

# Week 5 - 20<sup>th</sup> March 2013

Topic - Science  
Day Plan

Time	Activity	Notes
09:00 - 09:15	Light and Shadows - what you know	Write down what you know about light and shadows
09:15 - 09:30	Light and Shadows - questions	Write all questions you have about light and shadows
09:30 - 10:00	Light and Shadows - laws	Look in Encyclopaedia to find out about light
10:00 - 10:30	Break	
10:30 - 11:00	Light and Shadows - answers	Write down answers to questions
11:00 - 11:30	Light and Shadows - experiment	Think up and write down an experiment we do to prove something we have found out.
11:30 - 12:00	Light and Shadows - experiment	Do the experiment, what did we learn?
12:00 - 13:00	Lunch and break	
13:00 - 13:30	Light and Shadows - Test	Answer questions in this test
13:30 - 14:30	Art	Start on a painting, aim to complete it within the lesson. Think about light and shadows.
14:30 - 15:00	Light and Shadows - seeing?	Think about how we see, lets draw a diagram showing how it is done.

# What Do You Know?

Write down everything you know about Light and Shadows, you can write a list or a mind map. Remember you only have 15 minutes, so be quick.

1. I know that light causes shadows because of something on the way of a wall in a dark room then a torch comes on.
2. It is that the speed of light is the fastest thing in the world.
3. Light is caused by energy and oxygen.
4. I also know that you can get adjacent ~~ways~~ <sup>colours</sup> of seeing light, sometimes ~~or~~
5. you can see light.
6. Light is extremely hot and sometimes it's too hot to touch.
7. There are senses that can't read light (E.g. taste, hear) ~~←~~



Time - 5min after talking, Sagar thought of 3 more things. 10min  
Sagar - At first I found it easy and got 3-4 answers/~~things~~ things I know the I thought it through and got lots more (3 more)

Sanjiv - Sagar was able to write more once we talked about the subject.

# What Do You Want To Know?

Write down all the things you want to know about Light and Shadows.

1. What actually makes light?
2. Who invented light?
3. How do shadows work?
4. Does light like energy?
5. How do the two subjects connected so well?
6. How fast can light move?
7. ~~How~~ How is light connected to colours?
8. How do your eyes see colour?



Time - 15 min

Sagar - I found it harder but... 😊

Sangeer - Sagar was able to write down great questions.  
We will have fun looking for answers.

# What do you now know?

Have a look at the list of things you wanted to know earlier today. How many questions do you know now answers to? Write down your answers below, also have you got any new questions you would like answers to? If so write them below in another colour.

What makes light?

A luminous object. Eg. a sun or light bulb.

Who discovered the laws of light?  
mostly Newton and a very clever greek man named Heraclitus

How do shadows work?

Reflected light on something that isn't straight

How is light connected to colours?

Newton found that with a triangle shape (a prism) in a dark room and you had a small beam of light the colours of the rainbow would come out. Ta Da!

How do your eyes see colour?

they see colour by lenses in your eyes that send info to your brain and the colours!



Extra - white light hits lets say a green object then all the other colours of the spectrum are soaked up except green that it reflects back.

Light travels at 300 million metres per second!!!!

## Other facts?

Do the experiment; write down the results and what you learnt:

Light travels from a light source such a lamp or the Sun.

Light sources give out light.

We see things when light from a source enters our eyes.

Some objects seem bright, but they are only reflecting light from elsewhere.

Light travels in straight lines. (sometimes!)

If something is in the way of the light you get a shadow.

Light travels very fast. 300 million metres a second.

Opaque objects block all light .

An opaque object blocking the light causes shadows eg. wood, metal, stone, you.

Transparent objects let light through eg. glass, clear plastic.

Translucent objects block some light eg. tissue paper

# Experiment

Think up of an experiment we can do at home to prove something we have found out. Write down what we need to do the experiment, how we will do it and what we expect to happen

## Refraction

I am going to prove that when you look through air to something transparent in a bowl (maybe) and there's a coin you will see the coin in a different angle.

### Descript.

I am going to look through a bowl with water and a penny inside and look at it then get a block of a spoon poke it if I don't poke the coin it's because air going into water there to different things so it causes us to see things differently it will not work if just by looking through the window because you're going to trap ~~event~~ air to transparent back to air, so you would be able to see a coin floating in midair and you would be able to touch the coin!

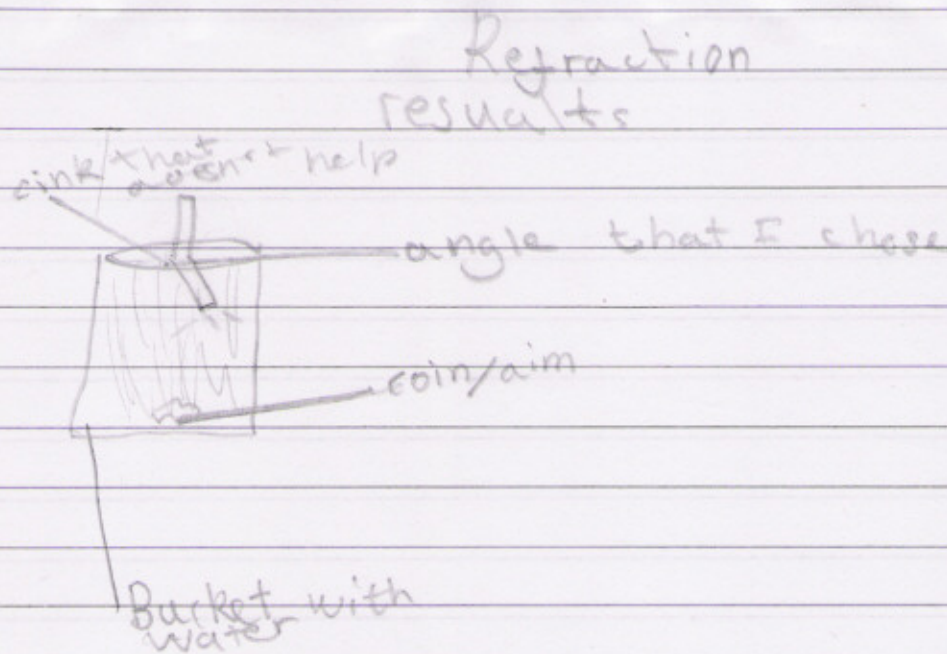
### Materials

Spoon, Bowl full of water, coin.

Great  
Effort



# Experiment Results



result

1. when I first did the experiment in the small bowl it did not work.
2. when we went to the bath and did the experiment in the bucket it worked
3. we put the stick in and saw a cink like shown in diagram.
4. then we realised that the bucket should be deeper
5. whenever the cink is the shadow is!
6. I have proved that Newton was right
7. the bigger the angle the bigger the cink (refraction) same the smaller angle.
8. also when I looked at the stick it lighter
9. Also when you put the coin in the jug your eyes thought it got bigger.

## Conclusion

1. If the bowl is too small you can not see the refraction.
2. Refraction affects the angle of light.
3. The angle of refraction affects the angle of light.
4. ~~The~~ colour is affected by water.
5. Water is acting like a lens.

# Test

Answer the following questions

1. Which of the following are sources of light, and which can you see because they reflect light?

- a. Stars
- b. Brick Walls
- c. Plants
- d. Mirrors
- e. Planets
- f. Electric light
- g. Candle flame

S  
R  
R  
R  
R  
S  
S

2. If you can see through something, it is said to be Transparent

3. What R can you see when you look in a mirror? reflection

4. What O describes a material that light cannot pass through? opaque

5. How does light travel? waves

6. What R describes the bending of light? refraction

7. What T describes a material that only some light can pass through? Translucent

8. What do you call an object that makes its own light? Luminous

9. Light travels much faster than sound. True or False? True

10. How are shadows formed? by light being blocked

11. How can you make a really large shadow of your hand appear on a screen?

Stand really close to the light

12. On a sunny day, what time of day will your shadow be the shortest?

Midday

13. Explain how you see yourself when you look in a mirror.

the light ~~is~~ reflects off the mirror  
into are eyes

# How do we see?

How do we see? Draw a diagram and describe how we see.

Your eye sees a plant because of the light shining onto a flower eye and makes a reflection into my eyes.

