



## 100 Things to Know About Space

### Fact Race

Divide your class into teams and challenge them to find the answers to these questions in the quickest possible time:

1. How long does one rotation of the Sun take?
2. Approximately how long ago did the Universe begin?
3. How many Earths could fit inside the Sun?
4. How many kilograms of litter have humans left on the Moon?
5. Which galaxy is the Milky Way on a collision course with?
6. What colour is the Sun?
7. Which two moons are bigger than Mercury?
8. What happens if you discover a comet?
9. How many tornadoes are on the Sun at any one moment?
10. Which moon do scientists believe that humans could colonise?
11. If the Sun burned out today, how many years would it still shine for?
12. What happens when you get too close to a black hole?
13. Why would a laser battle in space be boring?
14. What are Neutron stars?
15. Why do astronauts like to spice their food with hot sauce?
16. What were the very first astronauts?
17. How do astronauts scratch their noses?
18. What was the name of the first human to go into space?
19. Where is the coldest spot in the Universe?
20. How many planets are there in the Solar System?

### Answers

1. Around 25 Earth days
2. 13.82 billion years ago
3. 1.3 million
4. 180,000kg
5. The Andromeda Galaxy
6. Bright white
7. Ganymede and Titan
8. It will be named after you
9. 11,000
10. Europa (one of Jupiter's moons)
11. One million years
12. Spaghettification
13. It would be dark and silent
14. Dense, planet-sized remnants of old stars
15. Because living in a weightless environment dulls your sense of taste
16. Fruit flies
17. On a patch of Velcro inside their helmets
18. Yuri Gagarin
19. On Earth
20. 8



### An Astronaut's Guide

You have been asked to write a guide to space for a new astronaut. It must contain at least twenty top tips for them to follow. Make sure you explain the reasons behind your top tips.

### Holiday Guide

You work for a travel agent. They have decided to send people to space on their holidays. Create a poster or brochure promoting space as the top new holiday destination.

## 100 Things to Know About The Human Body

### Fact Race

Divide your class into teams and challenge them to find the answers to these questions in the quickest possible time:

1. How much hair will grow out of your nose in your lifetime?
2. Who has more DNA girls or boys?
3. Which metal are your teeth harder than?
4. On average, how much more do people fart on planes than usual?
5. How much of your liver can you lose and still keep your body functioning?
6. What are your four vital signs?
7. Which part of your body do optical illusions trick?
8. Which part of your body will always move when you move your fingers?
9. How many strands does a full head of hair have on average?
10. Who was nitrous oxide gas discovered by?
11. What does REM stand for?
12. On average, how many times do people sigh an hour?
13. How tall was the tallest man in recorded history?
14. Which mind-altering drug do millions of people take every day?
15. How far can blood spurt through the air?
16. What colour might your eyes turn if your liver isn't working properly?
17. How many people experience hallucinations in their lifetime?
18. What is the part of your brain that keeps time called?
19. Which flower is the drug morphine made from?
20. How many teeth can a five-year-old's mouth hold at one time?

### Answers

21. 2 metres
22. Girls
23. Steel
24. Nearly three times more than usual
25. 60%
26. Pulse rate, breathing rate, body temperature and blood pressure
27. Your brain
28. Your arms
29. 100,000 strands
30. Joseph Priestley
31. Rapid Eye Movement
32. 12 times an hour
33. 2.72m (8ft 11in)
34. Caffeine
35. Up to 9 metres
36. Yellow
37. Between 10% to 40%
38. The suprachiasmatic nucleus
39. Poppies
40. Up to 52 teeth



### Guinness Book of Records

Using the facts in the book, create your own version of the Guinness Book of Records. Support your facts with scientific explanations if you can, and include lots of illustrations.

### Poster

Pick any part of the body and make a poster that teaches someone younger than you all about that part of the body. Make sure you include at least 10 facts about it.

## 100 Things to Know About Science

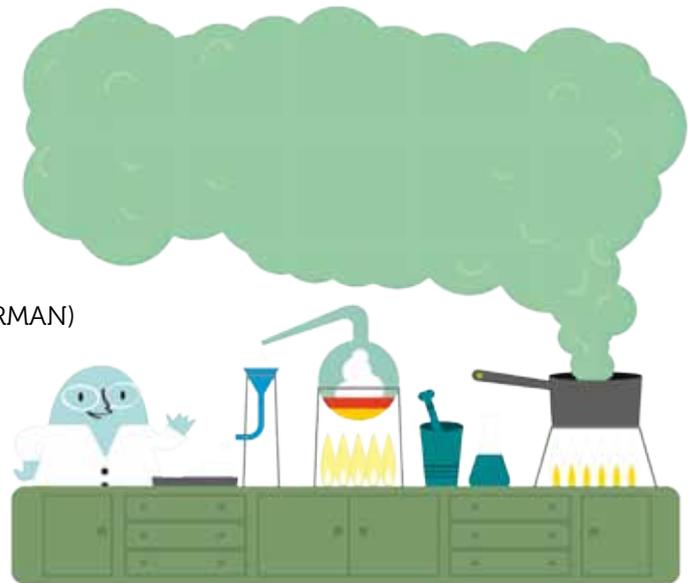
### Fact Race

Divide your class into teams and challenge them to find the answers to these questions in the quickest possible time:

1. How much stronger is the acid in your stomach than vinegar?
2. Which scientist invented the way that scientists name and classify species?
3. How many atoms is gold made up of?
4. Which animals migrate the furthest?
5. Are days on Earth getting longer or shorter?
6. What is the name of the technique that bats use to catch their prey?
7. Which precious stone might it rain on Jupiter?
8. What fraction of all marine species live in coral reefs?
9. Which country has the fastest average internet speed in the world?
10. How many earthquakes happen every day?
11. How many moons does Jupiter have?
12. What is the layer of hot rock called that sits under the Earth's crust?
13. What is the smallest living organism called?
14. Which elements did Marie Curie and her husband discover?
15. How long does it take for the Moon to orbit the Earth?
16. What is the world's tallest skyscraper?
17. How much of the Earth's surface is covered by water?
18. What is the largest animal on Earth?
19. How deep is the deepest ocean on Earth?
20. How many hearts do octopuses have?

### Answers

1. Ten times stronger
2. Carl Linnaeus
3. One
4. Arctic terns
5. Longer
6. Echolocation
7. Diamonds
8. Roughly a quarter
9. South Korea
10. Around 4,000
11. 67
12. The mantle
13. Archaeal Richmond Mine acidophilic nano-organism (ARMAN)
14. Radium and polonium
15. About 27 days
16. Burj Khalifa building, Dubai, United Arab Emirates
17. 71%
18. Blue whale
19. 10,994m
20. Three



### Fact File

Using the facts in the book, create your own version of the Guinness Book of Records. Support your facts with scientific explanations if you can, and include lots of illustrations.

### Twenty Questions

Think of twenty questions that you have about the facts that are in the book. What would you like to know more about?

## Lift-the-flap Periodic Table

### Fact Race

Divide your class into teams and challenge them to find the answers to these questions in the quickest possible time:

1. Which element is diamond made of?
2. What is the chemical symbol for Neon?
3. Which element has the chemical symbol Au?
4. Why is Caesium stored in bottles of oil?
5. The name Cobalt comes from which German word?
6. What happens to tin when it gets very cold?
7. What is the smelliest element?
8. Which element comes from the Ancient Greek word for 'hidden'?
9. Which is the most expensive element to buy?
10. At what temperature does Gadolinium become magnetic?
11. Which element is added to tap water in lots of countries?
12. Which element do animals need to survive?
13. Which element is crucial for mobile phone and computer microchips?
14. Which element can be used to make felt for hats?
15. What happens when potassium is dropped in water?
16. Who invented the periodic table?
17. What is the chemical symbol for Chromium?
18. Which element has the chemical symbol Re?
19. What are the three main parts of atoms?
20. Which metal is there more than any other of on Earth?

### Answers

1. Carbon
2. Ne
3. Gold
4. Because when it is exposed to air it explodes
5. Goblin
6. It crumbles into dust
7. Sulphur
8. Krypton
9. Californium
10. Below 19 °C
11. Fluorine
12. Oxygen
13. Silicon
14. Mercury
15. It burst into flame
16. Dmitri Mendeleev
17. Cr
18. Rhenium
19. Protons, neutrons, electrons
20. Iron



### Fact File

Pick one of the groups of elements and create a fact file about them. Include:

- The names of all the elements and their chemical symbols
- At least 10 facts about them
- Your top tips for working with this group of elements

### Poster

Pick one element and create a poster promoting why this element is the best element. Include as many facts about this element as you can, and make sure to illustrate it in a bright and fun way.

## Lift-the-flap Computers and Coding

### A Guide to Computers

Using the information from the book, create an illustrated guide to using a computer that you could give to someone who has never seen a computer before. Think about what they would need to know to understand what a computer is, and the basics of how to use it.

### Create your own quiz

Create a quiz using the information from the book. Consider different categories to divide your questions into, and make sure that you include the answers at the back!

### A Games Website

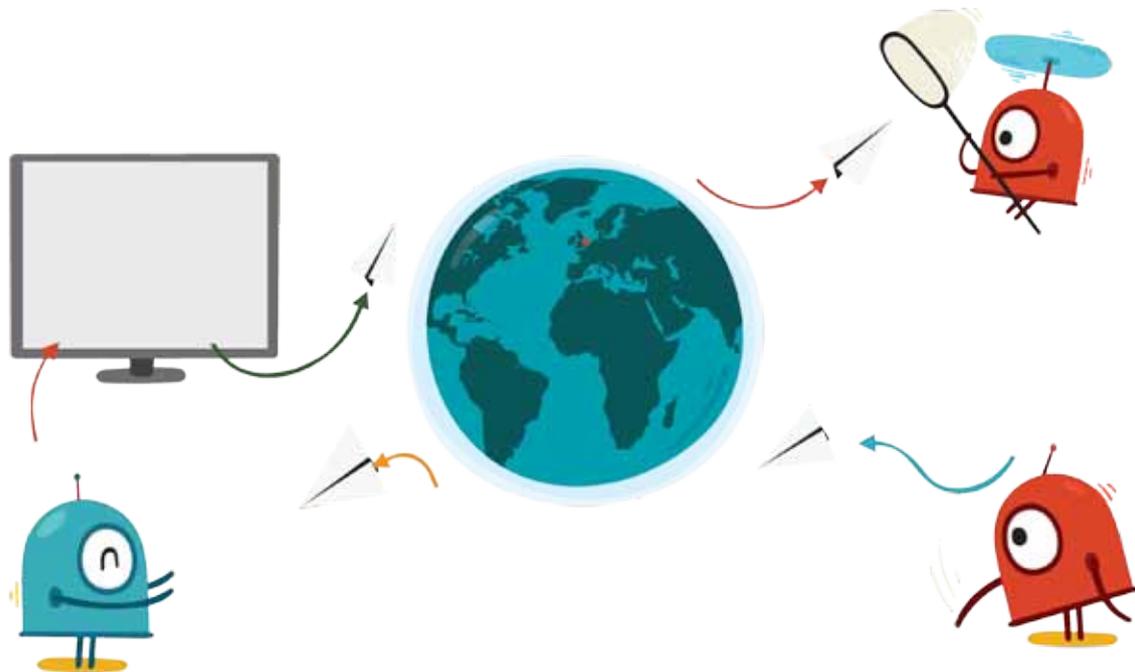
You have been asked to create a gaming website for young children aged 5-8. You need to plan the following features for it:

- A treasure trail game (like the one on page 7)
- A flow chart quiz (see page 8)
- A variable game where the gamer gets a score (see page 12 for help)

### Poster

Pick one element and create a poster promoting why this element is the best element. Include as many facts about this element as you can, and make sure to illustrate it in a bright and fun way.

You also need to design the home-screen for the website. Look at page 14 for inspiration for this.



## Lift-the-flap Fractions and Decimals

### Definitions Race

Divide your class into teams and challenge them to find the definitions to these terms in the quickest possible time:

1. Numerator
2. Denominator
3. Equivalent Fractions
4. Simplify
5. Proper Fraction
6. Improper Fraction
7. Place Value

### Answers

1. The number at the top of a fraction
2. The number at the bottom of a fraction
3. Different ways of writing the same amount e.g.  $\frac{1}{2}$  and  $\frac{2}{4}$
4. Reducing a fraction to the smallest possible numbers on the top and bottom
5. Where the number on the top is smaller than the one below
6. When the number on the top is bigger than the number on the bottom
7. Decimals are written using 'place value' – meaning the value of each number depends on where you put it.

### A Fractions, Decimals and Percentages Poster

Create a poster that teaches people the difference between fractions, decimals and percentages. Try to include examples of each, and think of fun illustrations that will help to explain them.

### Top Tips

Pick one element and create a poster promoting why this element is the best element. Include as many facts about this element as you can, and make sure to illustrate it in a bright and fun way.



## See Inside Energy

### Fact Race

Divide your class into teams and challenge them to find the answers to these questions in the quickest possible time:

1. What are the three fossil fuels?
2. What is nuclear fission?
3. What is the middle of an atom called?
4. How much of the world's energy comes from nuclear power plants?
5. What does ITER stand for?
6. What is renewable energy?
7. What is heat from the Earth called?
8. How much of Iceland's electricity comes from hydropower and geothermal energy?
9. How much of the world's energy currently comes from renewable sources?
10. Where is the largest dam in the world?
11. What is energy from flowing water called?
12. What are 'artificial leaves'?
13. How does a solar farm create energy?
14. Where is the biggest solar farm in the world?
15. What is fracking?

### Answers

1. Coal, oil and gas
2. Nuclear fission is a reaction, where energy inside atoms is released by splitting them apart.
3. A nucleus
4. 12%
5. International Thermonuclear Experimental Reactor
6. Renewable energy is energy from nature e.g. sun, wind and water. It's called renewable because these things will never run out.
7. Geothermal energy
8. 100%
9. 15%
10. The Three Gorges Dam in China
11. Hydropower
12. Solar panels that scientists have invented that can photosynthesize
13. Solar farms harvest the Sun's energy using giant clusters of solar panels
14. California
15. The process of extracting gas from underground

### A Guide to Energy

Produce a guide to explain all the different types of energy. Include:

- Where the energy comes from
- The positives of using that kind of energy
- The negatives of using it
- Which energy type you think we should use and why

### Dragons' Den

Create a pitch for a new device that can harness energy. Include:

- A drawing of the device, labelled with its different features
- An explanation of how the device will work
- An estimation of how much it will cost and how it will make a profit
- A persuasive speech about why people will want to invest in this type of energy



## See Inside Space Stations and other Spacecraft

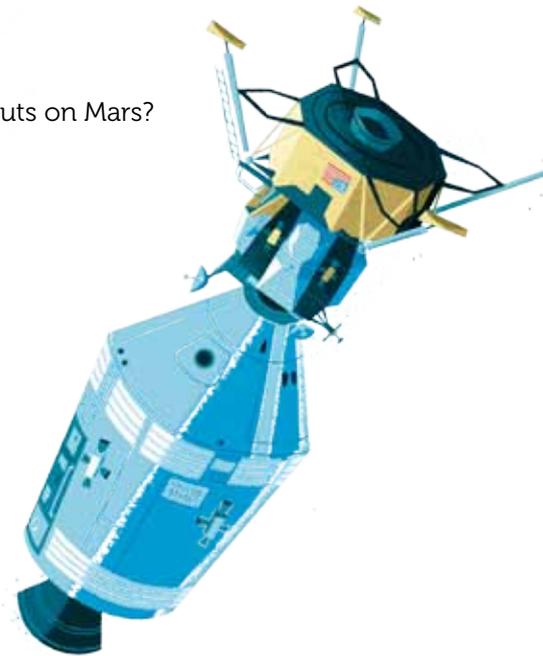
### Fact Race

Divide your class into teams and challenge them to find the answers to these questions in the quickest possible time:

1. What colour does the sky look in space?
2. How many km is the Moon above the Earth?
3. What was the name of the first animal to go into orbit?
4. Who was the first man to go into space?
5. In which year did the first spacecraft land on the moon?
6. How tall was Apollo 11?
7. What is a space station?
8. In what year was the first ever space station launched?
9. Which five countries/continents created the International Space Station?
10. How many times a day does the International Space Station orbit the Earth?
11. What was the rover named Opportunity looking for on Mars?
12. By which year are the USA and other space agencies hoping to land astronauts on Mars?
13. Name three tests that a spacecraft has to go through before it is launched
14. What are astronauts known as in Russia?
15. Why might scientists want to use a 'sky elevator'?

### Answers

1. Black
2. 400,000km
3. Laika the dog
4. Yuri Gagarin
5. 1959
6. 111m
7. A huge spacecraft with room to live onboard
8. 1971
9. USA, Russia, Europe, Canada and Japan
10. 16 times a day
11. Traces of water
12. 2035
13. Spin test, acoustic test, space simulator
14. Cosmonauts
15. Because it takes a huge amount of fuel to get a rocket to take off from the Earth



### Design a Space Station

Design a new space station to be launched. Draw a detailed map of it including all the features that you think it should have. Consider all the problems that an astronaut might face in space e.g. low gravity, and think about how your space station will need to be designed to deal with these issues.

### Promotion Poster

Imagine you are working for the government and you need to persuade people to train to become an astronaut. Create a poster that promotes the reasons why they might want to become an astronaut, and how it would be the perfect job for them.