher assessment through AfL strategies.            Weekly VIP quizzes.            Peer and self-assessments.</p>
<b>Links to prior learning (sequencing) and canon book</b>	<p>The Iron Man            In terms of prior learning, year 3/4 is the first time children will learn about the topic of light. However, children will build upon the skills and knowledge from key KS1's national curriculum statements based around working scientifically. Children will have prior knowledge of working scientifically skills of asking questions, grouping and classifying and using investigative techniques.            In addition to above, children will have already learnt about opaque, translucent and transparent materials in KS1 which will be covered through this topic of 'Light'.</p>
<b>Links to other learning (cross fertilisation)</b>	<p>In Computing, children will be using their knowledge of light beams and the importance of reduced screen time to protect our eyes.            In DT, children will be creating an Iron Man and will use their knowledge of light when picking appropriate materials.            In PSHE, children will be understanding about roles and responsibilities which will be linked to sun safety and how we protect our eyes from harsh light.            In Art, children will create a sculpture out of clay and use their light knowledge to discuss shadows it creates when using different light sources.</p> <p><b>Thematic Questions</b>  <b>The World Beyond Us</b>            How is light viewed in space?            What is the importance of light in space?  <b>Modern Britain</b>            How have different light sources developed over the years?            Have different light sources helped or hindered our natural world?</p>
<p><b>Very Important Points (VIPs):</b></p> <ul style="list-style-type: none"> <li>- Light is a form of energy that travels in a wave from a source.</li> <li>- We need light to be able to see things.</li> <li>- Light travels in a straight line.</li> <li>- A light source is an object that makes its own light.</li> <li>- Dark is the absence of light.</li> <li>- Reflection is the process where light hits the surface of an object and bounces back into our eyes.</li> <li>- Reflective is a word that describes something which reflects light well. E.g. hi vis jacket, cats eyes.</li> <li>- The best surfaces that reflect light best are smooth, shiny and flat.</li> <li>- Some surfaces and materials do not reflect light well. E.g. a rough surface</li> <li>- Waves of light are called light rays which can also be called beams.</li> <li>- The pupil is the black part of the eye which lets light in.</li> <li>- The retina is a layer at the very back of the eye where it takes the light that the eye receives. It then changes it into nerve signals to send to the brain.</li> <li>- If too much light enters, then it can damage the retina.</li> <li>- To help protect the eyes, you can wear a hat with a wide brim and sunglasses with a UV rating.</li> <li>- A shadow is an area of darkness where light has been blocked.</li> <li>- A shadow is larger when an object is closer to the light source because it blocks more of the light.</li> <li>- Opaque describes objects that do not let any light pass through them.</li> <li>- Translucent describes objects that let some light through, but scatter the light so we can't see through them properly.</li> </ul>	

	<p>Do you think light pollution is an issue we need to be concerned about?</p> <p><b>Healthy Bodies &amp; Healthy Minds</b>        How does light have a positive impact on our mental and physical health?        How can light have a negative impact on our mental and physical health?</p> <p><b>The World Around Us</b>        How do different countries source light?</p> <p><b>Culture</b>        How do some cultures use light within their religion?</p> <p><b>Technology in Action</b>        Is there any need for sun light when we have so many different light sources readily available to us?</p>	<p>- Transparent describes objects that let light travel through them easily, meaning that you can see through the object.</p>  <p>The diagram on the left shows a cross-section of a human eye with labels for the pupil, cornea, lens, and retina. The diagram on the right shows a torch beam hitting a surface, with arrows indicating light reflecting off the surface. Text boxes explain: 'The light is reflected from the object.' and 'Light from the torch hits the object.'</p>  <p>The diagram titled 'How a shadow is formed' shows a yellow sun on the left emitting light rays that pass through a vertical line representing a screen. A dark blue object is placed between the sun and the screen, blocking some of the light rays. This creates a dark area labeled 'shadow' on the screen. Labels include 'object', 'screen', 'light', and 'shadow'.</p> <p><b>Fat Question:</b>        How would the world be different if we had no natural light?</p>
<p><b>Links to future learning</b></p>	<p>This unit will support the children's learning when moving onto UKS2 science units, in particular:        Year 5: Earth and space        Year 6: Light</p>	
<p><b>Character/Wider Development ('50 things', cultural capital, skills)</b></p>	<p><b>The National Science and Media Museum, Bradford</b> - Children could explore the wonder of creating and capturing light through hands-on activities, workshops, shows and amazing art installations.</p> <p><b>Eureka! The National Children's Museum, Halifax</b> - Children could explore light through hands-on activities and workshops at the museum. There is also virtual workshops available for children to do at home or in the classroom.</p> <p>Children could use the '50 things to do before leaving primary school' to break a world record using light or when going to a whole class cinema trip explain how light allows us to watch a movie.</p>	

## OVERVIEW OF TEACHING SEQUENCE

Key Facts/Learning	Learning Focus or Key Question	Learning Outcomes (NC)	Key Words/ Vocabulary	Greater Depth/SEND	Misconceptions	Activities and Resources
<p><b>Week 1</b></p> <p>Children will understand that:</p> <ul style="list-style-type: none"> <li>- We need light to enable us to see.</li> <li>- Darkness is the absence of light.</li> </ul>	<p>To recognise the importance of light.</p>	<p>Recognise that they need light in order to see things and that dark is the absence of light.</p> <p>Asking relevant questions and using different types of scientific enquiries to answer them.</p>	<p>Light Light source Dark Reflection Reflect Reflective Ray Mirror Material Surfaces Eyes Protection Pupil Retina Shadow Opaque Translucent Transparent</p>	<p><b>GD</b></p> <p><b>Year 3</b> – Allow children to work independently to complete the task without any prompts or support. Children should start to think of their own sentences to showcase their understanding.</p> <p><b>Year 4</b> – Allow children to work independently to show their learning of light and dark. Encourage them to use pictures and diagrams and how light and dark effects real life.</p> <p><b>SEND</b></p> <p><b>Year 3</b> – Children will spend more time on the feely activity. Take pictures of children working and allow them to verbally say what</p>	<p><b>Children may think that:</b></p> <p>Light doesn't travel in straight lines.</p> <p>Windows are a light source.</p> <p>The moon is a light source.</p> <p>Light only comes from the sun and lights in our house.</p> <p>Darkness only happens when the lights are out/at night time.</p>	<p>Children will begin the lesson by using their prior knowledge to show what they already know about lightness and darkness through a variety of kagan activities.</p> <p>After talking through the knowledge part of the notebook slides, children will work in groups to complete the first task. This is to feel what is in the bag without looking/being blindfolded. They will draw/describe what they think the object is. After completing this the children will complete the same activity but with their eyes open and understand that it is because the light is allowing us to see the objects.</p> <p>Finally, they will complete an appropriate task to show their understanding of lightness and darkness.</p> <p>See planning slides on trust shared.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>- Bags.</li> <li>- Objects to put in bags for children to feel.</li> </ul> <p><b>Other useful resources:</b></p> <p><a href="https://www.bbc.co.uk/bitesize/topics/zbssgk7">https://www.bbc.co.uk/bitesize/topics/zbssgk7</a></p> <p><a href="https://www.youtube.com/watch?v=ekeMJLgDrrA">https://www.youtube.com/watch?v=ekeMJLgDrrA</a></p> <p><a href="https://www.bbc.co.uk/bitesize/clips/zb3s34j">https://www.bbc.co.uk/bitesize/clips/zb3s34j</a></p> <p><a href="https://www.bbc.co.uk/bitesize/clips/zjkc87h">https://www.bbc.co.uk/bitesize/clips/zjkc87h</a></p>

				<p><b>Year 4</b> – Children will complete the paragraph to show their understanding of light and dark by using the key words provided.</p>		<p><b>Year 3 Tasks</b>  <b>Red</b> - Children will complete the paragraph to show their understanding of light and dark by using the key words provided.  <b>Blue</b> - Children will complete the paragraph to show their understanding of light and dark by filling in the gaps for key words from their learning (without key words.)  <b>Gold</b> - Children will complete the paragraph to show their understanding of light and dark by filling in the gaps of phrases/sentences from their learning (without prompts).</p> <p><b>Year 4 Tasks</b>  <b>Red</b> - Children will complete the paragraph to show their understanding of light and dark by filling in the gaps for key words from their learning (without key words.)  <b>Blue</b> - Children will complete the paragraph to show their understanding of light and dark by filling in the gaps of phrases/sentences from their learning (without prompts).  <b>Gold</b> - Children will write a paragraph without support to show their understanding of light and dark.</p> <p><b>Year 3 Deepen the moment</b>          The sun, a lamp and a candle are all light sources. Which is the odd one out? Justify your answer.</p> <p><b>Year 4 Deepen the moment</b>          John thinks the moon is a light source because you can see it in the sky at night. Is he correct? Justify your answer.</p>
<p><b>Week 2</b></p> <p>Children will understand that:</p> <ul style="list-style-type: none"> <li>- The most reflective materials are</li> </ul>	<p>To identify materials that light reflects.</p>	<p>Notice that light is reflected from surfaces.</p> <p>Setting up simple practical enquiries,</p>	<p>Light          Light source          Dark          Reflection          Reflect          Reflective          Ray          Mirror          Material          Surfaces</p>	<p><b>GD:</b>  <b>Year 3</b> – Children will complete the experiment as a team by working out how you are going to answer the investigation question. There may be a few red herring</p>	<p><b>Children may think that:</b></p> <p>All materials are reflective.</p> <p>Only shiny items are reflective.</p>	<p>Children will begin the lesson by recapping their VIPs through a variety of kagan activities.</p> <p>After talking through the knowledge part of the notebook slides, children will be testing different materials to see how reflective they are. Children will write an investigation question and a prediction based on their learning so far. They will complete the investigation using the results table given to them. After this, they will have time to reflect on their results and write a conclusion based on their original predictions.</p>

smooth, shiny and flat.		comparative and fair tests.	Eyes Protection Pupil Retina Shadow Opaque Translucent Transparent	<p>items within your equipment that may not be needed for this experiment.</p> <p><b>Year 4</b> – Children will complete the experiment as a team by working out how you are going to answer the investigation question. There may be a few red herring items within your equipment that may not be needed for this experiment. Children will also have to create their own means of recording their results.</p> <p><b>SEND:</b> <b>Year 3</b> – Children will work as a group and have the adult record the results. Allow the children to explore, talk and ask questions. Take pictures of children working and any ‘writing’ to be completed as a group.</p>	All brightly coloured items are reflective.	<p>See planning slides on trust shared.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>- Torch</li> <li>- 5 different materials</li> <li>- Card</li> </ul> <p><b>Other useful resources:</b></p> <p><a href="https://www.bbc.co.uk/bitesize/clips/ztcg9j6">https://www.bbc.co.uk/bitesize/clips/ztcg9j6</a></p> <p><a href="https://www.youtube.com/watch?v=rDRTmymuNyE">https://www.youtube.com/watch?v=rDRTmymuNyE</a></p> <p><a href="https://www.bbc.co.uk/bitesize/clips/ztcg9j6">https://www.bbc.co.uk/bitesize/clips/ztcg9j6</a></p> <p><b>Year 3 Tasks &amp; Year 4 Tasks</b></p> <p>Both year groups will complete the same task but differentiation through year groups will be based on outcomes. Year 3 children will have more scaffolding and supporting materials, whereas year 4 children will be expected to work more independently.</p> <p><b>Red</b> - Children will complete the experiment with adult support using the result table provided.</p> <p><b>Blue</b> - Children will complete the experiment using the result table provided and the method modelled by an adult.</p> <p><b>Gold</b> -. Children will complete the experiment as a team by working out how you are going to answer the investigation question. There may be a few red herring items within your equipment that may not be needed for this experiment.</p> <p><b>Year 3 Deepen the moment</b></p> <p>I think that a mirror is the best material for reflection because it is smooth and flat. Do you agree? Draw a diagram to support your answer.</p> <p><b>Year 4 Deepen the moment</b></p> <p>Always. Sometimes. Never.</p>
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				<p><b>Year 4</b> – Children will complete the experiment with adult support using the result table provided.</p>		<p>Every item is reflective because we can see all items. Prove it!</p>
<p><b>Week 3</b></p> <p>Children will understand that:</p> <ul style="list-style-type: none"> <li>- The most effective reflective materials is a mirror and explain why this is.</li> </ul>	<p>To use mirrors to reflect light.</p>	<p>Notice that light is reflected from surfaces.</p> <p>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.</p>	<p>Light          Light source          Dark          Reflection          Reflect          Reflective          Ray          Mirror          Material          Surfaces          Eyes          Protection          Pupil          Retina          Shadow          Opaque          Translucent          Transparent</p>	<p><b>GD:</b></p> <p><b>Year 3</b> – Children to complete the activities using the template provided ensuring they explain how the mirrors reflect light. Children should be encouraged to work independently when completing the written task.</p> <p><b>Year 4</b> – Allow children to work in ability pairs to complete the activities. Children will be expected to record their results in the most efficient way. Children should use diagrams and really focus on explaining how light is reflected from the mirror and into our eyes.</p> <p><b>SEND:</b></p>	<p><b>Children may think that:</b></p> <p>Mirrors are the only reflective material.</p> <p>If a material is dirty, it stops being reflective.</p> <p>Mirrors can still reflect without a light source.</p>	<p>Children will begin the lesson by recapping their VIPs through a variety of kagan activities.</p> <p>After talking through the knowledge part of the notebook slides, children will complete two mirror activities to allow them to investigate how light is reflected using mirrors.</p> <p>They will complete an appropriate task to show their understanding of lightness and darkness.</p> <p>See planning slides on trust shared.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>- Mirrors</li> <li>- Chalk</li> <li>- Space outside/in the hall</li> </ul> <p><b>Other useful resources:</b></p> <p><a href="https://www.explainthatstuff.com/howmirrorswork.html">https://www.explainthatstuff.com/howmirrorswork.html</a></p> <p><a href="https://www.bbc.co.uk/bitesize/topics/zbssgk7/articles/zqdx82">https://www.bbc.co.uk/bitesize/topics/zbssgk7/articles/zqdx82</a></p> <p><b>Year 3 Tasks</b></p> <p><b>Red</b> - Children to complete the activities as a group. When recording the results, children are expected to draw a diagram/picture to showcase their understanding.</p> <p><b>Blue</b> - Children to complete the activity by using the template provided.</p> <p><b>Gold</b> - Children to complete the activities using the template provided ensuring they explain how the mirrors reflect light.</p> <p><b>Year 4 Tasks</b></p>

				<p><b>Year 3</b> – Children to explore the activities and an adult to take pictures and record discussions of children.</p> <p><b>Year 4</b> – Children to complete the activities as a group. When recording the results, children are expected to draw a diagram/picture to showcase their understanding.</p>		<p><b>Red</b> - Children to complete the activity by using the template provided.</p> <p><b>Blue</b> - Children to complete the activities using the template provided ensuring they explain how the mirrors reflect light.</p> <p><b>Gold</b> - Children to complete the activities and record their findings using diagrams and a full paragraph.</p> <p><b><u>Year 3 Deepen the moment</u></b>        Why do you think mirrors are so effective at reflecting light?</p> <p><b><u>Year 4 Deepen the moment</u></b>        If a mirror is not smooth, it will still reflect because it is shiny. Do you agree? Justify your answer.</p>
<p><b>Week 4</b></p> <p>Children will understand that:</p> <ul style="list-style-type: none"> <li>- The sun can be damaging to our eye health.</li> <li>- We must never look directly at the sun.</li> <li>- We need protection such as sunglasses and hats.</li> </ul>	<p>To recognise the impact of light from the sun.</p>	<p>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</p> <p>Asking relevant questions and using different types of scientific enquiries to answer them.</p>	<p>Light        Light source        Dark        Reflection        Reflect        Reflective        Ray        Mirror        Material        Surfaces        Eyes        Protection        Pupil        Retina        Shadow        Opaque        Translucent        Transparent</p>	<p><b>GD:</b></p> <p><b>Year 3</b> – Children to design a poster to explain the dangers of the sun. They will be expected to work independently and use other resources without guidance such as text books and iPads.</p> <p><b>Year 4</b> – Children to write a fact file explaining the dangers of the sun and how we can protect ourselves. They will be expected to use diagrams of the eye to show their understanding of the</p>	<p><b>Children may think that:</b></p> <p>The sun can only cause damage if it is hot.</p> <p>You can look at the sun as long as it is very quickly.</p> <p>You can see UV light from the sun.</p>	<p>Children will begin the lesson by recapping their VIPs through a variety of kagan activities.</p> <p>After talking through the knowledge part of the notebook slides, children will show their understanding of light from the sun and the dangers it poses through a poster or a fact file.</p> <p>They will complete an appropriate task to show their understanding of the above.</p> <p>See planning slides on trust shared.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>- Plain paper for poster</li> <li>- Fact file template</li> </ul> <p><b>Other useful resources:</b></p> <p><a href="https://www.bbc.co.uk/newsround/48609398">https://www.bbc.co.uk/newsround/48609398</a></p> <p><a href="https://www.bbc.co.uk/bitesize/articles/zvwtqp3">https://www.bbc.co.uk/bitesize/articles/zvwtqp3</a></p> <p><a href="https://www.bbc.co.uk/bitesize/topics/z6hv9j6/articles/zr8q8hv">https://www.bbc.co.uk/bitesize/topics/z6hv9j6/articles/zr8q8hv</a></p>



				<p>damage the sun can potentially cause.</p> <p><b>SEND:</b>  <b>Year 3</b> – Children to design a pair of sunglasses and label it to show how they can protect us from the sun.</p> <p><b>Year 4</b> – Children to work as a group to decide the main ways to protect ourselves from the sun. Adults could already have these printed so children can stick them down and draw pictures to show their understanding.</p>		<p><b>Year 3 Tasks</b>  <b>Red</b> - Children to design a pair of sunglasses and label it to show how they can protect us from the sun.  <b>Blue</b> - Children to design a poster to show how we protect ourselves from the sun.  <b>Gold</b> - Children to design a poster to explain the dangers of the sun.</p> <p><b>Year 4 Tasks</b>  <b>Red</b> - Children to design a poster to show how we protect ourselves from the sun.  <b>Blue</b> - Children to design a poster to explain the dangers of the sun.  <b>Gold</b> - Children to write a fact file explaining the dangers of the sun and how we can protect ourselves.</p> <p><b>Year 3 Deepen the moment</b>          I think that you can look at the sun as long as it is for a short amount of time. Do you agree? Justify your answer.</p> <p><b>Year 4 Deepen the moment</b>          Given that Mars has no ozone layer, astronauts will be exposed to high levels of UV light. Draw a picture of equipment which could be used to help protect them from the sun.</p>
<p><b>Week 5</b></p> <p>Children will understand that:</p> <ul style="list-style-type: none"> <li>- A shadow is an area of darkness where light has been blocked.</li> <li>- Opaque describes an object that does</li> </ul>	<p>To understand how shadows are created.</p>	<p>Recognise that shadows are formed when the light from a light source is blocked by an opaque object.</p> <p>Using straightforward scientific evidence to answer questions or to support their findings.</p>	<p>Light          Light source          Dark          Reflection          Reflect          Reflective          Ray          Mirror          Material          Surfaces          Eyes          Protection          Pupil          Retina          Shadow          Opaque</p>	<p><b>GD:</b>  <b>Year 3</b> – Children will complete the experiment as a team by working out how you are going to answer the investigation question. There may be a few red herring items within your equipment that may not be needed for this experiment.</p>	<p><b>Children may think that:</b></p> <ul style="list-style-type: none"> <li>- Shadows are only created by sun light.</li> <li>- All materials create a shadow.</li> <li>- Shadows cannot be created at night time.</li> </ul>	<p>Children will begin the lesson by recapping their VIPs through a variety of kagan activities.</p> <p>After talking through the knowledge part of the notebook slides, children will be testing different materials to see which ones create shadows. Children will write an investigation question and a prediction based on their learning so far. They will complete the investigation using the results table given to them. After this, they will have time to reflect on their results and write a conclusion based on their original predictions.</p> <p>See planning slides on trust shared.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>- Torches</li> <li>- Variety of materials (opaque, translucent and transparent).</li> </ul>



<p>not let any light pass through it.</p> <p>- Translucent describes objects that let some light through, but scatter the light so we can't see through them properly.</p> <p>- Transparent describes objects that let light travel through them easily, meaning you can see through the object.</p>			<p>Translucent Transparent</p>	<p><b>Year 4 –</b> Children will complete the experiment as a team by working out how you are going to answer the investigation question. There may be a few red herring items within your equipment that may not be needed for this experiment. Children will also have to create their own means of recording their results.</p> <p><b>SEND:</b> <b>Year 3 –</b> Children will work as a group and have the adult record the results. Allow the children to explore, talk and ask questions. Take pictures of children working and any 'writing' to be completed as a group.</p> <p><b>Year 4 –</b> Children will complete the experiment with adult support using the result table provided.</p>	<p>- Rulers</p> <p><b>Other useful resources:</b>  <a href="https://www.bbc.co.uk/bitesize/clips/z6fnvcw">https://www.bbc.co.uk/bitesize/clips/z6fnvcw</a>  <a href="https://www.bbc.co.uk/bitesize/clips/z8vfb9q">https://www.bbc.co.uk/bitesize/clips/z8vfb9q</a></p> <p><b>Year 3 Tasks &amp; Year 4 Tasks</b>        Both year groups will complete the same task but differentiation through year groups will be based on outcomes. Year 3 children will have more scaffolding and supporting materials, whereas year 4 children will be expected to work more independently.</p> <p><b>Red</b> - Children will complete the experiment with adult support using the result table provided.  <b>Blue</b> - Children will complete the experiment using the result table provided and the method modelled by an adult.  <b>Gold</b> - Children will complete the experiment as a team by working out how you are going to answer the investigation question. There may be a few red herring items within your equipment that may not be needed for this experiment.</p> <p><b>Year 3 Deepen the moment:</b>        I think that the best materials to create shadows are translucent ones. Do you agree? Explain your answer in full.</p> <p><b>Year 4 Deepen the moment</b>        Mia says, 'All objects create shadows. It is just the light moving closer or further away from the object that creates the shadow'. Do you agree or disagree? Use evidence to support your answer.</p>
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<p><b>Week 6</b></p> <p>Children will understand that:</p> <ul style="list-style-type: none"> <li>- A shadow is larger when an object is closer to the light source because it blocks more of the light.</li> </ul>	<p>To find patterns between an object, light and the size of a shadow.</p>	<p>Find patterns in the way that the size of shadows change.</p> <p>Identifying differences, similarities or changes related to simple scientific ideas and processes.</p>	<p>Light          Light source          Dark          Reflection          Reflect          Reflective          Ray          Mirror          Material          Surfaces          Eyes          Protection          Pupil          Retina          Shadow          Opaque          Translucent          Transparent</p>	<p><b>GD</b></p> <p><b>Year 3</b> – Allow children to work independently to complete the task without any prompts or support. Children should start to think of their own sentences to showcase their understanding.</p> <p><b>Year 4</b> – Allow children to work independently to show their learning of light and dark. Encourage them to use pictures and diagrams and how light and dark effects real life.</p> <p><b>SEND</b></p> <p><b>Year 3</b> – Children will spend more time on the feely activity. Take pictures of children working and allow them to verbally say what</p> <p><b>Year 4</b> – Children will complete the paragraph to show their understanding of light and dark by</p>	<p><b>Children may think that:</b></p> <ul style="list-style-type: none"> <li>- The closer a light source is to an object, the smaller the shadow will be.</li> <li>- Shadows can only be created with large objects.</li> <li>- You can only use a torch to create a shadow.</li> </ul>	<p>Children will begin the lesson by recapping their VIPs through a variety of kagan activities.</p> <p>After talking through the knowledge part of the notebook slides, children will be testing different distances of the light source to an object. Children will write an investigation question and a prediction based on their learning so far. They will complete the investigation using the results table given to them. After this, they will have time to reflect on their results and write a conclusion based on their original predictions.</p> <p>See planning slides on trust shared.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>- Torch</li> <li>- An object to shine torch on.</li> <li>- A ruler/meter stick</li> </ul> <p><b>Other useful resources:</b></p> <p><a href="https://www.bbc.co.uk/bitesize/clips/zshxpv4">https://www.bbc.co.uk/bitesize/clips/zshxpv4</a></p> <p><a href="https://www.youtube.com/watch?v=m8yb4hnA2dl">https://www.youtube.com/watch?v=m8yb4hnA2dl</a></p> <p><b>Year 3 Tasks &amp; Year 4 Tasks</b></p> <p>Both year groups will complete the same task but differentiation through year groups will be based on outcomes. Year 3 children will have more scaffolding and supporting materials, whereas year 4 children will be expected to work more independently.</p> <p><b>Red</b> - Children will complete the experiment with adult support using the result table provided.</p> <p><b>Blue</b> - Children will complete the experiment using the result table provided and the method modelled by an adult.</p> <p><b>Gold</b> - Children will complete the experiment as a team by working out how you are going to answer the investigation question. There may be a few red herring items within your equipment that may not be needed for this experiment.</p>
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				using the key words provided.		<p><b><u>Year 3 Deepen the moment:</u></b>          Always. Sometimes. Never. The closer the light source is to an object, the smaller the shadow will be.</p> <p><b><u>Year 4 Deepen the moment</u></b>          Explain how your shadow would change throughout the day and why this happens. Use diagrams to support your answer.</p>
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**Context (big picture learning)**

In LKS2, Science is a vital part of the curriculum that allows children to explore, examine and think about scientific ideas. It is an important part of the Science curriculum journey where there is a heavy emphasis on getting children to work scientifically, ask and answer questions and problem solve as they understand the knowledge behind each unit. In this unit children will work scientifically to by looking for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes. Children will explore what happens when light reflects off a mirror or other reflective surfaces, including playing mirror games to help them to answer questions about how light behaves. Children are heavily encouraged to work with their peers to create and answer their own questions to allow them to investigate and explore new theories independently. They will understand why it is important to protect their eyes from bright lights and the importance of this in the real world. In addition, they will explore and measure shadows and find out how they are formed and what might cause the shadows to change. Again, this will support them when moving into adult life and the importance of understanding how a shadow is formed.

**Folder name (Trust shared > Primaries > KS2 > Year 3/4 Planning > Cycle B > Summer 1 - The Iron Man > Science)**

Week 1 L1

Week 2 L2

Week 3 L3

Week 4 L4

Week 5 L5

Week 6 L6

Week 7 Assessment

## Key Vocabulary

**Light** - a form of energy that travels in a wave from a source.

**Light source** - an object that makes its own light.

**Dark** - the absence of light.

**Reflection** - the process where light hits the surface of an object and bounces back into our eyes.

**Reflective** - describes something which reflects light well. E.g. hi vis jacket, cats eyes.

**Ray** - a straight line of light.

**Mirror** - a material which reflects a clear image.

**Material** - the matter of what a thing is or what it is made from.

**Surfaces** - the outside part or upmost layer of an object.

**Eyes** - a pair of global organs which allows us to see.

**Protection** - keep safe from harm or injury.

**Pupil** - the black part of the eye which lets light in.

**Retina** - a layer at the very back of the eye where it takes the light that the eye receives. It then changes it into nerve signals to send to the brain.

**Shadow** - an area of darkness where light has been blocked.

**Opaque** - objects that do not let any light pass through them.

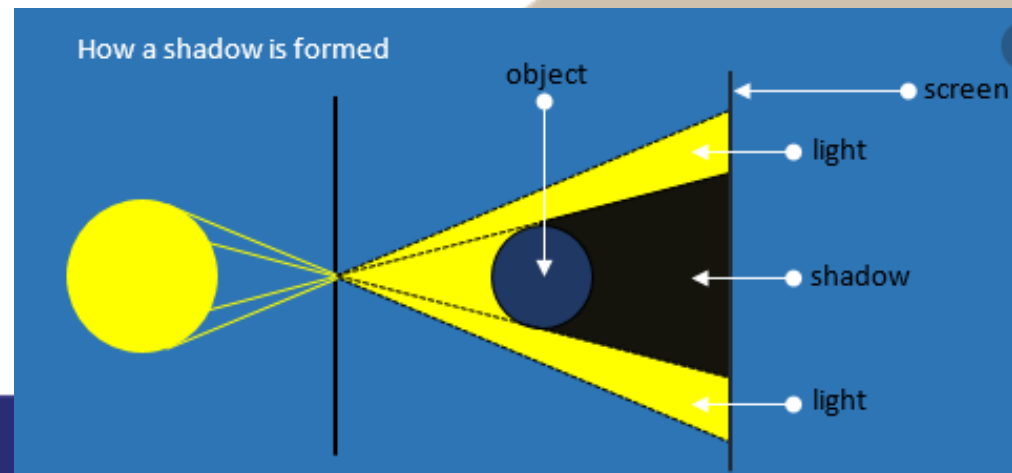
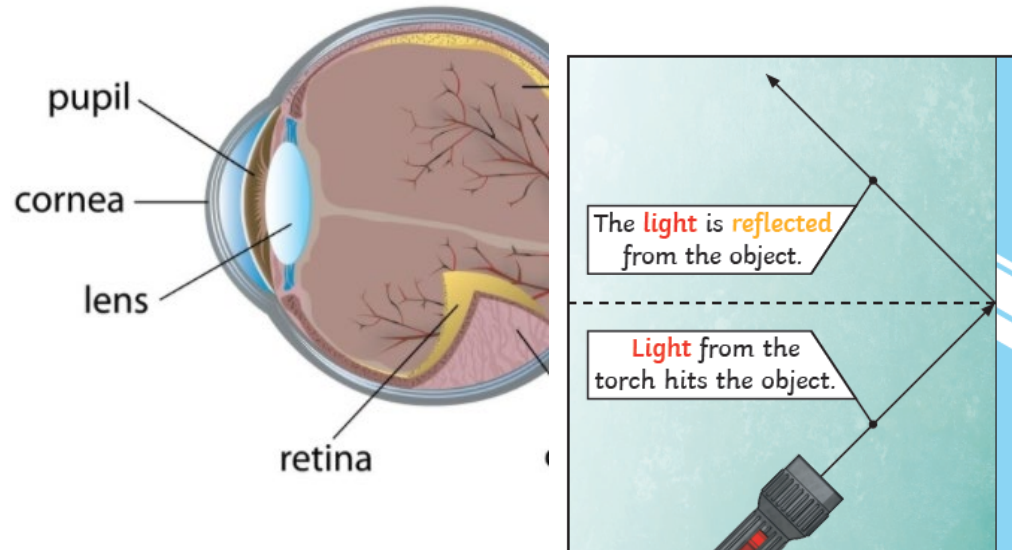
**Translucent** - objects that let some light through, but scatter the light so we can't see through them properly.

**Transparent** - objects that let light travel through them easily, meaning that you can see through the object.

**Intent:** To enable you, as learners, to understand the importance of natural light and light sources. You will learn about good eye health and how light enables us to see. In addition, you will experiment with different materials to see which are the most and least reflective. Finally, you will understand the link between objects, light and shadows.

## Fat Question

How would the world be different if we had no natural light?



## Very Important Points (VIPs):

- Light is a form of energy that travels in a wave from a source.
- We need light to be able to see things.
- Light travels in a straight line.
- A light source is an object that makes its own light.
- Dark is the absence of light.
- Reflection is the process where light hits the surface of an object and bounces back into our eyes.
- Reflective is a word that describes something which reflects light well. E.g. hi vis jacket, cats eyes.
- The best surfaces that reflect light best are smooth, shiny and flat.
- Some surfaces and materials do not reflect light well. E.g. a rough surface.
- Waves of light are called light rays which can also be called beams.
- The pupil is the black part of the eye which lets light in.
- The retina is a layer at the very back of the eye where it takes the light that the eye receives. It then changes it into nerve signals to send to the brain.
- If too much light enters, then it can damage the retina.
- To help protect the eyes, you can wear a hat with a wide brim and sunglasses with a UV rating.
- A shadow is an area of darkness where light has been blocked.
- A shadow is larger when an object is closer to the light source because it blocks more of the light.

