

 NATIONAL
GEOGRAPHIC
LEARNING

Impact

SECOND EDITION

ON THE COVER

A woman dives in a cenote in Mexico. Scientists estimate that there are over 6,000 cenotes on Mexico's Yucatán Peninsula alone, with systems that reach up to 435 km (270 mi) and include hundreds of individual cenotes.

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Impact

SECOND EDITION

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SCOPE AND SEQUENCE



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3 Your Digital Self

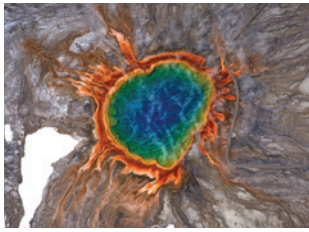
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4 Underwater Mysteries

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THEME	Colour and its effect on people	Body and mind	Technology's impact on our lives	Underwater exploration and discovery
VOCABULARY STRATEGIES	Suffix -al Use context clues	Suffix -ness Use a dictionary: Sample sentences	Prefix inter- Use a thesaurus	Prefix pre- Use context of unit
SPEAKING	Correcting information; Correcting thoughtfully	Checking in with friends and saying how you feel; Showing that you care	Checking for understanding and responding; Listening actively	Making and responding to suggestions; Sharing ideas
GRAMMAR	Comparatives and superlatives: Comparing two or more things <i>Purple is a popular colour. Green is more popular than purple. Blue is the most popular colour in the world.</i> The: Identifying general and specific things <i>The sun is shining in the sky.</i>	Adverbs: Saying how and how often you do something <i>Many teenagers sleep badly, so they're always tired.</i> Make + adjective: Saying what affects mood and feelings <i>A lack of sleep makes you tired.</i>	Modals: Expressing obligation, advice and permission <i>You should be careful about your safety online.</i> Must, might and can't: Expressing certainty in the present <i>I checked these facts on three different websites, so they must be true.</i>	Used to and would: Talking about habits in the past <i>I never used to be interested in the sea and I didn't use to read much at all!</i> Past simple: Describing past actions <i>When did the village sink? It sank thousands of years ago.</i>
READING	<i>The History of Dangerous Colours</i> Strategy: Sequencing	<i>Changing Your Future</i> Strategy: Summarising	<i>Is Your Life Balanced?</i> Strategy: Making connections to self	<i>Yonaguni Jima</i> Strategy: Identifying author's purpose
VIDEO	<i>Seeing Colours?</i>	<i>Virtually Viral</i>	<i>The Weird and Wild</i>	<i>Loch Ness Monster: Mystery Solved?</i>
WRITING	Genre: Descriptive paragraph Focus: Topic sentence	Genre: Classification essay Focus: Introducing categories	Genre: Opinion essay Focus: Facts and opinions	Genre: Contrast essay Focus: Contrasting points of view
MISSION	Look for Opportunities National Geographic Photographer: Annie Griffiths	Take Care of Yourself National Geographic Explorer: Pardis Sabeti , Computational Geneticist	Connect with People National Geographic Young Explorer: Qiyun Woo , Environmentalist/Storyteller	Be Curious National Geographic Explorer: Katy Croff Bell , Oceanographer
SUSTAINABILITY GOALS	Good Health and Well-Being; Reduced Inequalities; Sustainable Cities and Communities	Good Health and Well-Being; Industry, Innovation and Infrastructure; Reduced Inequalities	Good Health and Well-Being; Quality Education; Responsible Consumption and Production	Industry, Innovation and Infrastructure; Life Below Water
LITERACY BUILDER	Genre: Social media post Strategy: Analyse visuals	Genre: Song Strategy: Analyse meaning	Genre: Illustrations Strategy: Connect text to images	Genre: Blog post Strategy: Identify text features



5 Life in the Extreme

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6 Are You Going to Eat That?

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7 Art in the Open

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8 Don't Panic!

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THEME	Extreme environments	Food and plastic waste	Public art	Being prepared for dangerous situations
VOCABULARY STRATEGIES	Prefix micro- Use photos as context clues	Prefix de- Use antonyms to find meaning	Greek and Latin roots (mur-, poli-) Find definitions	Suffix -tion Use a thesaurus: Synonyms
SPEAKING	Expressing and responding to strong opinions; Valuing other opinions	Asking for repetition and repeating information; Checking understanding	Asking for more information; Asking a variety of questions	Telling a story and showing interest; Keeping people interested in a story
GRAMMAR	Present perfect: Describing past experiences that connect to the present <i>I have studied many extreme environments, but I've never been to Antarctica.</i> As . . . as: Making comparisons of equality <i>The Pacific hagfish is just as important as other fish.</i>	Going to, will and present continuous: Talking about the future <i>I'm going to start making my own lunches.</i> Conditionals: Talking about cause and effect <i>If you don't recycle it, it will end up in landfill.</i>	Past simple vs. present perfect: Talking about the past <i>Andrea Villarreal Rodríguez has worked on storytelling projects since 2019.</i> Indefinite pronouns: Talking about people, places and things without giving details <i>Someone has painted a mural on the wall of our school.</i>	Past simple vs. past continuous: Talking about the past <i>What did the elephants do? Where were the birds going?</i> Present perfect vs. present perfect continuous: Expressing a continuing action <i>He's been a firefighter for ten years. He's been fighting this fire for several hours.</i>
READING	<i>Weird and Wonderful!</i> Strategy: Categorising	<i>Clean Your Plate!</i> Strategy: Scanning for information	<i>Street Art in Rio</i> Strategy: Identifying the main idea	<i>The Power of Snow</i> Strategy: Visualising a story
VIDEO	<i>Photographing Parasites</i>	<i>Why We Use Plastic Packaging</i>	<i>Bringing Joy to Local Spaces</i>	<i>A Day in Pompeii</i>
WRITING	Genre: Persuasive essay Focus: Transition phrases	Genre: Cause-and-effect essay Focus: Introducing causes and effects	Genre: Process essay Focus: Sequencing words	Genre: Narrative essay Focus: Opening and closing paragraphs
MISSION	Ask Questions National Geographic Explorer: Kevin Hand , Planetary Scientist/Astrobiologist	Rethink What You Buy National Geographic Explorer: Ribhu Vohra , Educator/Environmentalist	Learn from Art National Geographic Young Explorer: Andrea Villarreal Rodríguez , Photographer/Filmmaker	Be Prepared National Geographic Explorer: Jimmy Chin , Climber/Photographer
SUSTAINABILITY GOALS	Climate Action; Life Below Water; Life on Land	Zero Hunger; Clean Water and Sanitation; Responsible Consumption and Production	Gender Equality; Reduced Inequalities; Sustainable Cities and Communities	Good Health and Well-Being; Decent Work and Economic Growth
LITERACY BUILDER	Genre: Flash fiction Strategy: Analyse details	Genre: Campaign poster Strategy: Get readers' attention	Genre: Public art Strategy: Ask questions	Genre: Sketchnote Strategy: Analyse graphic information

MEET THE EXPLORERS



Unit 1

ANNIE GRIFFITHS Photographer

Annie Griffiths was one of the first women photographers for *National Geographic*. She fell in love with photography when she took a class in college. She has worked in almost 150 countries taking colourful pictures of people and places.



Unit 2

PARDIS SABETI Computational Geneticist

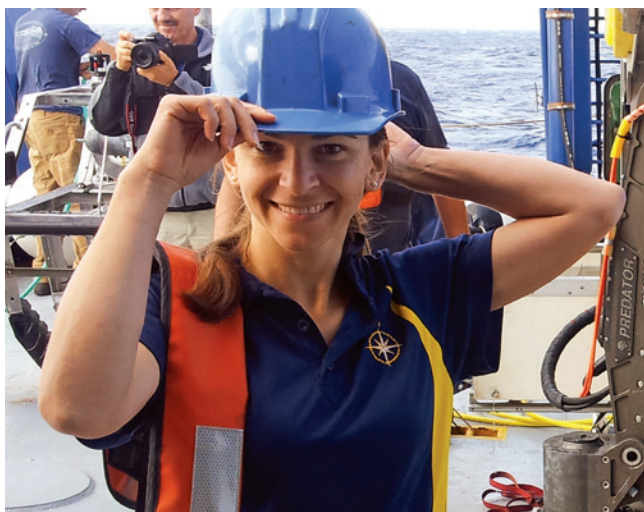
Pardis Sabeti was born in Tehran, Iran. She is the lead singer and bass player in a rock band. She's also a computational geneticist. Pardis works to understand and control dangerous diseases like Ebola. She wants to keep the world healthy and she knows that in order to do that, people need to work together. They need to share information, understand other people and have fun!



Unit 3

QIYUN WOO Environmentalist/Storyteller

Qiyun Woo uses her talents for drawing and storytelling to educate and advocate on issues like climate change. Her work engages communities, both digital and in person, by providing accessible content and resources to empower young people to make change and raise awareness about environmental issues. Qiyun's activism has been recognised by organisations like the National University of Singapore and the BBC.



Unit 4

KATY CROFF BELL Oceanographer

Katy Croff Bell is an underwater detective! As an oceanographer, Katy uses deep-sea technology to explore the ocean. As Chief Scientist aboard the E/V *Nautilus* she oversaw expeditions around the world. Later, she founded the Ocean Discovery League, an organisation focused on accessible ocean exploration. She's excited to share her work with the rest of us as she makes discoveries on the sea floor.



Unit 5

KEVIN HAND Planetary Scientist/Astrobiologist

Kevin Hand knows that life can thrive in the most extreme environments. Kevin works at the NASA Jet Propulsion Laboratory as a planetary scientist and astrobiologist. He researches one of Jupiter's moons, Europa. Its deep oceans may be the perfect environment for microscopic extremophiles. Kevin thinks studying Europa may be our best chance at finding life beyond Earth!



Unit 6

RIBHU VOHRA Educator/Environmentalist

Want to know something shocking? People eat up to 20 grammes of plastic, the weight of three pens, every month. Ribhu Vohra educates children about the problem of plastic in the food and water cycles, and wants to empower the next generation to drive change.



Unit 7

ANDREA VILLARREAL RODRÍGUEZ Photographer/Filmmaker

Andrea Villarreal Rodríguez uses visual storytelling to empower women and young people to be leaders and make changes in the world. Through creative expression, Andrea seeks to highlight the unique and diverse ideas that young people and local communities can bring to addressing issues like global warming. Her stories are inspired by the power, hope and resilience shown by the local communities she works with. Andrea believes that everyone can be a storyteller.



Unit 8

JIMMY CHIN Climber/Photographer

Avalanches, steep cliffs and below-freezing temperatures? It's all in a day's work for climber, filmmaker and photographer Jimmy Chin. Jimmy goes on four or five expeditions each year. He thinks his most important job on the expedition is to first be a safe, reliable member of the team – taking photos is second. But he's willing to take risks to get the perfect shot. Jimmy's love of exploring keeps him going. He thinks the human spirit is strong enough to overcome any obstacle.

A vibrant, colorful carnival float. The float is decorated with large, stylized letters, possibly spelling 'CARNIVAL', in bright colors like yellow, orange, and red. There are people on the float wearing costumes, including one with a large pink bubble. The float is surrounded by a dense crowd of people, also in costumes, and the background is filled with more colorful decorations and lights. The overall scene is festive and celebratory.

1

Colour Matters

‘When multiple colours dance across the same scene, the result can be a carnival.’

—Annie Griffiths

1. Look at the photo. How does it make you feel? What words could you use to describe the photo?
2. Read the quote. What is a carnival? What does it involve?
3. Think about the title, quote and photo. What would be lost if the photo was black and white?
4. Would you like to be at the place in the photo? Why or why not?

People celebrating carnival
in Rio de Janeiro, Brazil



VOCABULARY

- 1 Look at the photos.** Your brain can see seven million colours. How many of them can you name? What do different colours make you think of? Discuss. Then listen and read.  1.1

RED is a symbol of **good luck** in many cultures. It is the traditional colour for **wedding** dresses in China and India. But many cultures think red shows **danger**. This is why we see it on **emergency** vehicles and warning signs. Around 8 per cent of men worldwide are red-green **colour-blind**: they can't clearly see the difference between red and green.

GREEN is a colour that makes people feel at peace because it's the most common colour in nature. Leaves and grass are green because of the *chlorophyll* in them. The name of this chemical comes from the Greek words *khloros* (green) and *phyllon* (leaf).

Green is also a sign of **safety**. Because of this, it's used in traffic lights to tell people when it's safe to go.



BLUE is the most popular colour used by humans. More than half the world's national flags have blue in them. Blue is also the most common colour used by businesses. Many businesses use the colour blue to **represent** them in logos and advertisements. This is because blue helps us feel like we can trust them.

ORANGE gets its name from the fruit. At first, the word described the taste of the fruit's skin. By the 16th century, *orange* was also the name of this **bright** colour.



INDIGO is a dark colour between blue and purple. Indigo clothing was not common in the past because indigo **dye** came from a rare plant. It was very expensive and few people could wear clothes made with this dye. Now we use indigo dye to make blue jeans.



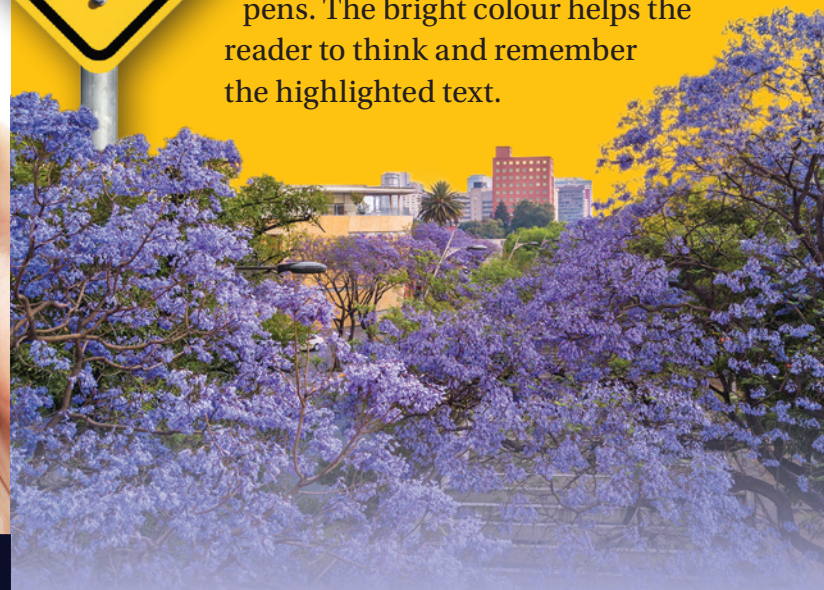
YELLOW is the colour of taxis and school buses in some countries because it's the most visible colour on the road. Like red, yellow is also used to **warn** people of dangerous situations.

Because it attracts attention, yellow is used for highlighter pens. The bright colour helps the reader to think and remember the highlighted text.



VIOLET is a **light** purple colour. It is one of the oldest colours mixed by humans. There are violet cave paintings in France that are 25,000 years old!

In Mexico City, people enjoy the violet flowers of the jacaranda trees in March and April. Jacaranda trees were first planted in Mexico by Tatsugoro Matsumoto, a Japanese gardener.



2 LEARN NEW WORDS. Listen and repeat. 🗣️ 1.2

3 Work in pairs. Find the words in the reading. Use nearby sentences and words to explain the meaning of those words.

colour-blind dye emergency good luck represent warn

4 Discuss in pairs. What colours make you feel happy? Sad? Angry? Excited?

5 Read and write the words from the list.

bright	danger	dye	emergency
light	represent	safety	wedding

Photographer Annie Griffiths has travelled all around the world. In many of the places she's visited, Annie has seen _____. However, Annie chooses to focus on the beauty of the places and the people she meets. This photo is one of her favourites. It shows her son resting next to her friend. She took it after a _____ celebration in Jordan. For Annie, the photo expresses her son's feelings of _____ and happiness.



Annie loves to use _____ colours in her photos. She says, 'It's difficult to photograph a very dark thing, for example the black fur of a panther or a very _____ thing, for example a snowy field. But one spot of colour in a picture can make it look amazing.'

6 LEARN NEW WORDS. Listen for these words and match them to the definitions. Then listen and repeat. **1.3 and 1.4**

common	flag	national	trust	visible
--------	------	----------	-------	---------

- _____ relating to a country
- _____ happening often
- _____ able to be seen
- _____ a piece of cloth with a country's colours
- _____ to believe that someone or something is good

**Photographer
Annie Griffiths**

7 Your Choice Choose an activity.

- Work independently.** Choose your favourite photo. Describe it to the class. Explain why you like it so much.
- Work in pairs.** 'A picture is worth a thousand words.' Discuss the meaning of this saying. Do you agree with it? Why or why not?
- Work in groups.** Your teacher asks you to paint different items in your classroom. What colours will you choose for each? Why? Create a design together.



SPEAKING

Correcting information 1.5

The sky is blue. **Actually**, it isn't blue.
As a matter of fact, it's lots of colours.
In fact, we see blue because blue light rays are shorter.
After all, the sky changes colour when the sun sets.

1 Listen. How do the speakers correct information?

Write the words and phrases you hear.  1.6

2 Read and complete the dialogue.

Jaime: White is the most popular colour for wedding dresses.

Ana: _____, it isn't a popular colour everywhere.

Jaime: Really?

Ana: Yes. _____, more and more women are choosing to get married in different colours.

Jaime: You're right, my sister wore red.

Ana: Did she? That's interesting. _____, red is a popular colour in India and China.

Jaime: Interesting! I think red is a great colour for wedding dresses.
_____, it represents love in many cultures!

3 Work in pairs. Place all of the cards on the desk with the photos facing up. Both students take cards with matching photos. One partner reads information and the other corrects it politely.



Go to Game 1A.

Conversation tip: Correcting thoughtfully

When correcting information, think about how other people's ideas might be different to yours. Offer your own thoughts and knowledge carefully and listen to theirs.

Polar bears have white fur.

As a matter of fact, their fur isn't white. It's clear, but it reflects the light. This makes it look white.

4 Work in groups. When is it important to correct information? What do you need to consider when correcting what someone else says?



GRAMMAR

Comparatives and superlatives: Comparing two or more things 1.7

Adjective	Comparative	Superlative
Purple is a popular colour.	Green is more popular than purple.	Blue is the most popular colour in the world.
Green peppers are tasty .	Red peppers are tastier than green peppers.	Yellow peppers are the tastiest peppers.
Red grapes are good .	Red grapes are better than green grapes.	Red grapes are the best .

Go to the Grammar Reference for more information.

1 Read. Complete the paragraph with the correct words or phrases.

hungrier larger most delicious sweeter worse

When you see your favourite food on a red plate, you probably feel hungry. But you feel _____ when it's on a white plate. Why? Research shows that colours can really affect our feelings about food. For example, when you add red dye to water, it tastes _____ than normal water, as if you've added sugar. The food that you think is the _____ will probably taste _____ to you if you change its colour to blue. This is because blue is a very unnatural colour for food.

Colour can also affect how much we eat. In one experiment, people were asked to serve themselves some pasta with white sauce. The people with red plates took a small portion, while the people with white plates took a much _____ portion. Can you guess why this happens?



2 Read. Complete the sentences with the correct comparative or superlative forms. Then listen and check your answers. 1.8

- Dark green vegetables are _____ (high/low) in vitamin C than light green vegetables.
- Yellow bananas are _____ (salty/sweet) green bananas, but green bananas are _____ (good/bad) for you.
- Blue is _____ (common/unusual) colour for food.
- _____ (healthy/popular) diet includes foods of many different colours.

3 Work in pairs. Make a list of your five favourite foods. Then share your list. Make comparisons about those foods.

Apples are better for you than biscuits, but biscuits are sweeter!

- 4 LEARN NEW WORDS.** Listen, look and read to find out about colours and moods.
Then listen and repeat. 🔊 1.9 and 1.10



GREEN

RELAXED

RED

NERVOUS



BLUE

DOWN



YELLOW

CHEERFUL

- 5 Listen again.** Take notes. What examples does the speaker give of each colour? Why do they use those examples? 🔊 1.9

- 6 Work in pairs.** Discuss how you feel when you see these things.



I feel relaxed when I see green trees.



I feel nervous when I see red lights on a car.



- 7 Work in groups.** Compare your answers in Activity 6 with another pair. Then choose two other colours and say how they make you feel.

Me too! But I feel relaxed when I look at blue artwork.

READING

1 Discuss in pairs. Based on the photos and title, how do you think colours can be dangerous?

2 LEARN NEW WORDS. Find the words in the reading. Guess the meaning of each word. Then listen and repeat.  1.11

chemicals laws poison powder sight

3 Sequencing While you read, notice the order of events.  1.12

Sequencing means putting events in the order in which they happened.

The History of DANGEROUS COLOURS

Humans love using colour to make clothes, dishes, jewellery and soaps. But there is a dark side to the history of colour. Many chemicals (such as lead, arsenic and uranium) used in paints, dyes and colourings made people unwell – or even killed them!

Let's take a look at the history of some of those colours.

Lead white

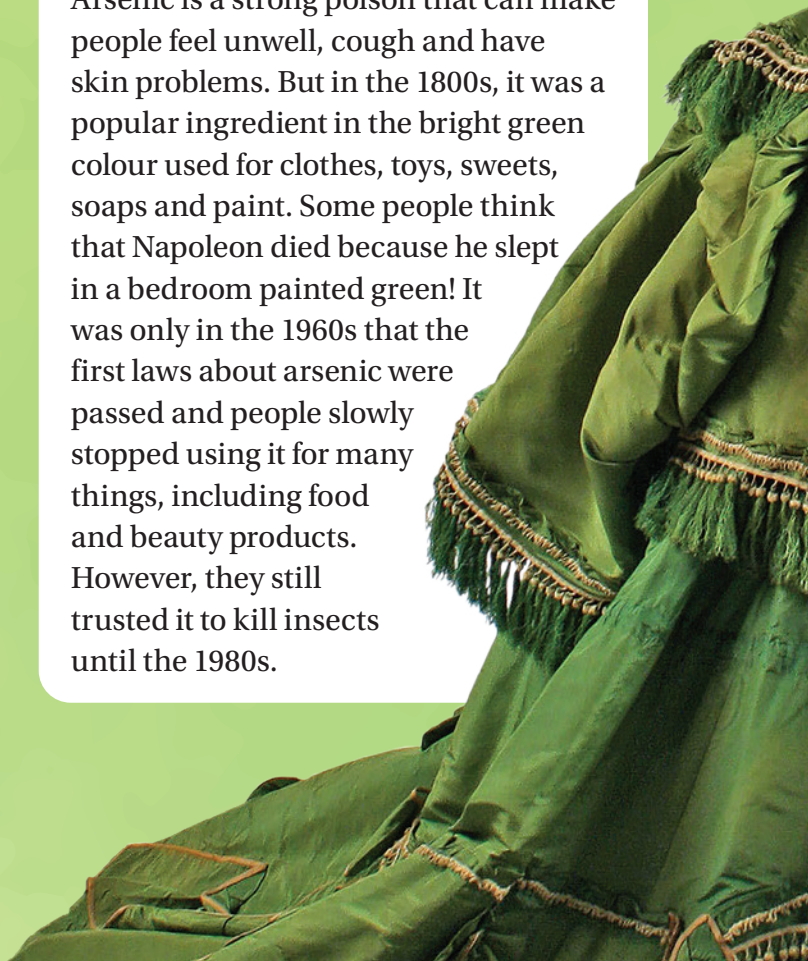
One of the earliest ingredients used in colours dates to 2,500 years ago. In both China and Greece, people mixed lead powder to make the colour white. They used it to make body creams and medicines. In the 1800s, lead powder was popular with artists because it was a very bright white. However, lead is dangerous for our health. It was common for people who used it to suffer from 'painter's colic' (a very bad cough), depression, heart problems or sight loss.



A jar of lead white powder for making oil paint

Arsenic green

Arsenic is a strong poison that can make people feel unwell, cough and have skin problems. But in the 1800s, it was a popular ingredient in the bright green colour used for clothes, toys, sweets, soaps and paint. Some people think that Napoleon died because he slept in a bedroom painted green! It was only in the 1960s that the first laws about arsenic were passed and people slowly stopped using it for many things, including food and beauty products. However, they still trusted it to kill insects until the 1980s.



Uranium orange

From the 1930s to the 1970s, many companies used uranium to make the colour orange. It was used to make bright orange ceramic plates, cups and bowls. People didn't know at the time that these beautiful dishes could make you very unwell. Uranium can cause cancer. Any cracks or chips in the dishes can let uranium into your food or drink, so be careful if you ever use one of these dishes!

These are the stories behind a few dangerous colours. I'm sure they've made some people nervous. Thankfully, science has helped us find safer colours!



Ceramic plates and cups

4 Sequencing Put the events in order.

- ___ Artists suffered from 'painter's colic'.
- ___ People still used arsenic to kill insects.
- ___ China and Greece used lead white to make medicine and creams.
- ___ Companies made bright orange plates that could cause cancer.

5 Work in pairs. Complete the table. Then discuss.

	Lead white	Arsenic green	Uranium orange
Uses	body creams, medicines		
Problems		unwell, cough, skin problems, death	

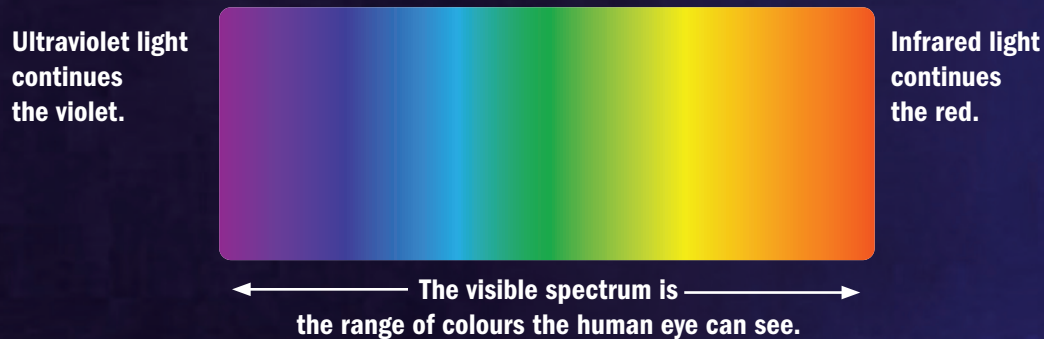
6 Discuss in groups.

1. What part or parts of the text surprised you the most? Why?
2. What are your favourite colours to wear? Why? Would you stop wearing those colours if you found out they were dangerous? Why or why not?
3. There are dyes and colourings that use dangerous chemicals still today. Is it more important to have beautiful colours or to be safe? Why?

Silk dress, 1868

VIDEO

- 1 Discuss in pairs.** How do we use colour in our life? Think about ways that colour warns or informs us about things.
- 2 Work in pairs.** You're going to watch *Seeing Colours?* Look at the photo. How many different colours can you see? Do you think that all animals see colours the same as you do? Why or why not?
- 3 Watch.** ▶ 1.1 While you watch, write examples from *Seeing Colours?* of things humans can see in the range of visible light.



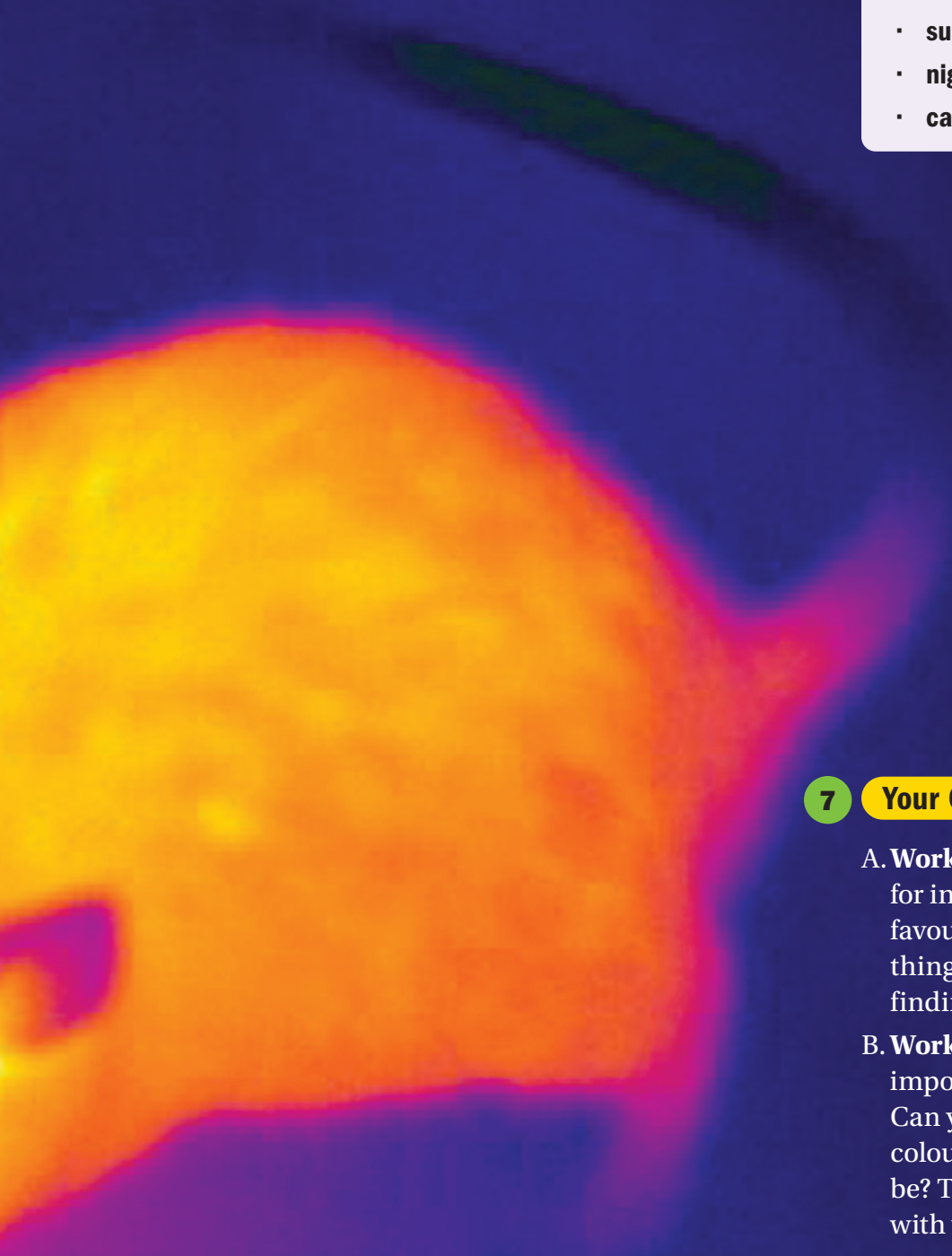
ultraviolet light	<u>not visible to humans</u>
blue	_____
green	_____
yellow	_____
red	_____
infrared	<u>not visible to humans</u>

- 4 Work in pairs.** Answer the questions.
 1. Why don't insects and animals see colours like most humans do?
 2. What can bees see in flowers that is invisible to humans?
 3. How can a snake see a mouse in the dark?
 4. What colour is infrared light to a snake?
 5. What percentage of men are colour-blind? What percentage of women are colour-blind?

- 5 Work in pairs.** How many colours in the range of visible light can you see? Would you like to be able to see heat like snakes do? Why or why not?

- 6 Read.** Choose one of the items from the list. Find out how it uses infrared light. Discuss your answers in groups.

- **TV remote control**
- **supermarket check-out scanner**
- **night-vision goggles**
- **car keys**



A mouse visible in a thermogram – an image that shows an object's temperature

- 7 Your Choice** Choose an activity.

- A. **Work independently.** Search online for interesting facts about your favourite colour. Find images of things that are that colour. Share your findings in a format of your choice.
- B. **Work in pairs.** Discuss the importance of colour in your life. Can you imagine a life without colour? What problems might there be? Then prepare a short presentation with your answers.
- C. **Work in groups.** Find pictures of things in nature. Use them to make a poster together. Decide a way to arrange them by colour. How are things of the same colour different? How are they the same? Present your poster to the class.