

Riverside Primary School - Science

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.

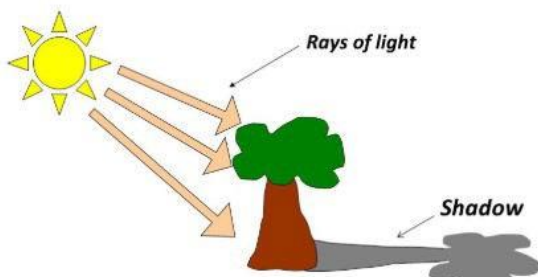
What will I know by the end of the unit?

How does **light** travel?

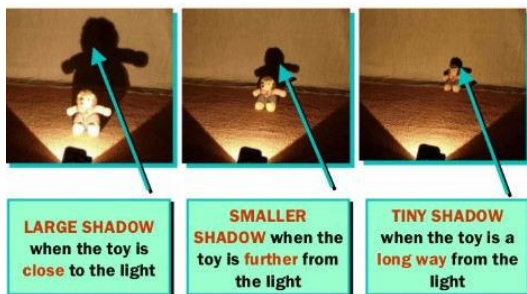
- **Light** travels in a straight line.
- When you place a torch on a table in a **dark** room, the beam travels in a straight line.
- **Reflection** is when **light** bounces off a surface - this changes the direction in which the **light** travels.

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.

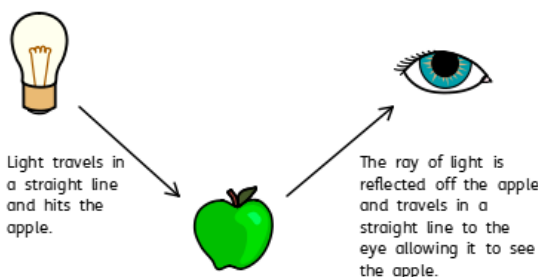


LARGE SHADOW when the toy is close to the light

SMALLER SHADOW when the toy is further from the light

TINY SHADOW when the toy is a long way from the light

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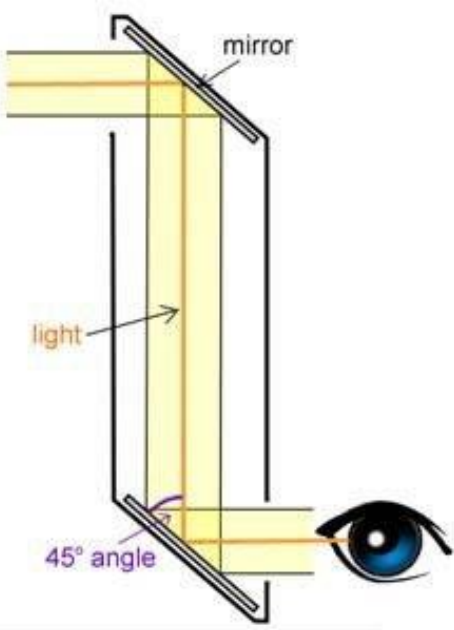
Question 1: When light bounces off a surface, it is..	Start of unit:	End of unit:
absorbed		
dissolved		
reflected		
bounced		

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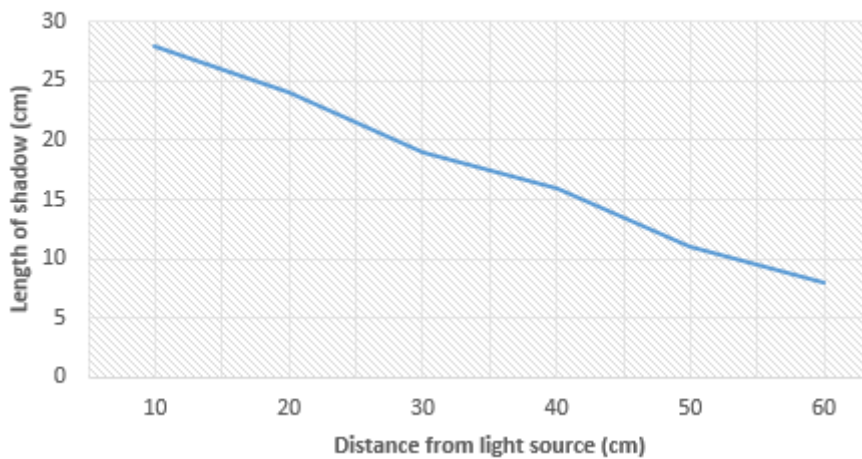
Question 7: You design an experiment to test the size of a shadow that is cast by a light source. Name one thing you will keep the same. Name one thing you will change.

Start of unit:

End of unit:

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Shadow Investigation



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.

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