





Topic: Light	Year: 3	Strand: Physics
--------------	---------	-----------------

What should I already know?
<ul style="list-style-type: none"> <li>• Certain things produce <b>light</b>, usually by burning (e.g. the Sun) or <b>electricity</b> (e.g. street <b>lights</b>)</li> <li>• Shiny materials do not make <b>light</b> but do reflect it.</li> <li>• <b>Shadows</b> are caused when certain materials block <b>light</b>.</li> </ul>

What will I know by the end of the unit?
--

<p>What is a <b>light source</b>?</p>	<ul style="list-style-type: none"> <li>• A <b>light source</b> is something that <b>emits light</b> by burning, electricity or <b>chemical reactions</b>.</li> <li>• Burning <b>light sources</b> include the Sun, flames from a fire and stars.</li> <li>• We must never look directly at the Sun as the <b>light</b> produced is very <b>bright</b> and can be harmful to our eyes. This is why we wear <b>sunglasses</b>.</li> <li>• <b>Electric lights</b> include lamps, car headlights and street <b>light</b>.</li> <li>• <b>Lights</b> that are caused by <b>chemical reactions</b> are much less common. This happens when different chemicals react and <b>light</b> is a <b>product</b> of that reaction. Examples can include glow sticks and fire flies.</li> </ul> 
---------------------------------------	--

<p>Why do we need <b>light</b>?</p>	<ul style="list-style-type: none"> <li>• We need <b>light</b> so that we are able to see in the <b>dark</b>.</li> <li>• This is because the <b>dark</b> is the absence of <b>light</b>. The Sun and stars always give us <b>light</b> but we can only see the stars when it is <b>dark</b>. At night time we cannot see the Sun's <b>light</b> as the Earth turns and our part of the Earth is not lit up by the Sun at night.</li> <li>• When we are driving, we need car headlights or street <b>lights</b> to help us.</li> <li>• If we are walking or out in the dark, we would need <b>torches</b> to help us see. You should not look directly into the <b>torch</b> as this is dangerous.</li> </ul> 
-------------------------------------	---

<p>What are not <b>sources of light</b>?</p>	<ul style="list-style-type: none"> <li>• The Moon is not a <b>source of light</b> even though we can see it in the <b>dark</b>.</li> <li>• This is because the Sun's <b>light reflects</b> on the <b>surface</b> of the Moon making it appear as though the Moon <b>emits light</b>.</li> <li>• Shiny things are not <b>light sources</b> - they appear to be <b>sources of light</b> as they are <b>bright</b>.</li> </ul>
--	---

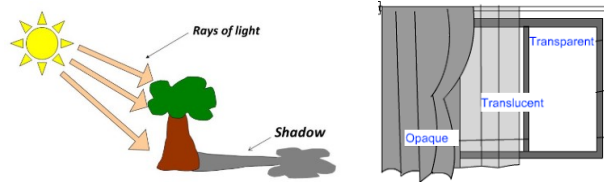
<p>How does <b>light travel</b>?</p>	<ul style="list-style-type: none"> <li>• <b>Light</b> travels in straight lines.</li> <li>• When <b>light</b> is blocked by an <b>opaque</b> object, a <b>dark shadow</b> is formed.</li> </ul>
--------------------------------------	---

Investigate!
--------------

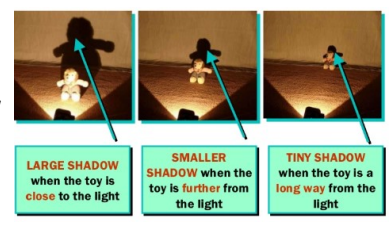
<ul style="list-style-type: none"> <li>• The <b>brightness</b> of torches - can you put torches in order from <b>brightest to dimmest</b>? What would make it a <b>fair test</b>?</li> <li>• Why do lights seem <b>brighter</b> in the <b>dark</b>?</li> <li>• Explore which objects form shadows when light is shone on them.</li> <li>• How can you change the size and shape of <b>shadows</b> by using the same object?</li> <li>• What happens when light is <b>reflected</b> from different <b>surfaces</b>? What happens when light is <b>reflected</b> from a <b>mirror</b>? What happens when the <b>angle</b> of the <b>mirror</b> (or light <b>source</b> changes?)</li> </ul>
---

Diagrams
----------

How are **shadows** formed?



<ul style="list-style-type: none"> <li>• When <b>light</b> is blocked by an <b>opaque</b> object, a <b>dark shadow</b> is formed. An <b>opaque</b> material blocks <b>light</b> so we can't see through it and shine a <b>light</b> through it.</li> <li>• When <b>light</b> is shone onto a <b>transparent</b> object, the <b>light</b> travels through it, we can see through it and it makes a very faint <b>shadow</b>.</li> <li>• When <b>light</b> is shone onto a <b>translucent</b> object, some of the <b>light</b> travels through it, we can see <b>bright light sources</b> through it and it makes a fairly <b>dark shadow</b>.</li> <li>• The size of a <b>shadow</b> changes as the <b>light source</b> moves. The further away the <b>light source</b> is, the smaller the <b>shadow</b> is. The closer the <b>source</b> of the light, the bigger the shadow.</li> </ul>
---



Vocabulary	
------------	--

angle	the direction from which you look at something
bright	a colour that is strong and noticeable, and not <b>dark</b>
chemical reactions	a process that involves changes in the structure of something
dark	the absence of <b>light</b>
dim	<b>light</b> that is not <b>bright</b>
electricity	a form of energy that can be carried by wires and is used for heating and lighting, and to provide power for machines
emits	to <b>emit</b> a sound or <b>light</b> means to produce it
light	a <b>brightness</b> that lets you see things.
mirror	a flat piece of glass which <b>reflects light</b> , so that when you look at it you can see yourself <b>reflected</b> in it
opaque	if an object or substance is <b>opaque</b> , you cannot see through it
product	something that is produced
reflects	sent back from the <b>surface</b> and not pass through it
shadows	a dark shape on a <b>surface</b> that is made when something stands between a <b>light</b> and the <b>surface</b>
source	where something comes from
sunglasses	glasses with <b>dark</b> lenses which you wear to protect your eyes from <b>bright</b> sunlight
surface	the flat top part of something or the outside of it
torches	a small <b>electric light</b> which is powered by batteries and which you can carry
translucent	if a material is <b>translucent</b> , some <b>light</b> can pass through it
transparent	If an object or substance is <b>transparent</b> , you can see through it



Topic: Light		Year: 3		Strand: Physics	
Question 1: How does light travel?	Start of unit:	End of unit:	Question 6: Shadows are formed when...	Start of unit:	End of unit:
In a straight line			light is let through an object		
In a curvy line			light reflects off an object		
Light is everywhere			it is dark		
Light does not travel			light cannot travel through an object		
Question 2: Dark means	Start of unit:	End of unit:	Question 7: Mirrors work by	Start of unit:	End of unit:
when there is a little bit of light so you can see			letting light through that hits them		
the absence of light			absorbing light that hits them		
you have to eat carrots so you can see			reflecting light that hits them		
Question 3: When light bounces off a surface, it is..	Start of unit:	End of unit:	Question 8: The size of a shadow becomes smaller...	Start of unit:	End of unit:
absorbed			when the object is close to the light source		
dissolved			when the object is far from the light source		
reflected			the distance between the light source and the object stays the same		
bounced					
Question 4: Sources of light include...(tick three)	Start of unit:	End of unit:	Question 9: How do we see an object?	Start of unit:	End of unit:
the sun			Light reflects off the object and enters our eyes		
the moon			Light travels from our eyes and reflects off the object		
street lights			Light reflects off our eyes and enters the object		
torches					
Question 5: Looking directly at the Sun is...	Start of unit:	End of unit:	Question 10: Match the words to their description:	Start of unit:	End of unit:
safe			translucent		
dangerous			you cannot see through it and a dark shadow is formed		
ok if there are clouds			transparent		
ok if the sun is rising or setting			you can see a little light through it and a fairly dark shadow is formed		
			opaque		
			you can see through it completely and a faint shadow is formed		