

LIGHT AND OPTICS

1 ANSWER THE QUESTIONS IN YOUR OWN WORDS!

Why is light so important for us ? What does it give us ? _____

Give some examples for

1. natural light _____

2. man-made light _____

Which two "natures" does light have ? _____

What is the amplitude of a wave ? _____

What colour does sunlight have ? _____

Why do we often see a rainbow ? Explain ! _____

Which colour has the longest and which the shortest wavelength ? _____

What are ultraviolet rays ? _____

What are infrared rays ? _____

Which three things may happen with light when it hits an object ?

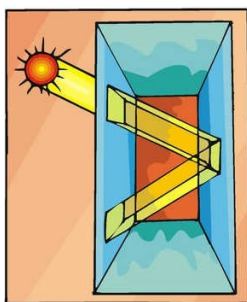
1. _____

2. _____

3. _____

Why can you see yourself in a mirror ? _____

Why don't swimming pools look as deep as they really are ? _____



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2 ANSWER THE QUESTIONS IN YOUR OWN WORDS!

What happens when light scatters ? _____

Why is the sky blue ? _____

Why do we see certain colours in certain objects ? _____

What colour reflects all light ? What colour absorbs all light ? _____

How fast can light travel in space ? _____

How long does it take sunlight to reach our earth ? _____

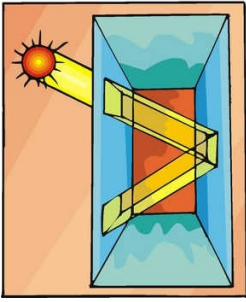
How is the brightness of light measured ? _____

What is a nanometre ? _____

Why does visible light have a high frequency ? _____

If a wave has a frequency of 100 hertz, what does this mean ? _____

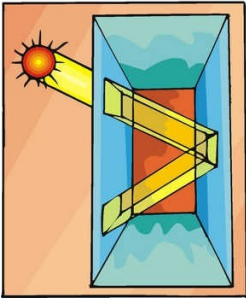




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3 TRUE OR FALSE?

	T	F
Green plants use sunlight to produce oxygen.		
An atom or particle that has little energy is called excited.		
A light bulb glows because a wire inside is heated.		
Light can only travel as waves.		
All electromagnetic waves are visible.		
Light is an electromagnetic wave.		
The amplitude is the distance between two high points of a wave.		
X-rays are long waves that pass through the human body.		
Ultraviolet and infrared light are invisible.		
Radio waves belong to the longest waves we know.		
Opaque materials only let some light pass through.		
We can see objects because light bounces off them and hits our eyes.		
When light waves hit a solid object they become faster.		
The sky is blue because the air absorbs most of the blue light.		
White objects reflect all colours.		
An apple is red because it absorbs all the colours except the red ones.		
Light travels at a speed of 300,000 kilometres an hour.		
In the metric system we measure the brightness of light in lux.		
Radio waves have low frequencies.		
Visible light has a high frequency because it has a long wavelength.		

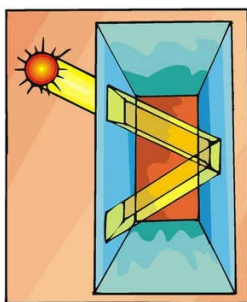


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4 MATCH THE WORDS WITH THE DEFINITIONS

A	amplitude
B	breathe
C	excited
D	space
E	particles
F	store
G	translucent
H	X-ray
I	laser
J	bounce off
K	refract
L	intensity
M	equal
N	hertz
O	microwaves
P	sunburn
Q	horizon
R	reflect
S	solid
T	flashlight

	if an object has more energy than normal
	to be the same as something else
	light changes direction when it passes through glass, water or other objects
	a small electric light that you can carry in your hand
	longer waves that are used to make food warm
	distance between the highest and lowest point of a wave
	machine that produces powerful beams of light in which all particles travel in the same direction
	to put things somewhere for a longer time
	to send back
	the red skin that you get when you spend too much time in the sun
	to take air into your lungs and send it out again
	the unit frequencies are measured in
	how strong something is
	beams of light that can go through objects and make a picture of the inside of them
	hard, with a fixed shape
	to hit an object and then quickly move away from it
	the area far away from the earth where the stars and the planets are
	a line far away where land or the sea seems to meet the sky
	not transparent, but clear enough so that you can see through a bit
	very small pieces of something



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5 FILL IN THE CORRECT WORDS FROM THE LIST BELOW !

Light gives us the _____ we need to stay alive. It _____ us with _____, heat and electricity. Most light comes from _____ when they give off energy. We get _____ light from the sun and the stars, but light is also produced by _____.

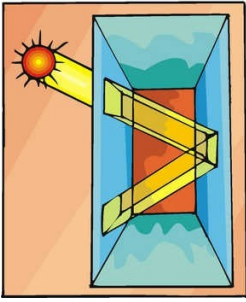
Light is an _____ wave that can travel through _____ at a speed of 300 000 km a second. It has a wavelength, frequency and _____.

When sunlight passes through special objects it _____ up into many different colours. _____ light is at one end of the _____ spectrum. It has the shortest _____. Red light, which has the longest wavelength, is at the other end.

Ultraviolet light is _____ and may cause sunburn and skin _____. Infra-red light makes you feel warm and can't be seen either.

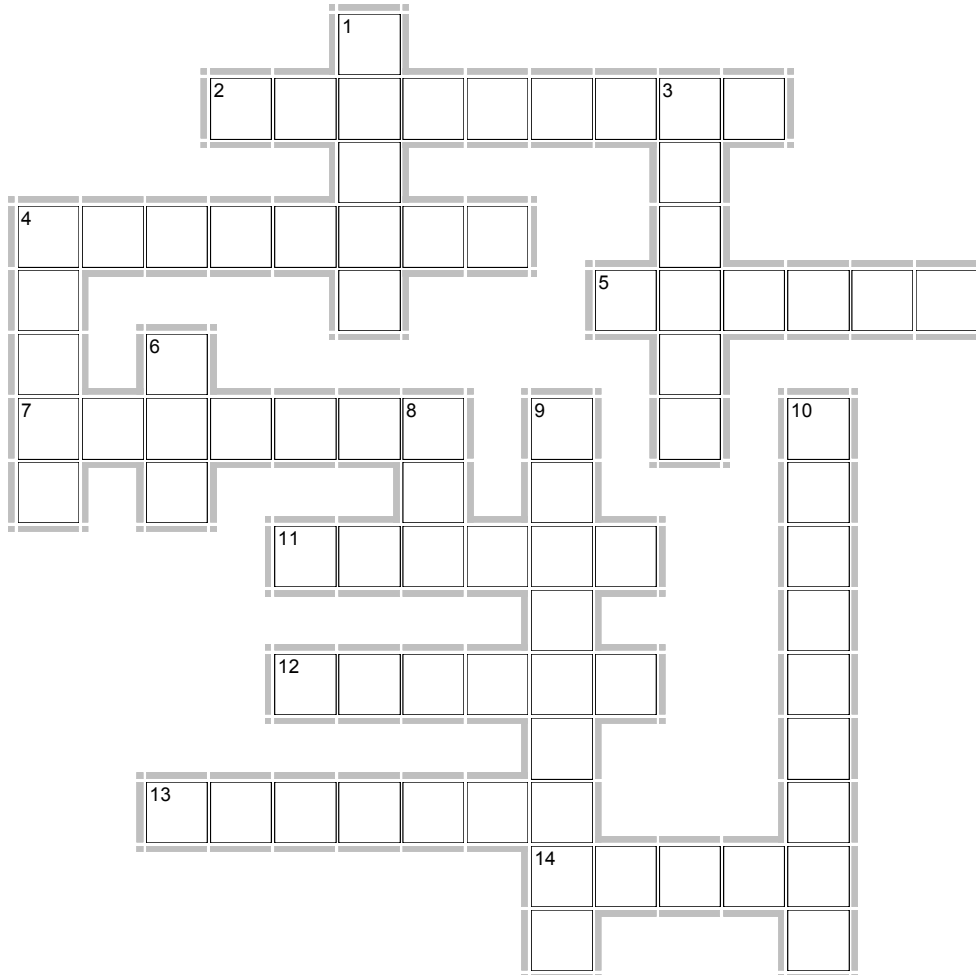
When light hits an object it may _____ in three ways. It can be _____, which means it bounces off an object and travels to your eyes. Light refracts when it hits an object. It becomes slower and _____ its direction. When light rays hit other atoms or molecules they _____, which means they send off their rays in many different _____.

amplitude	electromagnetic	reflected
atoms	energy	scatter
behave	fuel	space
breaks	humans	violet
cancer	invisible	visible
changes	natural	wavelength
directions	provides	



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6 CROSSWORD



Across

2. distance between the highest and the lowest points of a wave
4. a very small piece of something
5. a piece of glass that you can see yourself in
7. to move quickly into different directions
11. a gas that is in the air and that we need to live
12. if you cannot see through something
13. one thousand million
14. the highest point of a hill or a wave

Down

1. the area far away from the earth, where the stars and the planets are
3. machine or tool that does a certain job
4. a block of glass that breaks up light into different colours
6. the material that candles are made of
8. a straight beam of light
9. the number of times that something happens in a given time
10. to enter or pass something, even if it is difficult