

# Workbook

"Living with the sun"  
Program



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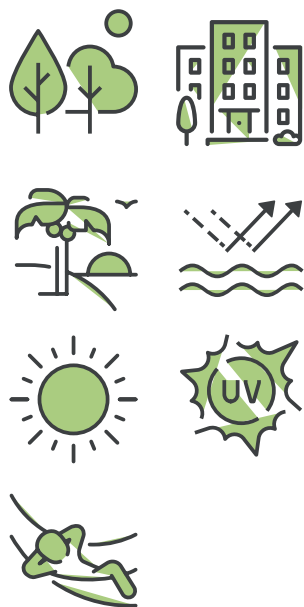
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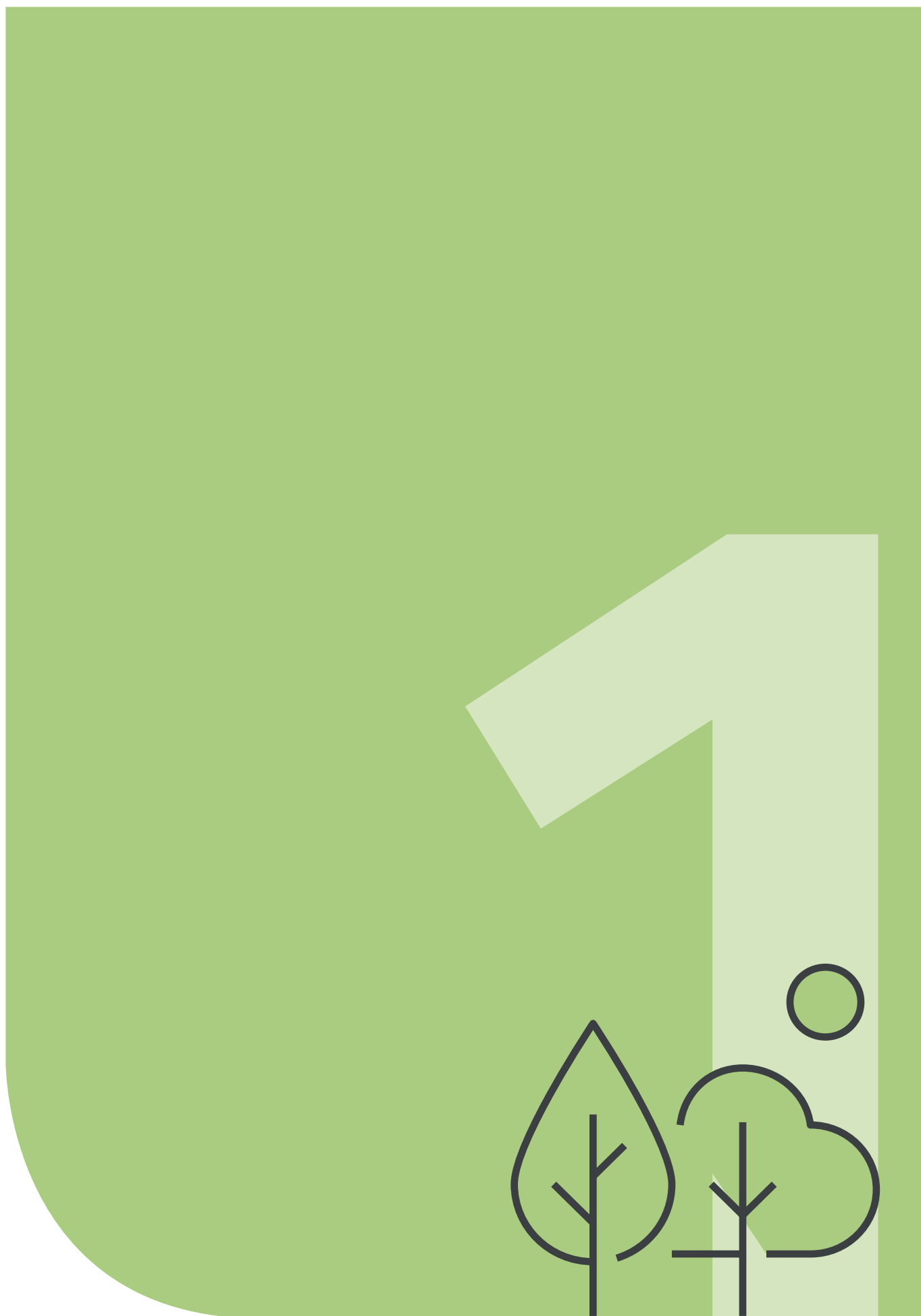
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# Index



1. INTRODUCTION .....	5
2. PERSONAL FILE .....	7
3. DIDACTIC UNITS .....	9
<b>Unit 1.</b> The sun .....	13
<b>Unit 2.</b> The skin .....	19
<b>Unit 3.</b> Positive and negative effects of the sun .....	27
<b>Unit 4.</b> Photoprotection .....	37
STICKERS .....	46







# Introduction

Dear students,

In this workbook you will find different activities relating to each of the educational units that are part of the “Living with the sun” project. Through them, you will come to understand how your body reacts to the sun and learn the many benefits that you can gain from it, as well as the negative consequences it can have on your body. This will teach you so much about the right habits you need to cultivate in order to protect and care for your skin while you enjoy the positive effects of the sun. You may already know some of the contents, while others will be either partially or completely new. In any case, they will be of great help to you in your day-to-day.

We offer you a trip full of fun with videos, sudoku, stickers and much more. On this journey you will enjoy becoming as bright and healthy as WonderLux is.

Oh! Do you not know who she is? Well, let’s go meet her!

2





## Personal file

→ Date: .....

→ Name: .....

→ Year: .....

→ Age: .....

→ Eye colour: .....

→ Hair colour: .....

→ Skin colour: .....

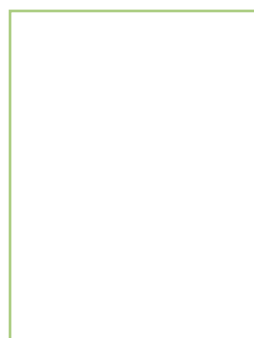


Photo / Drawing

### What are my habits under the sun:

→ .....

→ .....

→ .....

→ .....

→ .....

→ .....

→ .....

→ .....

### Phototype (do not fill in this section until you have reached unit 2):

→ .....

→ .....

→ .....



# Didactic units

<b>Unit 1.</b> The sun .....	13
<b>Unit 2.</b> The skin .....	19
<b>Unit 3.</b> Positive and negative effects of the sun .....	27
<b>Unit4.</b> Photoprotection.....	37





# Intro Lux

Hello! I'm Lux. You probably know me as the Sun, but throughout history I have had several names, depending on the time, culture or place of the world in which they've called on me. For example, for the ancient Egyptians I was Ra, for the Mayans, Ak Kin, and for the Incas, Inti. And those are just a couple of examples. Besides having many names, you can see me on the flags of different countries, like those of Argentina, Nepal or Japan. Although I have lived for many years, in terms of the universe I'm a young star, since I'm about five billion years old, which places me roughly halfway through my life. When my life comes to an end, I will once again become a red giant, that is, a star colder and bigger than I am now (even though that's 400 times bigger than the moon, with a mass that is 333,000 times the Earth's).

As you will see I have a very interesting life. But let me give you some more information so you can get to know me a little better. For example, my rays are very fast. They move to a speed of 300,000 kilometers per second, so it takes them about eight minutes to reach your planet. Another interesting fact is that my outer temperature is about 6,000°C. Finally, the radiations that I emit are comparable to those of several million simultaneous atomic bombs.

Do you know why I explain all of this to you? It's because your life and mine are closely linked. All these facts I have shared with you actually affect you in your everyday life, and that is why you will get to know me a little bit better as you work on this project. You will learn to take full advantage my benefits in a healthy way, while also taking care to protect yourself so you can enjoy me without risks



Now, draw however you imagine WonderLux to look like:



## The sun



After reading the comic, discuss these questions with your classmates:

- Who is Lux?
- How does Lux sneak in?
- Where does Lux go through to get here?
- What happens when Lux sneaks in?
- What is the ozone layer?
- What is the ozone layer for?



**Before watching the video about the sun, discuss these questions with your classmates:**

1. What do you know about the sun?
2. What kind of star is it?
3. Where is it?
4. What movements does the Earth carry out in relation to the Sun?
5. How do the sun and the plants relate to each other?
6. What is the greenhouse effect?

**Now, answer the same questions with the information you have learned from watching the video:**

1. ....
2. ....
3. ....
4. ....
5. ....
6. ....



Complete these crosswords by carefully reading the below definitions. They are all related to the sun:

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.
1.																		
2.																		
3.																		
4.																		
5.																		
6.																		
7.																		
8.																		
9.																		
10.																		
11.																		
12.																		
13.																		
14.																		
15.																		
16.																		
17.																		
18.																		
19.																		

### HORIZONTAL

3. The \_\_\_\_\_ consists of one star and the elements that rotate around it.
5. The movement of the Earth which traces an orbit around the Sun and which creates the seasons is called \_\_\_\_\_
14. At the beginning of this season, we have the longest nights of the year and, as it goes on, days get longer and longer. Temperatures are low and it can snow. Deciduous trees lose all their leaves. \_\_\_\_\_
17. At the beginning of this season, we have the longest days of the year, and little by little they shorten as it goes on. Temperatures are high, there's very little rain and much of the vegetation dries. \_\_\_\_\_
19. A \_\_\_\_\_ is created when the light, which spreads in a straight line, stumbles upon an opaque object. As these objects do not allow the light to go through, it bounces off and is unable to reach certain areas.

### VERTICAL

2. Characteristic of the development that ensures the needs of the present without compromising the needs of future generations. \_\_\_\_\_
4. Process carried out by plants which transforms inorganic matter into organic matter by using solar energy. \_\_\_\_\_
6. The movement that the Earth carries out on itself is called \_\_\_\_\_. The Earth takes 24 hours to make a complete turn on itself. It is what we call day.
9. At the beginning of this season, the days and nights are of equal length. Nights get shorter as it goes on. Temperatures are gentle, it rains frequently and many plants and flowers grow. \_\_\_\_\_
12. The \_\_\_\_\_ are just like giant fireballs that emit light and heat continuously.
15. At the beginning of this season, days and nights are almost equal in length. As it goes on, nights grow longer. Temperatures are mild at first, but grow progressively colder and some trees begin to lose their leaves. \_\_\_\_\_
18. Natural phenomenon in which the gases that form the atmosphere and the clouds filter solar radiation, only allowing some of it to reach the Earth's surface. The Earth is heated in the process and returns this radiation back to the atmosphere, while some of it is retained by the greenhouse gases of the planet causing the Earth's temperature to increase further. \_\_\_\_\_



## Rubric Unit 1: El Sol

You must have learned so many new things about the sun by now. At the end of this workbook, you'll find some Lux stickers. Cut them out and stick a happy one if you remember the information, and a sad one if you don't.

If there are things you don't remember, it's okay, don't give up! Ask, investigate, research... and you'll find the answer!

Facts about the sun	Happy Lux	Sad Lux

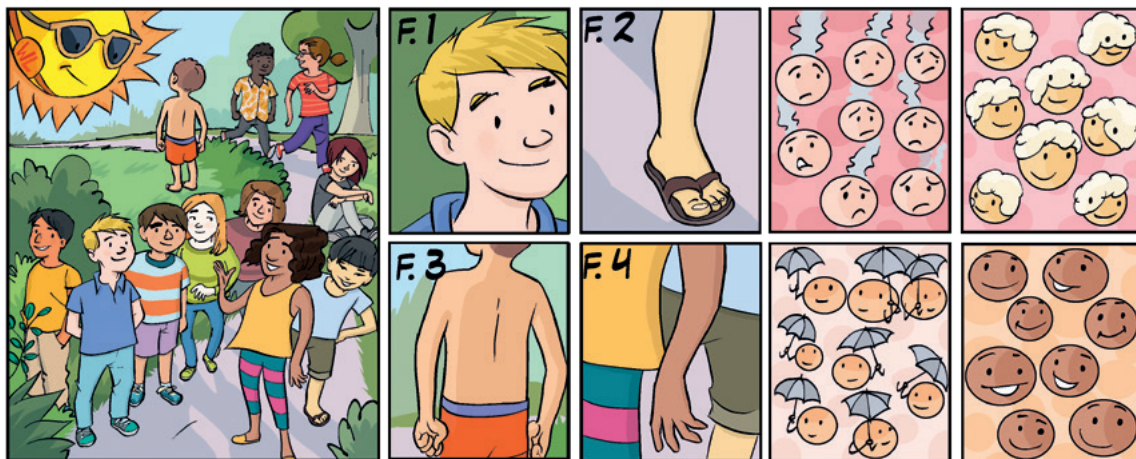


Facts about the sun	Happy Lux	Sad Lux



Facts about the sun	Happy Lux	Sad Lux

# The skin



After reading the comic, discuss these questions with your classmates:

- ➔ What are these little faces?
- ➔ Why is Lux observing them?
- ➔ What do their expressions mean?
- ➔ Why are they different colours?

Before watching the video about the skin, discuss these questions with your classmates:

1. How many senses do you know?
2. What is the skin and what sense is it related to?
3. Is the skin related to the sun? Why?
4. How many layers does your skin have and what are they called?
5. What is a phototype?



Now, answer the same questions with the new information you have learned from watching the video:

- 1. ....
- 2. ....
- 3. ....
- 4. ....
- 5. ....

Draw the skin and its layers. Name each one:





## Knowing our skin

Por parejas, observad vuestros brazos, cara, cuellos y piernas y rellenad esta tabla para el estudio de vuestra piel.

Knowing our skin				
➔ Name of the student: .....				
Type	Number	Location	Size (mm)	Colour
➔ Freckle	➔	➔	➔	➔
	➔	➔	➔	➔
	➔	➔	➔	➔
	➔	➔	➔	➔
	➔	➔	➔	➔
➔ Moles	➔	➔	➔	➔
	➔	➔	➔	➔
	➔	➔	➔	➔
	➔	➔	➔	➔
	➔	➔	➔	➔
➔ Scars	➔	➔	➔	➔
	➔	➔	➔	➔
	➔	➔	➔	➔
	➔	➔	➔	➔
	➔	➔	➔	➔
➔ Other	➔	➔	➔	➔
	➔	➔	➔	➔
	➔	➔	➔	➔
	➔	➔	➔	➔
	➔	➔	➔	➔



The **phototype** determines the skin’s responsiveness to solar radiation. There are 6 phototypes ranging from the whitest skins (phototype 1) that get easily burned and never tan, to very dark skins (phototype 6) that always look dark-brown or black and never get burned.

When exposed to the sun, our organism synthesises **melanin**, which is a brown pigment on the skin that absorbs the sun’s radiation (that’s why we get tanned). People with low phototypes must be more careful with the sun because the amount of melanin their body produces is low, which means they can’t tan and get burned more easily.

**Phototypes.** Fill in this table with the information about each phototype. Then, look for images of Lux with different phototypes at the end of your workbook, cut them out and add them in accordingly.

Phototype	Lux’s images	Sunburn	Tan	Description
I				
II				
III				
IV				



Phototype	Lux's images	Sunburn	Tan	Description
<b>V</b>				
<b>VI</b>				

Now that you know about phototypes, go back to your personal file at the beginning of the workbook and indicate what yours is.

You must have learned about many antioxidant foods by now. Look for them in this word search game:

- ➔ carrots
- ➔ broccoli
- ➔ apples
- ➔ walnuts
- ➔ tomatoes
- ➔ peppers
- ➔ lemons
- ➔ black grapes
- ➔ avocado
- ➔ spinach
- ➔ sardines
- ➔ celery

Q	W	G	T	I	O	J	K	N	P	U	J	R	D	C	T	F	R	X	Q
K	I	P	E	T	R	Y	F	E	S	A	I	R	O	H	N	N	A	Z	N
V	B	T	H	G	A	Y	T	I	P	N	N	B	R	E	O	Z	P	H	O
W	Y	O	L	K	J	O	U	A	R	G	E	N	A	U	U	N	T	W	A
C	Q	E	L	I	P	L	U	R	T	U	T	R	A	S	S	Z	H	I	T
N	I	U	I	L	Y	T	A	M	O	B	U	R	T	T	W	Q	A	S	H
M	O	U	M	H	C	E	R	E	M	Q	U	N	E	N	T	H	U	P	L
L	I	Q	O	M	A	T	O	E	A	S	X	A	S	W	R	U	R	T	T
M	A	R	S	I	R	E	T	S	T	S	A	Z	M	I	P	O	L	K	A
T	E	U	E	B	R	O	C	C	O	L	I	Q	I	B	L	I	E	M	N
N	A	B	N	I	O	R	U	E	E	T	L	T	L	A	N	S	E	P	I
W	A	Z	R	U	T	I	M	Y	S	O	E	O	E	S	B	L	C	A	T
A	P	P	L	E	S	Q	U	E	I	P	M	P	M	N	L	D	B	L	A
L	R	E	E	D	A	R	A	S	A	V	A	V	O	C	A	D	O	T	E
N	Y	P	R	E	W	A	S	D	F	G	N	G	N	J	C	O	M	A	B
U	X	P	V	I	B	N	M	Q	W	O	S	O	S	U	K	T	B	N	X
T	E	E	D	V	P	W	G	T	C	W	R	W	R	L	G	M	R	W	I
S	O	R	X	Q	P	O	J	C	N	P	U	P	U	J	R	D	O	G	A
T	R	S	A	R	D	I	N	E	S	S	A	S	A	I	A	O	L	U	P
G	A	Y	H	O	B	Y	T	L	E	W	A	W	A	S	P	I	T	E	L
K	J	O	W	A	C	X	C	E	I	B	N	B	N	M	E	K	E	X	I
I	P	L	B	Z	O	T	U	R	L	J	K	N	S	P	S	N	A	C	H
L	Y	T	A	L	Y	E	S	Y	Z	Y	F	E	S	A	I	R	O	H	R
H	U	E	B	E	S	I	W	S	Q	U	R	T	T	W	Q	A	S	H	E



## Rubric Unit 2: The skin

You must have learned so many new things about your skin by now. At the end of this workbook, you'll find some Lux stickers. Cut them out and stick a happy one if you remember the information, and a sad one if you don't.

If there are things you don't remember, it's okay, don't give up! Ask, investigate, research... and you'll find the answer!

Facts about the skin	Happy Lux	Sad Lux

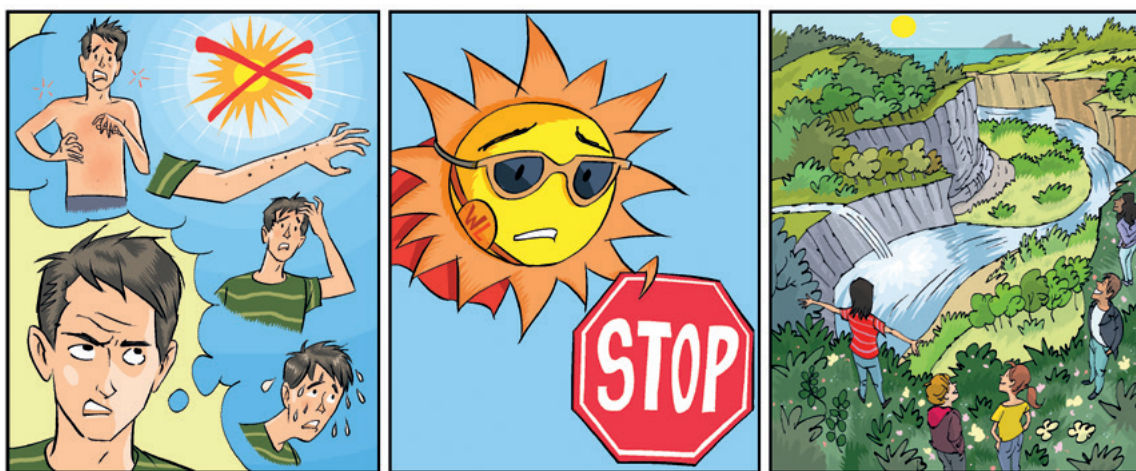


Facts about the skin	Happy Lux	Sad Lux



Facts about the skin	Happy Lux	Sad Lux

## Positive and negative effects of the sun



After reading the comic, discuss these questions with your classmates:

- ➔ What do you think happens to the boy from the first strip?
- ➔ Why does Lux have a STOP sign?
- ➔ Why do you think the scenery looks so beautiful in the third strip?
- ➔ How do you think the people in the third strip feel?

Before watching the video about the positive and negative effects of the sun, discuss these questions with your classmates:

1. Why is the presence of the sun on Earth so important?
2. What are the positive effects of the sun?
3. What are the negative effects of the sun?
4. What is vitamin D? Where can it be found?



Now, answer the same questions with all the new information you have learned by watching the video (<https://youtu.be/NkVFMgftfdE>):

1. ....
2. ....
3. ....
4. ....

Now that you know the positive and negative effects of the sun, fill out the table below:



Positive effect



Negative effect



.....	.....
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....





Now draw the positive effect and the negative effect that most influence or affect you:



Positive effect



Negative effect



Complete these crosswords by carefully reading the below definitions. They are all related to the positive and negative effects of the sun:

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.
1.																	
2.																	
3.																	
4.																	
5.																	
6.																	
7.																	
8.																	
9.																	
10.																	
11.																	
12.																	
13.																	
14.																	
15.																	
16.																	
17.																	

### HORIZONTAL

3. Our skin ages the same way as the rest of our organs. The sun accelerates this aging process and that is called \_\_\_\_\_
7. Solar burns can promote the development of \_\_\_\_\_. It is the most common form of malignant tumour affecting human beings today.
10. Substances produced by some of our organs in situations of excitement, pain or infatuation. They can also appear with some external stimuli such as spicy foods, chocolate and sunlight. \_\_\_\_\_
12. If you expose yourself to sunlight in excess and without protection, especially before you turn 18, your skin is more likely to develop cancer because it has a \_\_\_\_\_
13. An essential vitamin for human beings. Its deficiency is linked to certain diseases. Foods such as blue fish, milk or eggs contain this vitamin. \_\_\_\_\_
15. Radiation that only penetrates the epidermis. \_\_\_\_\_

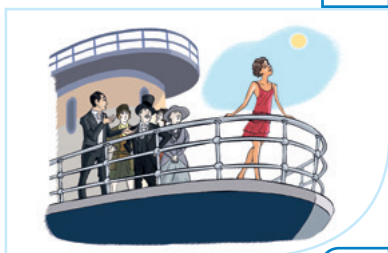
### VERTICAL

4. Exposing ourselves to the sun on very hot days can give us a \_\_\_\_\_
8. Radiation that penetrates the entire dermis. \_\_\_\_\_
10. Measure of the intensity of ultraviolet radiation that reaches the surface of the Earth. \_\_\_\_\_
12. It is the most common form of skin cancer, and is derived from the cells that give our skin colour. \_\_\_\_\_
15. Excessive solar radiation has harmful effects on our health. The most significant is the risk of \_\_\_\_\_



Let's learn more about the sun and how it has influenced culture and fashion over time.

The story below is divided into paragraphs. Read it, then unite each paragraph with its corresponding image:



Throughout history, having fair skin was considered a symbol of distinction among the upper classes, the aristocracy and the royal families. That's where the term "blue blood" comes from, which refers to having a skin so pale that blue veins can be seen through it.

In contrast, the lower classes usually had darker skin for most of the year, mainly because most work was carried out outdoors and under the sun without wearing any protection. This prevented tanning from being too popular.

In the early twentieth century, scientific research revealed the many benefits of the sun on human health. Thus, sun therapies started to get prescribed, consisting in taking so-called "sun ray baths" to combat diseases such as anemia or depression, and strengthen bones. In spite of the benefits that the sun brought, high society members continued to resist tanned skin, as it was still a symbol of either belonging to the lower classes or being treated for some kind of illness.

But there came a time when it was decided that being pale was no longer attractive. And among the most exclusive circles, tanned skin became fashionable as something not only healthy but also attractive. One of the culprits of this change in fashion was the seamstress and designer Coco Chanel. After having spent a holiday on board a cruise through the Mediterranean, she returned to Paris with skin bronzed by the sun.

Coco was a true trend-setter of the time and everything she did, said or designed spread like wildfire from one day to the next. This caused legions of her fans to imitate her tan straight away, and for the look to spread amongst the elite.



## Myths. True or false

Determine which of these statements is true or false:

→ You can't get burned on a cloudy day.

☐ T ☐ F

→ If I'm not hot when I'm in the sun, it means I'm not burning.

☐ T ☐ F

→ The sun only damages the skin, not the eyes.

☐ T ☐ F

→ The higher the altitude, the greater the risk of getting burned.

☐ T ☐ F

→ Being in the water keeps you from getting burned.

☐ T ☐ F

→ When shadows are short, the sun is at its most dangerous.

☐ T ☐ F

→ The sun is only dangerous in the summer.

☐ T ☐ F

→ The negative effects of solar burns are cumulative.

☐ T ☐ F

→ Red-haired and fair-skinned people are especially sensitive to UV radiation.

☐ T ☐ F



Draw an aged version of yourself, or paste a picture of yourself and age it:

A large green rectangular box with a green arrow pointing to the top-left corner, indicating where to draw or paste a picture.



### Rubric Unit 3: Positive and negative effects of the sun

You must have learned so many new things about the positive and negative effects of the sun by now. At the end of this workbook, you'll find some Lux stickers. Cut them out and stick a happy one if you remember the information, and a sad one if you don't.

If there are things you don't remember, it's okay, don't give up! Ask, investigate, research... and you'll find the answer!

Facts about the sun's effects	Happy Lux	Sad Lux



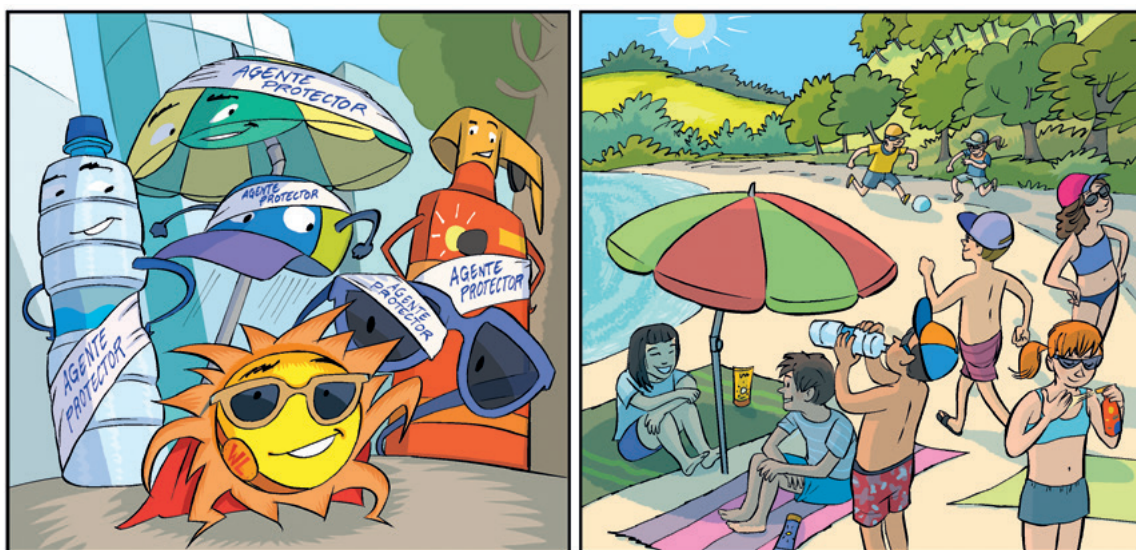
Facts about the sun's effects	Happy Lux	Sad Lux



Facts about the sun's effects	Happy Lux	Sad Lux



# Photoprotection



After reading the comic, discuss these questions with your classmates:

- ➔ Who are the characters that stand besides Lux in the first strip?
- ➔ What do you think he is going to do?
- ➔ How do they relate to the people in the second strip?

Before watching the video on photoprotection, discuss these questions with your classmates:

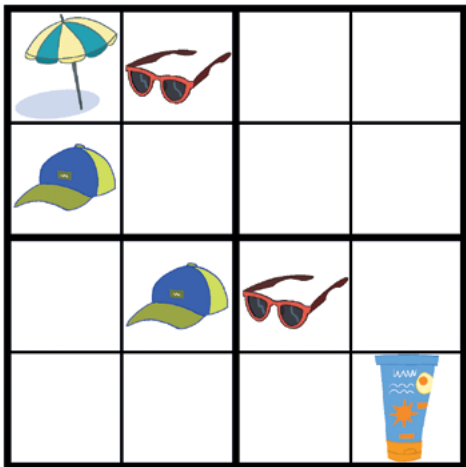
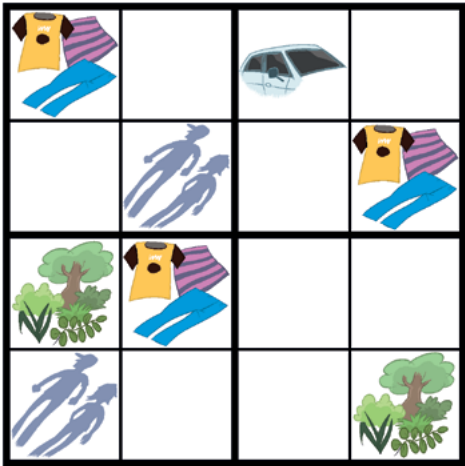
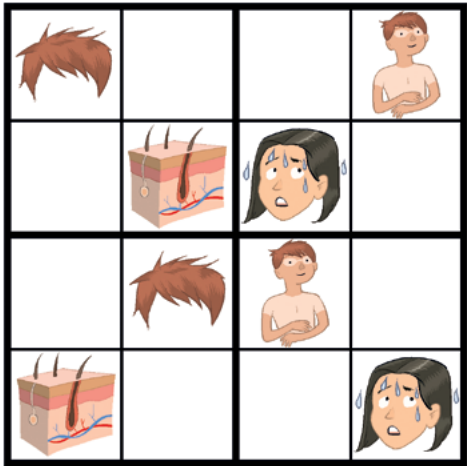
1. What are photoprotectors and what are they used for?
2. Why are they important?
3. Which ones do you know?
4. Which ones do you normally use? How do you use them?



Now, answer the same questions with the new information you have learned by watching the video (<https://youtu.be/v9mGD9NEuas>):



1. ....
2. ....
3. ....
4. ....

Resolve these sudokus with photoprotection images:





Invent your very own antioxidant recipe



KITCHEN


•RECIPE•

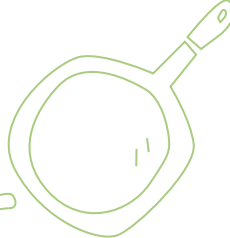


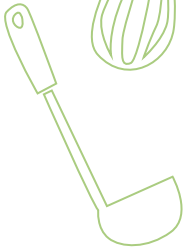

TIME

PEOPLE

INGREDIENTS:

INSTRUCTIONS:







## Myths. True or False

Determine which of these statements is true or false:

→ The most economical and effective protection against the sun is the shade.

☐ T ☐ F

→ Tanning protects you from sunburn.

☐ T ☐ F

→ We must avoid the sun in summer between 12 and 17h.

☐ T ☐ F

→ Applying sunscreen before leaving home is enough.

☐ T ☐ F

→ Clothes protect me completely from the sun.

☐ T ☐ F

→ A high-factor sunscreen will prevent me from getting tanned.

☐ T ☐ F

→ It is advisable to stay hydrated while exposed to the sun.

☐ T ☐ F



## Rubric Unit 4: Photoprotection

You must have learned so many new things about photoprotection by now. At the end of this workbook, you'll find some Lux stickers. Cut them out and stick a happy one if you remember the information, and a sad one if you don't.

If there are things you don't remember, it's okay, don't give up! Ask, investigate, research... and you'll find the answer!

Facts about photoprotection	Happy Lux	Sad Lux



Facts about photoprotection	Happy Lux	Sad Lux



Facts about photoprotection	Happy Lux	Sad Lux



## Contract



I, \_\_\_\_\_, having completed the training project Living with the Sun, am committed to:

- Taking the necessary precautions to take care of my health and my hygiene in all areas of my life, and especially in those aspects related to the sun, in order to prevent any possible damage.
- Making the most of all the benefits that the sun brings to humans.
- Using sunscreen, a hat and protective clothing, regularly and responsibly, while ensuring that the people around me do the same.
- Sharing all my learnings from this project with my immediate environment, in order to help people understand the importance of protecting themselves and interacting with the sun in a responsible way.

And to make it count:

Signature





## Farewell to Lux:

### The end is here, friends!

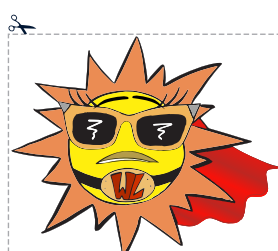
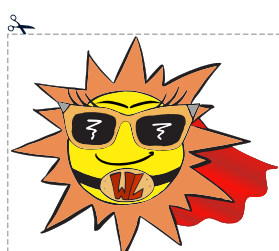
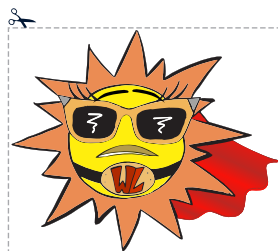
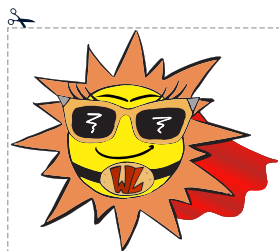
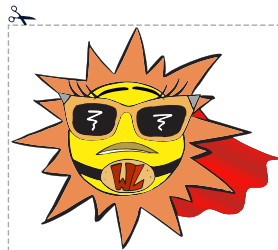
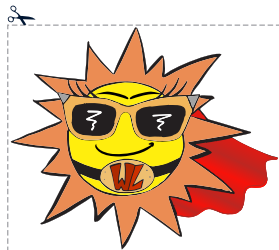
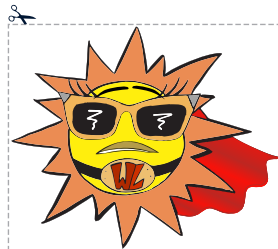
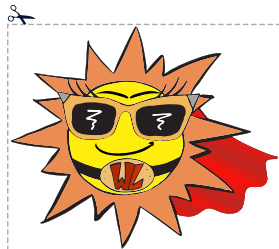
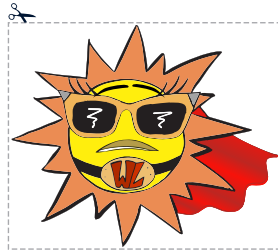
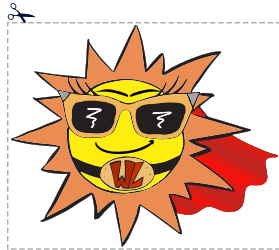
You have all become superheroes, just like us, so it's now your turn to shine a light around you by sharing everything you've learned and taking care of your friends.

WE ARE COUNTING ON YOU!

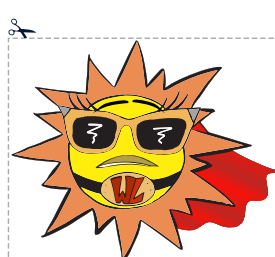
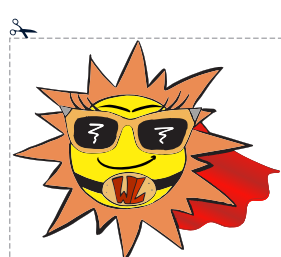
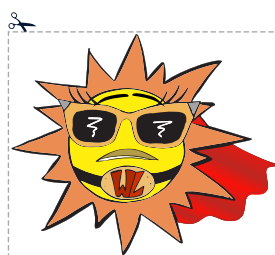
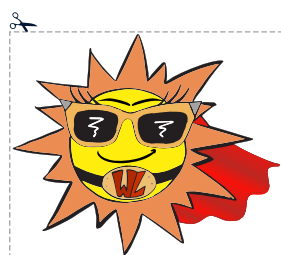
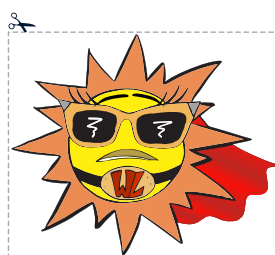
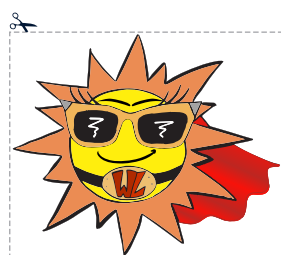
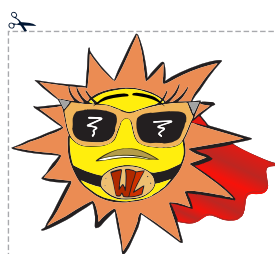
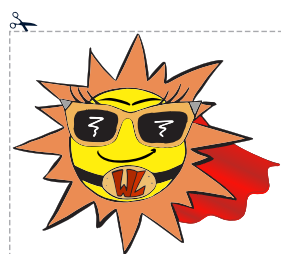
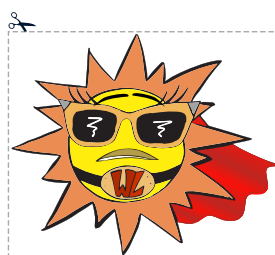
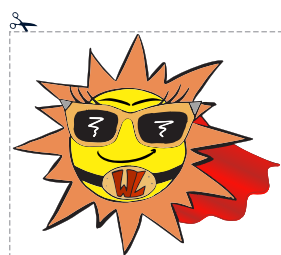


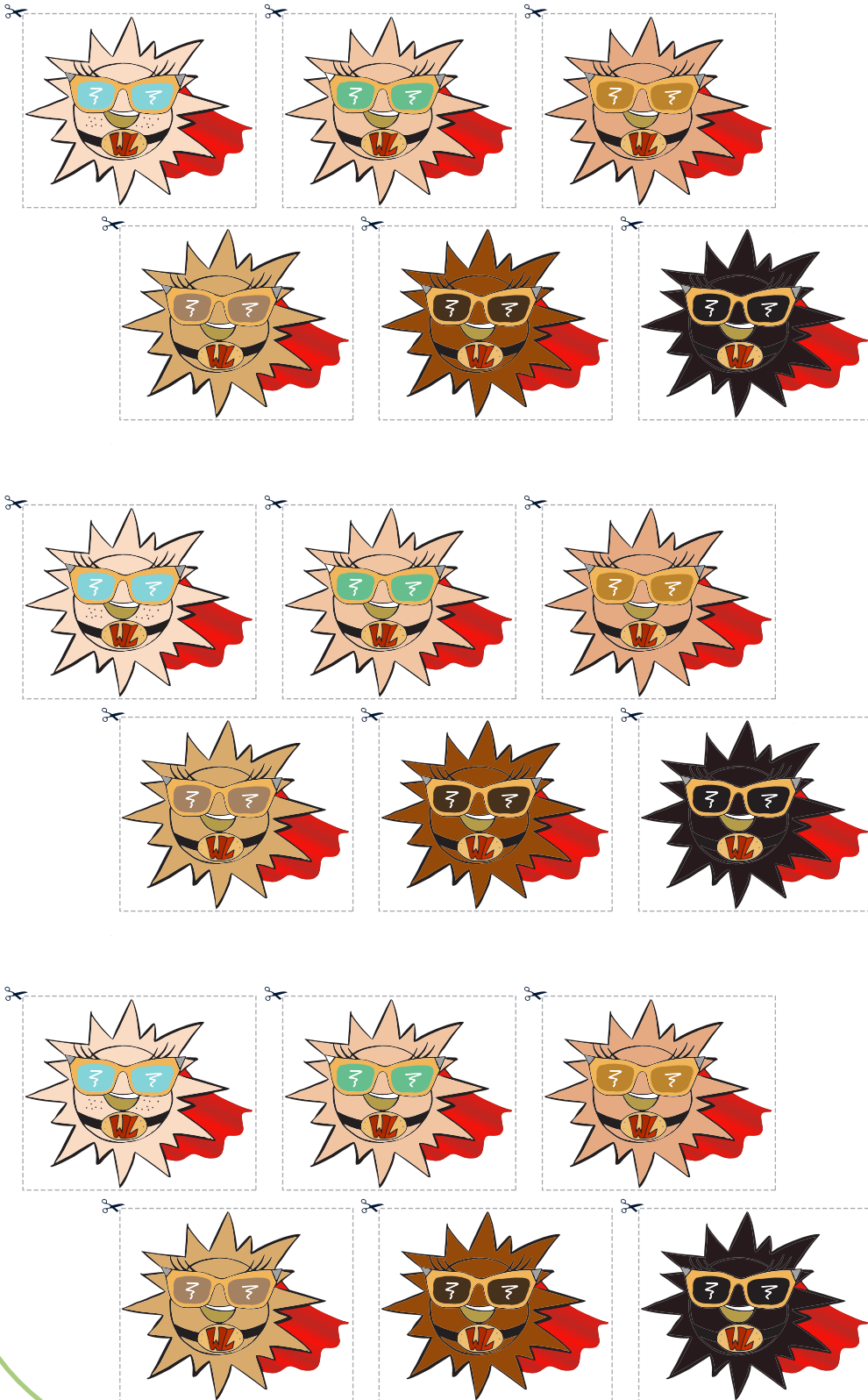


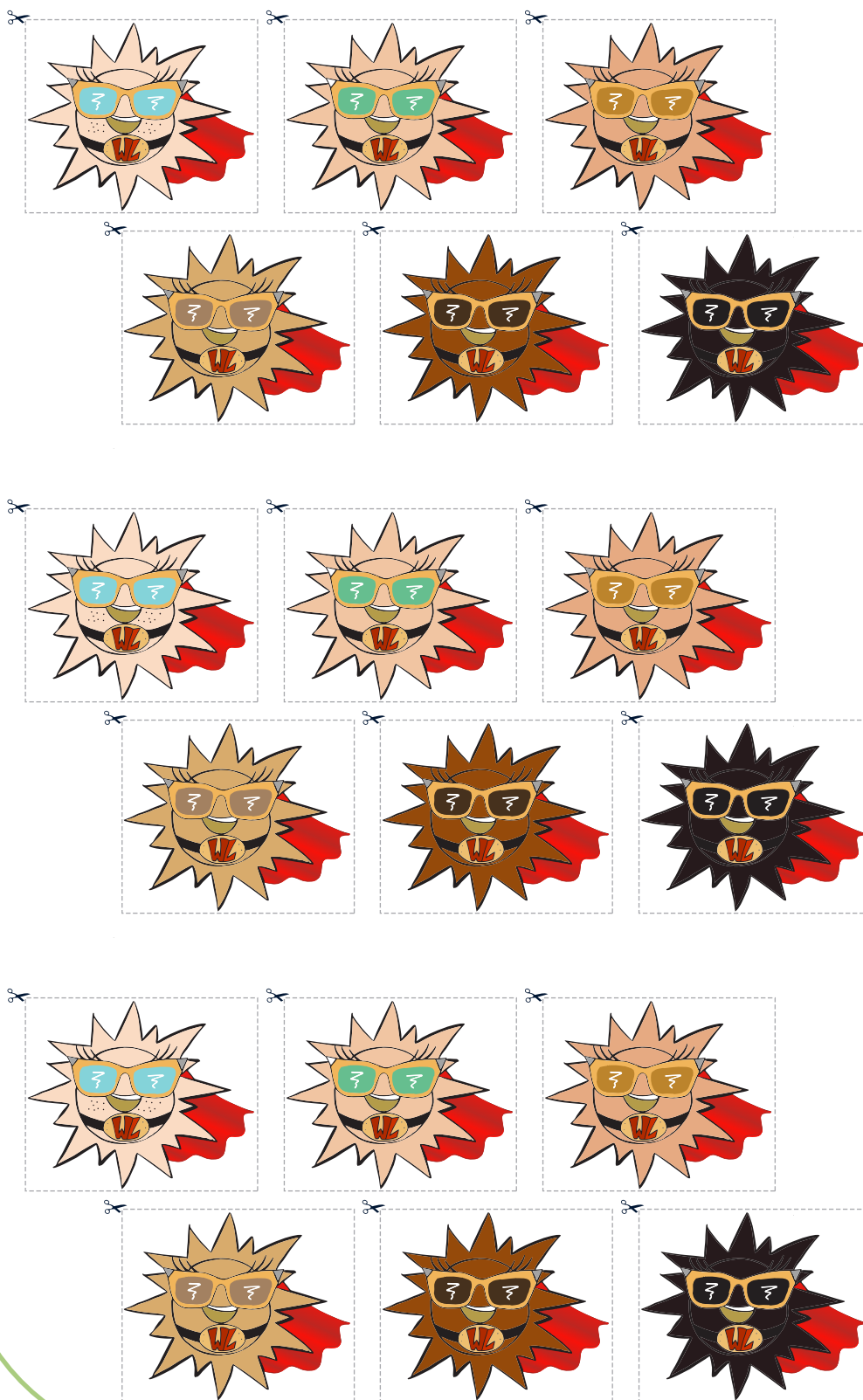
**Lux stickers:**



To print on self adhesive paper.











# Sudoku stickers:



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