

Science - Year 6

Light – Block 6L

Crime Lab Investigation

Session 1

Resource pack

UK CRIME LAB REPORT



CRIMINAL CASE FILE: 197663

OFFICERS IN CHARGE: DC Charlotte Briers & DC Ahmed Karim

SUMMARY OF CRIME:

At approximately 10.40 on the morning of 12th April the laptop of Sally Bircumshaw, teacher of Physics at West Hollow Secondary School, was stolen from her classroom, complete with password.

Ms Bircumshaw expressed concern that her laptop contained detailed notes on an upcoming publication that she fears was the motivation for the theft. She explained that her 'encrypted' password was hidden high on the wall behind books on a shelf, but that the books had been moved, leading her to believe that the password was seen by the thief.

CCTV shows the suspect dressed in a t-shirt and jeans with a hat covering their head. A clear identification cannot be made. The suspect's t-shirt and trousers appeared to change colour depending on the camera used. Witnesses describe the clothes as turquoise, yellow and bright pink at various times.

Witness sightings of the suspect's shadow suggest they were anything from 5ft 11 to 9ft 8. One witness said that they saw an odd shape on the shadow, which they described as being the shape of a car 'rear view' mirror on a stick, but are not sure.

We have CCTV footage of a small beam of light being shone into the gymnasium of the school late evening on the 8th April 2016. This beam was trained on three specific points of the wall below the window through which we believe the suspect made their entry. External CCTV footage shows a figure shining a torch through a hole in the exterior wall, once on tip toes, once standing normally and once on their knees. This footage is hazy and the suspect cannot be identified, or key height established, as a result.

ITEMS FOUND DISCARDED AT THE SCENE: coloured plastic film

ENTRY POINT: school gymnasium window

EXIT POINT: classroom window

KEY SUSPECTS:

- Anaya Jinda1
- Hannah Jackson
- Prof. Alice Nilsson
- Nouri Kashani
- Craig Ray
- Oliver Browning

UK CRIME LAB: EXPERT CLARIFICATION FORM



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EXPERT CLARIFICATION CHALLENGES: all basic challenges to be completed to a satisfactory level. High level expertise awarded for successful execution of 'high level' challenges.

CHALLENGE ONE (Equipment available: torch)

Does light travel in straight or curved lines?

(High level expertise: can you change the direction of a light beam?)

CHALLENGE TWO (Equipment available: torch, shadow 'puppets')

What causes a shadow to form?

(High level expertise: what causes a shadow to become larger/smaller and more or less defined?)

CHALLENGE THREE (Equipment available: torch, prism, coloured items)

Is light made up of colours or not?

(High level expertise: Why do you think things appear a specific colour?)

CHALLENGE FOUR (Equipment available: digital camera)

Can you identify key sources of light: natural and artificial?

(High level challenge: Can you describe through a diagram why the moon appears to be a source of light, but isn't?)

CHALLENGE FIVE (Equipment available: torch, shoe box with an eye hole and a 'light' hole covered by a flap, object to go in the box)

- *Does light come from our eyes or an original light source, reflecting off objects into our eyes?*
- *(High level expertise: Why can we often still see at night time?)*

• *NB: please ensure you can demonstrate your answers scientifically*

STICKY-NOTE INVESTIGATIONS (AFTER GOLDSWORTHY AND FEASY, 1997)

Stick filled in sticky-notes on the blank boxes to help organise thoughts
- the sticky-notes can be moved as the investigation plan progresses

Enquiry question:

VARIABLES

Things I could change/vary

--	--	--

Things I could observe or measure

--	--	--

Ensuring my test is fair

I will change

I will observe

I will keep these things the same

Predicting

When I change

**What will
happen to**

I think...

Results and patterns	
What I changed	What I observed

What happened to	
When I changed	

I discovered:






FINAL SELECTION QUIZ



1. When light bounces back off a surface, we say it has been ...
 - Reflected
 - Absorbed
 - Bent
2. What types of surfaces reflect light well?
 - Light coloured and smooth
 - Dull and dark
 - Dark coloured and smooth
3. Which of these objects would reflect the most light?
 - A rusty metal key
 - A wooden spoon
 - A polished metal knife
4. How do mirrors work?
 - By reflecting the light that hits them
 - By absorbing the light that hits them
 - By letting through the light that hits them
5. Why do scissors look shiny?
 - Because they are sharp
 - Because they reflect light
 - Because they give out light
6. To make a wall reflect as much light as possible, you should paint it?
 - Black
 - White
 - Yellow
7. How are shadows formed?
 - By light passing through an object
 - By light reflecting from a shiny object
 - By an opaque object blocking the path of light
8. How do we see a tree?
 - By light reflecting off the tree and entering our eyes
 - By light travelling from our eyes and reflecting off the tree
 - By light reflecting off our eyes and entering the tree
9. Which of these is FALSE?
 - Light travels in straight lines
 - Light travels very fast
 - Light can pass through any material

CRIME LAB: SUSPECTS



Photo	Name	Profession	Height	Motive
	Anaya Jindal	Science Journalist	5ft 9	Wants Sally's ideas to publish herself.
	Hannah Jackson	GCSE Physics Pupil (taught by Craig Ray)	5ft 10	Wants to impress her physics teacher with Sally's ideas, in order to get good grades on her course work.
	Prof Alice Nilsson	Professor of Physics	5ft 3	Wants Sally's ideas to claim as her own.
	Nouri Kashani	Microbiologist	5ft 10	Nouri unsuccessfully applied for a teaching job at the school - he was interviewed by Sally Bircumshaw and blames her for not getting the job. He knows that she has a paper she is working on as she shared this information during the interview.
	Craig Ray	Physics Teacher	6ft 3	Wants Sally's ideas to claim as his own and use in his research.
	Oliver Browning	Lighting Engineer	6ft	Is known to have been dared to break into the school and steal something valuable by his 'mates'.