

Light and Shadows

The Sun

The Sun is our nearest star and is our main light source. It is roughly sphere-shaped and is much greater in size than the Earth. The Sun provides us with both light and heat. The Sun appears to move during the day, rising in the east and setting in the west, however, it is actually the Earth that is moving in a **constant rotation**. It is this movement that creates the effect of day and night.

Light sources

Light can come from many different places. Some light sources occur naturally, such as the Sun, whilst others are man-made using electricity. Can you think of any sources of light natural or man-made?

Examples of Light Sources

Natural	Man-Made
sun	torch
fire	television
lightning	lighthouse
firefly	table lamp



Sometimes it can be **confusing** which objects are light sources and which are not. For example, the Moon or a mirror are not sources of light. They do not create light, they only reflect it from other sources. However, if a rock or metal is heated up enough to be melted it can become a light source itself.

How Light Travels

Light rays travel at a speed of 300 million metres per second. They travel in straight lines which come directly from the light source. When they hit an **opaque** object, some light is **absorbed** but the rest reflects off which is how shadows are formed. If the object is **transparent**, light rays can pass through easily. If the object is **translucent**, some light can pass through but the rest of the light will be reflected. Some objects need to be transparent to work, for example a pair of glasses or a window, whilst others need to be opaque, such as a pair of curtains or a **parasol**.

Shadows

A shadow is a dark area where light cannot reach. When rays of light are blocked by an opaque object, such as you, a shadow is created. It forms the same shape, or **silhouette**, as the object which is blocking the light out. If the light source is moved closer to the opaque object, the more light is blocked out and therefore the shadow becomes larger. In the **opposite** way, when the light source is moved further away from an object, less light is blocked and therefore the shadow becomes smaller.



Shadow Play

We can have fun with shadows by creating different shapes using models or even our hands to create stories and plays. This is called shadow play or shadow **puppetry**. Shadow play is an old **tradition** and is popular in Asia.



How Shadows Change

The position of the Sun affects the position and length of the shadows created outside, due to the movement of the Earth during the day. Shadows are longer during the morning and late afternoon because the Sun is further away and the shadows are shortest at midday. Because of this, on a sunny day, we can use a **sundial** to tell the time.

REMEMBER...

It is important to keep your eyes healthy by not looking directly at light sources, such as the Sun. It is **recommended** that you wear sunglasses with high UV (Ultra Violet) protection.

Light and Shadows – Follow-Up Work

How are day and night created?

Identify the main ideas of the final section titled 'REMEMBER...'.

What is a shadow?

Give an example of a sub-heading from the text.

What is shadow play?

Record four examples of natural light sources.

Use a dictionary to find the meaning of the word 'opaque'.

What does the word 'transparent' mean in the text?

How quickly does light travel?

How do the pictures help the reader?

What text type is this? How do you know?

Why has the writer put the word 'REMEMBER' in capital letters?

What is the most interesting thing you have learnt about light and shadows?

After reading the text, what else would you like to find out about light and shadows?

Light and Shadows – Vocab 1

Write the meaning of each of these words.

constant _____

rotation _____

confusing _____

opaque _____

absorbed _____

transparent _____

translucent _____

parasol _____

silhouette _____

opposite _____

puppetry _____

tradition _____

sundial _____

recommended _____

Light and Shadows – Vocab 2

Unscramble the words below and find them in the word search.

ncsotnta

c _____

uaqepo

o _____

soopepit

o _____

atioditnr

t _____

ontatroi

r _____

nnfusigco

c _____

a	n	o	i	t	p	e	c	o	d	b
c	e	f	m	t	n	a	i	p	e	d
i	a	g	o	b	r	y	a	p	g	e
j	n	n	p	d	h	c	m	o	t	s
n	x	i	a	c	u	o	n	s	u	c
o	i	l	q	a	d	n	s	i	h	o
i	s	l	u	l	z	f	n	t	u	n
t	b	e	e	s	i	u	u	e	i	s
a	a	u	n	t	e	s	g	e	a	t
t	r	a	d	i	t	i	o	n	d	a
o	o	g	h	r	s	n	c	f	e	n
r	n	a	o	t	e	g	f	r	i	t

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Light and Shadows – Y3m/Y4d/Y5e (Ruby) – Vocab

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resources [here](#).

Suffixes

A suffix is a letter or group of letters added at the end of a word to make a new word.

For example, tallest, funnier, swimming, walked. Sometimes you have to change the root word for the correct spelling.

Identify five examples of words using the suffixes 'est', 'er', 'ing' and 'ed' from the text.

Add the following suffixes to these root words. Remember you may need to change the spelling of the root word for the correct spelling.

happy + er = _____

dance + ing = _____

thin + est = _____

talk + ed = _____

fat + est = _____

simple + er = _____

Light and Shadows – Oral Teacher Questions

How are day and night created? **The Earth that is moving in a constant rotation around the sun.**

Identify the main idea in the final section titled 'REMEMBER...'. **We need to be safe and protect our eyes by not looking directly at light sources and wearing sunglasses with UV protection.**

What is a shadow? **A shadow is a dark area where light cannot reach.**

Give an example of a sub-heading from the text. **The Sun, Light Sources, How Light Travels, Shadows, Shadow Play, How Shadows Change.**

What is shadow play? **An art form where models or puppets are used to create shadows and tell stories and plays.**

Record four examples of natural light sources. **Sun, fire, lightning, firefly.**

Use a dictionary to find the meaning of the word 'opaque'. **Preventing light from passing through.**

What does the word 'transparent' mean in this context? **An object which you can see through clearly.**

How quickly does light travel? **300 million metres per second.**

How do the pictures help the reader? **The pictures show a visual image of what is being discussed in the text. This helps the reader to understand what they read by showing them examples of what is being described.**

What text type is this? How do you know? **It is an information text/non-chronological report on light sources. It has subtitles, interesting information, facts and images.**

Why has the writer put the word 'REMEMBER' in capital letters? **To make it stand out as it is an important safety notice.**

What is the most interesting thing you have learnt about light and shadows?
Personal response.

After reading the text, what else would you like to find out about light and shadows?
Personal response.

Light and Shadows – Vocab 1

Write the meaning of each of these words.

constant – **happening all of the time**

rotation – **moving in a circle around a fixed point**

confusing – **something which is difficult to understand**

opaque – **preventing light from passing through**

absorbed – **to be taken in; to soak in**

transparent – **you can see through it clearly**

translucent – **almost transparent, allowing some light through**

parasol – **a type of sunshade, similar to an umbrella**

silhouette – **a dark shape seen against a light surface**

opposite – **completely different**

puppetry – **the act of controlling puppets**

tradition – **a belief or way of acting that people have been doing for a long time**

sundial – **a device used outside to show the time by making shadows on the surface**

recommended – **something which is suggested to be good**

Light and Shadows – Vocab 2

Unscramble the words below and find them in the word search.

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opaque

soopepit

opposite

atioditnr

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rotation

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a	n	o	i	t	p	e	c	o	d	b
c	e	f	m	t	n	a	i	p	e	d
i	a	g	o	b	r	y	a	p	g	e
j	n	n	p	d	h	c	m	o	t	s
n	x	i	a	c	u	o	n	s	u	c
o	i	l	q	a	d	n	s	i	h	o
i	s	l	u	l	z	f	n	t	u	n
t	b	e	e	s	i	u	u	e	i	s
a	a	u	n	t	e	s	g	e	a	t
t	r	a	d	i	t	i	o	n	d	a
o	o	g	h	r	s	n	c	f	e	n
r	n	a	o	t	e	g	f	r	i	t

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Light and Shadows – Y3m/Y4d/Y5e (Ruby) – Vocab **ANSWERS**

Like this? Find more differentiated Light resources [here](#).

Suffixes

A suffix is a letter or group of letters added at the end of a word to make a new word.

For example, tallest, funnier, swimming, walked. Sometimes you have to change the root word for the correct spelling.

Identify five examples of words using the suffixes 'est', 'er', 'ing' and 'ed' from the text.

Answers could include: nearest, smaller, closer, larger, longer, greater, looking, rising, moving, confusing, blocking, moved, heated, melted, absorbed, formed, reflected, clocked, created.

Add the following suffixes to these root words. Remember you may need to change the spelling of the root word for the correct spelling.

happy + er = **happier**

dance + ing = **dancing**

thin + est = **thinnest**

talk + ed = **talked**

fat + est = **fattest**

simple + er = **simpler**