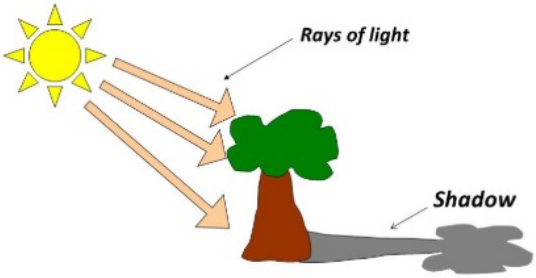
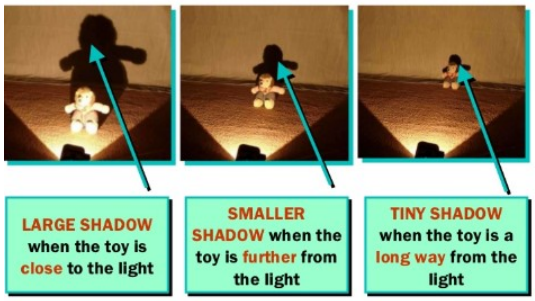
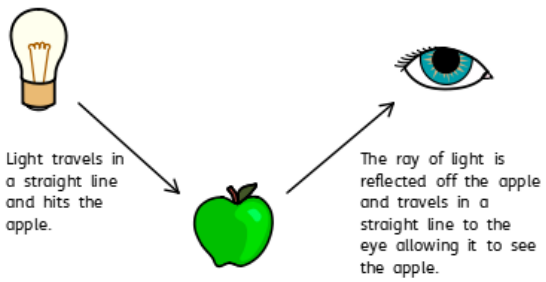
Over Hall Community School

Topic: Light	Year: 6	Strand: Physics

What should I already know?

- 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.

What will I know by the end of the unit?

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.
What is the relationship between **light sources** and **shadows?**	• 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. 
How do we see?	

Investigate!

- 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.

Vocabulary

angle	the direction from which you look at something
dark	the absence of **light**
dim	**light** that is not **bright**
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 **emit** a sound or **light** means to produce it
light	a **brightness** that lets you see things.
mirror	a flat piece of glass which **reflects light**, so that when you lookat it you can see yourself **reflected** in it
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 between a **light** and the **surface**
source	where something comes from
surface	the flat top part of something or the outside of it
torches	a small **electric light** which is powered by batteries and which you can 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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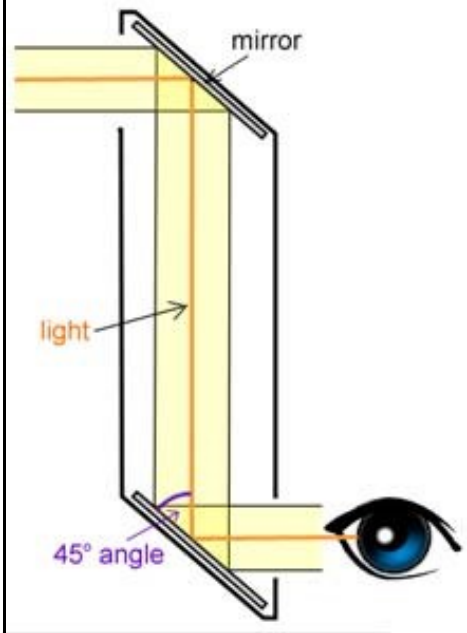
Question 1: When light bounces off a surface, it is..	Start of unit:	End of unit:
absorbed		
dissolved		
reflected		
bounced		

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		

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		

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		

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:

Question 6: Describe how the mirrors in a periscope allow us to see.	Start of unit:	End of unit:
		

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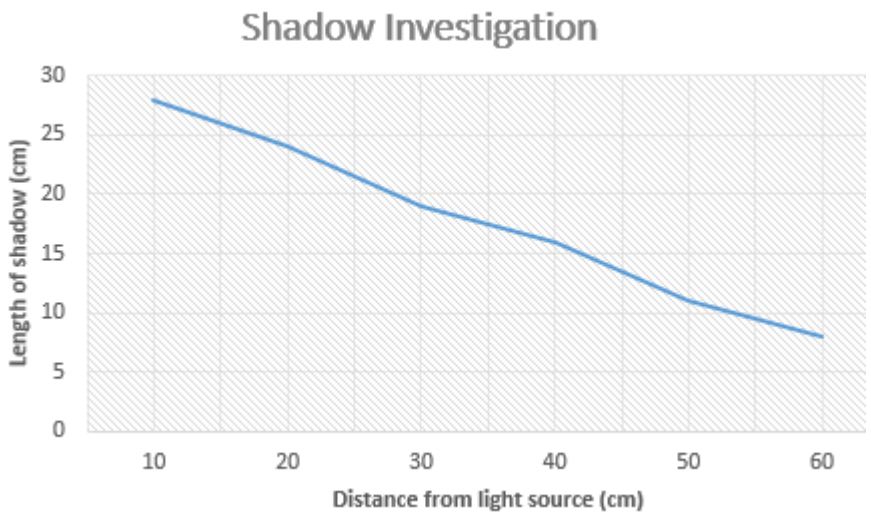
Question 7: You design an experiment to test the size of a shadow that is cast by a light source. Name one thing you will keep the same. Name one thing you will change.	Start of unit:	End of unit:

	Start of unit:	End of unit:
		
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?		
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?		
Question 10: Write a conclusion about what the line graph is showing using scientific vocabulary.		