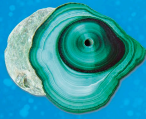




SHAPES



SOUND



SPACE



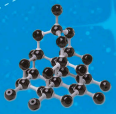
1000 WORDS science



ENERGY



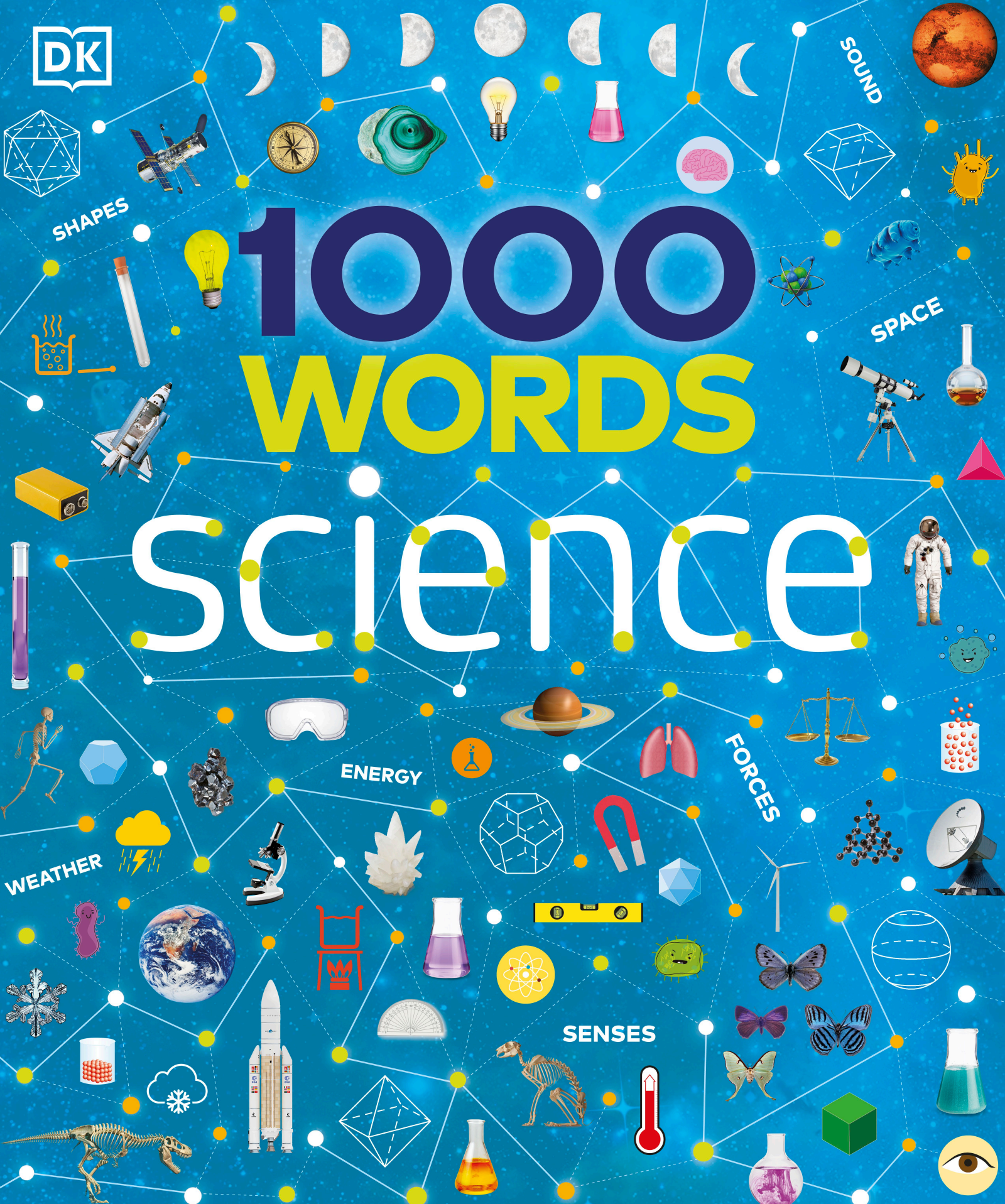
FORCES



SENSES



WEATHER



Build knowledge, vocabulary, and literacy skills

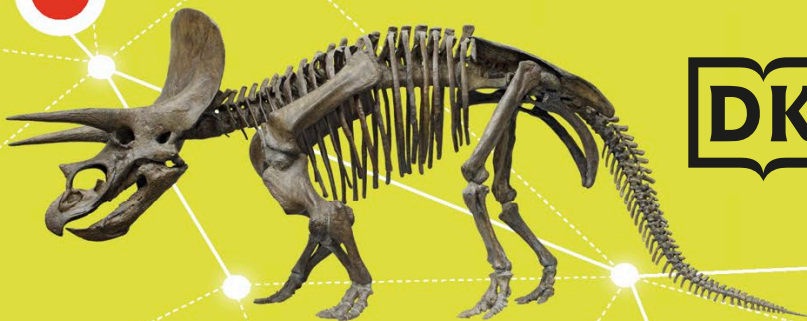


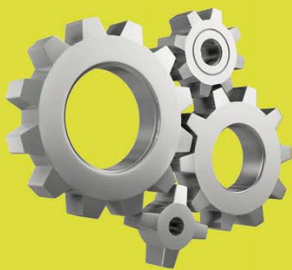
1000 WORDS

science



Jules Pottle





Penguin
Random
House



Written by Jules Pottle
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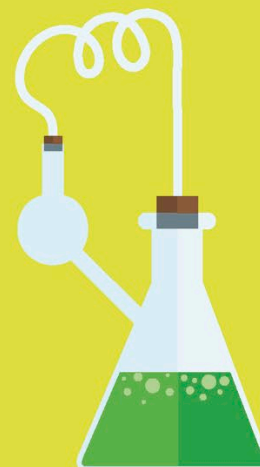
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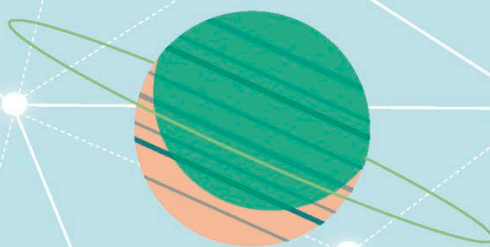
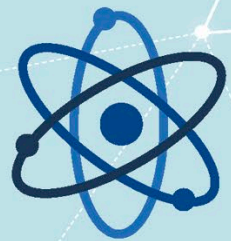


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1000 WORDS science



A note for parents about STEM...

STEM subjects are those that incorporate science, technology, engineering, and math. They often overlap. You need mathematical measurements to collect the results from a science experiment. You need to write computer programs to operate the machines you have engineered. You need to understand the science of forces to be a structural engineer. STEM subjects are highly interlinked, and many of the words from one subject will be useful when learning about another.

Children will meet a lot of new words when they begin to study STEM subjects at school. A great deal of technical vocabulary is used in these lessons: names for pieces of equipment, names for things we cannot see (such as forces), and words that describe a specific property of materials (such as “opaque”), and these may all be new to children.

This book contains topics and words that children are likely to encounter in their first few years at school. It also includes many of the topics that fascinate children in this age group, and some that show how STEM subjects are present in our everyday lives.

A broad vocabulary can help children access their education more easily. Spending time with children and talking about the words and the illustrations in this book will expose them to more than just the words written here. They will encounter additional words as part of the conversation. This book is a great place to start your child’s STEM education.

Jules Pottle, elementary science consultant, teacher, and trainer

Contents

6	Hot and cold	36	Measuring
8	Seasons	38	Up high
10	Sound	40	Long ago
12	Machines	42	Plants
14	Space	44	Playground forces
16	Moon landing	46	Laboratory
18	Transportation	48	Ecosystems
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28	Materials	58	Light
30	Underground	60	Sharing and grouping
32	Comparisons	62	Adding and subtracting
34	Junk	64	Acknowledgments

Hot and cold

How warm are you right now? Some places in the world are warm, while others are freezing cold.





tree
frog

vine

rainforest

snake

monkey

butterfly

North Pole

Arctic

cold

Antarctic

South Pole

glacier

iceberg

polar
bear

explorers

orca

sea

snowman

seal

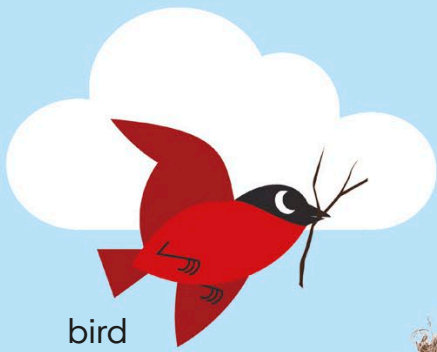
penguins

Inuk

Seasons

As the Earth orbits the sun, countries near the North and South Poles move through different seasons. Winter is usually cold. In spring, the weather gets warmer. It is hottest in summer, and then cools down again in the fall.





bird

eggs

nest

warm

blossom



calf



lamb



sky

beach



fruit



harvest

shade

hot



sheep



butterfly



cow



watering can

water

bee



flower

pollen



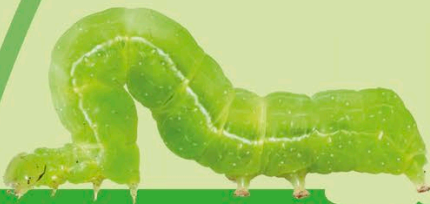
rabbit



baby rabbit



shoot



caterpillar

spring



sunscreen



cooler

sun hat



frog

summer

Sound

The world around us is bursting with different noises. Do you know what all of these sound like?





voice

tune

hum

microphone

vibration

speakers

splish

splash

headphones

woof

flute

meow

roar

tweet

siren

fire engine

buzz

volume

cell phone

birdsong

tick

tock

purr

airplane

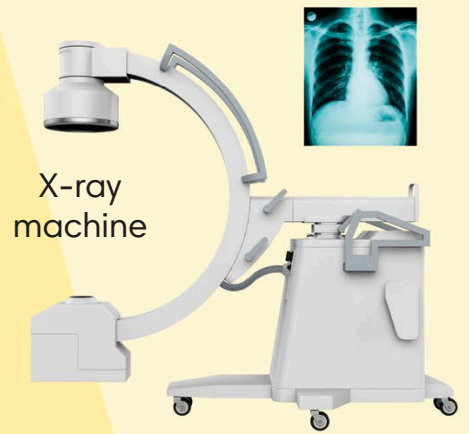
clickety-clack

loud

quiet

Machines

We build machines to help us.
They can be small and simple or
big and complicated.



X-ray
machine



pulley

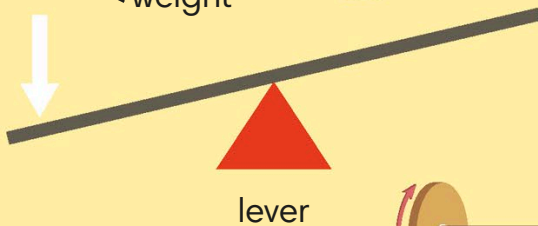
weight



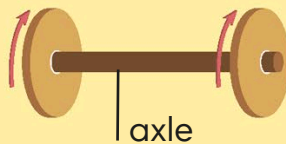
chain



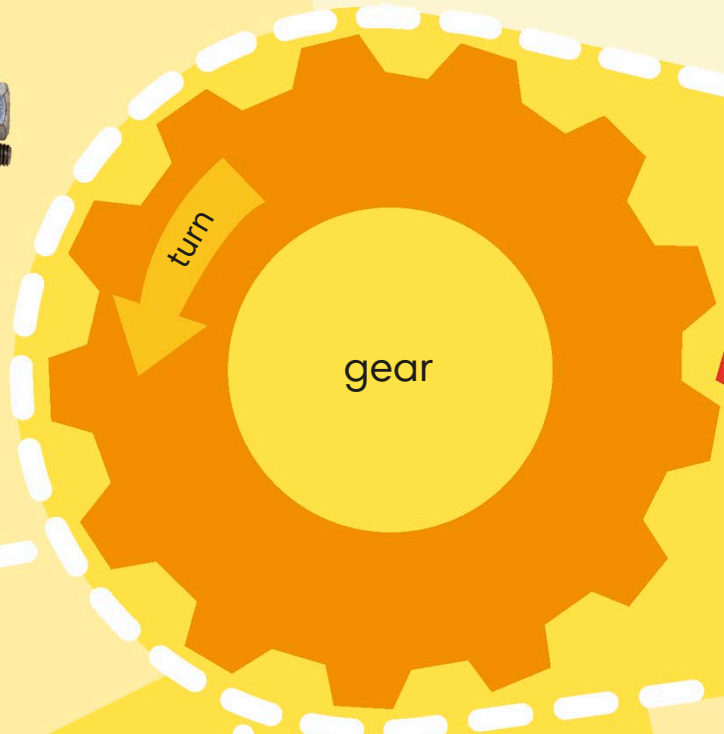
nuts and
bolts



lever

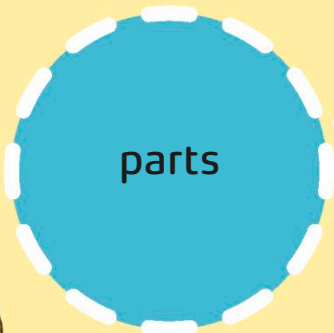


axle



turn

gear



parts

circuit
board



electrician



building



mechanic



drill



plug

wire

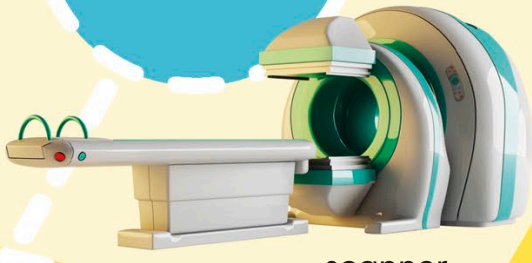
electricity



crane



hospital



scanner

wheelchair



computer



television

toaster



clock



fridge



mobile phone



calculator

home

pull

push



lawnmower



vacuum cleaner



cog

race car



power

transportation

steam engine



bus

wheel



bike



motorcycle



tractor

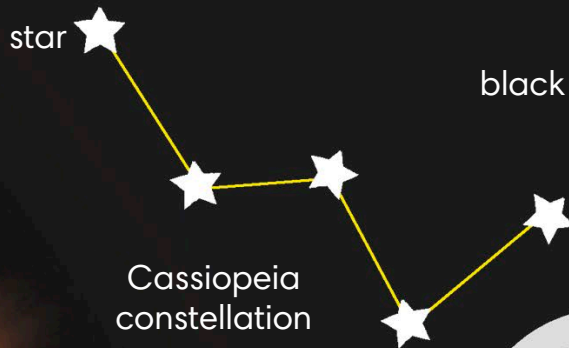
tire



excavator

Space

Have you ever looked at the night sky and wondered what's out there in space?



black

outer space



Solar System

sun

Mercury

Venus

day

Earth

Mars

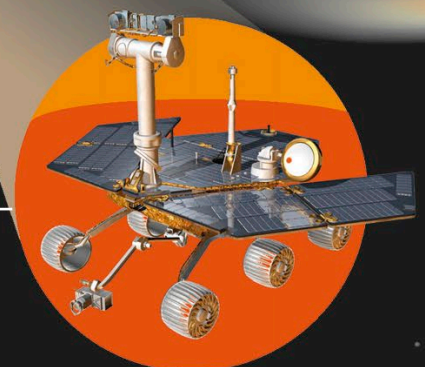
night

light

Jupiter



Mars Rover





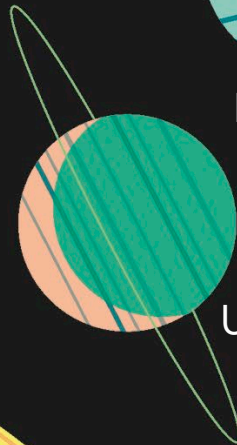
Hubble Space Telescope



Neptune

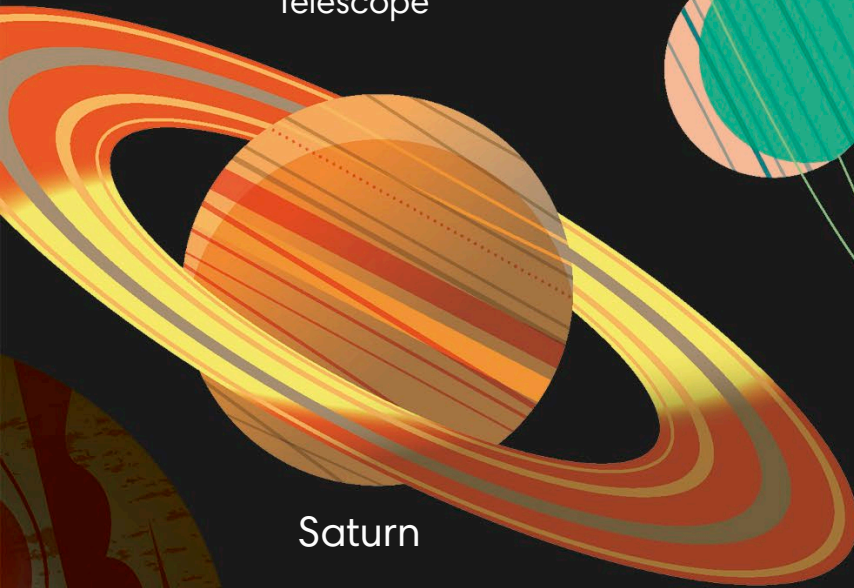


eclipse

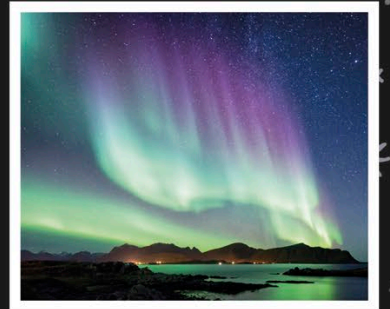


Uranus

planets



Saturn

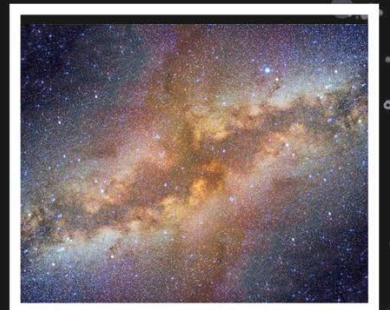


Northern lights

dark

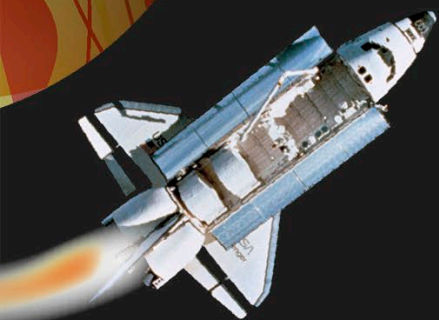


comet



Milky Way

astronomer



Space Shuttle

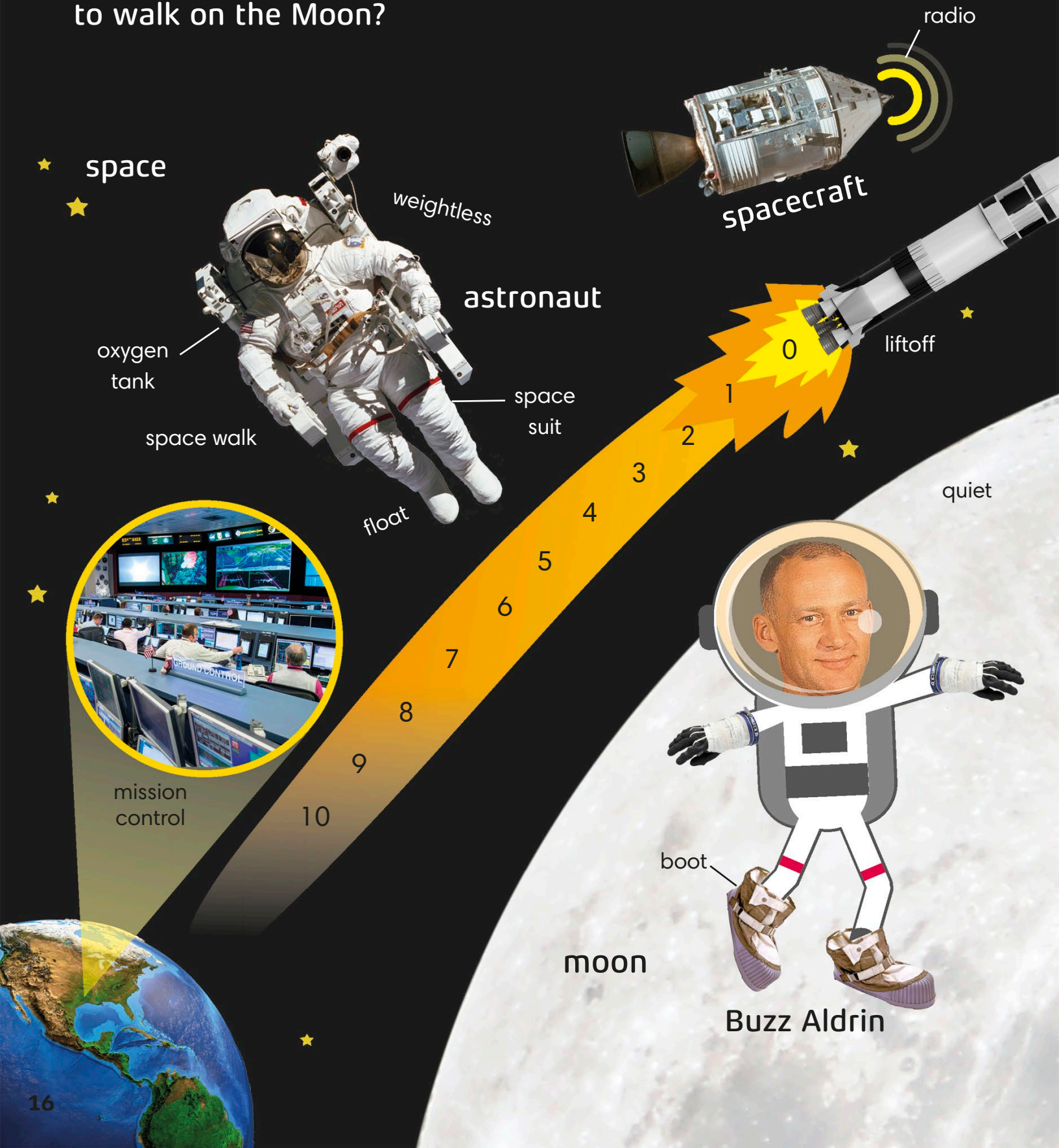
telescope

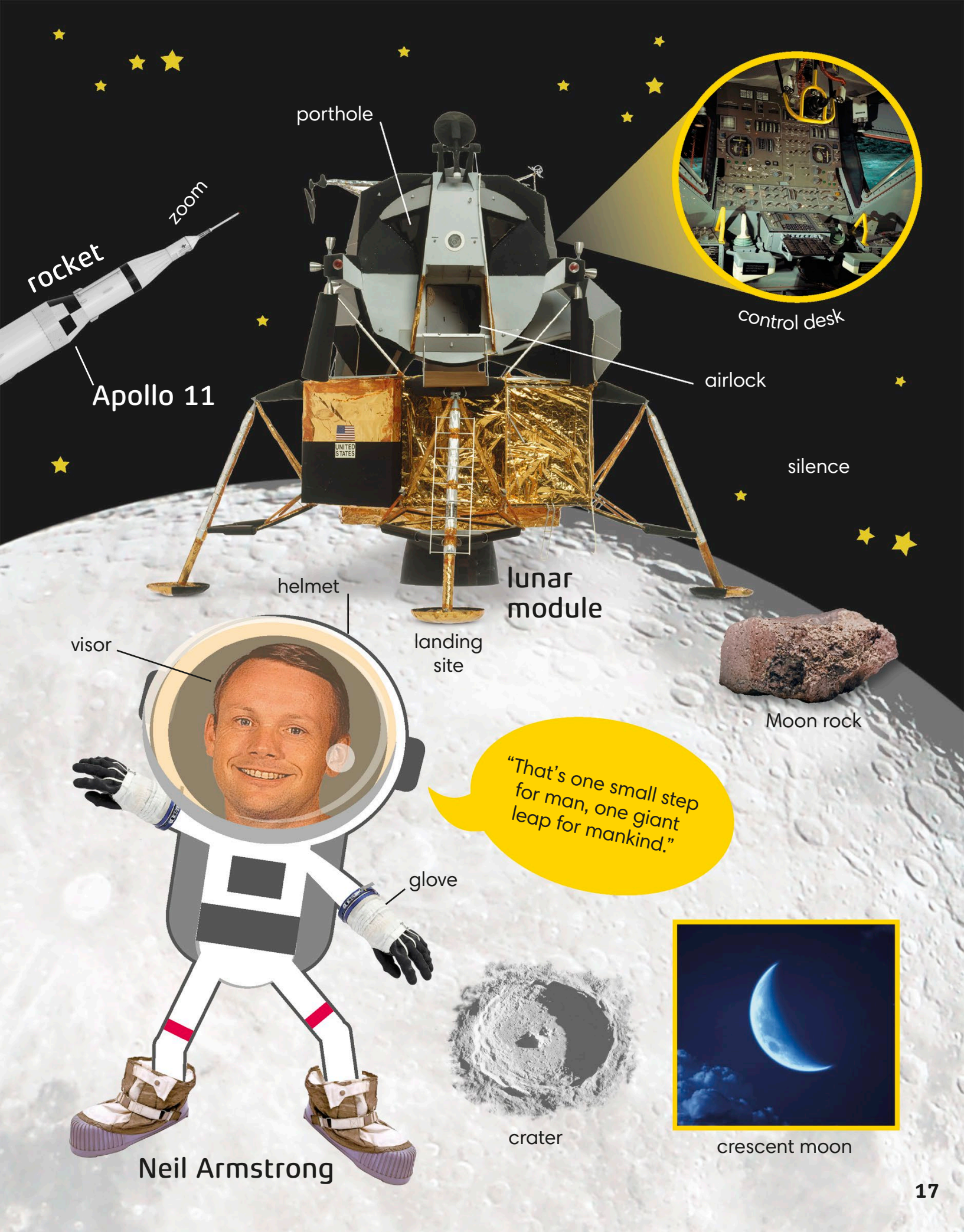


galaxy

Moon landing

What do you think it would be like to be an astronaut like Neil and Buzz, the first people to walk on the Moon?





rocket
zoom

Apollo 11

porthole

control desk

airlock

silence

lunar
module

helmet

landing
site

visor

Moon rock

"That's one small step
for man, one giant
leap for mankind."

glove

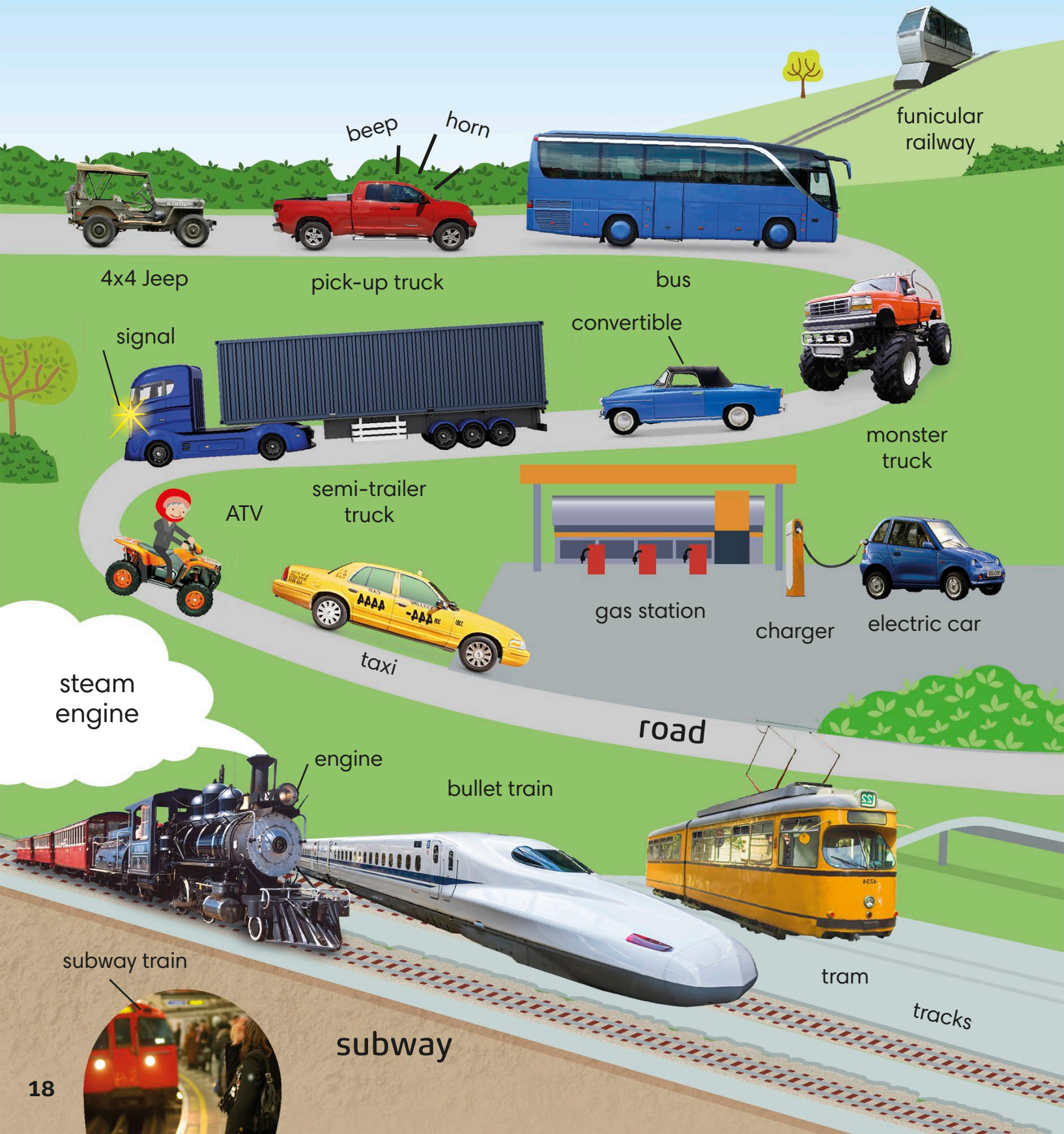
crater

crescent moon

Neil Armstrong

Transportation

There are lots of ways to travel. How many of these types of transportation have you used?



air



parachute



airplane



glider



helicopter



jet plane



airport



horse and carriage

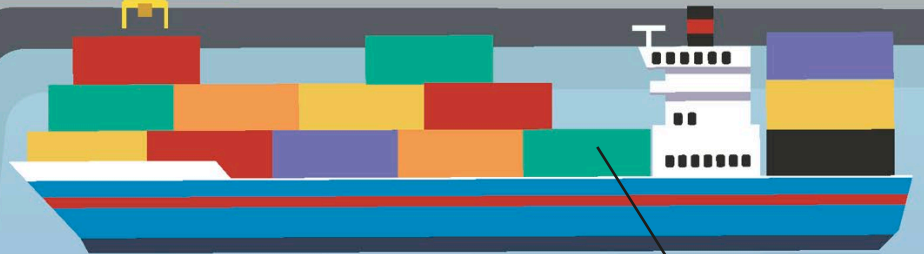
stoplight



port



sailboat



container ship

containers

sea



ferry



monorail



bicycle



tandem



tricycle



engineer

rail

Vehicles

Many machines are designed to move people and things around. We call them vehicles.

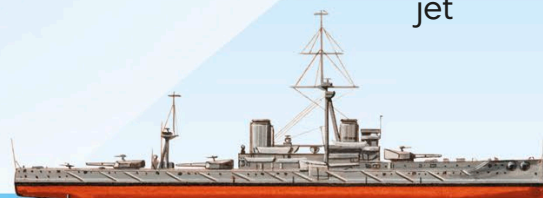
aerodynamic



fighter jet



lifeboat



ship

speedboat



submarine



army truck



tank



dump truck

cab



backhoe loader



caterpillar tracks

excavator



bulldozer



drone



horse trailer



tractor

baler



combine harvester



flag

streamlined



race car

spoiler

tire



pit stop

grip

motorcycle



wheel



ambulance

ramp



police car



siren

fire engine



garage

crane



jack



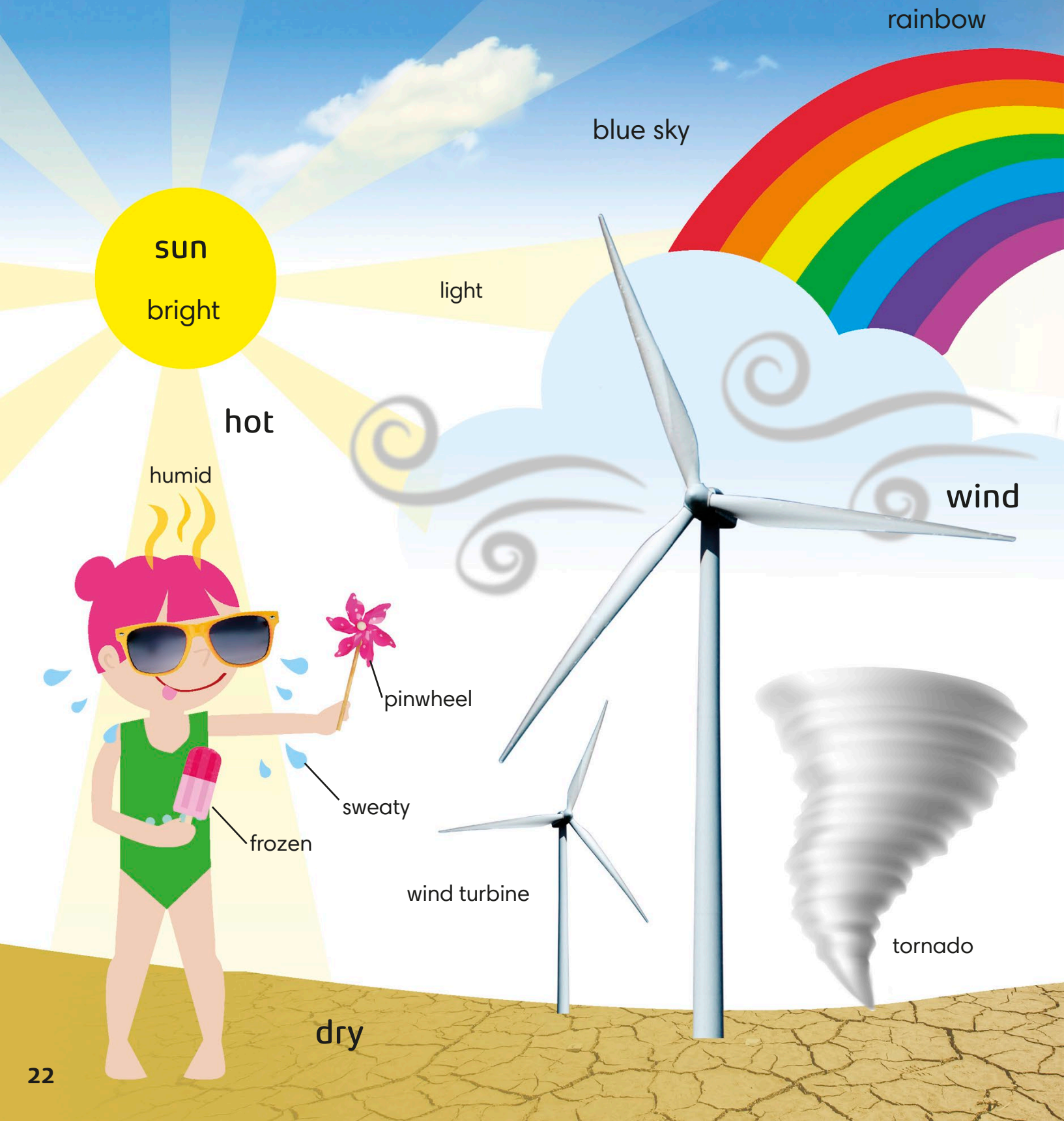
car lift



mechanic

Weather

What is the weather like today? It can change from season to season or from day to day. In some places, it can even change several times in one day!



thunder

cloud

storm cloud



hail

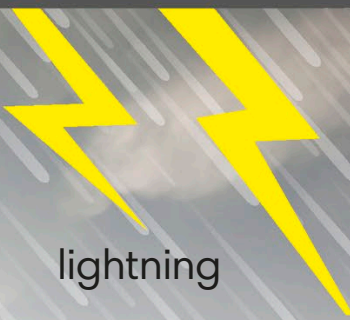
storm

rain

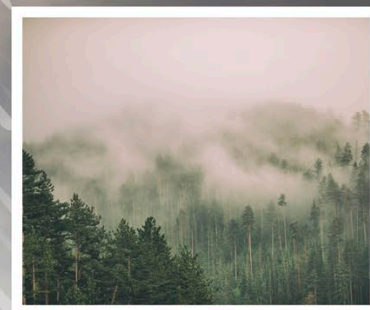


raindrops

lightning



showers



mist

colors



drizzle

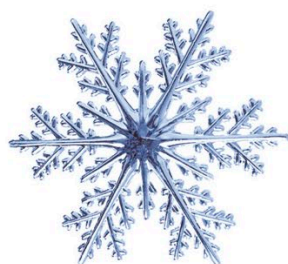


snowstorm

snow



cold



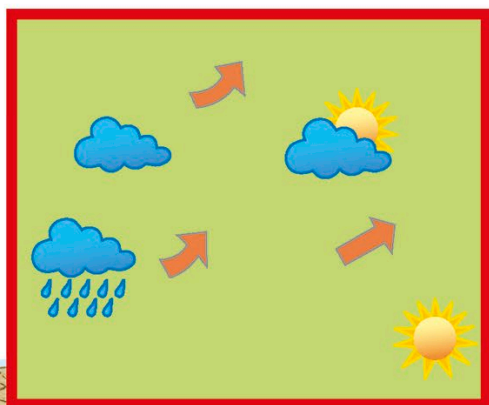
ice crystal

damp

wet



chilly



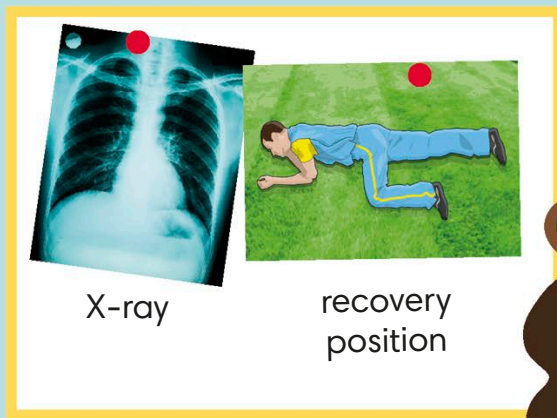
forecast



At the doctor's office

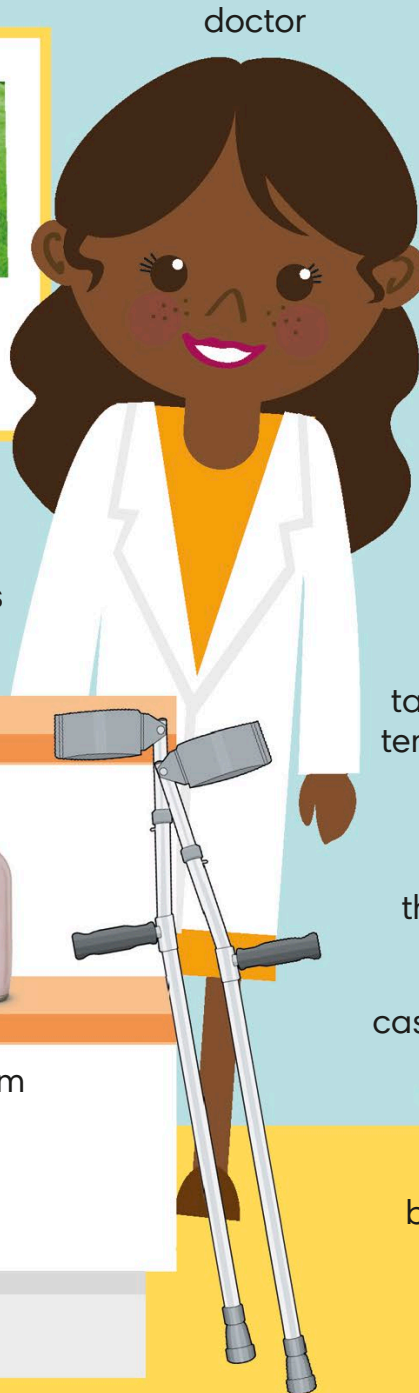
The doctor can figure out what is wrong with us and help us get better when we are sick.

doctor's office

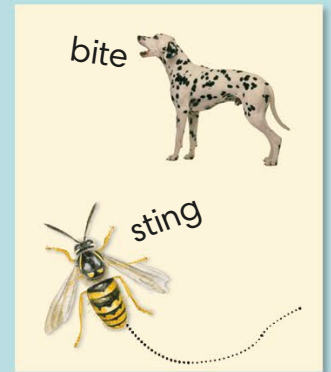


X-ray

recovery position



doctor



bite

sting



hand washing



medicine

tablets

antibiotics



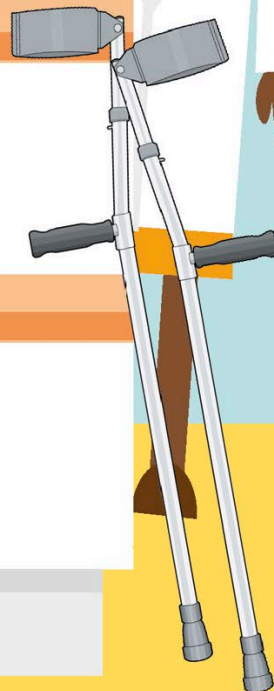
syringe



hand gel



cream



crutches

patient

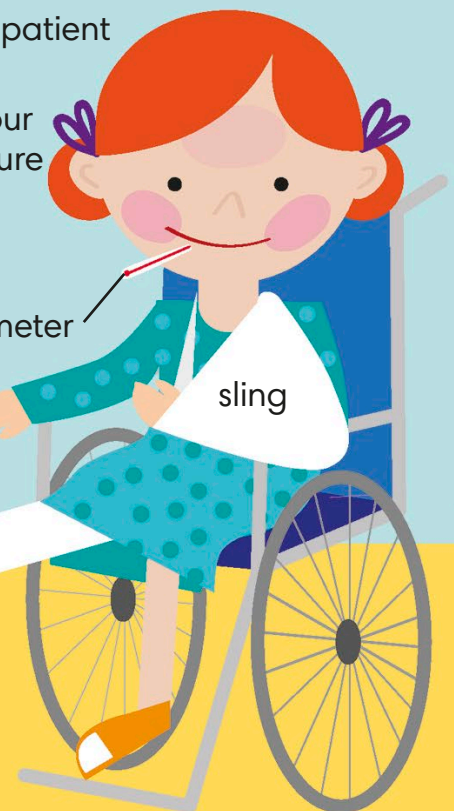
taking your temperature

thermometer

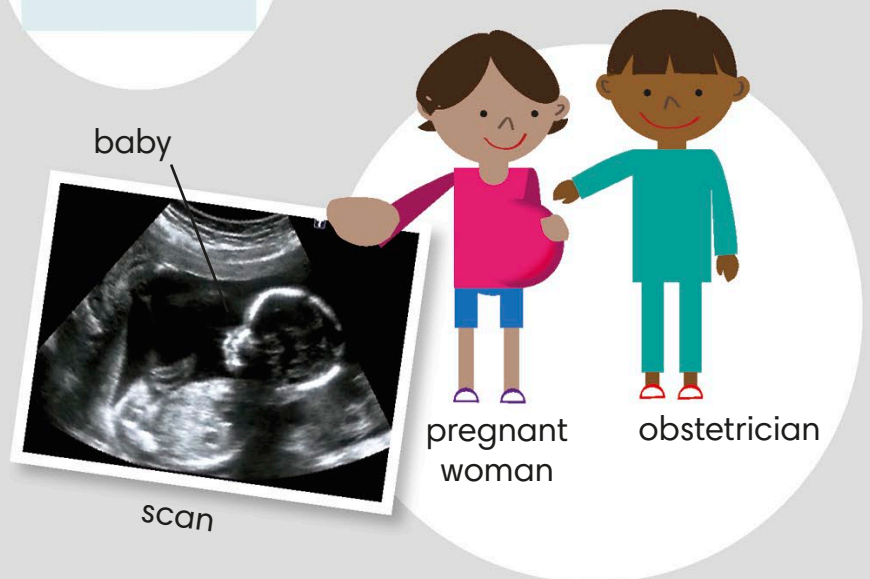
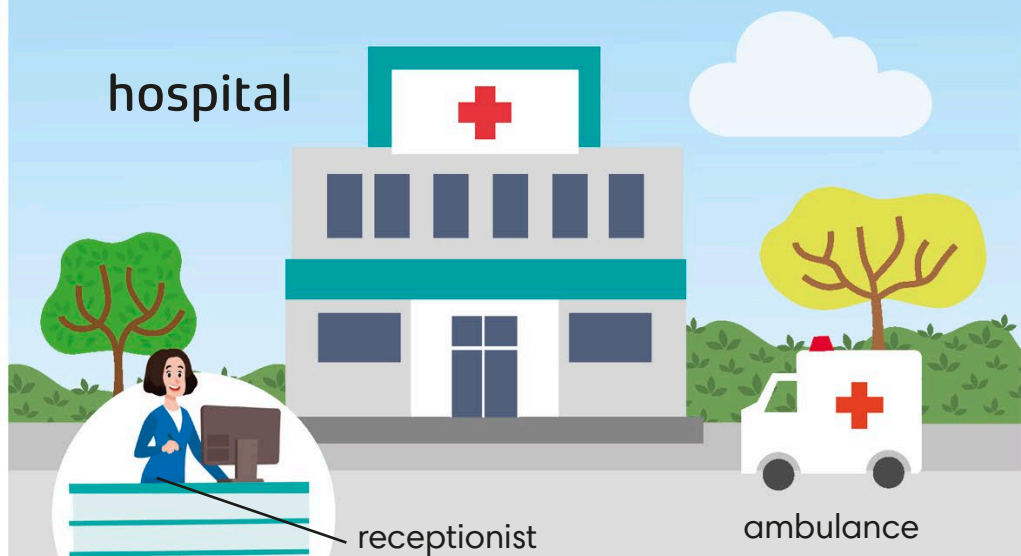
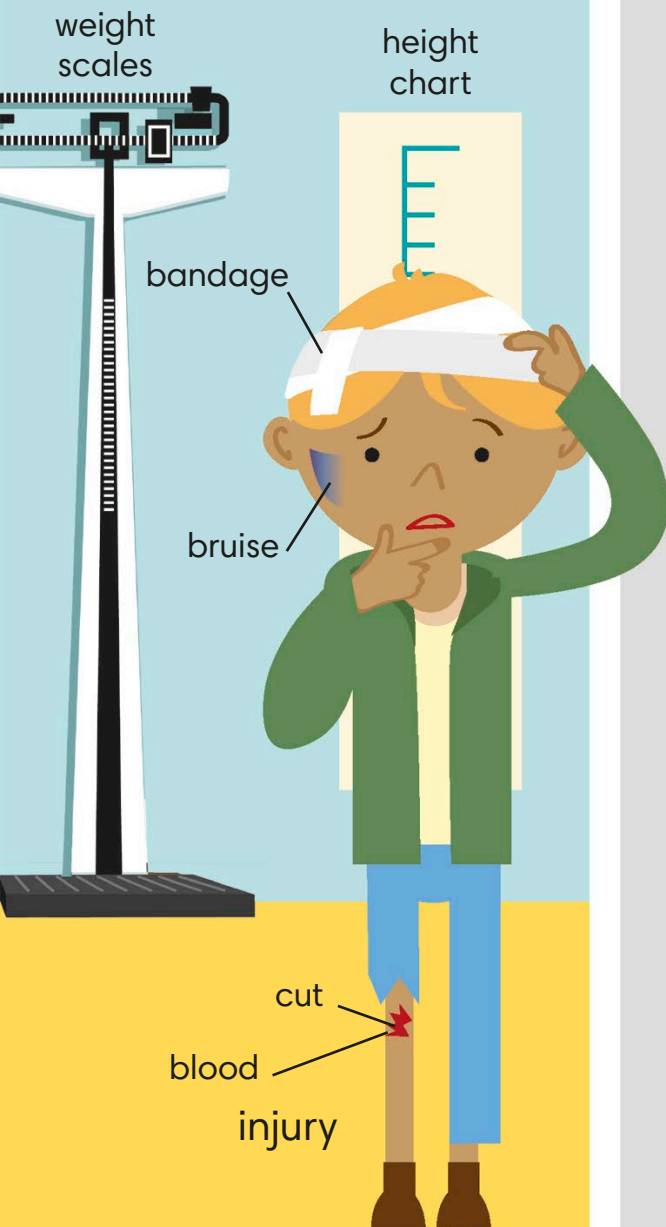
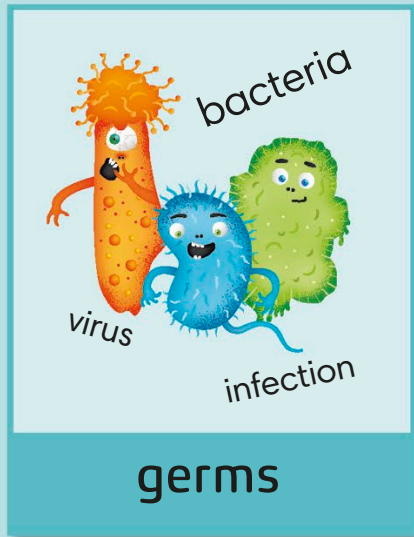
sling

cast

broken leg

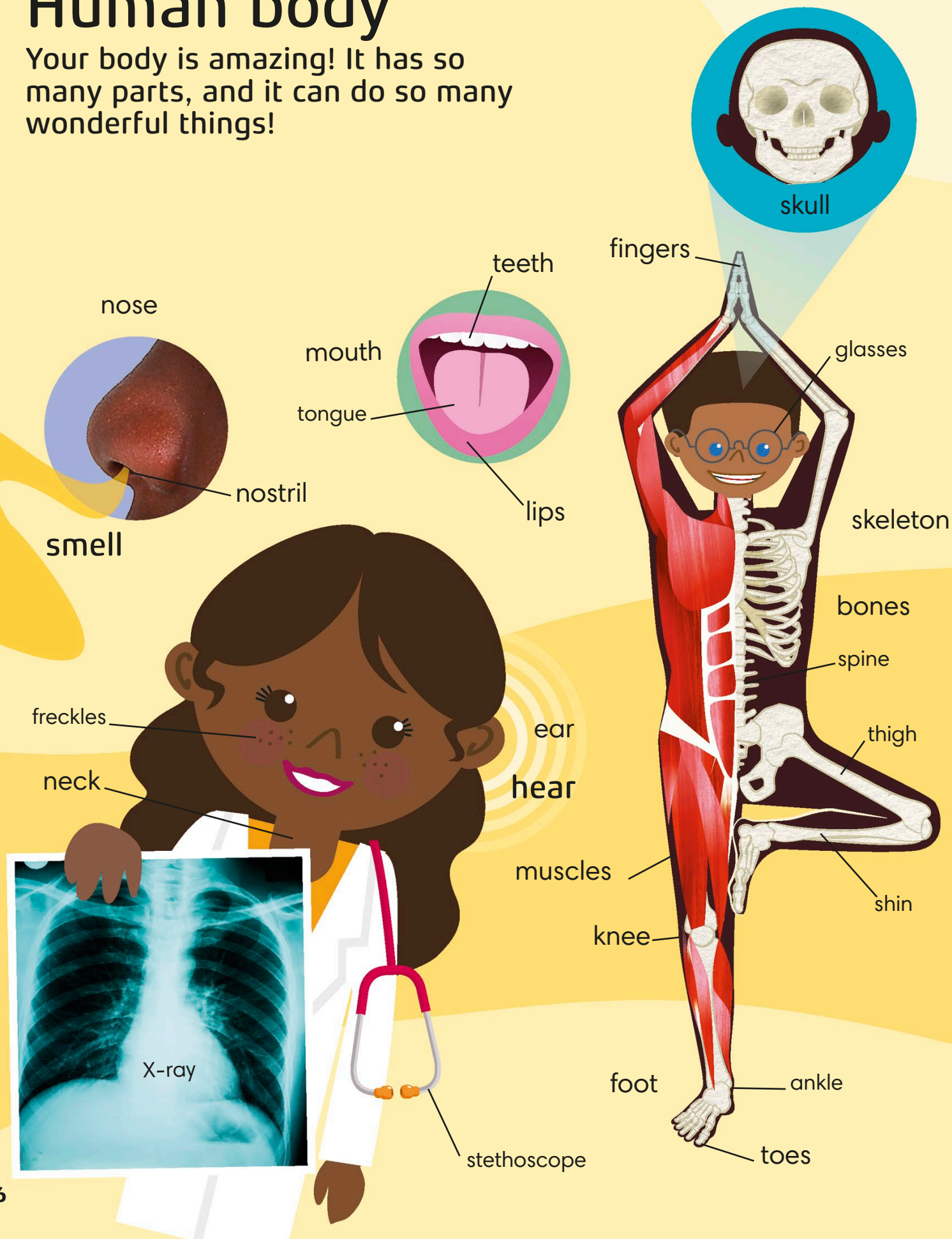


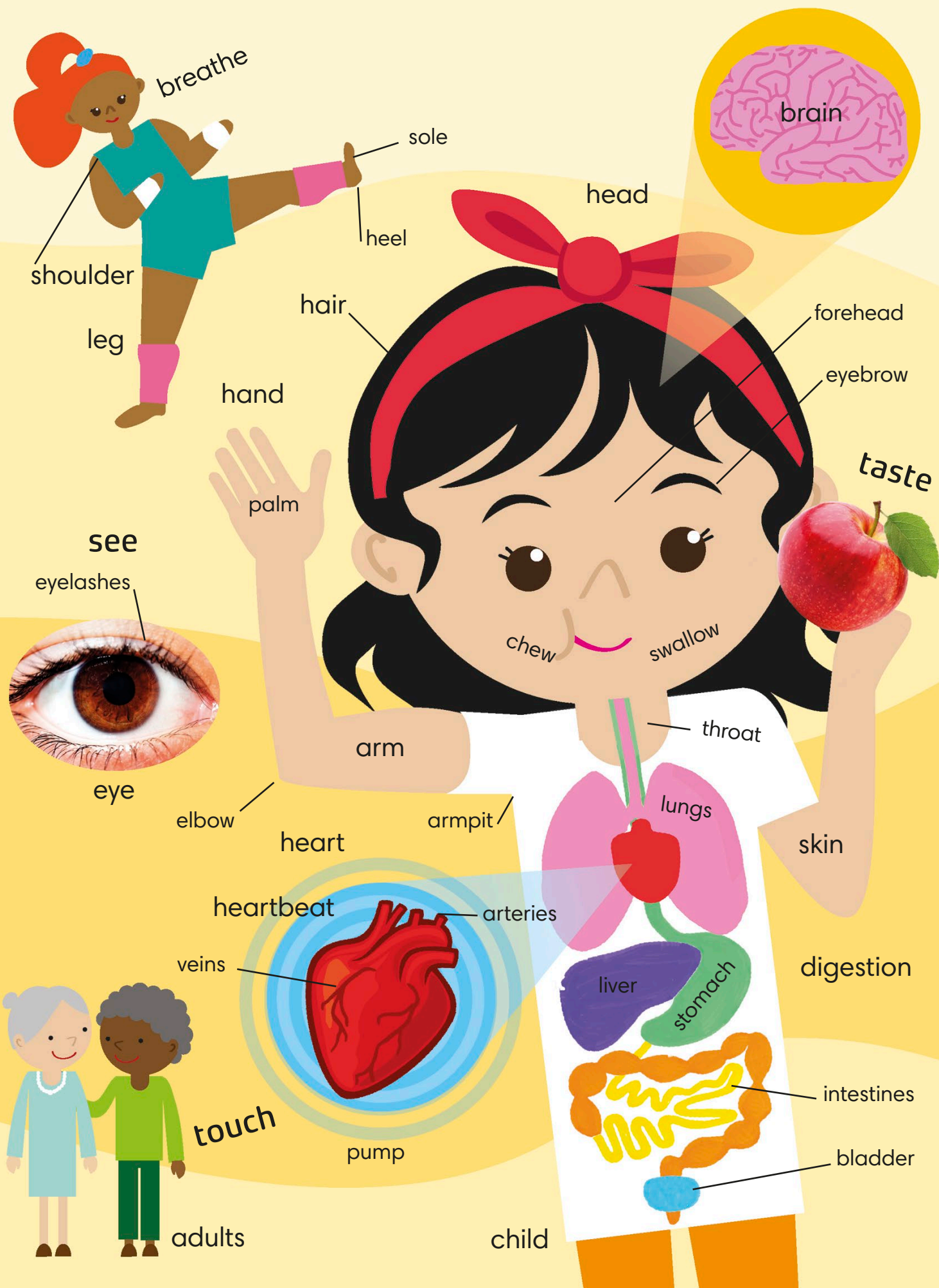
wheelchair



Human body

Your body is amazing! It has so many parts, and it can do so many wonderful things!





breathe

brain

head

shoulder

sole

heel

leg

hair

hand

forehead

eyebrow

taste

see

eyelashes

chew

swallow

palm

arm

throat

lungs

skin

heart

armpit

heartbeat

arteries

veins

liver

stomach

digestion

touch

pump

intestines

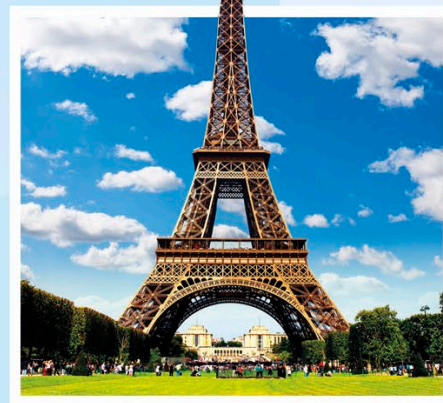
bladder

adults

child

Materials

The world is made of many different materials. Some are rare, and some you might see every single day!



iron



hard

diamond

steel

metals

copper

lava
explosive

flint

pebble

gravel

sandstone

clay

granite

rock

solids

sand



icicle

freeze

melt

ice crystal

paper



salt crystal



sugar crystal

elastic



rubber band

plastic



man-made



recyclable

biodegradable



wool



cotton



wood

natural



shell

pearl

glass



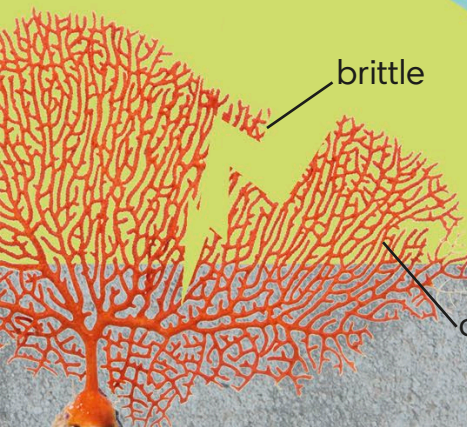
water



dishwashing liquid



acid



brittle

sponge

absorbent

coral



poisonous

air



oxygen



hydrogen



nitrogen

carbon dioxide



gases

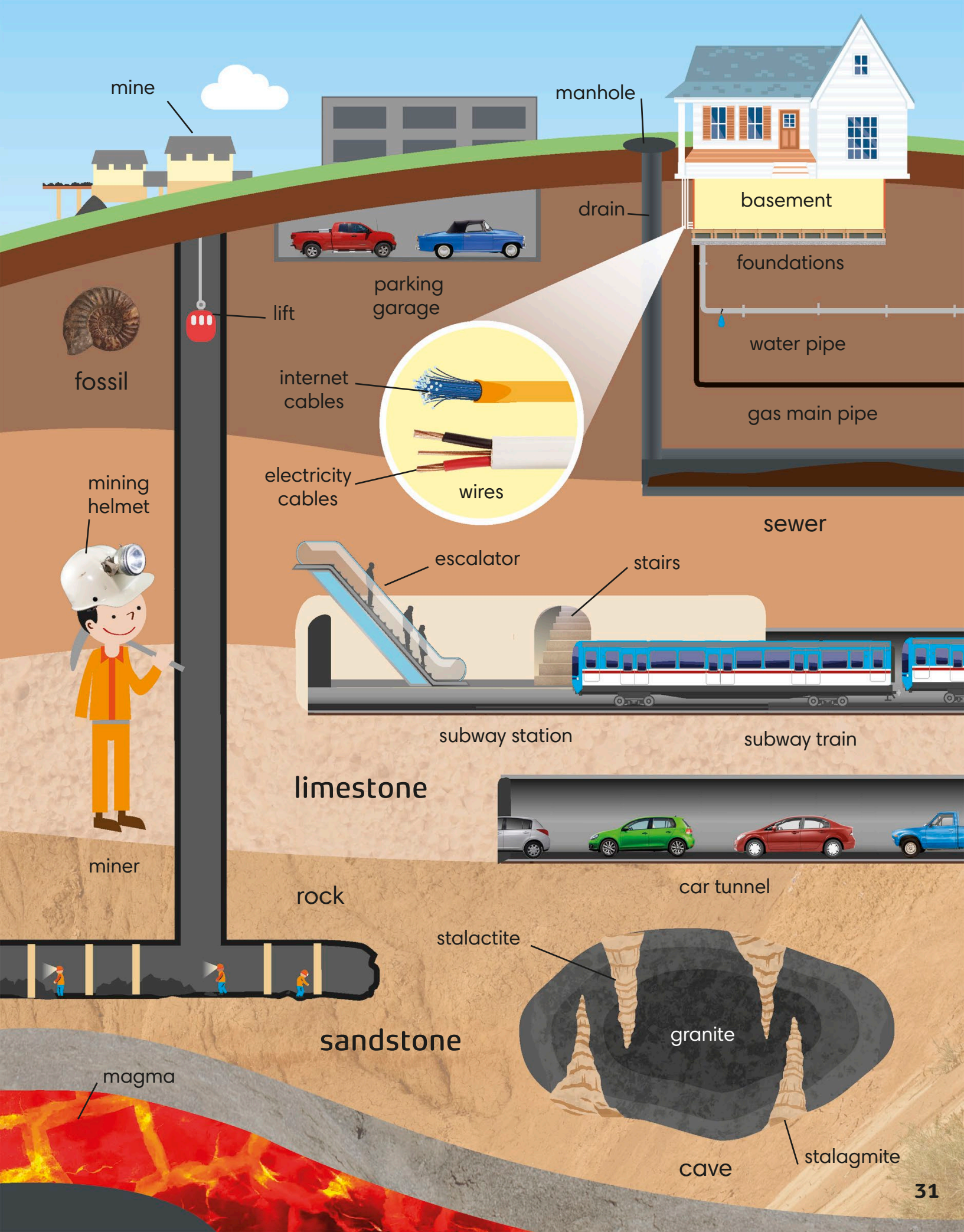


rain

liquids

You can't always see it, but there is a whole world in the ground underneath your feet!





mine

manhole

basement

foundations

water pipe

gas main pipe

sewer

fossil

lift

parking
garage

internet
cables

electricity
cables

wires

mining
helmet

miner

escalator

stairs

subway station

subway train

limestone

rock

car tunnel

stalactite

granite

sandstone

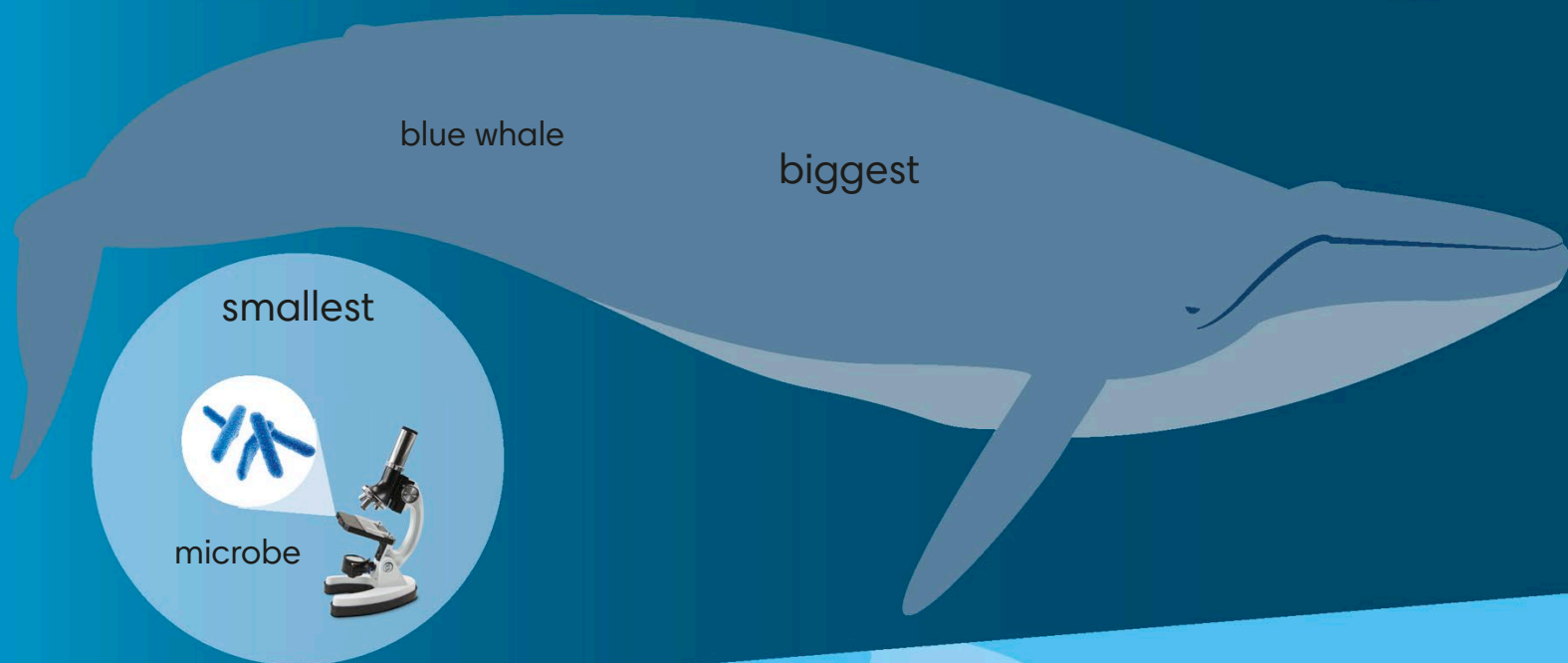
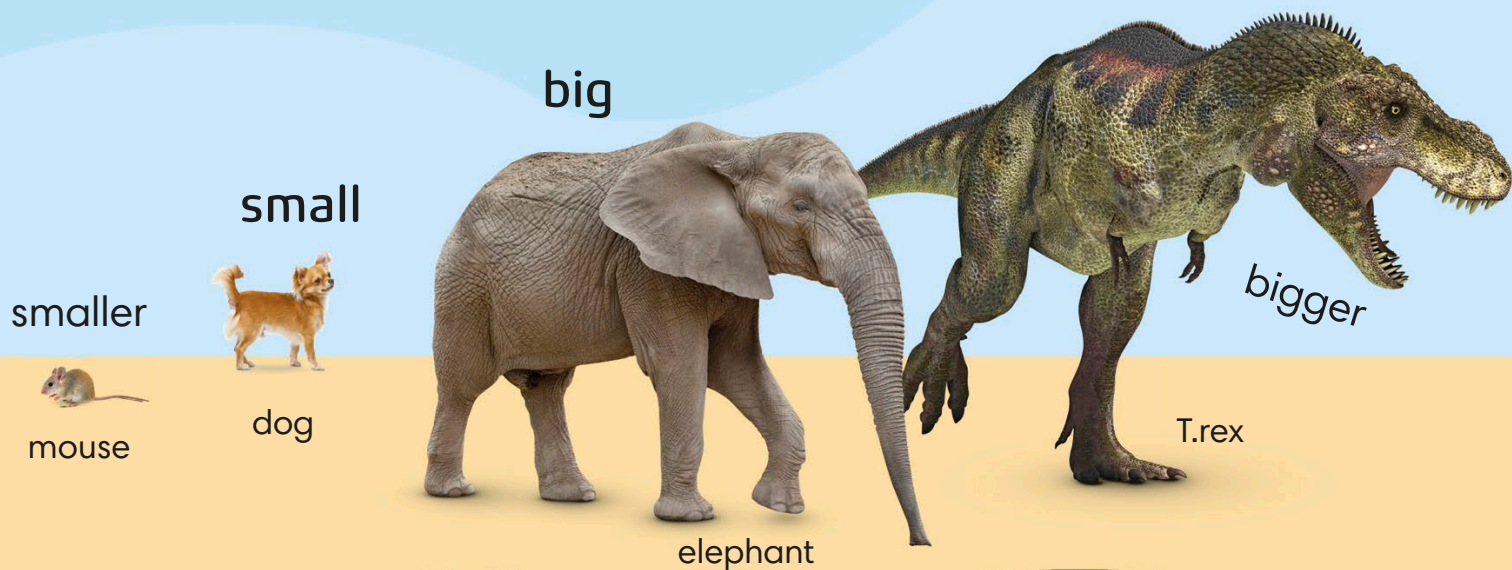
magma

cave

stalagmite

Comparisons

You might be tall. You might be short. You might be early or late, or hot or cold. These kinds of words help us describe and compare things.



darker

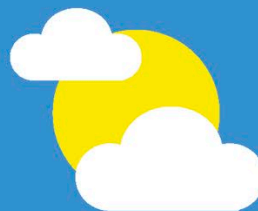
dark

bright

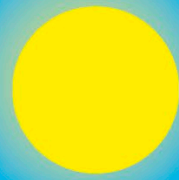
brighter



Moon



sun



equal

balance



light

heavy

rock



feather

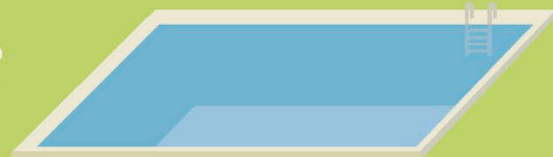
unequal

shallow

deep



bath



swimming pool

deeper



ocean

quieter

quiet

loud

louder

loudest

buzz



mosquito

purr



cat



crying baby



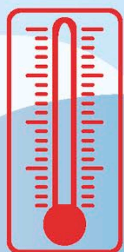
trumpet

toot

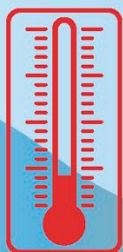


siren

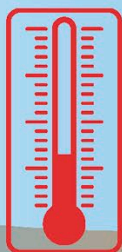
temperature



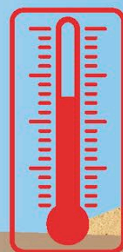
coldest



colder



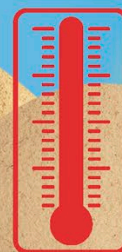
cold



hot



hotter



hottest

Junk

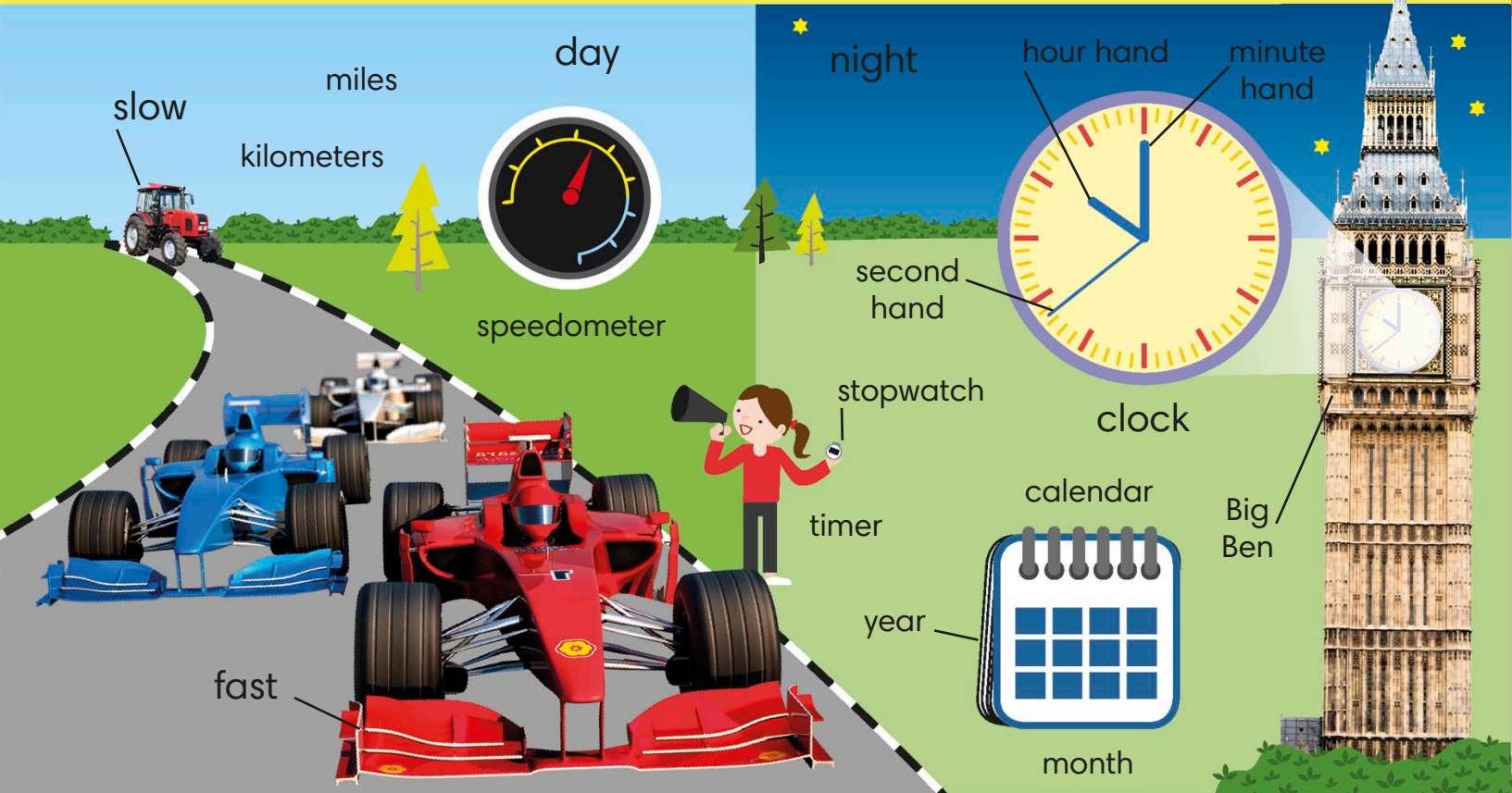
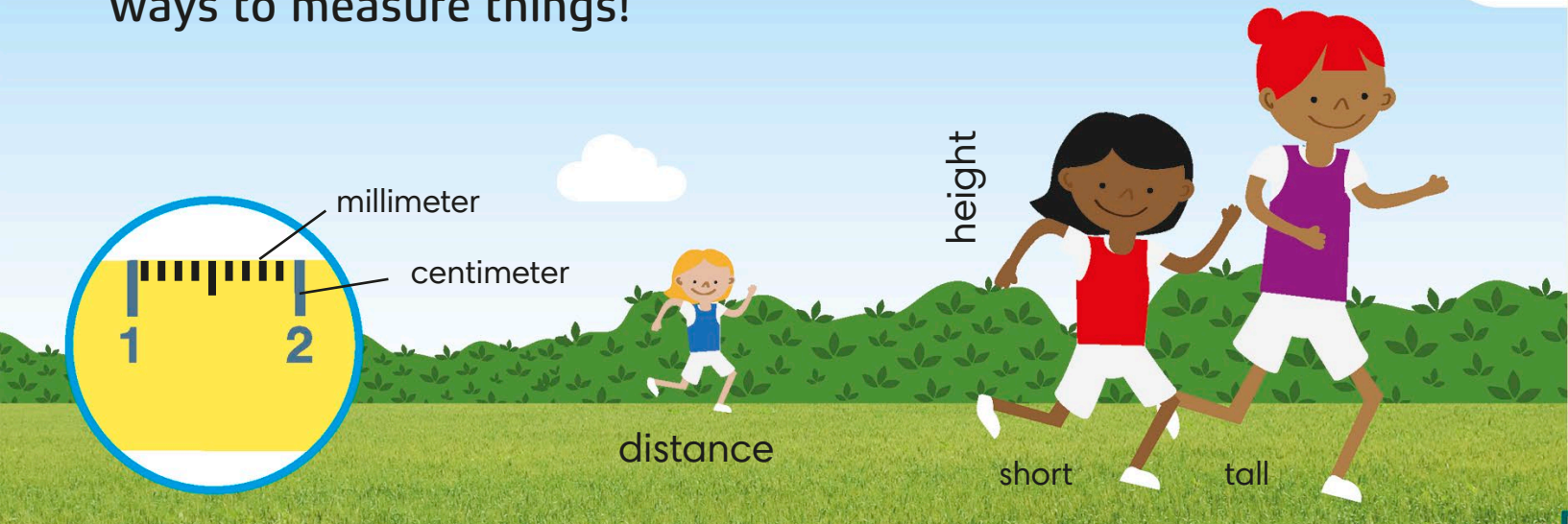
What happens to all the things we throw away? How many of these things can be reused or recycled?

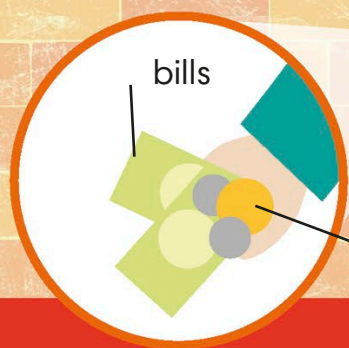




Measuring

If you are doing an experiment or making something, you often need to measure things. And there are many ways to measure things!





money



light

shopping



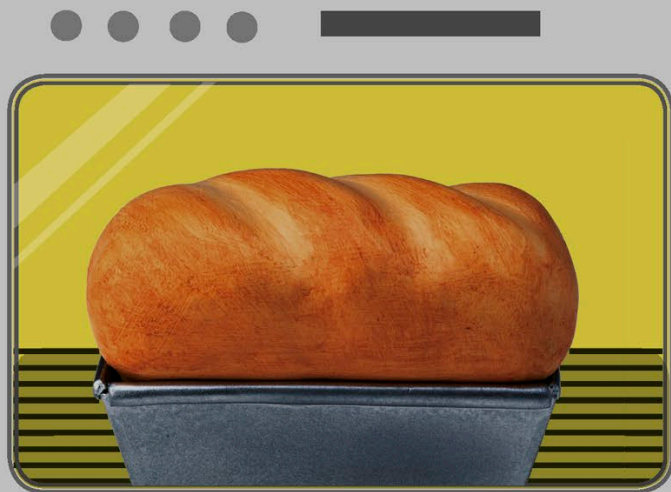
heavy



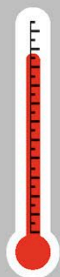
apples



weight



hot



cold

thermometer

350°

degrees

temperature



full

container

fill

liter

half empty

half full

milliliters

volume

Up high

Look up! There are lots of things going on up there. What can you see above you?





satellite

star

meteor

planet

moon

sun

jet stream

cumulus clouds

snowflakes

rain

red kite

birds

pigeon

swallow

vapor trail

seagull

butterfly

mountain

mist

control tower

windsock

cell tower

travel

hang glider

glide

pollen

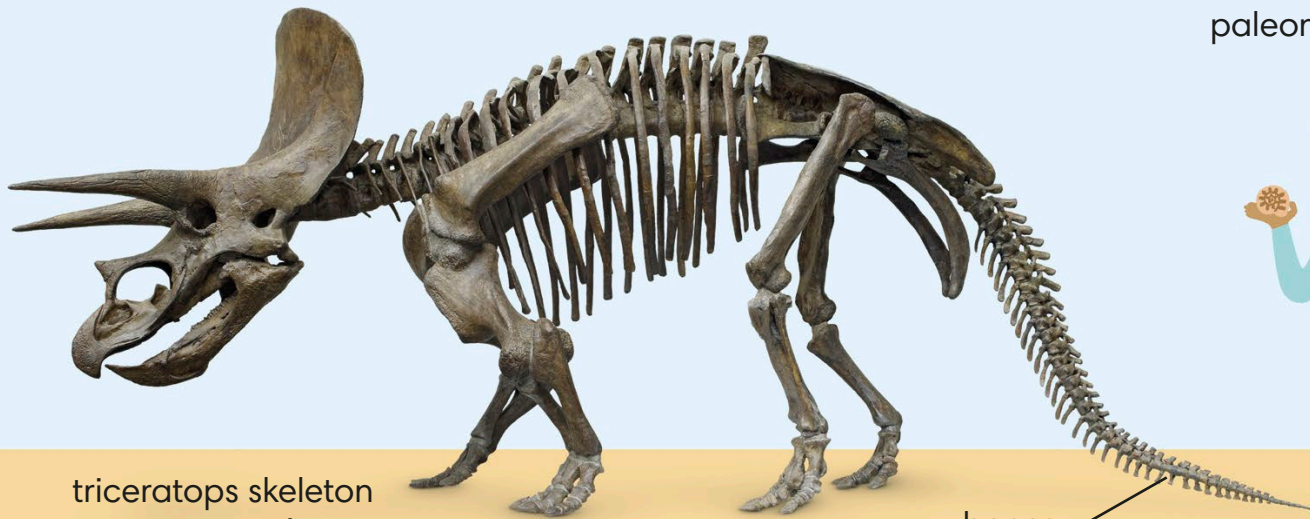
Everest

jet pack

wind turbine

Long ago

65 million years ago, dinosaurs were alive. 2.6 million years ago, large areas of the Earth were covered in ice. The Earth looks very different today.



triceratops skeleton reconstruction

bones

paleontologist



fossils

albertosaurus skull

teeth



ammonite



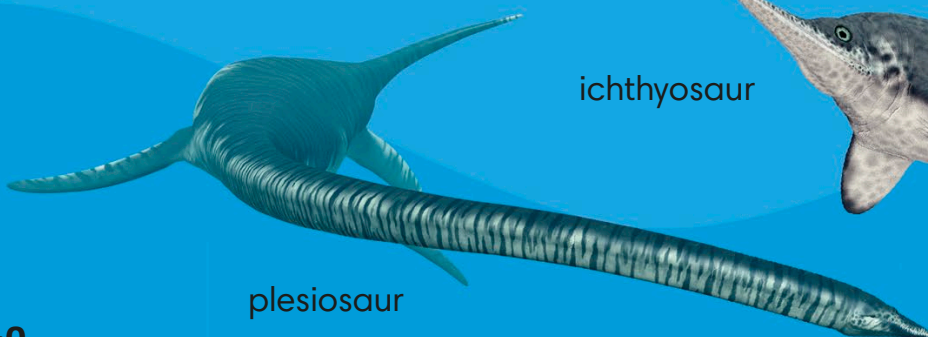
dinosaur poop



amber



plesiosaur foot

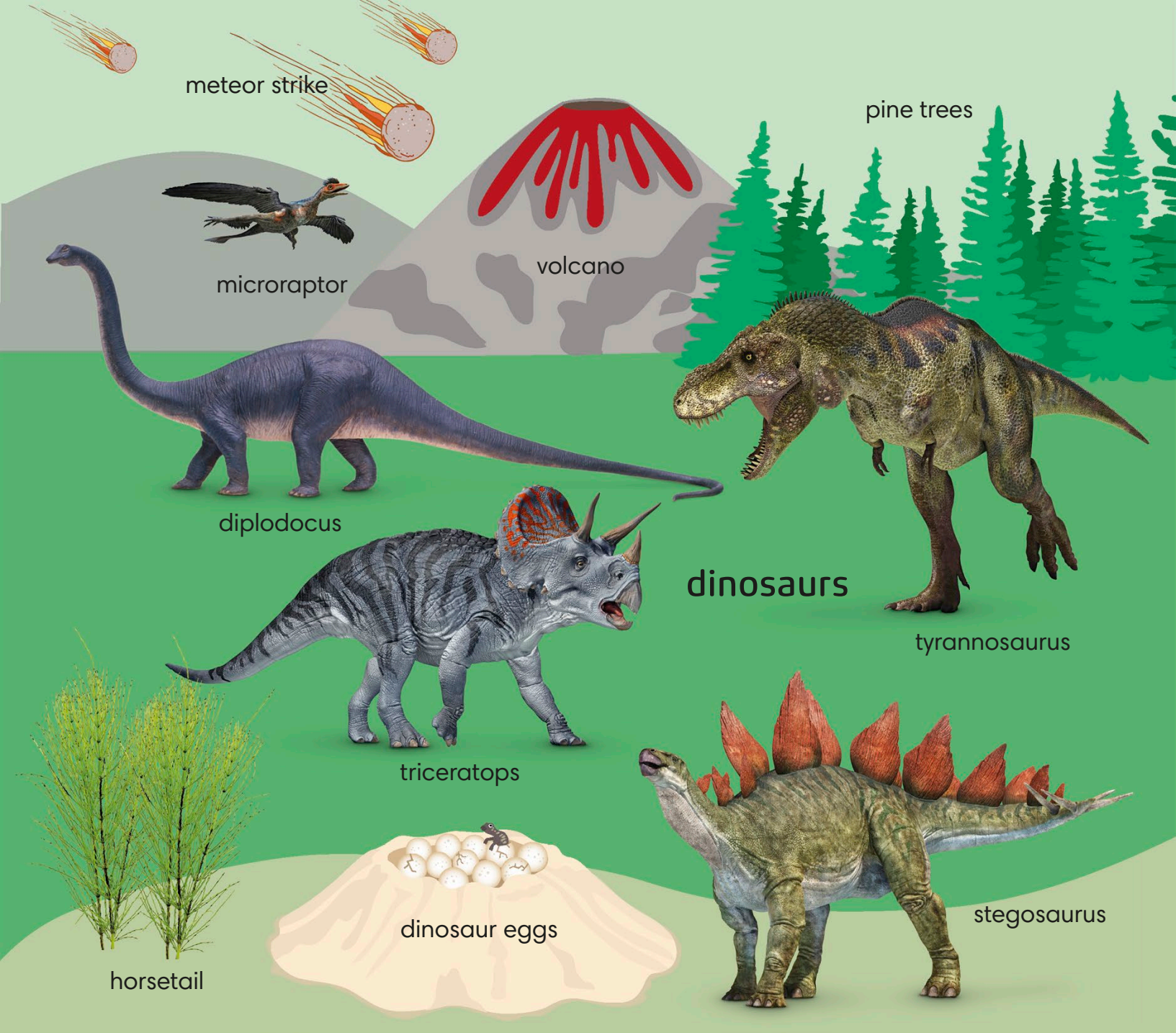


plesiosaur

ichthyosaur



horseshoe crab



meteor strike

pine trees

microraptor

volcano

diplodocus

dinosaurs

tyrannosaurus

triceratops

dinosaur eggs

stegosaurus

horsetail



ice age

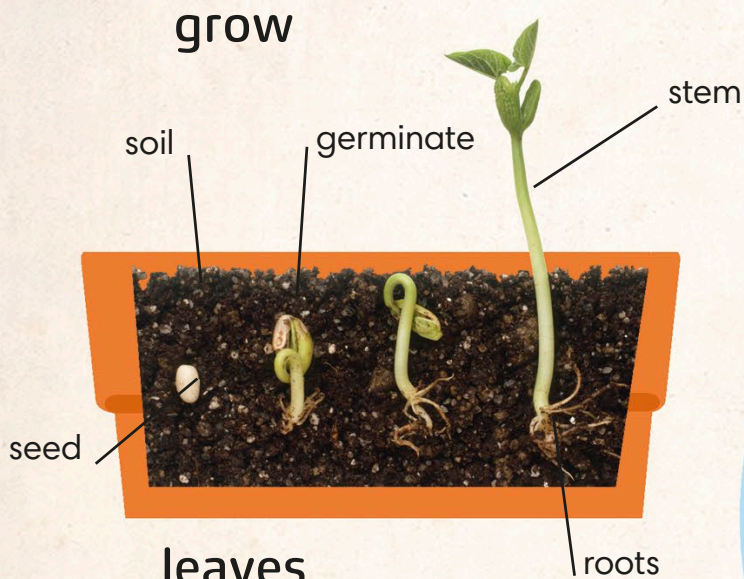
saber-toothed tiger

mammoth

giant ground sloth

Plants

Plants are really important to our planet. They make their food from the carbon dioxide we breathe out, and they release oxygen back into the air for us to breathe in.



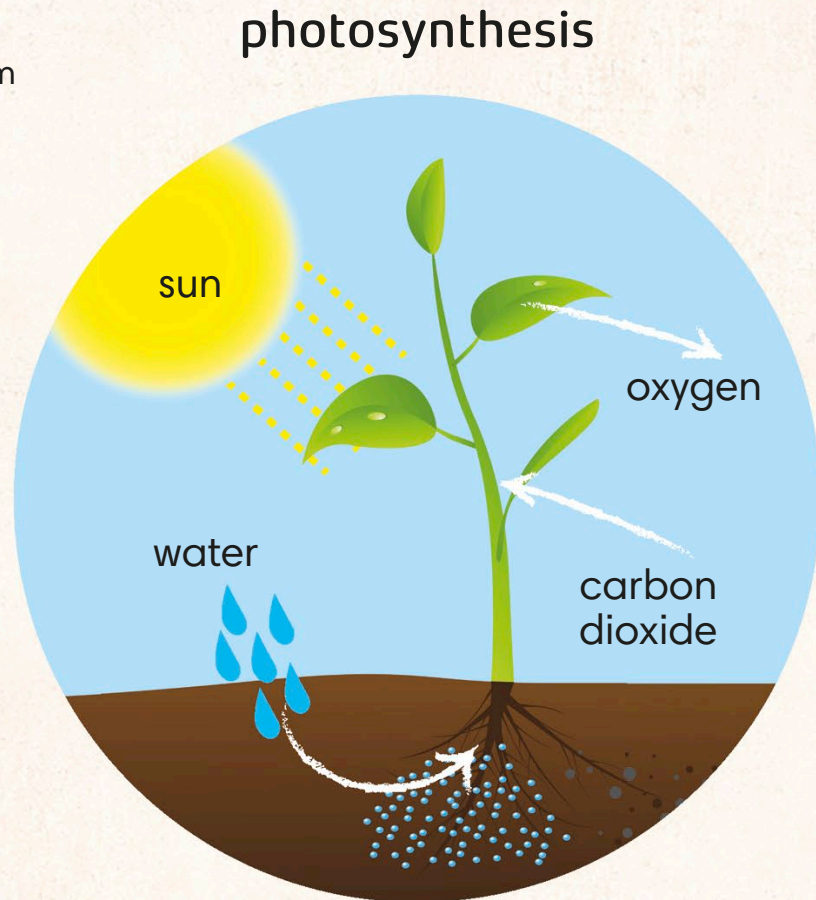
serrated



palmate



lobed



branch

trees



deciduous



evergreen

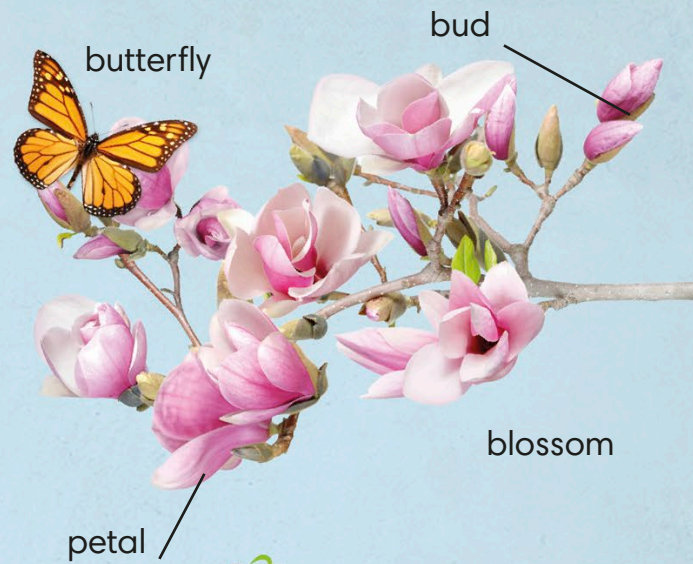
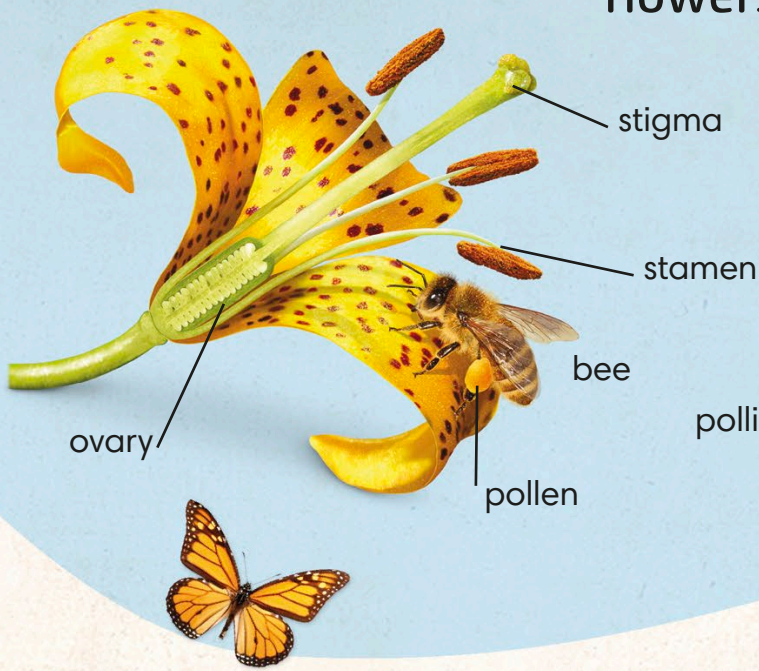


trunk



twig

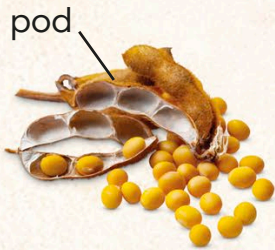
flowers



plants



pinecone



soybeans



moss



climbing plant



cactus

fruits



nuts



apple



avocado



mango



cherries

vegetables



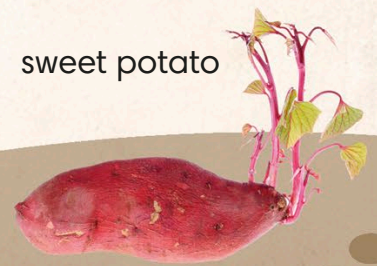
bulb



rhizome



root vegetable



tuber

Playground forces

It's fun to play at the park, but did you know that parks are full of science? You are using forces all the time when you play!





pull up

force of gravity

force of gravity

jungle gym

spring pushing up

bouncer

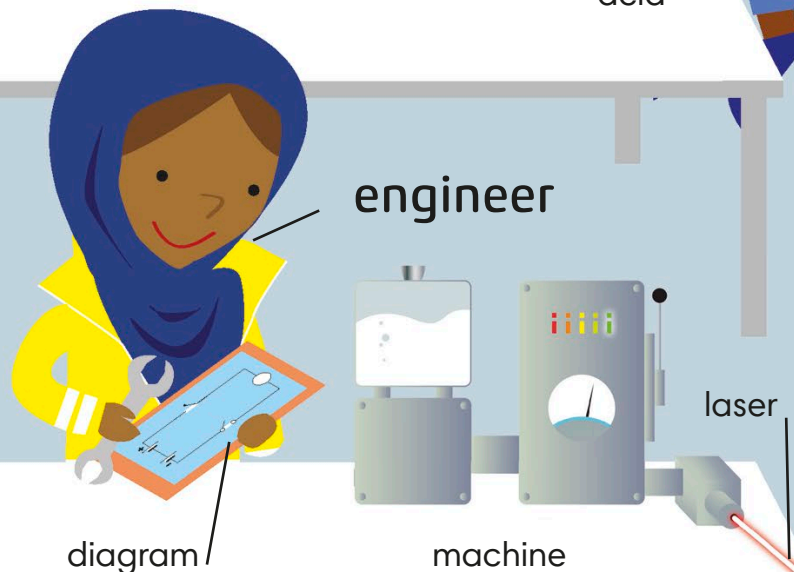
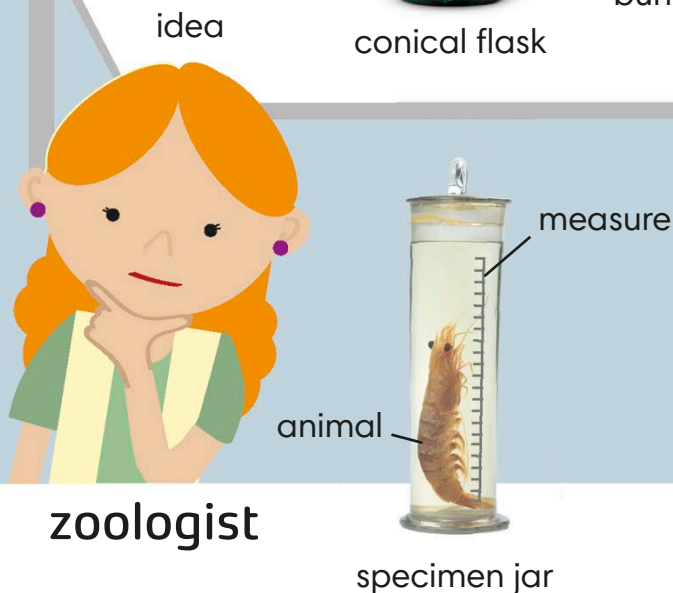
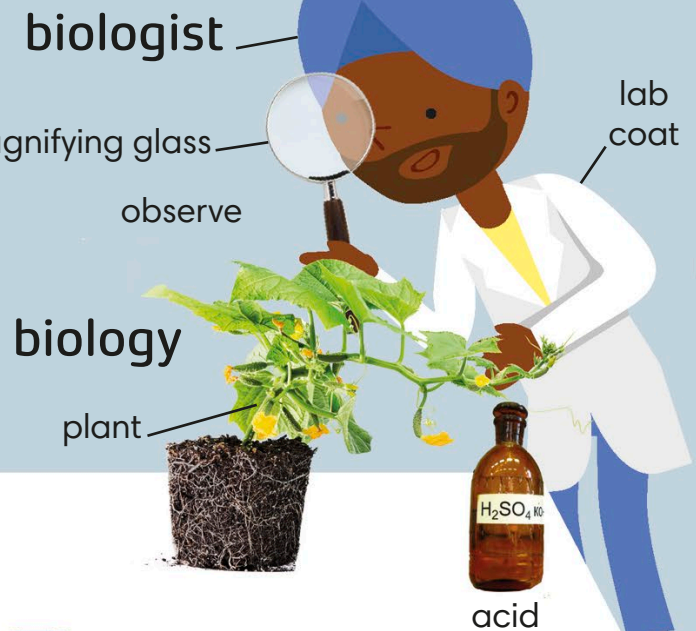
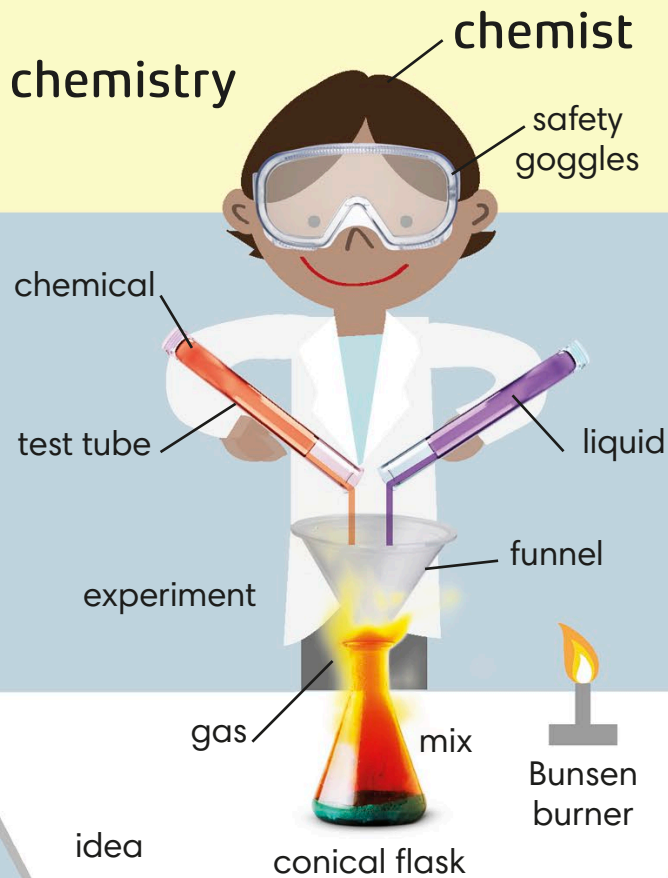
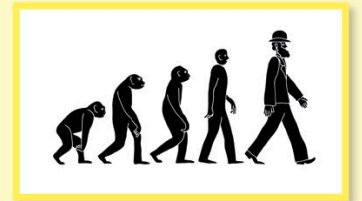
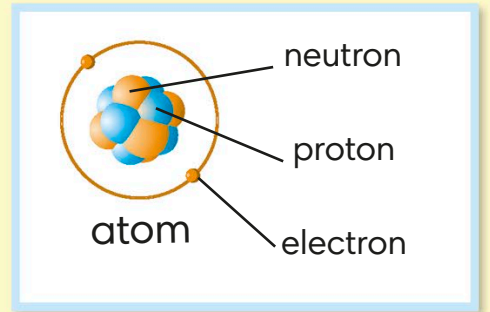
push

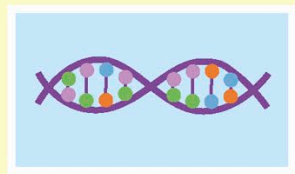
centripetal force

merry-go-round

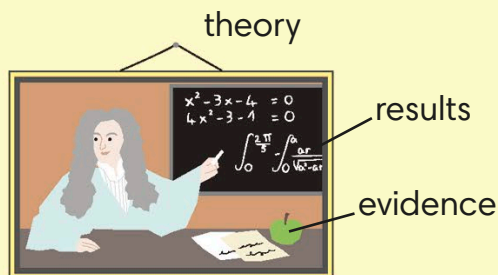
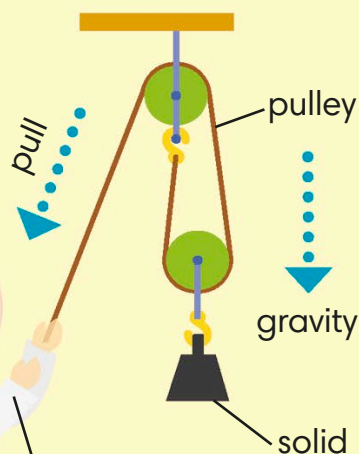
Laboratory

Some scientists work in a laboratory. Different scientists use different equipment. What kind of scientist would you like to be?





DNA



Isaac Newton

space

force

test

energy

physicist

physics

acceleration

lever

motion

prediction

rocket scientist

astronomer

telescope

doctor

nurse

magnet

beaker

body

stethoscope

paleontologist

microbiologist

virus

virologist

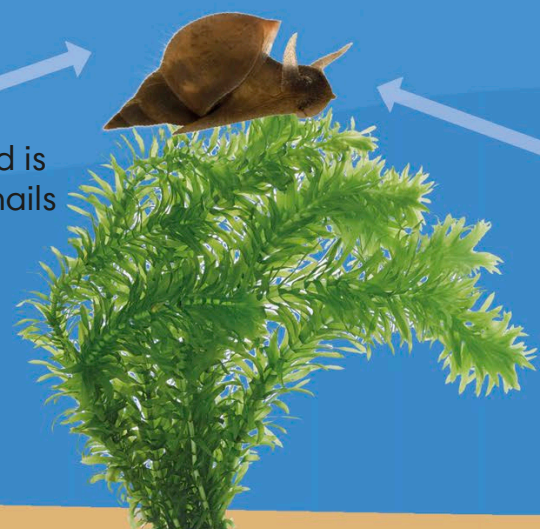
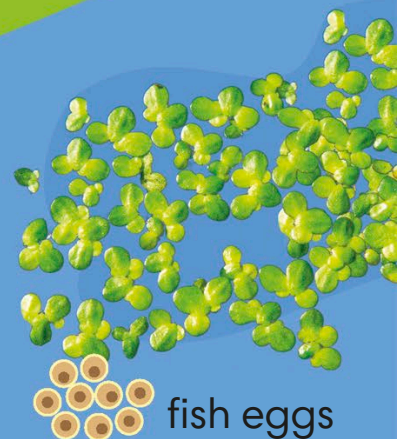
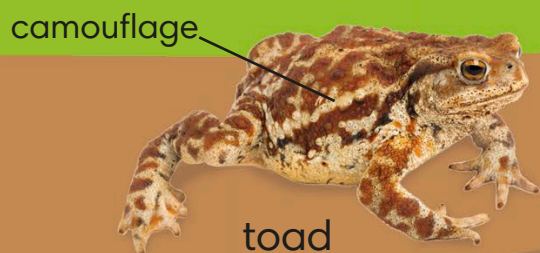
petri dish

bacterium

sample

microscope

fossil



frogs die and
release nutrients to
help pondweed grow

pondweed puts
oxygen into water

fish give carbon dioxide
to the plants

pondweed is
food for snails

pondweed

pond snail

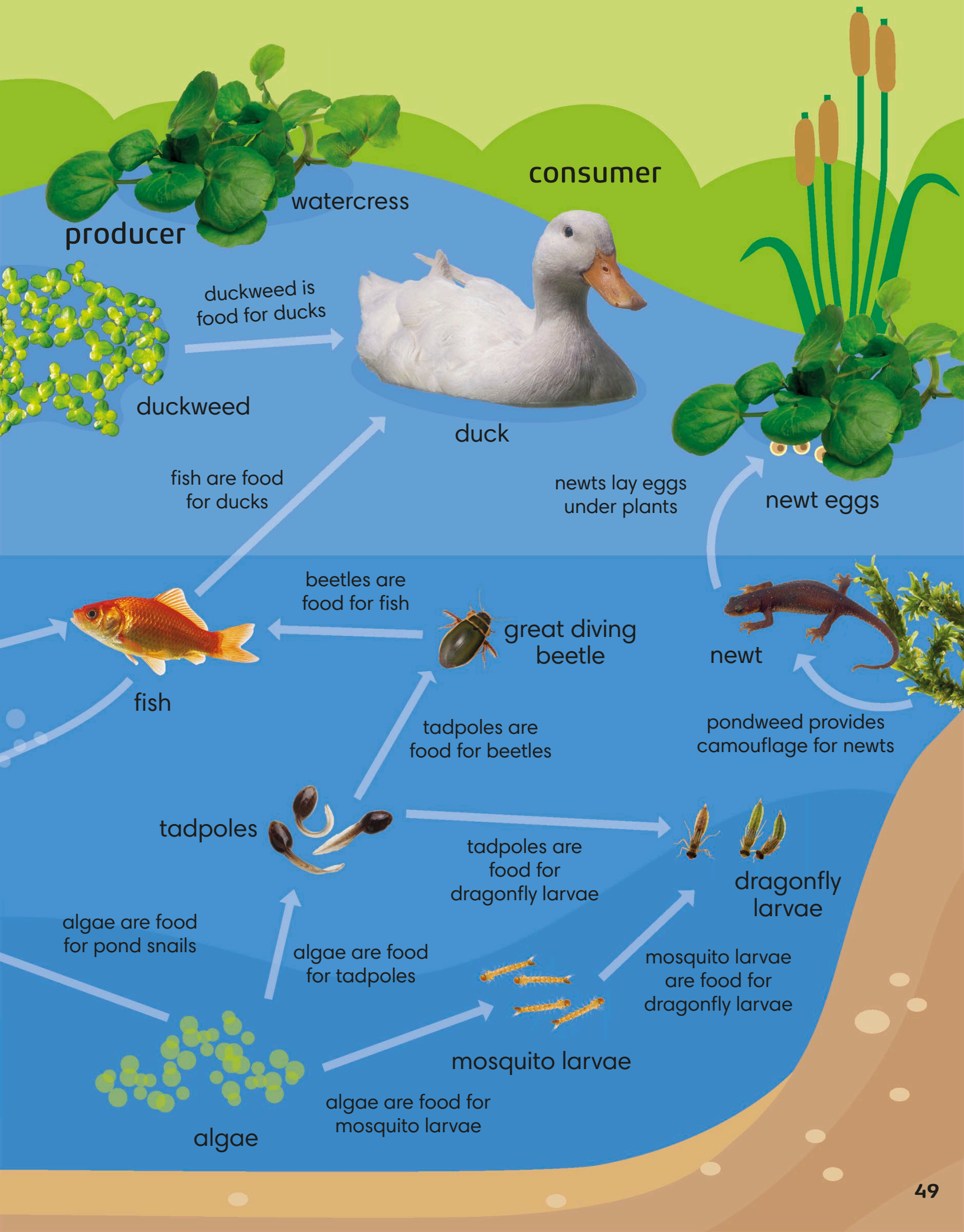
frog spawn

toad

frog

fish eggs

camouflage.



Classification of animals

Animals are classified, or grouped together, with others that have the same features. Look at all the different kinds of animals there are.



jellyfish

coelenterates

myriapods



millipede



centipede

worms



roundworm



flatworm

echinoderms



starfish



sea urchin

molluscs



octopus

snail



mussels



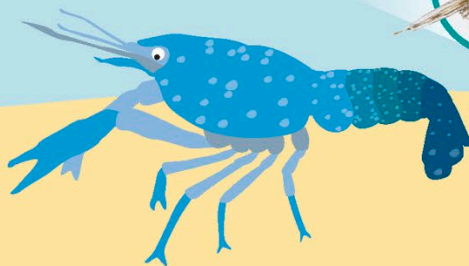
squid



crustaceans



crab



lobster



sea monkey



shrimp

arachnids



spider



scorpion

insects



beetle



fly



bee



butterfly

stick insect



invertebrates

birds



penguin



chicken

owl



duck



mammals



human



horse



dog



rabbit



polar bear

marsupials

duck-billed platypus



kangaroo

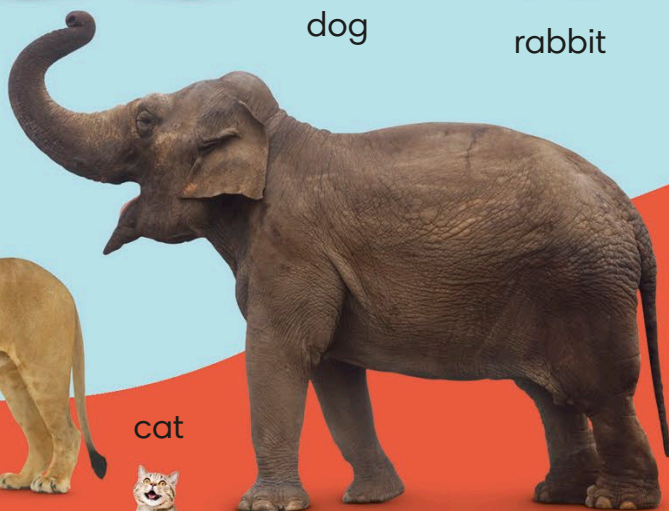


koala



lion

cat



elephant

amphibians



toad



newt



frog

reptiles



tortoise



snake



crocodile

fish



shark



clownfish



ray



tuna

vertebrates

Water

Water comes from many sources, including a tap! There is so much of it on Earth that our planet looks blue from space.

ocean



blue planet

aqueduct



lake

freshwater

reservoir

stream

waterwheel

river

well

canal

irrigation

dam

surf

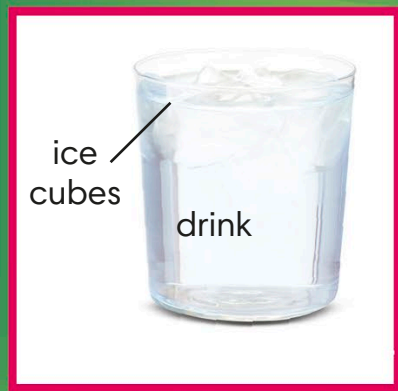
riptide

wave

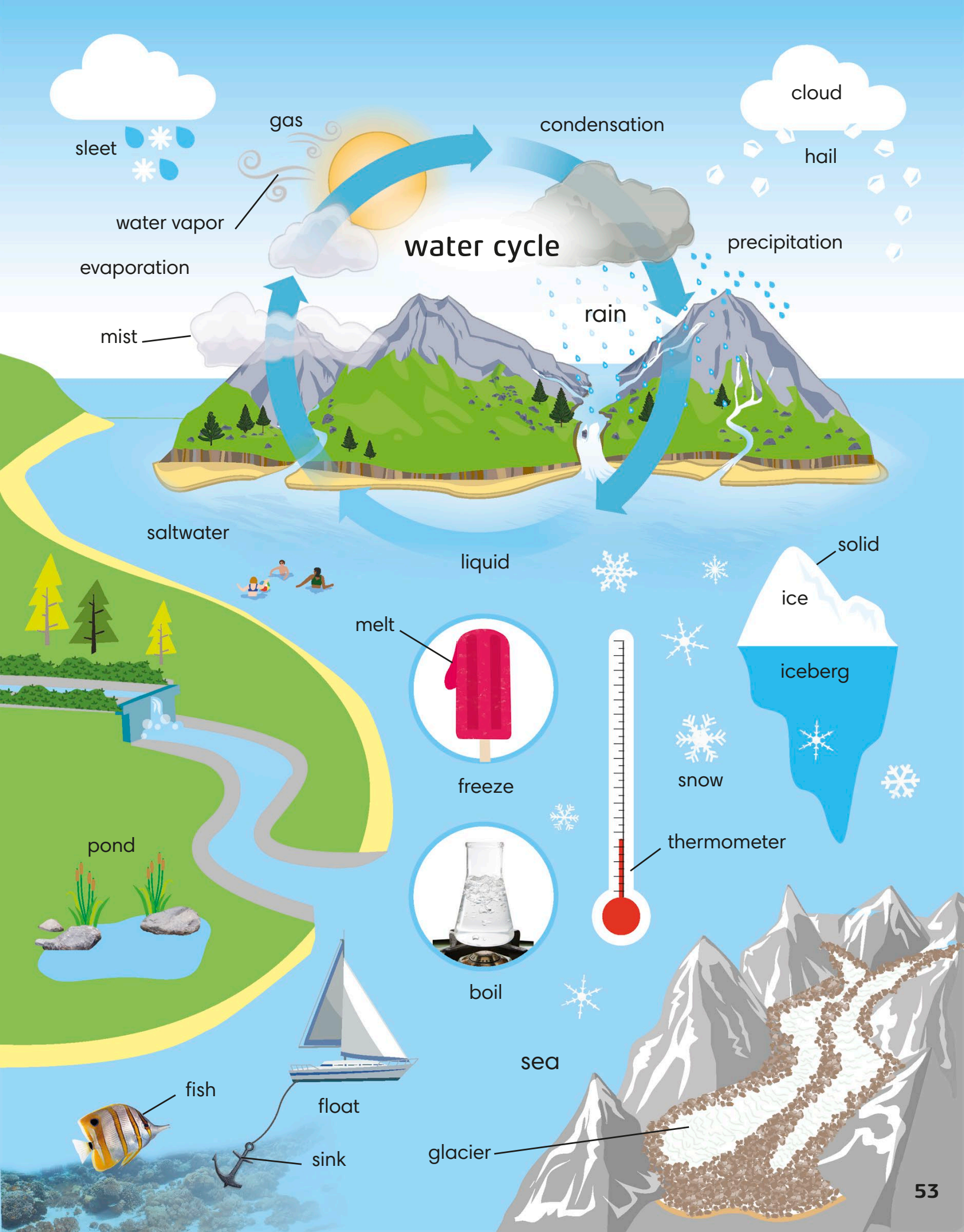
current

shadoof

reef



H₂O (water)



Experiments

Have you ever wanted to carry out an experiment?
Here are some things you might need.

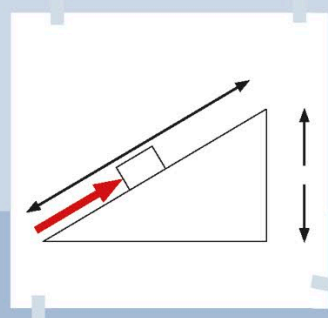
equipment



microscope



beaker



diagram



Newton meter



ruler



rock sample



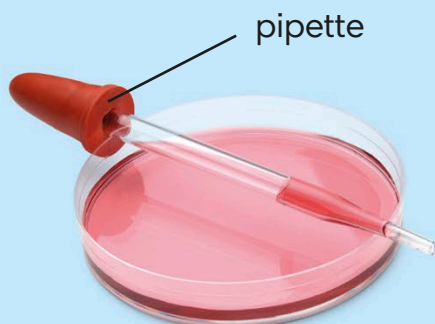
tweezers



thermometer



sound meter



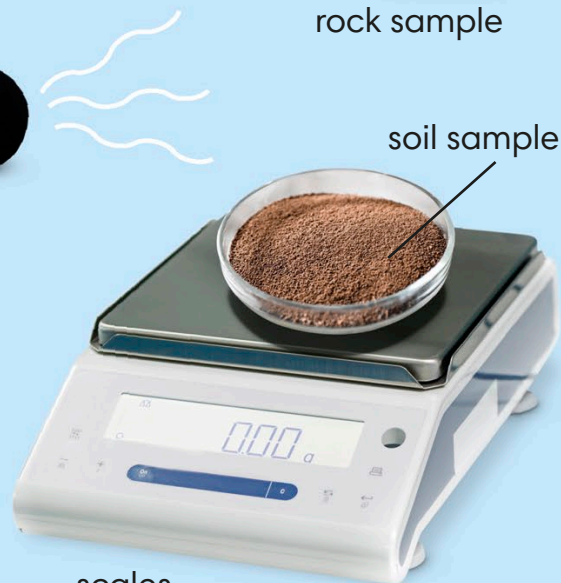
pipette



Petri dish

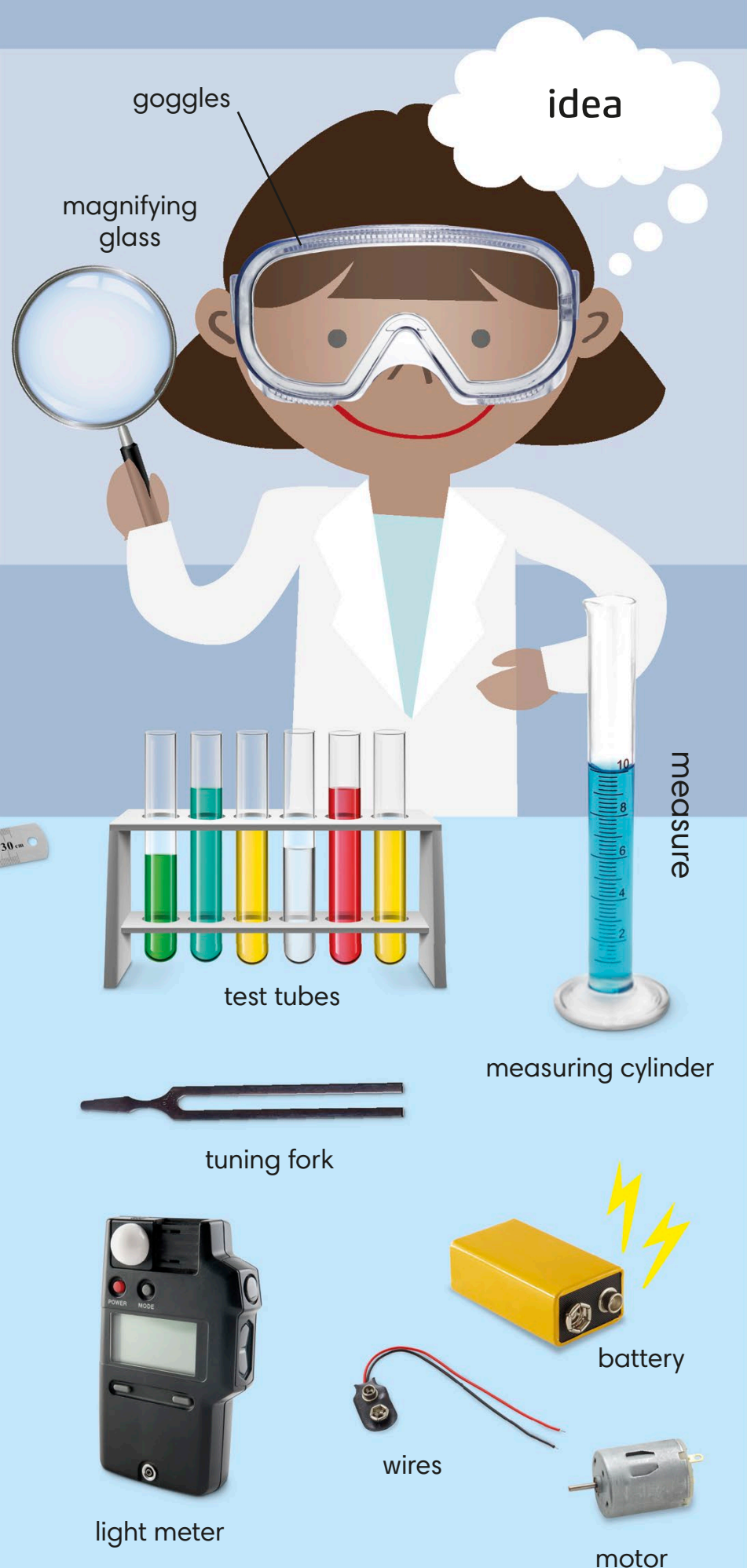


spoon



soil sample

scales



experiment

question



method



equipment



prediction



results



graph



conclusion

Mixing and cooking

When you mix ingredients together, or heat them or cool them, you might end up making something new.



microwave



mixer



solid



weighing scales



blender



oven

roasted chicken



mold

preserves

pickles



cook

burn



steam

bubble



mold



thermometer



raw



simmer

stove



boil



timer

coffee
maker

fridge

freezer



sieve

whisk

mix

combine

proof



wood-fired oven

bake

smoke

grill

charcoal

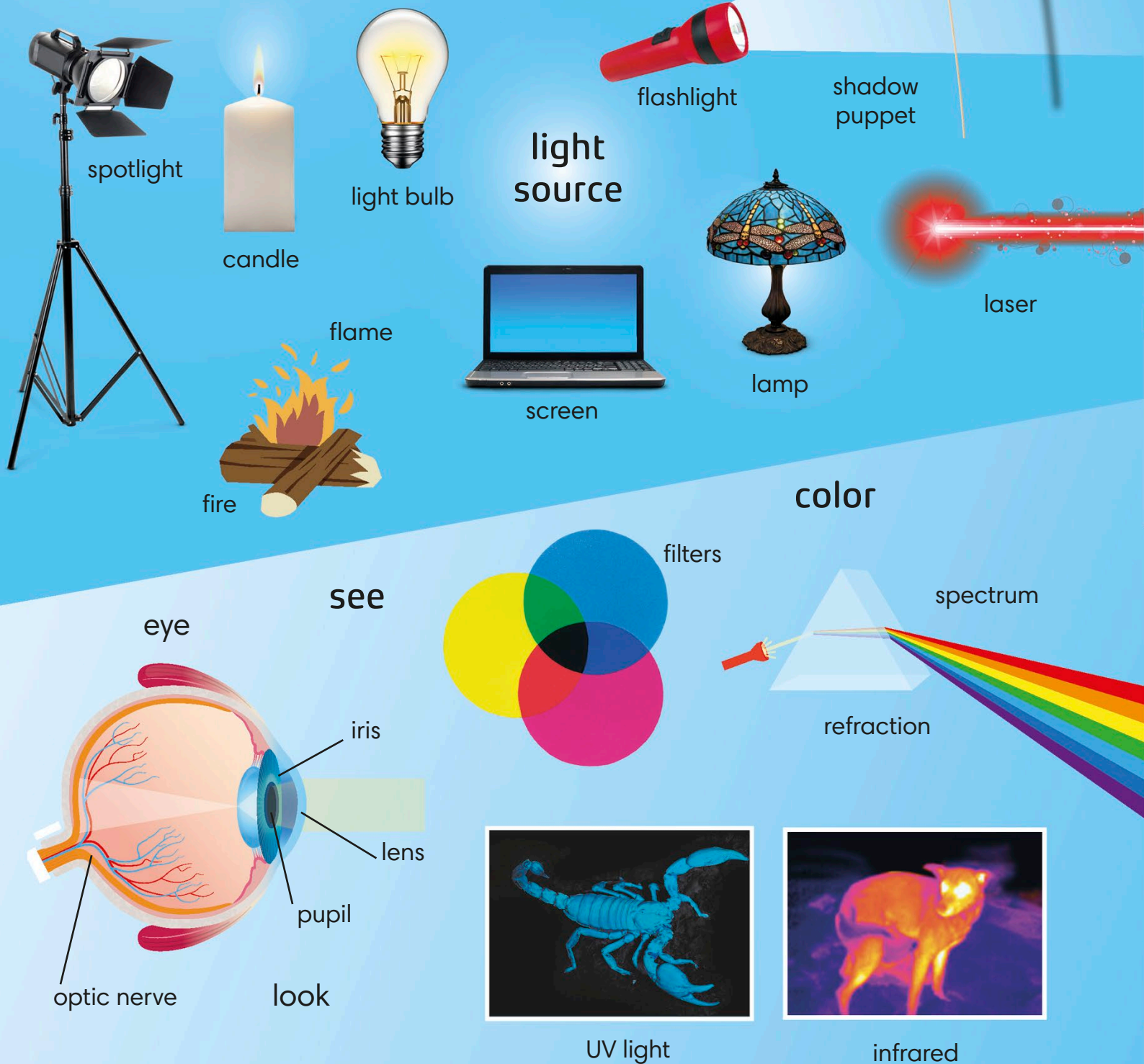
heat

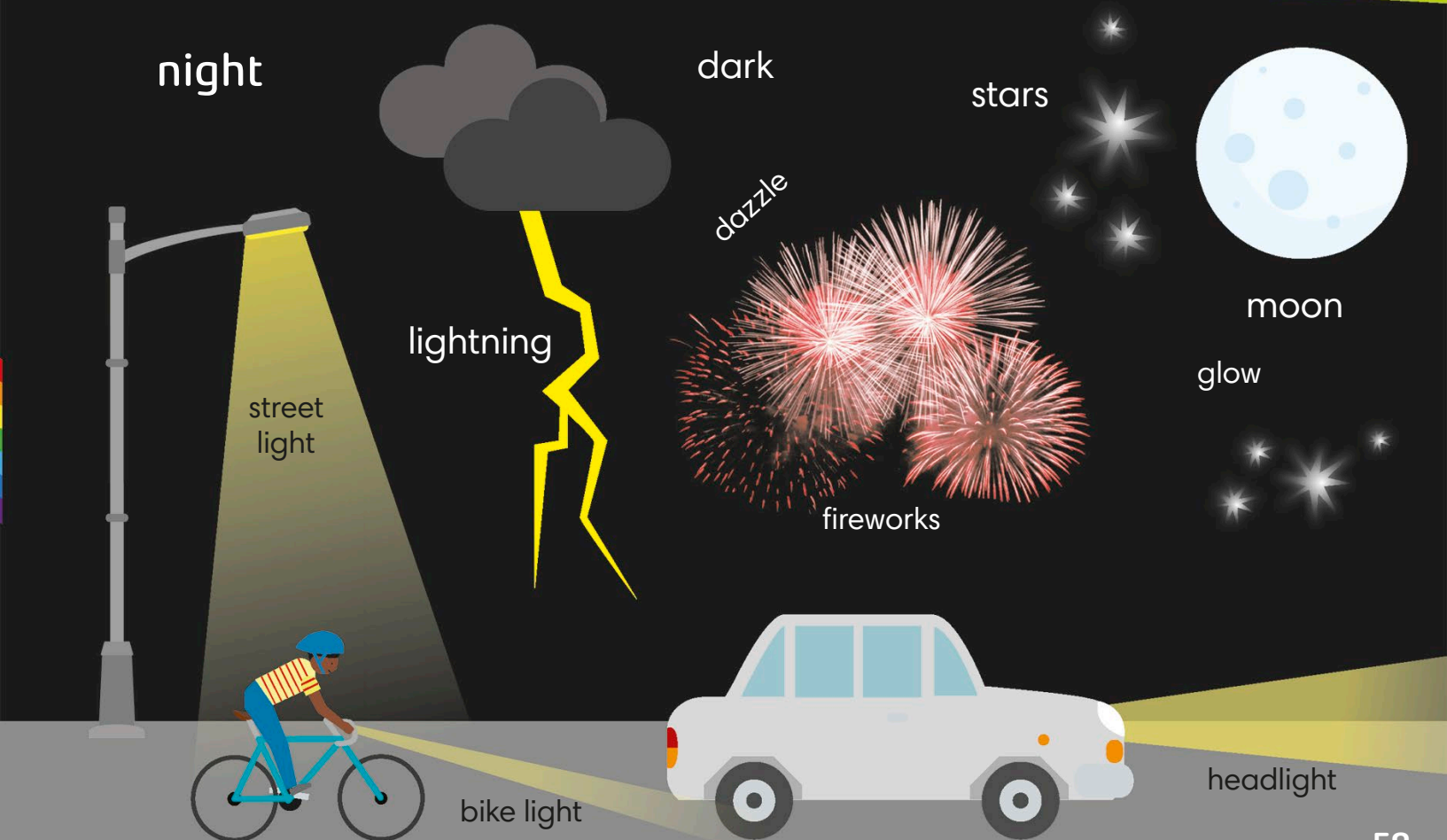
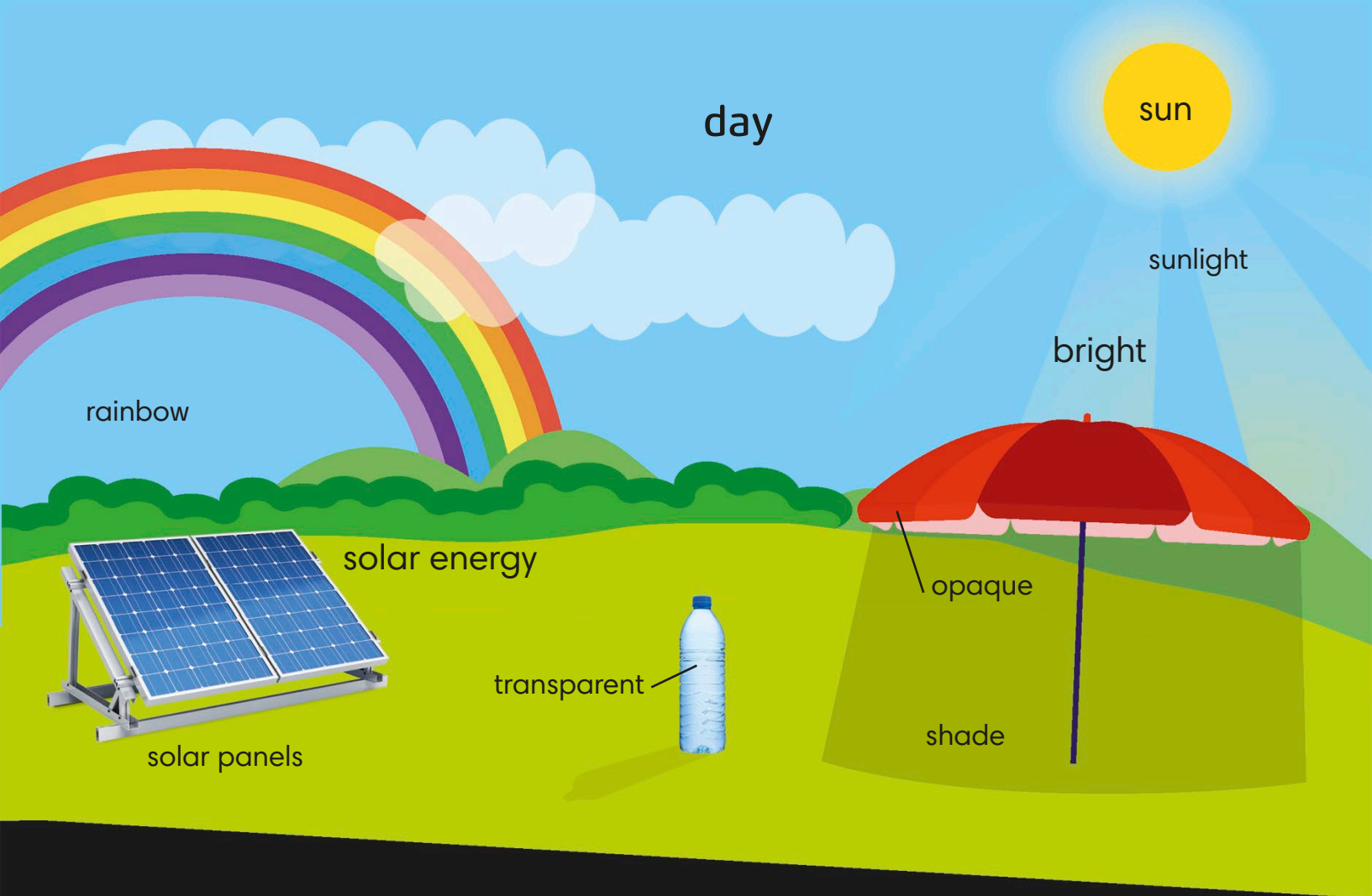
fire

campfire

Light

We need light in order to see. Light comes from a variety of sources. The source of light we use most is the sun.





Sharing and grouping

Some things come in pairs or in larger groups. We may need to divide them up—one for me and one for you!

divide

split

middle

equal parts
of a half

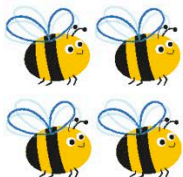
half

cut

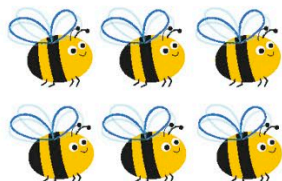
Half for you,
half for me.



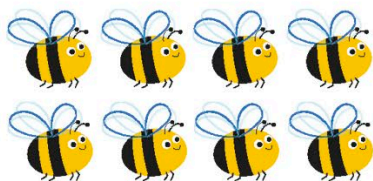
count in twos



2 sets of 2



2 sets of 3



2 sets of 4

share

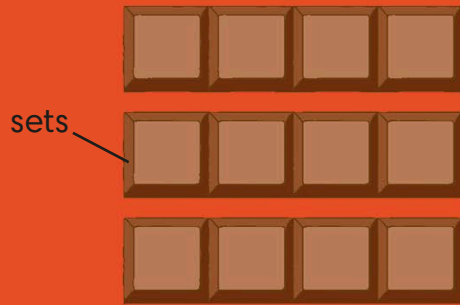
equal

fair
share

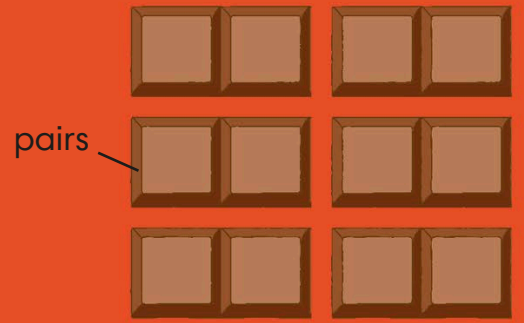
multiply



array



groups



equivalent

fractions



quarter

greater than

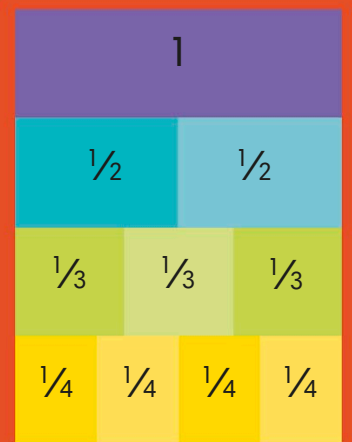
less than

eighth

$\frac{1}{8}$

half

whole



fraction wall

Adding and subtracting

How many do you have? Have some been added or taken away? We need different words to describe how the number of things changes.

sum



plus

equals

total

pairs that make 10



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

combine

one more

100 square

more

another one

how many?

10



number line

increase

count on

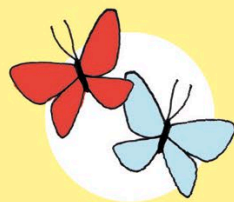
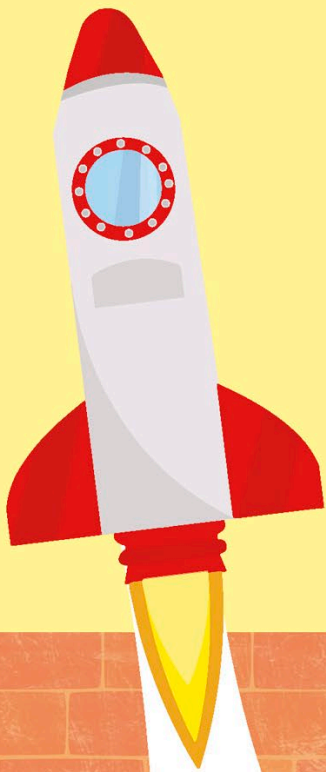
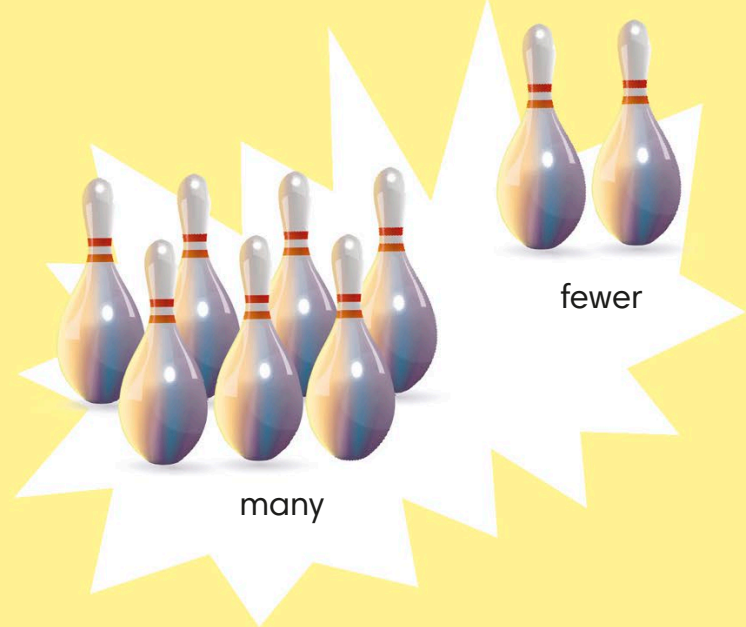
jumps

10

add

partition

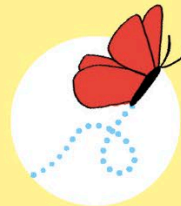
$$12 = 10 + 2$$



2



minus



1



1

less



how many?

what is left?



blast off!

number

decrease

count back

0 1 2 3 4 5 6 7 8 9 10

subtract

Acknowledgments

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