Cambridge Primary Science Workbook 6 (2021) Answers

Unit 1 Systems and diseases

Workbook answers

Page 4 Body organs

1 Internal organs: heart, intestines, brain, stomach, lungs, gallbladder, kidneys
External organs: nose, skin, ears

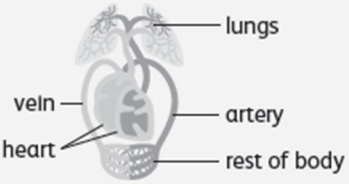
2 Check that learners have completed their diagrams, labels, titles and captions correctly.

Workbook answers

Page 5 Heart and circulation

1 a True b False c False d True e False

2



3 • The heart is always beating/active.
• The heart is not in your conscious control.

Workbook answers

Page 6 Heart rate and exercise

1 The first set of data, because the heart rates are higher.

2 a For example:

Name of learner	Tyrone	Nadia	Lionel	Zou	Sergio	Claudia
Heart rate before exercise	85	80	75	90	70	80
Heart rate during exercise	125	115	120	140	120	110

b Zou and Sergio

3 Heart rate is higher during exercise because the heart needs to work harder to pump blood around the body. During exercise, the muscles are working harder and need more oxygen.

Workbook answers

Page 7 Process of breathing

1

Stage of breathing	What your diaphragm does	What your ribs do	What your lungs do	What happens inside your lungs
inhalation	flattens and moves downwards	lift upwards and outwards	fill up with air	oxygen passes into the bloodstream
exhalation	moves upwards	move upwards	air is pushed out of them	carbon dioxide is breathed out

2 a and b Check learners' diagrams, referencing the diagrams on page 16 of the *Learner's Book*.

Workbook answers

Page 8 Infectious diseases word search

N	I	N	F	P	A	R	A	S	I	T	E
D	O	M	I	S	M	I	C	I	N	F	E
B	C	I	N	F	E	C	T	I	O	U	S
A	O	C	S	U	R	I	V	H	A	N	E
A	U	R	V	S	D	F	U	Y	I	G	B
I	G	O	I	P	I	C	O	G	R	I	O
R	H	S	R	A	S	M	I	I	E	N	R
A	M	C	C	R	E	F	S	E	T	F	C
L	A	O	O	H	A	D	U	N	C	E	I
A	L	P	U	Y	S	L	R	E	A	L	M
M	A	I	N	G	E	O	I	A	B	R	I
F	U	C	D	E	T	C	E	F	N	I	T

Page 9 Microbes

1 There are different types of microbes on Earth. Two of the main types are **viruses/bacteria** and **bacteria/viruses**.

Bacteria can live in almost every environment, including in and on the human body. Most **bacteria** are harmless. Some **bacteria** can be beneficial to humans. They can help us digest food and fight disease-causing microbes. Less than 1 % of **bacteria** cause diseases in humans.

Most **viruses** do cause disease and can be more harmful to humans.

Both **viruses/bacteria** and **bacteria/viruses** are too small to be seen by the eye, and **viruses** are much smaller than **bacteria**.

Bacteria can survive without a host, but **viruses** can only survive once they get into the cells of a host.

Both **viruses/bacteria** and **bacteria/viruses** can be spread in a number of different ways. A person who has been infected by harmful **bacteria** can be treated with antibiotics. However, a person who has been infected by **viruses** cannot.

2 Check learners' questions. Ask them to get into pairs and to quiz each other. Identify questions that learners find difficult to answer and go through these together.

Workbook answers

Page 10 Transmission of diseases

a Animals: Wear insect repellent.

b Touch: Handles can be cleaned regularly.

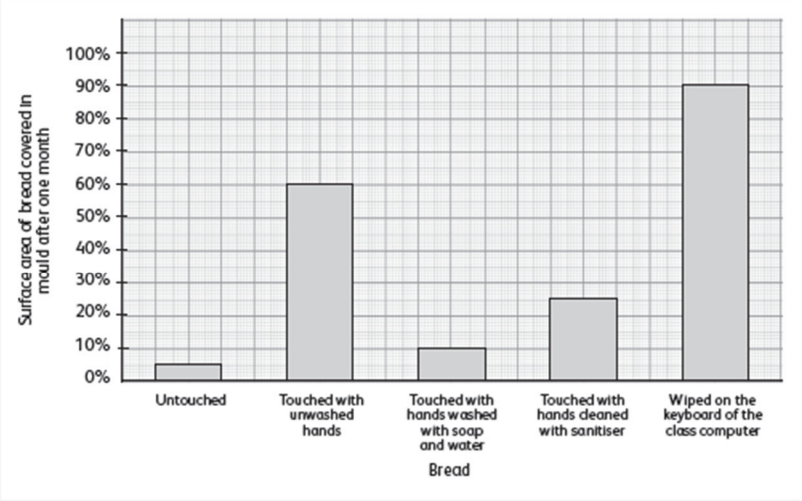
c Water: Care can be taken not to drink water and to wash yourself after swimming in a lake/river.

d Air: Cough into a tissue, bin it after use, and wash your hands for at least 20 seconds with soap and water.

e Food: Food can be washed to stop the spread of disease.

Page 11 Hand hygiene

1 a Use this activity to create cross-curricular links with bar charts covered in the Mathematics curriculum.



b The keyboard of the class computer should be wiped with cleaning wipes regularly. This could be done after every learner uses it or at least once a day.

Page 12 Human defence mechanisms

1

Scenario	Body's defence mechanism
Sand and dust blowing into your eye	mucus (tears)
Eating food that has been dropped on the floor	stomach acid
Picking up a ball off the ground	skin
Coughing and covering your mouth with your hand	mucus (from throat) and skin
Breathing harmful bacteria in through your nose	mucus (in nose)

Accept appropriate responses for the three additional scenarios.

2 Accept appropriate responses and get learners to share their acrostics with others in the class.

Unit 2 Human reproduction

Workbook answers

Page 14 Reproduction word search

N	A	I	P	O	L	L	A	F	A	F	G
O	O	G	N	I	R	P	S	F	F	O	G
I	E	I	I	O	E	R	A	T	T	A	E
T	G	A	T	I	R	E	H	N	I	O	S
A	B	U	F	C	E	T	F	S	O	I	T
S	I	S	E	X	U	A	L	E	N	F	A
I	R	X	M	B	T	D	E	G	M	E	T
L	T	E	E	E	E	A	O	A	R	L	I
I	H	S	A	T	R	M	L	R	E	A	O
T	S	E	L	U	U	E	M	G	P	M	N
R	P	R	E	A	S	G	G	A	S	E	E
E	E	L	A	N	R	E	T	N	I	F	R
F	R	F	P	E	R	I	O	D	T	U	B

Page 15 Puberty mind map

Check that learners have used scientific words and linked them correctly as they continue to add to their mind maps throughout the unit.

Workbook answers

Page 16 Comparing reproduction in different animals

1 A male is needed for reproduction to occur, a female is needed for reproduction to occur, sperm is needed, egg is needed, there is a gestation period for offspring to form, and so on.

2 So that the species does not die out.

3 Check the odd one outs the learners create. Once they have made some, they can work with others in the class and test them out on each other. Walk around and listen carefully to their conversations. Make notes of any alternative ideas that you could use in a whole class discussion.

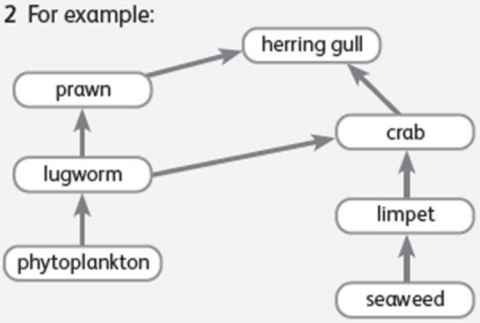
Unit 3 Ecosystems

Workbook answers

Page 18 A seashore food web

1 For example:
phytoplankton; seaweed
lugworm – eats phytoplankton
prawn – eats lugworms
limpet – eats seaweed
crab – eats limpets and lugworms
herring gull – eats crabs and prawns

2 For example:



Page 19 Food webs

The errors are as follows:

a The arrow between 'Sun' and 'grass' is in the wrong direction. The arrows between 'fox' and 'rabbit' and 'thrush' are in the wrong direction because rabbits and thrushes are consumed by foxes. The arrow between 'peregrine falcon' and 'rabbit' is in the wrong direction because rabbits are consumed by peregrine falcons.

b The arrow between 'Arctic hare' and 'Snowy owl' is in the wrong direction because owls consume hares. The arrow between 'Arctic wolf' and 'Snowy owl' is in the wrong direction because wolves consume hares.

c No Sun shown. The arrows from all the plants are in the wrong direction.

d No Sun shown. No producers (plants) shown.

Workbook answers

Page 20 Food chains

1 a Prediction: The numbers of all the organisms might increase. Explanation: More leaves might mean more caterpillars. More caterpillars might mean more frogs. More frogs might mean more snakes.

b Prediction: The numbers of all the organisms might decrease. Explanation: Fewer figs might mean tapirs are not getting enough to eat, and are either dying or moving away. Fewer tapirs might lead to the same effect on boa constrictors. This, in turn, might lead to the same effect on harpy eagles.

c Prediction: The number of bluefish might increase. The number of shrimp might decrease. The number of phytoplankton might increase. Explanation: with no more swordfish, bluefish have fewer predators, so their numbers might increase. If bluefish numbers increase, they might eat more shrimp, so shrimp numbers might decrease. With fewer shrimp to eat them, phytoplankton numbers might increase.

Page 21 Endangered species fact files

1 Check learners' fact files.

Page 22 Waste survey

1 Use this activity to create cross-curricular links with English and ESL by asking learners to go through a process of drafting, editing and proofreading their email. The email could mention the positive actions already taking place, as well as recommending the following changes:

- setting up a compost bin
- putting more litter bins in the playground
- changing the playground litter bins so that they divide litter into recyclable and non-recyclable items
- encourage learners to bring only unpackaged snacks to school.

Page 23 Sort that waste

1 Paper and card: used envelope, kitchen roll, egg box
Plastic: yoghurt pot, milk carton, drinks bottle
Glass: jam jar, sauce bottle, broken mirror
Metal: (aluminium) drinks can, foil tray, (metal) bottle top
Compost: grass cuttings, banana peel, vegetable peelings
Cannot be recycled or composted: chicken carcass, used cooking oil, mouldy cheese

Page 24 Toxic accumulation

Use this activity to create cross-curricular links with multiplication covered in the Mathematics curriculum.

a 400 g of fish per day × 0.1 micrograms of DDE per gram of fish = 40 micrograms of DDE per day.

b 200 g of seal per day × 2.0 micrograms of DDE per gram of seal = 400 micrograms of DDE per day from seal. Plus 200 g of fish per day × 0.1 micrograms of DDE per gram of fish = 20 micrograms of DDE per day from seal. Total = 420 micrograms of DDE per day.

c seals, bald eagles (do not only eat fish but scavenge on dead mammals and birds), osprey, northern harriers.

Unit 4 Reversible and irreversible changes

Workbook answers

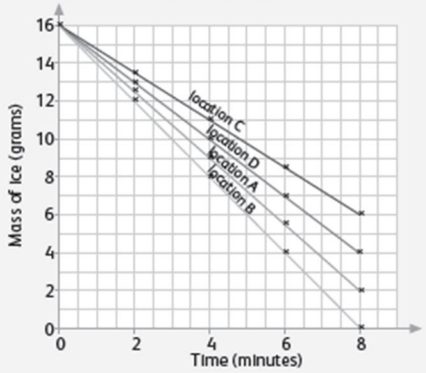
Page 26 Changes to materials

Learners' answers will vary. Check their annotated diagrams.

Workbook answers

Page 27 Investigate melting

1 Refer to what learners have learnt about mass in Mathematics.



2 a Highest to lowest: B, A, D, C.
b Example answer: Location B had the highest temperature because the ice melted the fastest at this location.

Page 28 Freezing different liquids

a For example: amount of each substance.
b For example: the ketchup will freeze slowest because it is the most viscous/thickest.
c For example: the time each liquid takes to freeze.
d For example: first column 'Liquid', second column 'Time to freeze', third column 'How it freezes'.
e For example: vertical axis 'Time to freeze', horizontal axis 'Liquid' and title of graph 'How the viscosity of a liquid affects how fast it freezes'.

Page 29 Investigate freezing

Check learners' plans. Ensure that learners have given a clear prediction and drawn a labelled diagram showing what they plan to do in their investigation. They should say what they will observe or measure and how they will make sure that these observations or measurements are reliable. Learners should also identify any potential problems and explain how these could be avoided.

Page 30 Thermal conductivity cartoon

- Show learners one plastic spoon, one metal spoon and two ice cubes.
- Let learners touch the spoons, talk to a partner and predict which ice cube will melt first; the ice cube on the plastic spoon or the ice cube on the metal spoon. Ask learners to share their reasoning. From experience, learners should predict that the ice cube on the plastic spoon will melt first because it feels warmer to the touch.
- Place an ice cube on each spoon at the same time and let learners observe what happens. Collect data by timing how quickly each ice cube melts.
- The metal spoon is a better thermal conductor and conducts thermal energy from the atmosphere through the spoon into the ice cube faster. The plastic spoon is a poor thermal conductor and, therefore, does not allow thermal energy to flow into the spoon and helps prevent the ice cube from melting. Air is also a poor thermal conductor. The reason the metal spoon feels colder is because it conducts the thermal energy away from your hand; there is less thermal energy so it feels colder. The plastic spoon feels warmer because it is a bad thermal conductor; more thermal energy remains in your hand.
- Look at learners' cartoons to check their understanding. This activity is a good way of identifying alternative concepts that can be discussed with the class.

Workbook answers

Page 31 Boiling and evaporation

1 a Heat it to its boiling point (to 100 °C)
b Water in its gas state (water vapour)
c Water in liquid form
d 100 °C
e In its pure form it is not possible to heat water above its boiling point.
f If you add salt to water, you will make salt water, which is a different substance and has a boiling point above 100 °C.
g Yes, evaporation occurs on the surface of a liquid at temperatures above the liquid's melting point when it turns into a gas. Boiling happens throughout a liquid and only occurs at a liquid's boiling point; this is when the whole liquid turns into a gas.

2

Statement	True	False
All liquids boil at the same temperature.		×
When a liquid boils, it turns into a gas.	✓	
When a liquid evaporates, it turns into a gas.	✓	
Liquids can only turn into a gas at boiling point.		×
Water vapour is a liquid.		×
Steam is a gas.		×

Workbook answers

Page 32 Irreversible changes, product and reactants

1 Irreversible changes: cake baking in oven; concrete being mixed; a fried egg in a pan

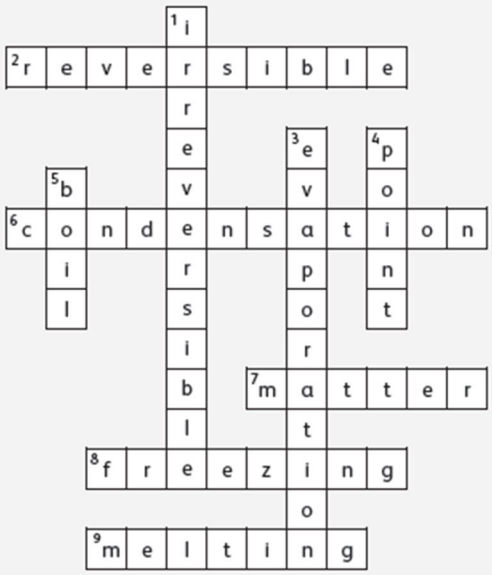
2

Reactants	Product
bicarbonate of soda, citric acid, olive oil, essential oil, food colouring, dried flower petals	bath fizz
oil/butter, corn kernels	popcorn
cement, sand, water, limestone	concrete

3 Example answers: colour changes; gas given off; temperature changes; odour change; formation of a precipitate

Workbook answers

Page 33 Material changes crossword



Page 34 Changes during cooking

1 Example answers:

Change	What causes the change (heating, mixing, both, or something else)?	Is the change reversible or irreversible?	How do you know if the change is reversible or irreversible?
a freezing orange juice to make ice lollies	something else (cooling)	reversible	freezing can be reversed by heating, which causes melting
b toasting marshmallows	heating	irreversible	change of colour and texture
c frying an egg	heating	irreversible	change of colour and texture
d melting cheese	heating	reversible	melting can be reversed by cooling (cheese will harden when it cools)
e baking biscuits	both (mixing and heating)	irreversible	change of colour and texture
f browning onions	heating	irreversible	change of colour
g putting butter in the refrigerator to firm up	something else (cooling)	reversible	butter will get soft again if it is removed from the fridge
h cooking corn kernels so they burst to make popcorn	heating	irreversible	change of colour and texture

Unit 5 Forces

Workbook answers

Page 36 Force diagrams

Errors include: arrows are needed for non-contact forces; forces are present even if objects are not moving; the bigger the arrow, the bigger the force; arrows are needed if forces are balanced.

Workbook answers

Page 37 Balanced and unbalanced forces

1

Motion	Forces	
	Balanced forces	Unbalanced forces
not moving	b	
constant speed	d	
speeding up		a
slowing down		c

Workbook answers

Page 38 Friction: the force that opposes motion

1 a It increases friction between the tyres and the road and prevents the change in motion of the car, for example: to stop it from skidding.

b Bald tyres are smoother, have less grip and therefore reduced friction. This means that the car is more likely to skid and the driver will be unable to control the motion of the car.
The driver should change the tyres for ones with a better tread and therefore more grip.

c The motion of the skater is faster because the friction between the skate and the ice is low.

d It is not helpful. The friction between the socks and the smooth floor is low, so the motion of the girl means that the socks do not grip the floor enough and she could slip and fall.

Page 39 Air resistance

1 a car C

b Car C is the car with the smallest surface area facing the direction of travel. This means it will create the least air resistance.

2 a position B

b Position B is the position with the largest surface area facing the direction of travel. This means that it will create the most air resistance.

Workbook answers

Page 40 Mass and weight

1 a weight b mass c newtons d kilograms e true f about 10 newtons

2 a 90 kilograms (the same as on Earth), because the amount of matter in the astronaut's body does not change.

b 0 newtons/the astronaut does not weigh anything, because he/she is not being pulled by gravity.

Page 41 Leaving the Moon

1 a 600 N

b

Person/Object	Mass (kg)	Strength of gravity on the Moon (N/kg)	Weight of object on the Moon (N)
astronaut A	100 kg	1.6 N/kg	160 N
astronaut B	110 kg	1.6 N/kg	176 N
rover	400 kg	1.6 N/kg	640 N
crate of rock samples	150 kg	1.6 N/kg	240 N
science experiment	50 kg	1.6 N/kg	80 N
flag and flagpole	30 kg	1.6 N/kg	48 N
Total weight on the Moon			1 344 N

c No.

d Example answer: The astronauts must both go back. Together they weigh 236 N. This means they could carry up to 364 N with them. They must leave the rover on the Moon, as it weighs more than this. They cannot take all three remaining objects, as together they weigh more than 364 N. They must leave one object behind. The flag and flagpole are the least useful, so they should leave these behind.

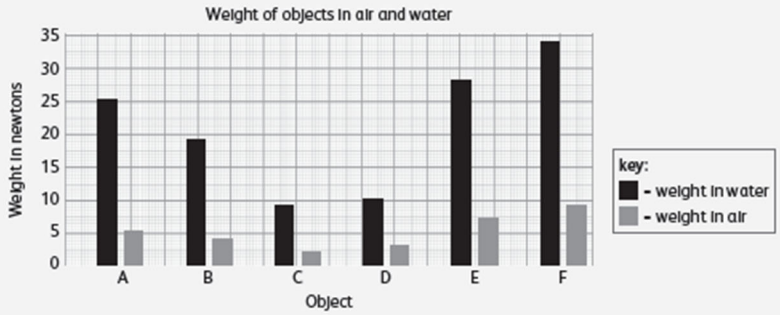
Workbook answers

Page 42 Weight in water

1 a

Object	A	B	C	D	E	F
Weight in air (N)	25	19	9	10	28	34
Weight in water (N)	5	4	2	3	7	9

b Refer to what learners have learnt about bar charts in Mathematics.



c Anya and Diya

d Diya

Unit 6 Electrical circuits

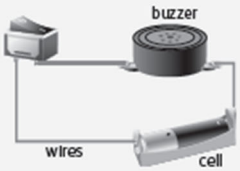
Workbook answers

Page 44 Electricity mind map

1 Check learners' mind maps.

Page 45 Circuits

1 Check that learners' instructions for making a circuit include a labelled picture, as in the example on the right.



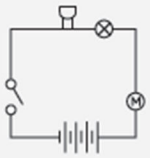
2 Accept any three of the following: the circuit is incomplete, the lamp is broken, one or more of the cells are out of power, the switch is in the 'off'/ open position, one or more of the components are not connected correctly.

Page 46 Circuit diagrams

1 b three wires, two cells, one buzzer, one switch

c four wires, three cells, one lamp, one motor, one switch

2



Workbook answers

Page 47 Electrical cells

a Alessandro Volta. 1800. The Voltaic pile.

b A series of chemical reactions between the chemicals stored inside the cell result in electrons gathering on the negative terminal. When the cell is connected in a circuit, these electrons flow from the negative terminal through the components of the circuit and back to the cell (to the positive terminal).

c The chemicals inside electric cells are toxic (harmful to living things). Leaking cells are dangerous. Electric cells can also explode if you put them in a fire.

d Do not put them in the waste bin. Take them to be recycled.

Page 48 Electrical circuits quiz

1 a Components b i series ii parallel c buzzer
d The wires should be drawn as a straight line. e There is no cell.

2 Check learners' questions and answers.

Page 49 Match circuit component names to their symbols

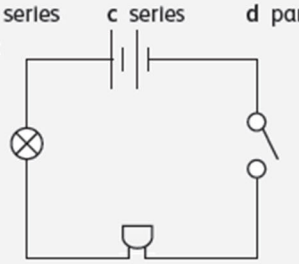
Make sure learners have matched the name of the circuit component to each symbol correctly.

Workbook answers

Page 50 Series and parallel circuits

1 a parallel b series c series d parallel

2 Example answer:



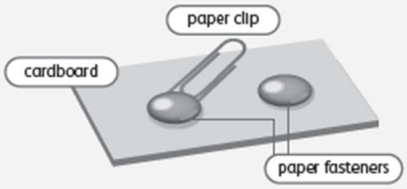
3 You might choose to use a parallel circuit rather than a series circuit when you want to be able to control each component separately.

Page 51 Harry's switches

1 a Check that learners have placed crosses anywhere on the lines, above and below each lamp symbol, one cross for each lamp.

b Check that learners have placed a circle anywhere on the lines above and below the battery symbol, leading as far as the lines that branch off to the first lamp symbol.

c Check that learners have included an annotated diagram of a switch with their instructions. Example:



Page 52 Electrical word search

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

Unit 7 Light, reflection and refraction

Workbook answers

Page 54 Light and seeing

1 Learners should tick picture a.

2 Learners should draw a straight arrow from the Sun to the butterfly, and another arrow from the butterfly to the girl's eyes.

Page 55 Travelling light

1 Order from best to worst: B, A, C

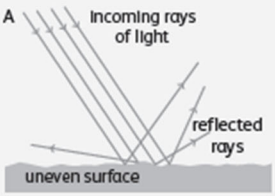
2 a  b  c 

Workbook answers

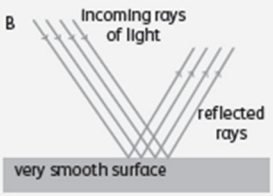
Page 56 Reflections

1 a Specular reflection: B
Diffuse reflection: A
Everyday example of specular reflection: mirror, still water
Everyday example of diffuse reflection: most objects we can see.

b A



B



2 a It is recognisable as a pencil/a similar shape to a pencil.
b It is curved/bent/distorted.

Page 57 Incoming and reflected rays

Use this activity to create cross-curricular links with measuring angles covered in the Mathematics curriculum.

1 a 25° **b** 70° **c** 50° **d** 35°

2 a 55° **b** 10° **c** 85° **d** 20°

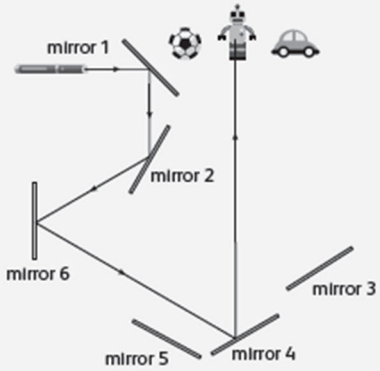
Page 58 What have you learnt so far?

1 a lamp, smartphone, clock
b 1 lamp, 2 smartphone, 3 clock
c reading, telling the time, entertainment
d

e The girl sitting reading by the lamp should be coloured in.
f The mirror
g It is reversed./The letters are the other way around.

Page 59 Mirror maze

1 a robot
b



Angles: 45°/45°, 30°/30°, 60°/60°, 60°/60°
c Check learners' predictions.

2 Check learners' mazes.

Workbook answers

Page 60 Light meeting transparent objects: refraction

1 a Angle *b*, is less than angle *a* because light travelling from air into glass slows down and bends towards the normal.
b Angle *b*, is less than angle *a* because light travelling from water into glass slows down and bends towards the normal.

c Angle *b* is greater than angle *a* because light travelling from glass into water speeds up and bends away from the normal.
d Angle *b* is less than angle *a* because light travelling from air into water slows down and bends towards the normal.
e Angle *b* is the same as angle *a* because, as the light travels down the normal, the speed of the light gets faster.

Unit 8 Rocks and soils

Workbook answers

Page 62 The structure of the Earth

1 a A: Inner core B: Outer core C: Mantle D: Crust
b Crust, mantle, inner core c Outer core, mantle
d Magma e Lava

2 Check learners' questions and then ask them to share their questions with a partner.

Pages 63–64 Different types of igneous, sedimentary and metamorphic rocks

1 Learners' predictions, for example:
a sandstone, limestone, chalk: sedimentary rocks, because they have holes in them
b marble, granite: metamorphic and igneous rocks, because they do not contain holes

2 a sandstone, limestone, chalk
b marble, granite
c Learners' own answers, based on their predictions from question 1.
d The chalk would let water through and everything would be wet.
e Accept answers where reasonable justifications are provided and linked to ideas about hardness and permeability.

Page 65 Is it metamorphic, igneous or sedimentary?

1 stairs, statues, tables, wall tiles

2 a limestone – white; slate – grey; granite – pink, white, variations of grey
b limestone – cement, toothpaste, agriculture; slate – buildings, bridges, paving, monuments; granite – buildings, bridges, paving, monuments
c limestone – sedimentary; slate – metamorphic; granite – igneous

3 a Pumice is an igneous rock.
b Pumice forms when lava that has lots of water and gas inside it cools quickly.
c Pumice was used to make concrete in Roman times and is still used to make lightweight concrete blocks today. It also breaks up easily when rubbed and can be used to clean the skin. Some toothpastes contain pumice to rub on the teeth and polish them.

Page 66 Different types of rocks

1

Rock	Sedimentary	Metamorphic	Igneous	Crystals	Rock fragments	Fossils
slate		✓		✓		
sandstone	✓				✓	✓
granite			✓	✓		
marble		✓				
limestone	✓				✓	✓
basalt			✓	✓		
chalk	✓				✓	✓

2 Provide learners with resources, such as books and access to the internet, to research different types of fossils. Remind learners of the rules for staying safe online, tips for effective searching, and how to recognise reliable sources of information.

Workbook answers

Page 67 Mind map of processes in the rock cycle

Check learners' mind maps to see how they are linking different processes. Learners can be encouraged to add other words to their mind maps that they have encountered across the unit.

Page 68 The rock cycle

a	Sedimentation	Burial	Sedimentary rock	Heat/pressure	Metamorphic rock
b	Sedimentary rock	Heat/pressure	Metamorphic rock	Magma	Lava or igneous rock
c	Metamorphic rock	Magma/lava	Igneous rock	Weathering	Erosion

Page 69 Soil

1

Layer	Materials used	Strengths of the model	Weaknesses of the model
organic material	Shredded coconut Gummy worms	Green to represent plants. Worms show there are living things in this layer.	Lack of diversity within the layer. No roots showing the relationship between plants and topsoil.
topsoil	Crushed biscuits	Fine, broken-down grains like the soil. Contains same material as layers below in a smaller form.	Only one material used in the layer, but it is made up of several materials.
subsoil	Chocolate mousse	Thick, dense substance. Contains same material as layers below in a smaller form.	Only one material used in the layer, but it is made up of several materials.
bedrock	Chocolate and butterscotch chips	Large chips to represent the rocks. Contains same material as layers above in the largest form.	Only one material used in the layer, but it is made up of several materials.

2 Use this activity to create cross-curricular links with calculating volume in the Mathematics curriculum.

a

Soil sample	Volume of water poured in (cm^3)	Volume of water collected (cm^3)	Amount of water held by the soil
A	100	40	60 cm^3
B	100	95	5 cm^3
C	100	80	20 cm^3

b **A**: Clay: most water retained by soil. **B**: Sand: least water retained by soil.
C: More water retained than B and less water retained than A.

Page 70 Rocks in a house

1 clay (brick) chimney slate roof sandstone walls granite worktop marble floor

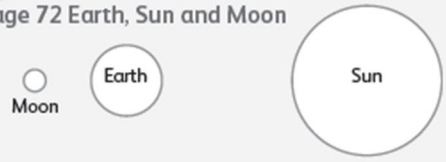
2 For example: chess set, statue, garden wall, buildings, kitchen worktop, floor, jewellery.

Unit 9 Earth and the Solar System

Workbook answers

Page 72 Earth, Sun and Moon

1



2 Provide learners with a range of resources for their research. When using the internet for research, remind learners of the rules for staying safe online, tips for effective searching, and how to recognise reliable sources of information.

Page 73 The moving Earth

1 a Check learners' diagrams.

b axis

c 24 hours (one day)

d The Sun appears to move across the sky during the course of a day.

e The gravitational pull of the Sun

f 365 days (one year)

Page 74 Objects in the Solar System

1 a and b Planet: The name given to a rocky or gas object that is round, orbits around a star, and is the only object in its orbit. Examples: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune.

Star: The name given to a luminous object in the sky that is made of gas and gives out light. Example: The Sun.

Satellite: The name given to an object that orbits around another. Example: Any moons around planets. Any of the planets around the Sun, the asteroid belt around the Sun.

2 From the Sun, the planets are: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune.

Page 75 Planetary awards

1 a Jupiter

b Neptune

c Jupiter

d Mercury

e Venus

f Mars

g Venus

h Jupiter

i Neptune

Page 76 Planet distances

1 a Earth and Mars: 78; Mars and Jupiter: 551; Jupiter and Saturn: 651; Saturn and Uranus: 1 450; Uranus and Neptune: 1 620

b With the exception of the distance between Venus and Earth, the distance between each planet gets larger as the planets get further from the Sun.

c Anything over 5 000 kilometres is acceptable.

d Allow distances between 330 to 480 million kilometres.

e The asteroid belt.

Workbook answers

Page 77 Moon phases

1 a a 4 b 7 c 5 d 1
e 8 f 3 g 6 h 2

b a full b waning crescent c waning gibbous d waxing crescent
e new f waxing gibbous g last quarter h first quarter

2 a about 28 days

b For example: This was how long it took for the apparent shape of the Moon to be the same as when I started observing.

Page 78 Craters on the Moon

1 a Rubber ball b It is heavier (than the foam ball)

2 a Anything above 70 cm. The solid steel ball will make a larger crater than the rubber ball.

b The table shows that the rubber ball made a larger crater than the foam ball. The steel ball will make an even larger crater because it is heavier than the rubber ball.

Page 79 Famous astronomers

	Astronomer	Place	Contribution
1 a	Nicolaus Copernicus	Poland	created a more advanced heliocentric model
b	Zhang Heng	China	realised the Moon's brightness was caused by reflected sunlight
c	Edwin Hubble	United States	provided evidence of other galaxies outside the Milky Way
d	Aristarchus	Greece	created the first heliocentric (Sun-centred) model
e	Galileo Galilei	Italy	observed and studied sunspots
f	Ahmad ibn Muhammad ibn Kathir al-Farghani	Persia (Iran)	calculated the diameter of the Earth

2 Aristarchus, Zhang Heng, Ahmad ibn Muhammad ibn Kathir al-Farghani, Nicolaus Copernicus, Galileo Galilei, Edwin Hubble