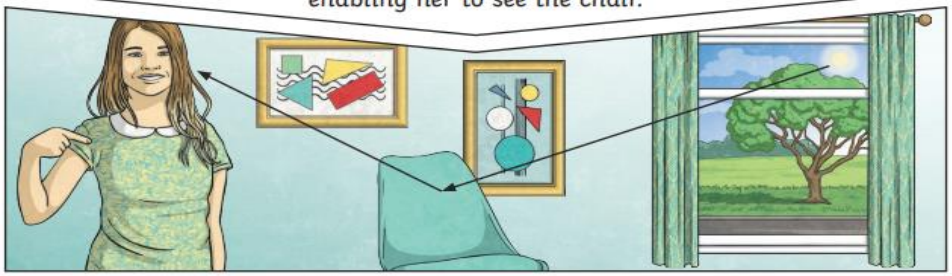
Key Knowledge

We need **light** to be able to see things. **Light** waves travel out from sources of **light** in straight lines. These lines are often called rays or beams of **light**.

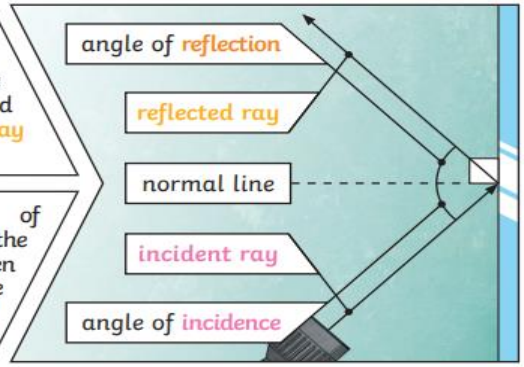
Light from the sun travels in a straight line and hits the chair. The **light** ray is then **reflected** off the chair and travels in a straight line to the girl's eye, enabling her to see the chair.



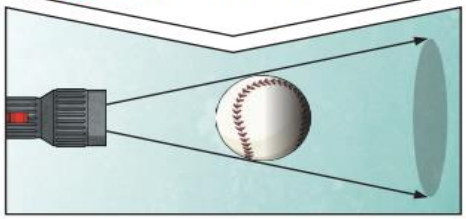
The law of reflection states that the angle of **incidence** is equal to the angle of **reflection**. Whenever **light** is **reflected** from a surface, it obeys this law.

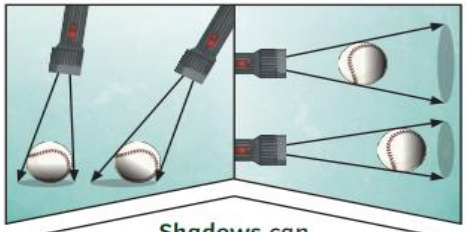
The angle of **reflection** is the angle between the normal line and the **reflected ray** of **light**.

The angle of **incidence** is the angle between the normal line and the **incident ray** of **light**.



A **shadow** is always the same shape as the object that casts it. This is because when an **opaque** object is in the path of **light** travelling from a **light source**, it will block the **light** rays that hit it, while the rest of the **light** can continue travelling.





Shadows can also be elongated or shortened depending on the angle of the **light source**. A **shadow** is also larger when the object is closer to the **light source**. This is because it blocks more of the **light**.

Key Vocabulary

light	A form of energy that travels in a wave from a source.
light source	An object that makes its own **light**.
reflection	**Reflection** is when **light** bounces off a surface, changing the direction of a ray of **light**.
incident ray	A ray of **light** that hits a surface.
reflected ray	A ray of **light** that has bounced back after hitting a surface.
the law of reflection	The law states that the angle of the **incident ray** is equal to the angle of the **reflected ray**.
shadow	An area of darkness where **light** has been blocked.
transparent	Describes objects that let **light** travel through them easily, meaning you can see through the object.
translucent	Describes objects that things let some **light** through, but scatters the **light** so we can't see through them properly.
opaque	Describes objects that do not let any **light** pass through them.

Try it at home

1. Put a spoon in a glass of water and look at it from different angles. Explain what happened.
2. Make a poster about different light sources – both natural and artificial. Be creative with your presentation.
3. Write your name and hold it in the mirror. Draw a diagram and use key vocabulary to explain what happened.

Learning links https://www.bbc.co.uk/bitesize/topics/zbssgk7

1. How does light travel?	
In straight lines	
In wavy lines	
Around corners	
2. How do we see?	
All objects give off light that travels to our eye	
Light from a light source reflects off an object into our eye	
Our eyes absorb light from everything within 20 metres of us	
3. Which of these can we see through?	
Opaque objects	
Translucent objects	
Transparent objects	
4. Which of these cast shadows?	
Transparent objects	
Translucent objects	
Opaque objects	
Everything	

5. Draw something that explains how this person sees this chair.

6. Match the word to its meaning

Light source	A ray of light that bounces off a surface.
Incident ray	An object that lets some light through, but we can't see through them properly.
Reflected ray	Something that makes its own light.
Transparent	An object that lets no light through, meaning that we can't see through it.
Translucent	A ray of light that hits a surface.
Opaque	An object that lets light travel through easily meaning it is see-through.