Vertex Academy

Year 4 Science workbook

9 worksheets · answers at the back

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Year 4 Science: Solids, liquids and gases, and how they change

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. Flour can be poured. Is it a solid, a liquid or a gas?

2. You pour 300 mL of juice from a bottle into a wide jug. How much juice is in the jug?

3. Water vapour from a shower turns into drops on a cold mirror. What is this change called?

4. At what temperature does pure water freeze?

5. Butter melts in a hot pan. Is a new substance made?

6. Why does the air in a balloon fill the whole balloon?

Fix the mistake

7. Correct this statement: "Sand can be poured, so it is a liquid."

8. Correct this statement: "When a puddle evaporates, the water disappears."

9. Correct this statement: "The white cloud above a boiling kettle is a gas."

10. Correct this statement: "When ice melts it becomes a new substance."

Year 4 Science: Temperature: measuring how hot or cold

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. What unit do we usually use for temperature?

2. A thermometer has a number every 10 °C and 10 small gaps between numbers. What is each mark worth?

3. Each mark is 2 °C. The liquid stops 3 marks above 30. What is the temperature?

4. You predicted 15 °C and measured 19 °C. How far out was your prediction?

5. Four readings of one cup are 18 °C, 19 °C, 18 °C and 26 °C. Which is likely to be wrong?

6. Why should the bulb stay in the water while you read the thermometer?

Fix the mistake

7. Correct this statement: "Every small mark on a thermometer is 1 °C."

8. Correct this statement: "You can read the thermometer as soon as it goes in."

9. Correct this statement: "If the water feels warm to my hand, it is warm."

10. Correct this statement: "The answer is 24."

Year 4 Science: Contact and non-contact forces: ramps, magnets and gravity

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. Kicking a ball: is that a contact or a non-contact force?

2. The north pole of one magnet is near the south pole of another. Do they attract or repel?

3. Which one will a magnet attract: a steel nail, an aluminium can, or a copper pipe?

4. Why is a wheelie bin easier to move than a box of the same weight dragged on the ground?

5. An apple falls from a tree. Which force pulls it, and is it a contact force?

6. Why does a full trolley need a bigger push than an empty one?

Fix the mistake

7. Correct this statement: "All metals stick to magnets."

8. Correct this statement: "Two north poles pull together."

9. Correct this statement: "A ramp makes the box lighter."

10. Correct this statement: "Gravity only works on things that are falling."

Year 4 Science: Earth spins and orbits: days, years and the Sun's path

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. How long does Earth take to spin once on its axis?

2. In which direction does the Sun rise?

3. How long does Earth take to travel once around the Sun?

4. What did Galileo see Venus do that gave evidence it goes around the Sun?

5. In New Zealand at midday, which part of the sky is the Sun in?

6. At 9 am the Sun is above the gym roof in the north-east. Which direction will it be in at 3 pm?

Fix the mistake

7. Correct this statement: "The Sun moves across the sky every day."

8. Correct this statement: "A day is how long Earth takes to go around the Sun."

9. Correct this statement: "In New Zealand the midday Sun is straight overhead."

Year 4 Science: Day, night and shadows: modelling the Sun and Earth

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. At midday, is your shadow long or short?

2. In the morning in New Zealand, which way do shadows point: towards the east side or the west side?

3. Which half of Earth has daytime?

4. What causes day and night?

5. It is midday in New Zealand. Is it day or night on the opposite side of Earth?

6. In the torch-and-ball model, what does one full turn of the ball stand for?

Fix the mistake

7. Correct this statement: "Night happens because the Sun goes around to the other side of Earth."

8. Correct this statement: "Day and night happen because Earth goes around the Sun."

9. Correct this statement: "Shadows are longest at midday, when the Sun is strongest."

Year 4 Science: Eggs, live young, seeds and spores: how living things begin

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. Does a kiwi lay eggs or give birth to live young?

2. A platypus lays eggs. Is it a mammal?

3. What do ferns make instead of seeds?

4. Which part of a flower makes pollen?

5. A drawing is 12 cm long. The real flower is 4 cm long. What is the magnification?

6. What does a seed need to germinate?

Fix the mistake

7. Correct this statement: "All mammals give birth to live young."

8. Correct this statement: "Ferns grow from seeds."

9. Correct this statement: "Shade and colour a scientific drawing so it looks real."

10. Correct this statement: "The magnification of a 9 cm drawing of a 3 cm flower is ×6."

Year 4 Science: Flowers, fruits and seeds, and how seeds travel

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. Which usually has more young at a time: a mouse or a kiwi?

2. How can you grow a new potato plant without a seed?

3. What is it called when pollen moves from an anther to a stigma?

4. Which part of a flower grows into the fruit?

5. A seed is covered in tiny hooks. How is it spread?

6. What does a seed need first, to germinate?

Fix the mistake

7. Correct this statement: "Pollination and fertilisation are the same thing."

8. Correct this statement: "Fruits are only sweet things like apples and oranges."

9. Correct this statement: "A seed needs soil to start growing."

Year 4 Science: Skeletons, shells and stems: how living things are held up

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. A tuatara has a backbone. Is it a vertebrate or an invertebrate?

2. Which part of your skeleton protects your brain?

3. How many bones are in your forearm?

4. What kind of skeleton does a crab have?

5. Why does a jellyfish slump on the beach?

6. Why can a kauri grow much taller than a daisy?

Fix the mistake

7. Correct this statement: "Insects and spiders have backbones."

8. Correct this statement: "Muscles push bones to move them."

9. Correct this statement: "A wētā's skeleton grows with it, like ours."

Year 4 Science: Habitats: where living things find what they need

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. What four things does a good habitat give a living thing?

2. A slater lives under a damp log and eats rotting wood. What does the log give it?

3. A fantail and a spider both catch flies in the same garden. What resource do they share?

4. In Room 4's survey, how many more slaters than earthworms were there?

5. What did Jane Goodall see a chimpanzee use a twig for?

6. Why should you roll a log back after looking underneath it?

Fix the mistake

7. Correct this statement: "A habitat is just an animal's nest or burrow."

8. Correct this statement: "Each animal in a habitat has its own food and water that nothing else uses."

9. Correct this statement: "After looking under a log, you can leave it turned over."

Answer key (for parents and tutors)

1. Flour can be poured. Is it a solid, a liquid or a gas?
   A solid, because each grain keeps its shape.
2. You pour 300 mL of juice from a bottle into a wide jug. How much juice is in the jug?
   300 mL, because a liquid keeps its volume.
3. Water vapour from a shower turns into drops on a cold mirror. What is this change called?
   Condensing.
4. At what temperature does pure water freeze?
   0 °C.
5. Butter melts in a hot pan. Is a new substance made?
   No. Melting is a physical change, and it is still butter.
6. Why does the air in a balloon fill the whole balloon?
   Air is a gas, and a gas spreads out to fill its container.
7. Correct this statement: "Sand can be poured, so it is a liquid."
   Each grain of sand keeps its own shape, so sand is a solid; powders just flow like liquids.
8. Correct this statement: "When a puddle evaporates, the water disappears."
   The water turns into water vapour, a gas we cannot see; it is still water, now in the air.
9. Correct this statement: "The white cloud above a boiling kettle is a gas."
   The white cloud is tiny drops of liquid water that have condensed; the gas itself is invisible.
10. Correct this statement: "When ice melts it becomes a new substance."
    Melting is a physical change: it is still water, just in a different state.

Answer key (for parents and tutors)

1. What unit do we usually use for temperature?
   Degrees Celsius, °C.
2. A thermometer has a number every 10 °C and 10 small gaps between numbers. What is each mark worth?
   1 °C, because 10 ÷ 10 = 1.
3. Each mark is 2 °C. The liquid stops 3 marks above 30. What is the temperature?
   36 °C, because 3 × 2 = 6 and 30 + 6 = 36.
4. You predicted 15 °C and measured 19 °C. How far out was your prediction?
   4 °C, because 19 − 15 = 4.
5. Four readings of one cup are 18 °C, 19 °C, 18 °C and 26 °C. Which is likely to be wrong?
   26 °C, because it is far from the other three.
6. Why should the bulb stay in the water while you read the thermometer?
   Out of the water the liquid starts to change straight away, so the reading would be wrong.
7. Correct this statement: "Every small mark on a thermometer is 1 °C."
   Count the gaps between two numbers first; on many thermometers each mark is 2 °C or 5 °C.
8. Correct this statement: "You can read the thermometer as soon as it goes in."
   Wait until the liquid stops moving, then read it while the bulb is still in the water.
9. Correct this statement: "If the water feels warm to my hand, it is warm."
   Your hand compares with what it touched before; only a thermometer gives a number you can trust.
10. Correct this statement: "The answer is 24."
    Always write the unit: 24 °C.

Answer key (for parents and tutors)

1. Kicking a ball: is that a contact or a non-contact force?
   Contact, because the foot touches the ball.
2. The north pole of one magnet is near the south pole of another. Do they attract or repel?
   Attract.
3. Which one will a magnet attract: a steel nail, an aluminium can, or a copper pipe?
   The steel nail.
4. Why is a wheelie bin easier to move than a box of the same weight dragged on the ground?
   Its wheels roll, so there is less friction than dragging.
5. An apple falls from a tree. Which force pulls it, and is it a contact force?
   Gravity, a non-contact force.
6. Why does a full trolley need a bigger push than an empty one?
   It is heavier, and heavier things need a bigger force to start moving.
7. Correct this statement: "All metals stick to magnets."
   Only some metals are attracted, mainly iron, steel and nickel; aluminium, copper and gold are not.
8. Correct this statement: "Two north poles pull together."
   Matching poles repel; only a north pole and a south pole attract.
9. Correct this statement: "A ramp makes the box lighter."
   The box weighs the same; a ramp lets you use a smaller push over a longer distance.
10. Correct this statement: "Gravity only works on things that are falling."
    Gravity pulls on you all the time, even standing still; the floor pushes back up so you do not fall.

Answer key (for parents and tutors)

1. How long does Earth take to spin once on its axis?
   About 24 hours.
2. In which direction does the Sun rise?
   The east.
3. How long does Earth take to travel once around the Sun?
   About 365 and a quarter days.
4. What did Galileo see Venus do that gave evidence it goes around the Sun?
   Change shape, like the Moon's phases, and change size.
5. In New Zealand at midday, which part of the sky is the Sun in?
   The north.
6. At 9 am the Sun is above the gym roof in the north-east. Which direction will it be in at 3 pm?
   The north-west, because it moves from east to west.
7. Correct this statement: "The Sun moves across the sky every day."
   The Sun only seems to move; Earth spinning towards the east makes it look that way.
8. Correct this statement: "A day is how long Earth takes to go around the Sun."
   A day is one spin, about 24 hours; a year is one orbit, about 365 and a quarter days.
9. Correct this statement: "In New Zealand the midday Sun is straight overhead."
   In New Zealand the midday Sun is in the northern part of the sky, never straight overhead.

Answer key (for parents and tutors)

1. At midday, is your shadow long or short?
   Short, because the Sun is high.
2. In the morning in New Zealand, which way do shadows point: towards the east side or the west side?
   Towards the west side, away from the morning Sun in the east.
3. Which half of Earth has daytime?
   The half facing the Sun.
4. What causes day and night?
   Earth spinning on its axis.
5. It is midday in New Zealand. Is it day or night on the opposite side of Earth?
   Night.
6. In the torch-and-ball model, what does one full turn of the ball stand for?
   One day.
7. Correct this statement: "Night happens because the Sun goes around to the other side of Earth."
   The Sun does not go around Earth; Earth spins, so our side turns away from the Sun.
8. Correct this statement: "Day and night happen because Earth goes around the Sun."
   Day and night come from Earth's spin every 24 hours; one trip around the Sun takes a whole year.
9. Correct this statement: "Shadows are longest at midday, when the Sun is strongest."
   At midday the Sun is highest in the sky, so shadows are shortest.

Answer key (for parents and tutors)

1. Does a kiwi lay eggs or give birth to live young?
   It lays eggs.
2. A platypus lays eggs. Is it a mammal?
   Yes, because it feeds its young on milk.
3. What do ferns make instead of seeds?
   Spores.
4. Which part of a flower makes pollen?
   The anther, at the tip of the stamen.
5. A drawing is 12 cm long. The real flower is 4 cm long. What is the magnification?
   ×3, because 12 ÷ 4 = 3.
6. What does a seed need to germinate?
   Water and warmth.
7. Correct this statement: "All mammals give birth to live young."
   Echidnas and platypuses are mammals that lay eggs; they still feed their young on milk.
8. Correct this statement: "Ferns grow from seeds."
   Ferns and mosses grow from spores; they have no flowers and no seeds.
9. Correct this statement: "Shade and colour a scientific drawing so it looks real."
   Use single clear pencil lines and no shading, so every part and label is easy to see.
10. Correct this statement: "The magnification of a 9 cm drawing of a 3 cm flower is ×6."
    Divide, do not subtract: 9 ÷ 3 = 3, so the magnification is ×3.

Answer key (for parents and tutors)

1. Which usually has more young at a time: a mouse or a kiwi?
   A mouse.
2. How can you grow a new potato plant without a seed?
   Plant a piece of potato that has an eye.
3. What is it called when pollen moves from an anther to a stigma?
   Pollination.
4. Which part of a flower grows into the fruit?
   The ovary.
5. A seed is covered in tiny hooks. How is it spread?
   By catching on animals' fur or feathers.
6. What does a seed need first, to germinate?
   Water.
7. Correct this statement: "Pollination and fertilisation are the same thing."
   Pollination moves pollen to the stigma; fertilisation happens after, when pollen joins an egg cell in the ovary.
8. Correct this statement: "Fruits are only sweet things like apples and oranges."
   Any part grown from a flower that holds seeds is a fruit, so tomatoes and pumpkins count.
9. Correct this statement: "A seed needs soil to start growing."
   A seed needs water to germinate; its stored food feeds it at first, so it can sprout on a wet paper towel.

Answer key (for parents and tutors)

1. A tuatara has a backbone. Is it a vertebrate or an invertebrate?
   A vertebrate.
2. Which part of your skeleton protects your brain?
   The skull.
3. How many bones are in your forearm?
   2 bones.
4. What kind of skeleton does a crab have?
   An exoskeleton.
5. Why does a jellyfish slump on the beach?
   There is no water to hold its soft body up.
6. Why can a kauri grow much taller than a daisy?
   Its trunk is made of stiff wood, which can hold up a tall plant.
7. Correct this statement: "Insects and spiders have backbones."
   Insects and spiders are invertebrates with no backbone; their support is an exoskeleton on the outside.
8. Correct this statement: "Muscles push bones to move them."
   Muscles can only pull, so they work in pairs: one pulls to bend a joint and the other pulls to straighten it.
9. Correct this statement: "A wētā's skeleton grows with it, like ours."
   An exoskeleton cannot grow, so a wētā moults: it sheds the old one and grows a bigger one.

Answer key (for parents and tutors)

1. What four things does a good habitat give a living thing?
   Water, food, air and shelter.
2. A slater lives under a damp log and eats rotting wood. What does the log give it?
   Shelter and food.
3. A fantail and a spider both catch flies in the same garden. What resource do they share?
   Flies, which are food for both.
4. In Room 4's survey, how many more slaters than earthworms were there?
   6 more, because 12 − 6 = 6.
5. What did Jane Goodall see a chimpanzee use a twig for?
   To fish termites out of a termite mound.
6. Why should you roll a log back after looking underneath it?
   It is the shelter of the animals that live there.
7. Correct this statement: "A habitat is just an animal's nest or burrow."
   A habitat is the whole place it lives, including where it finds food, water and shelter.
8. Correct this statement: "Each animal in a habitat has its own food and water that nothing else uses."
   Living things in one habitat often share the same resources, such as one stream or one log.
9. Correct this statement: "After looking under a log, you can leave it turned over."
   Roll it back gently the way it was, because it is the animals' shelter.