

**1**

**Where do rainbows come from?**

**P.2-3**

**2**

**Why do we get hiccups?**

**P.4-5**

**3**

**How do beavers build their homes?**

**P.6-7**

**4**

**What are snowflakes?**

**P.8-9**

**5**

**How do plants grow?**

**P.10-11**

**6**

**Are clouds made of marshmallows?**

**P.12-13**

**7**

**How do kites fly?**

**P.14-15**

**8**

**Why do we measure things?**

**P.16-17**

**9**

**What is the sun for?**

**P.18-19**

**10**

**What are things made of?**

**P.20-21**

**11**

**How does water get to our taps?**

**P.22-23**

**12**

**Why do see-saws go up and down?**

**P.24-25**

**Biography: Jane Goodall P.26-27**

## Lesson

## 1

# Where do rainbows come from?

When there is rain and sunshine in the sky at the same time, we can sometimes see a rainbow too.



A rainbow is a colourful arch in the sky.  
Why is it so colourful?

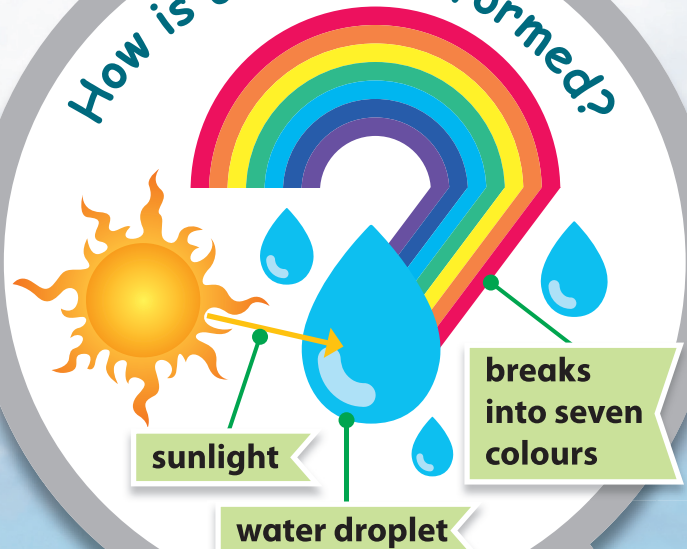
Sunlight looks white but it is not white. It has many colours. When sunlight hits a water droplet, it bends and breaks into seven colours.

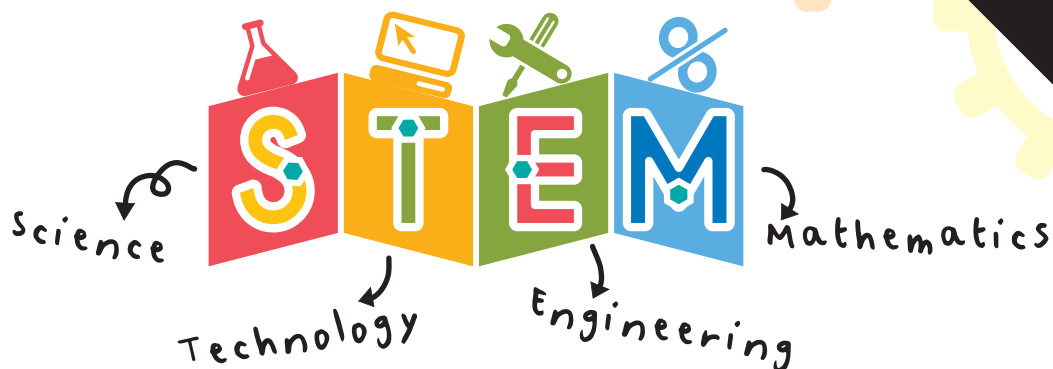
A

Fill in the blanks.

- We see a rainbow when there is rain and 1 \_\_\_\_\_.
- The colour of sunlight is not 2 \_\_\_\_\_.

How is a rainbow formed?





**1**

**If water is clear,  
why is the  
ocean blue?**

**P.2-3**

**2**

**How can ants  
carry heavy  
weights?**

**P.4-5**

**3**

**What are  
wind farms?**

**P.6-7**

**4**

**How can we  
know the age of  
a tree?**

**P.8-9**

**5**

**What is the  
strongest muscle in  
the human body?**

**P.10-11**

**6**

**Can bubbles  
be square?**

**P.12-13**

**7**

**Why can't the  
wolf blow down  
the brick house?**

**P.14-15**

**8**

**How do people  
count?**

**P.16-17**

**9**

**Do cows really  
have four  
stomachs?**

**P.18-19**

**10**

**How do automatic  
doors know when  
to open?**

**P.20-21**

**11**

**How far can a  
sneeze travel?**

**P.22-23**

**12**

**What is so  
special about  
fingerprints?**

**P.24-25**

**Biography: Franklin Yang Chen-Ning P.26-27**

## Lesson

## 1

# If water is clear, why is the ocean blue?



**Water in a glass looks clear. So why do oceans look blue? Is the ocean like a big mirror reflecting the blue sky above?**

You are right if you answered, 'No!'

The ocean is reflecting something though, but what?

The ocean looks blue because it absorbs and reflects sunlight.

Sunlight is made up of seven colours: red, orange, yellow, green, blue, indigo and violet — just like the colours of a rainbow!

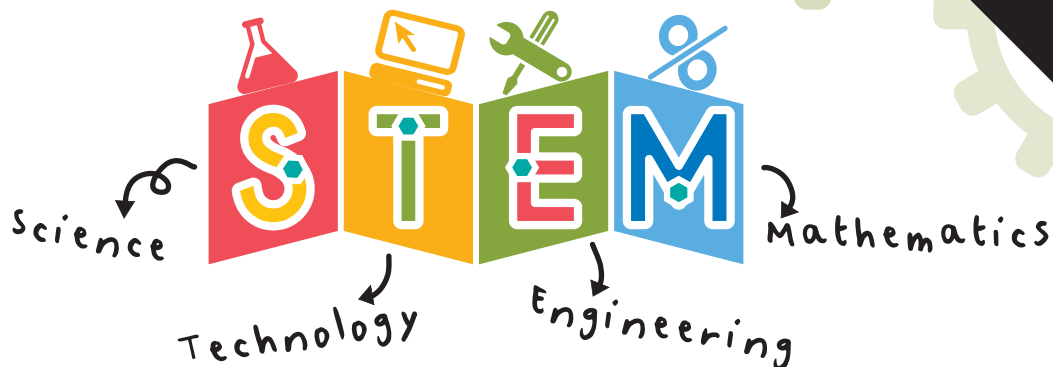
**A**

**Fill in the blanks.**

Water is **1** \_\_\_\_\_ but the ocean looks **2** \_\_\_\_\_.







**1**

**Where is the water?**

**P.2-3**

**2**

**What makes popcorn pop?**

**P.4-5**

**3**

**What is the most important circle?**

**P.6-7**

**4**

**How do planes stay up in the air?**

**P.8-9**

**5**

**Can plants grow without soil?**

**P.10-11**

**6**

**Do tall buildings move when the wind blows?**

**P.12-13**

**7**

**How do we hear?**

**P.14-15**

**8**

**Why can we hear a train before it reaches the station?**

**P.16-17**

**9**

**How do mobile phones work?**

**P.18-19**

**10**

**Do animals play hide-and-seek?**

**P.20-21**

**11**

**Have computers taken over the world?**

**P.22-23**

**12**

**Are robots alive?**

**P.24-25**

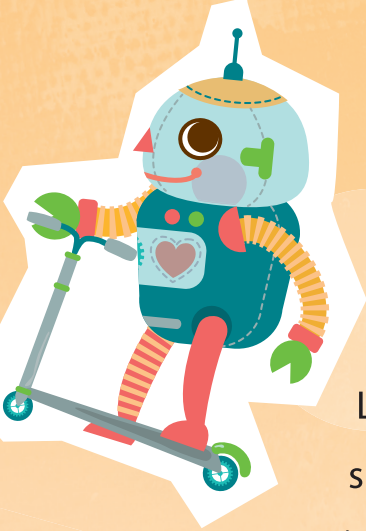
## Lesson



# What is the most important circle?

**Without this circle,  
your scooter or bicycle would not move.**

**What circle is it?  The wheel!**



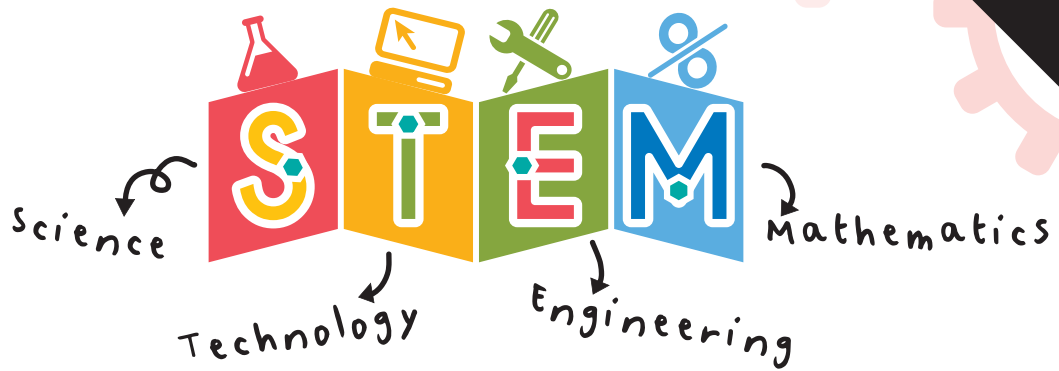
Long ago, people had to pull things on sleds, which was hard work. Later, people invented wheels. They put wheels on carts to help them move heavy things easily.

Then, people put wheels on carriages pulled by horses. They could travel around more quickly in these carriages.

Nowadays, we travel on faster vehicles that have wheels, like school buses and cars.

**A****Fill in the blanks.**

- In the past, people used **1** \_\_\_\_\_ to move heavy things, but it was hard work.
- People invented **2** \_\_\_\_\_ and put them on carts and **3** \_\_\_\_\_ pulled by horses.



1

**What do honeybees do all day?**

**P. 2–3**

2

**Why does pasta come in so many shapes and sizes?**

**P. 4–5**

3

**What are artificial body parts for?**

**P. 6–7**

4

**How do fish breathe in the water?**

**P. 8–9**

5

**What is liquid nitrogen ice cream?**

**P. 10–11**

6

**Why can we see the moon in the daytime?**

**P. 12–13**

7

**Why do we get 'pins and needles'?**

**P. 14–15**

8

**What are X-rays used for?**

**P. 16–17**

9

**How do pilots know their directions in the sky?**

**P. 18–19**

10

**Why do boomerangs always come back?**

**P. 20–21**

11

**What is a volcano?**

**P. 22–23**

12

**What geometric shapes can you find in Hong Kong Geopark?**

**P. 24–25**

**Biography: Alexander Fleming**

**P. 26–27**



## Lesson

## 2

# Why does *Pasta* come in so many shapes and sizes?



**There are about 350 types of pasta.**

**They come in many different shapes.**

**For example, lasagne is rectangular; fusilli is a helix; penne is a cylinder and farfalle is in the shape of a lovely bow!**

Almost all pasta is made from the same ingredients and tastes very similar. But why have people created so many different types of pasta? Different sauces cling to different shapes better than others, and different sizes are better for different types of dishes. Even the angles of the edges of the pasta can affect how much sauce gets inside the pasta!

**A**

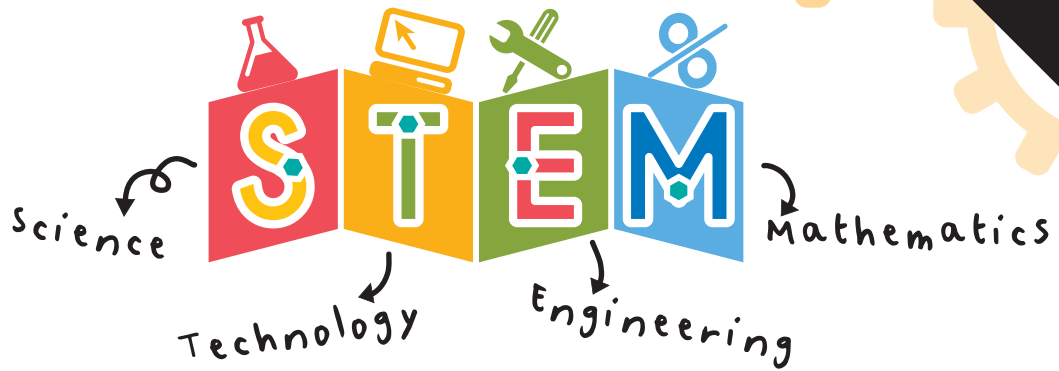
**Answer the question in a complete sentence.**

What are the similarities and differences between different types of pasta?

---

---





**1**

**Why do things look smaller when they are far away?**

**P.2-3**

**2**

**What does gravity do?**

**P.4-5**

**3**

**What is Wi-fi?**

**P.6-7**

**4**

**Do astronauts use tools in space?**

**P.8-9**

**5**

**Why are flamingoes pink?**

**P.10-11**

**6**

**Why do we need to sleep?**

**P.12-13**

**7**

**Do insects really taste with their feet?**

**P.14-15**

**8**

**What makes bridges so strong?**

**P.16-17**

**9**

**What happens to recycled items?**

**P.18-19**

**10**

**Why can birds sit on electrical wires and not get electrocuted?**

**P.20-21**

**11**

**Why do boats float?**

**P.22-23**

**12**

**What are Fibonacci numbers?**

**P.24-25**

**Biography: Tu Youyou P.26-27**

## Lesson

## 6

# Why do we need to sleep?

We spend about one third of our time sleeping. We do not seem to do anything when we sleep. So is sleeping a waste of time?



Neuroscientists who study the nervous system of the human body have a few ideas on why sleep is important.

There are two types of sleep: non-Rapid Eye Movement (**non-REM**) sleep and Rapid Eye Movement (**REM**) sleep. At night, we usually experience four to five sleep cycles, which consist of both **non-REM** and **REM** sleep.

During **non-REM** sleep, the body parts and muscles used during the day are restored to get ready for the next day.

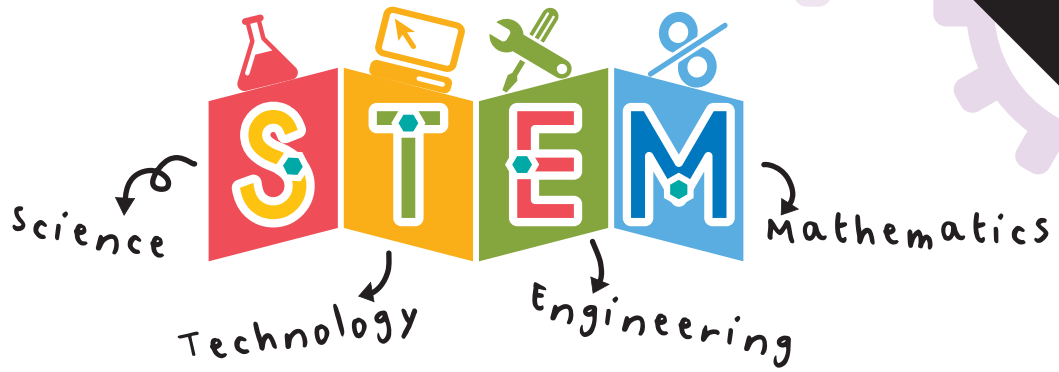
**REM** sleep follows **non-REM** sleep. During **REM** sleep, the eyes are closed but move rapidly from side to side. The brain can be more active than when we are awake because a lot of information is sorted and stored as memories.

Getting enough sleep keeps our bodies healthy, improves our memory, and helps us concentrate better. But a lack of sleep makes us grumpy, clumsy, forgetful, and more likely to make silly mistakes and become ill!

A

**Fill in the blanks.**

Neuroscientists are interested in how the **1** \_\_\_\_\_ works. They have identified two types of sleep: non-REM and REM sleep. They also discovered that our muscles are **2** \_\_\_\_\_ during non-REM sleep, while our eyes move **3** \_\_\_\_\_ and our brains are very **4** \_\_\_\_\_ during REM sleep.



1

**Do stars shine forever?**

**P. 2–3**

2

**How can hummingbirds fly backwards?**

**P. 4–5**

3

**How are underwater tunnels built?**

**P. 6–7**

4

**Why do beans give you wind?**

**P. 8–9**

5

**How do bats find food in the dark?**

**P. 10–11**

6

**How do autonomous cars work?**

**P. 12–13**

7

**Does thunder always follow lightning?**

**P. 14–15**

8

**Can males give birth to babies?**

**P. 16–17**

9

**What is 3D printing?**

**P. 18–19**

10

**What do man-made satellites do?**

**P. 20–21**

11

**What is emotional body language?**

**P. 22–23**

12

**What are fossils and what can they tell us?**

**P. 24–25**





# Do stars shine forever

**The stars we can see at night are the same as those people saw thousands of years ago. Does this mean stars shine forever?**

Like living things, stars go through a life cycle where they are born, live and die. The process takes millions to billions of years, so it seems like forever!

In space, there are regions filled with gases and dust. These regions are called stellar nurseries, where baby stars are born. A star is a giant ball of gas. It is formed when more and more gas is pulled by gravity into a spinning cloud. The cloud gets **hotter and hotter** until it **glows**. The glowing gas cloud is called a **protostar**.

cloud of gases and dust in space

**A** Answer the questions in complete sentences.

1 What is a star made of?

\_\_\_\_\_

\_\_\_\_\_

2 What is a newborn star called?

\_\_\_\_\_

\_\_\_\_\_



Here's what we see on Earth.