

Cambridge Primary Ready to Go Lessons for Science Stage 5

Answers to photocopiable pages

Unit 1A: 5.1 The way we see things

Page 9: Sources of light

1. Answers will vary, according to the objects chosen.
2. A light source is something that gives off its own light.

Page 10: Sources of light

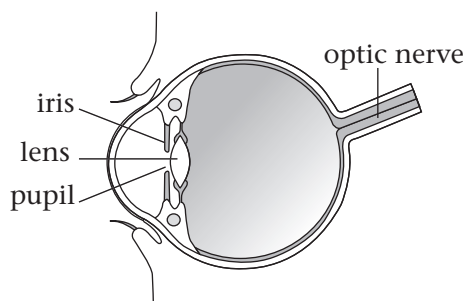
Answers will vary, according to the objects chosen.

Page 12: How do we see?

1. Look for arrows on the diagram from the candle flame directly to the eyes.
2. We see things because light enters our eyes.

Page 14: The eye

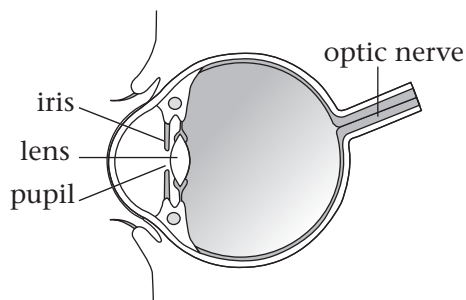
1.



2. The iris is – the coloured circle.
The pupil is – the black centre.
The lens – helps us to focus.
The optic nerve – goes to the brain.
(For easy marking, notice that the lines make a pattern – two interlocking crosses, like a hash!)

Page 15: The eye

1.



2. Answers will vary, for example:

- a) The optic nerve connects your eye to your brain.
- b) The pupil is the black part of your eye, where light enters.
- c) The lens helps the eye to focus.
- d) The iris makes the pupil larger or smaller, depending on the amount of light available.

Page 17: Reflections: making predictions

A H I M O T U V W X Y

Pages 19–20: Which materials best reflect light? 1 & 2

1. Answers will vary, and do not have to be correct.
- 2–5. Answers will vary, depending on the materials and equipment available.
6. Answers will vary, and should specify that reflective materials are shiny, reflect a torch beam and allow the learners to see themselves in them.

Pages 21–22: Which materials best reflect light? 1 & 2

1. Answers will vary, and do not have to be correct.
- 2–4. Answers will vary, depending on the materials and equipment available.
5. Answers will vary, and should specify that reflective materials are shiny, reflect a torch beam and allow the learners to see themselves in them.

Page 24: Making a periscope

The learners follow the instructions to make a periscope.

Page 26: Beams of light

The reflected beam is always reflected at the same angle as the torch beam creating it.

Page 28: How many images?

Angle	Number of images
180°	2
90°	4
60°	6
45°	8
30°	12

Graphs will vary, but should show the results above.

Page 30: Comparing reflections 1

The difference between the two pictures is that the reflection in the mirror is clear, because smooth, polished surfaces reflect light well. The reflection in the flat piece of foil is similar.

Page 31: Comparing reflections 2

The reflection in the crumpled foil is less clear because the light from the rough surface gets scattered in all directions. Similar effects occur in still and rippling water.

Page 33: Optical illusions 1

1. a-b) Both options can be seen.
- c) Answers will vary; your eyes see black spots inside the circles on the edge of your peripheral vision, which is a different distance for everyone.

Page 34: Optical illusions 2

1. a-b) Both options can be seen.
- c) Yes.

Page 36: The structure of the eye

1. a) pupil
b) optic nerve
c) lens
d) iris
2. a) The pupil lets in light.
b) The lens gets fatter or flatter to focus on something. It is controlled by the muscles that surround it.
c) Two eyes help to distinguish how near or far objects are from you. Two eyes also allow you to see in more detail.

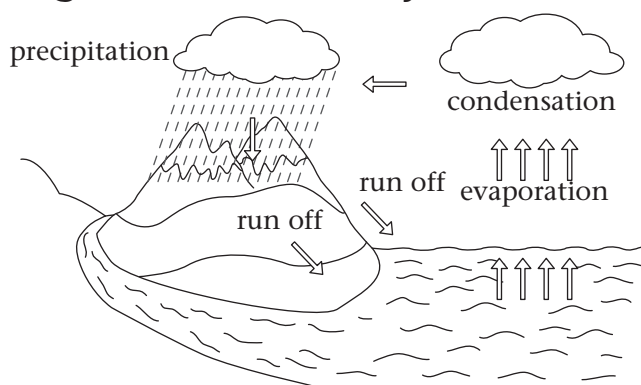
Unit 1B: 5.2 Evaporation and condensation

Page 38: What is evaporation?

1. liquid gas
2. Answers will vary; look for the learners drawing liquid with particles that have gaps between them, and gas with fewer particles that have bigger spaces between them.

3. Heat.
4. Water vapour.
5. Steam.

Page 40: The water cycle



Pages 42 & 44: What is condensation? Experiment

Answers will vary; some will be simple diagrams, while other learners will attempt to draw cross-section diagrams.

Page 43: Condensation experiment results

- 1-2. Yes, it is colder in the middle.
3. Answers will vary, but they should be in the middle.
4. Answers will vary, but they should be at the edges.
5. The drops are bigger and the warm water condenses in the coldest place.

Page 45: Condensation experiment results

- 1-2. Personal response.
3. a) Either is possible.
b) Personal response.

Page 47: Taking temperatures

Answers will vary, depending on the conditions in the room.

Page 49: Making predictions

- 1-2. 10 30

2.	Time in seconds	Temperature in °C
	150	70
	180	80
	210	90
	240	100

Page 50: Melting point of ice

Results: Personal response.

Conclusion: The melting point of ice is 0°C.

Page 51: Boiling point of water

1. Personal response.
2. Use the data to draw the bar chart.
3. Interpret the temperature from the bar chart drawn.

Pages 53–54: How long can you keep an ice-cube for? 1 & 2

- 1–4. Personal response.
5. the wrapping kept it cold; also look for a description of some of the properties of the wrapping.

Page 56: Making solutions

1. solute solvent
2. a) Answers will vary, for example:
Amount of solute
Amount of solvent
Same size containers
Same number of stirs
b) the solute
3. It will evaporate over time.

Page 58: Soluble or insoluble?

Personal response.

Page 60: Growing salt crystals

The picture should show a cube.

Page 62: What's in it? 1

Personal response.

Page 63: What's in it? 2

1. Liquid C.
2. By taste.
3. It evaporated.

Page 65: Making crystals

- a) Heat it.
- b) Evaporation.
- c) Slow evaporation would yield bigger crystals.

Unit 2A: 5.3 The life cycle of a flowering plant

Page 67: Flowers and fruits

Look for evidence of:

2. A shoot
3. New leaves
4. Flowers or fruit

Page 69: Seeds: what is your favourite fruit?

Personal response.

Page 71: Growing fruit seeds

Answers will vary; look for evidence of preparing the pot and soil, planting the seed and watering, then selecting a good position to place the pot.

Page 73: Seed dispersal

Coconut Light – they float on water	Jacaranda seed pod Explosion
Castor oil fruit Spiky and juicy – carried by animals	Flame of the forest tree seed pod Light and with wings – carried by the wind

Pages 75–76: Investigating seed dispersal 1 & 2

All answers will vary, depending on the seeds available for investigation.

Page 78: Germination 1

Personal response.

Page 79: Germination 2

1. Warm and with water.
2. Personal response.
3. a) warmth
b) water

Page 81: Evidence of germination

1. water
2. dark
3. warmth
4. root
5. shoot
6. food
7. seedling
8. Answers will vary, but should include water.

Page 82: Germination observations

1. To make it a fair test.
2. Water.
3. Peas.
4. They got bigger and roots appeared first.
5. To compare and water them.

Page 84: Insect pollination

Answers will vary, but should include the bee going to another flower and transferring pollen; seed production; seed dispersal; and the germination and growth of new plants.

Page 85: Insect pollination

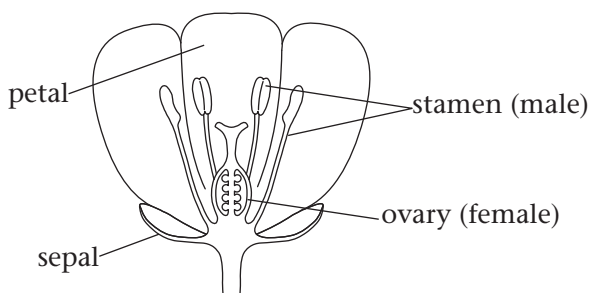
Diary entries will vary, but should include the same information as photocopiable page 84 above.

1. By the flower's colours or scent.
2. On the stamens.
3. On its hairy legs.
4. A seed is formed; fertilisation takes place.
5. fertilisation

Page 87: Plant structure

Answers will vary. Give credit for correctly labelled parts, using comparison with the diagram at the top of the photocopiable page.

Page 88: Flower diagram



Page 89: Structure of a flower

Answers will vary, according to the type of flower being studied.

Page 91: Plant parts in pollination

1. The bee lands on the flower.
2. Pollen sticks to the bee's hairy legs.
3. The bee moves to the stigma.
4. The pollen gets to the ova.

Page 92: Plant parts in pollination

Answers will vary, for example:

stigma (female part)

The female part is the ovary. Ova grow inside the ovary. Ova need pollen to grow into seeds.

stamen (male part)

The male part has pollen on its stamens. Insects take pollen from the stamen to the stigma (the top part of the ovary).

ovary containing ova

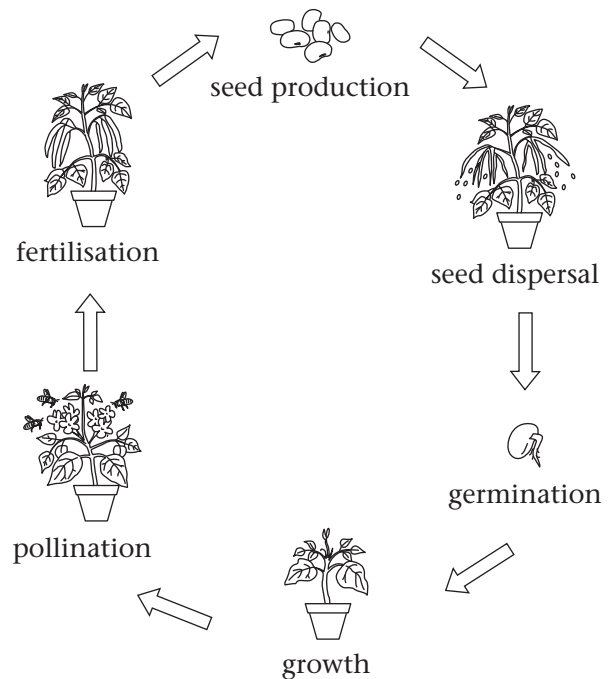
Pollen travels down tubes from the stigma to the ovary. Pollen fertilises the ova and seeds are formed.

Page 94: Plant quiz

1. Seeds.
2. Dispersal.
3. Wind, water, explosion, animals.

4. Germination.
5. The roots.
6. The shoot.
7. The transfer of pollen from the stamen to the stigma.
8. Water, warmth, light.

Page 95: The life cycle of a flowering plant



Page 97: Germination

- 1-2. The diagram should be labelled showing a shoot and roots.
3. Water and the correct temperature for the plant to start germinating.
4. Light.

Unit 2B: 5.4 Investigating plant growth

Page 99: Conditions for germination

1. The beans in pot A needed warmth and light to germinate.
2. It was too cold for the beans in pot B to germinate.
3. The correct temperature is important for germination to occur. Water and warmth are needed, but not light.

Page 101: What do healthy plants need?

1. Answers will vary; look for drawings of a plant with flower, leaf, roots and stem correctly labelled.

2. Personal response.
 - a) Warmth
 - b) Moisture (water)
 - c) Light

Page 102: How do plants take up water?

Personal response.

Page 104: How do plants grow in different light?

1. Pictures of plants should have the following characteristics:

Dark	Dim light	Bright light
Pale	Pale green	Green
Spindly	Stretch towards the light	Upright
Withered	Drooping	Bright flowers

2. a) dark wilting leaves weak roots tall thin straggly stem unhealthy yellow
- b) dim wilting leaves weak roots tall straggly thin yellow stem unhealthy
- c) bright light green stem healthy leaves strong roots

Page 105: How do plants grow in different light?

Answers will vary; look for pictures and descriptions that fit the answers to photocopiable page 104 above.

Pages 107–08: Do plants grow better with or without warmth? 1 & 2

Equipment lists and diagrams will vary according to how the learners decide to conduct the experiment. This will also influence the method, results and conclusion.

Conclusion

Plants grow better with warmth.

Scientific reason: I think that this is because ...

Answers will vary; accept answers that include details of the optimum temperature for germination to take place, or that they need energy from the Sun to make food and grow.

Page 110: How do plants grow best – with or without water?

1. Same number of seeds / plants
Same size pot
Same position
2. Answers will vary; look for a reasonable amount for the size of the pot.

3. Beaker / jug / measuring cylinder.
4. Personal response.

Page 111: How do plants grow best – with or without water?

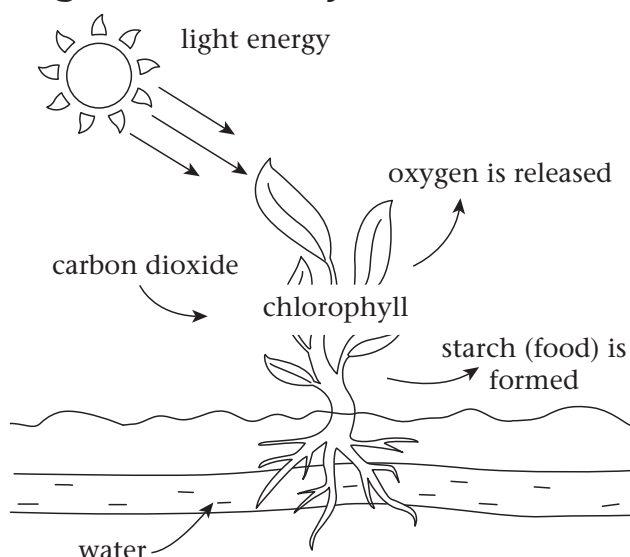
- 1–2. Personal response.
3. If the answer to 2 is yes, the control plant will be in ideal conditions – temperature, light and water – for comparison at the end of the test.
- 4–5. Personal response.
6. too little water makes plants wilt and wither, the right amount produces healthy, green sturdy plants and too much also makes them wither and wilt.

Page 113: Photosynthesis

Answers will vary, according to the leaf chosen.

I can see veins.

Page 114: Photosynthesis



2. carbon dioxide + chlorophyll + light + water → starch (food) + oxygen

Page 116: Germinating seeds

Answers will vary, according to the conditions chosen; look for answers reflecting the practical work done in this unit, including fair testing and making conclusions.

Unit 3A: 5.5 Earth's movements

Page 118: Earth, Sun and Moon

1. Answers will vary; look for the relative sizes and positions of the Earth, Sun and Moon.

2.	How it moves
Sun	Stays still – does not move.
Earth	Spins on its own axis. Orbits the Sun.
Moon	Rotates on its own axis. Orbits the Earth. Orbits the Sun in a pair with the Earth.

Page 119: Earth, Sun and Moon facts

To be completed throughout the unit, adding new facts as they are discovered.

Page 121: Measuring shadows 1

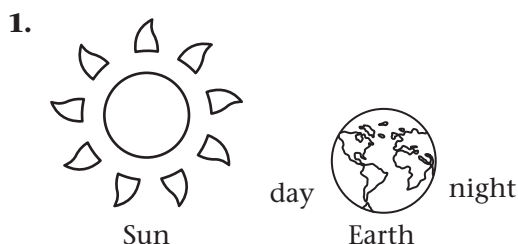
Answers will vary, according to the measurements taken and time of day.

Page 122: Measuring shadows 2

1–4. Answers will vary; look for correct use of data collected and accuracy in drawing the graph.

5. Because of the position of the Sun in the sky at different times of the day.

Page 124: Day and night



2. It takes 24 hours for the Earth to spin once on its axis to make a day and a night.

Page 125: Day and night

1–2. Answers will vary, but should be similar to the diagram on photocopiable page 124. Look for evidence of night on Earth being away from the Sun, and day facing the Sun.

3. Light from the Sun hits the countries on Earth facing it during daytime.

4. It is night-time where the Earth is in shade from the Sun, in countries that are facing away from the Sun as the Earth spins on its own axis.

5. 24 hours.

Page 127: How long is a day?

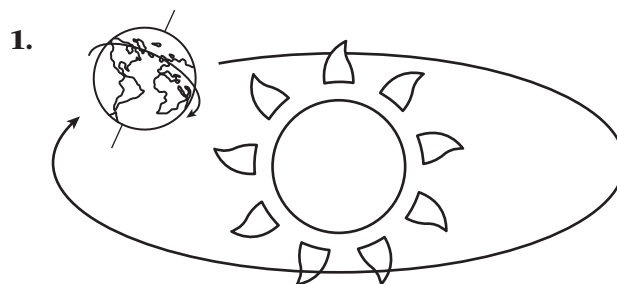
Answers will vary, according to the country chosen and the time of year.

Page 128: How long is a day?

1–3. Answers will vary; look for correct use of data in drawing and interpreting the bar chart.

4. Day length varies, and cities on similar latitudes will have similar day lengths, while cities on different latitudes will have different day lengths.

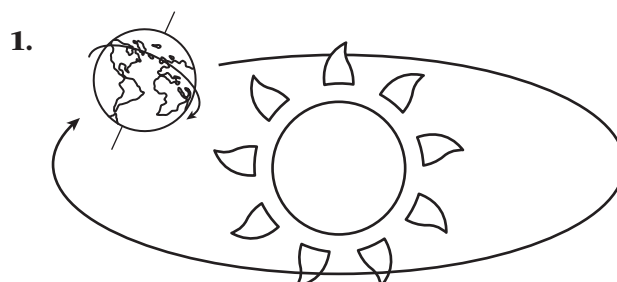
Page 130: What makes a year?



2. a) 365

b) year

Page 131: What makes a year?

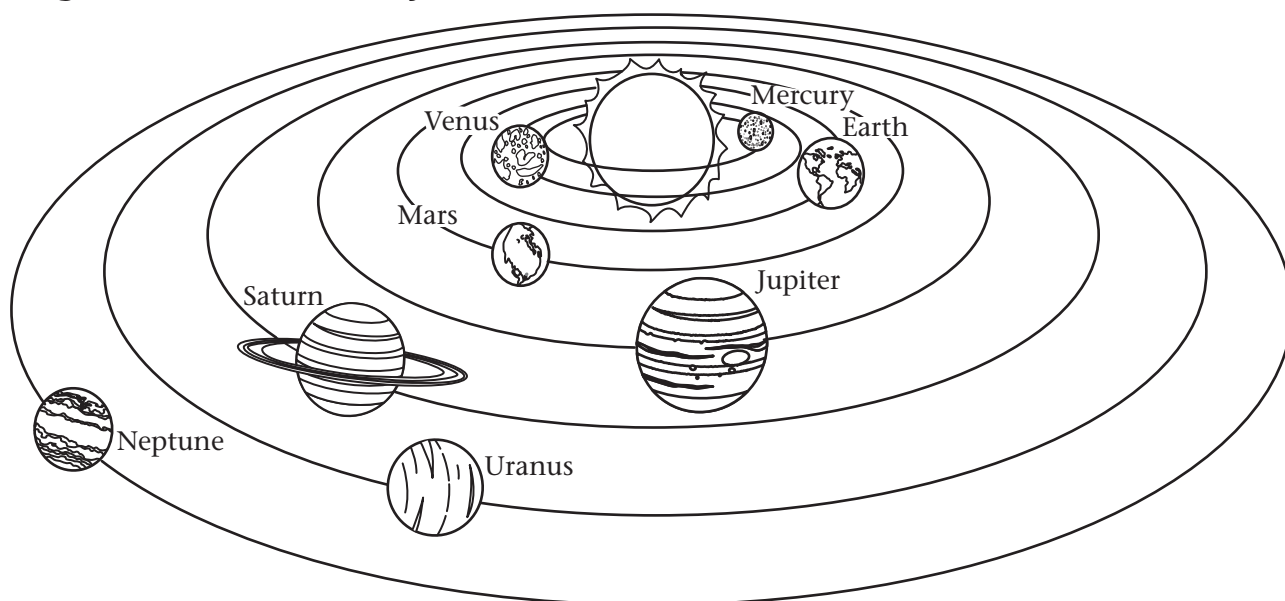


2. The southern hemisphere.

3. Summer.

4. Since the axis of the Earth is tilted, as it revolves around the Sun either the northern or southern hemisphere is tilted towards the Sun. This means that for people living in the hemisphere tilted towards the Sun it is summer, when there are more hours of sunlight and higher temperatures. When one hemisphere has summer, the other hemisphere has winter because that half of the earth is tilted away from the Sun.

Page 133: The Solar System



Pages 134–35: The Solar System – information about planets 1 & 2

Information cards for cutting out and laminating.

Page 136: The Solar System – fact file

Answers will vary, according to the planet studied; check the information is correct.

Page 138: Aristarchos – fact file

Reference for completing fact files on other famous space scientists.

Page 139: Researching a famous scientist – fact file

Writing template for starting to write about a famous space scientist.

Page 141: Pythagoras – fact file

Reference for completing fact files on other famous space scientists.

Page 142: Front cover

Template for designing a book cover.

Page 143: Book cover

Template for a book cover, if required.

Page 145: Famous scientist

Template for a contents page.

Pages 147–52: Famous scientists

Further information about a range of space scientists from around the world and throughout history.

Page 154: Changing shadows

1. 9:00a.m.	12:00 noon (midday)
	
_____ horizon	_____ horizon
3:00p.m.	6:00p.m.
	
_____ horizon	_____ horizon

2. Noon (midday).
3. The Sun is highest in the sky at this time.
4. low

Unit 3B: 5.6 Shadows

Page 156: Light sources

Object	Source of light
torch	a cell (battery)
the Sun	burning gases glowing
candle	wax fuelling the flame

Page 157: Light sources

Object	Source of light	Natural?	Artificial?
the Sun	burning gases	✓	
lamp	electricity / lamp		✓
oil lamp	oil / flame	✓	

Page 159: How shadows are formed

- To make the shadow bigger move the object closer to the light source.
 - To make the shadow smaller move the object further away from the light source.
- Yes.
- If the object is close to the light, the shadow is big. If the object is further away from the light source, the shadow will be smaller. The shadow is always the same shape as the object making it, though can look stretched or squashed.

Page 160: How shadows are formed

Personal response.

Page 162: What makes the sharpest shadow?

- Answers will vary.
- The opaque object will make the sharpest shadow as it does not allow any light to pass through it.

Page 164: Changing shadows

- Answers will vary.
- the object is close to the light source
 - the light source is low down

Page 165: Altering shadows

- 1–2. Personal response; check for accurate representation of data on the graph.
- The shadow gets smaller.

Page 167: Changing my own shadow

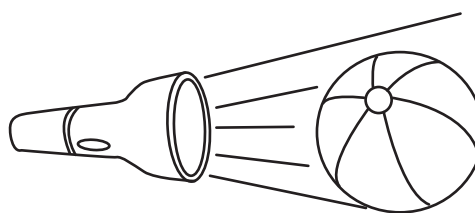
Answers will vary.

Pages 168–69: Investigating shadows 1 & 2

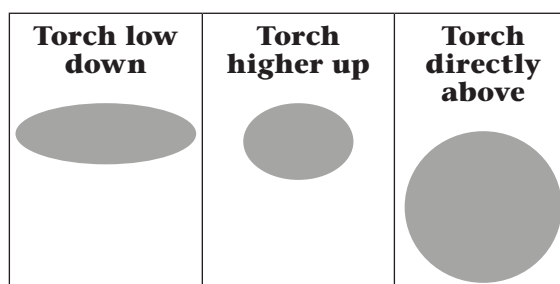
- 1–2. Answers will vary.
- big
 - smaller

Page 171: What affects the size of a shadow?

1.



2.



- The higher the light source, the shorter the shadow.
The lower the light source, the longer the shadow.

Page 172: Shadow graph

1.

Distance from light in cm	10	20	30	40	50	60	70	80
Length of shadow in cm	50	45	40	35	30	25	20	15

- Personal response; check for accurate representation of data on the graph.
- Hold the torch as high as possible directly above the object.

Page 174: Shadow sticks 1

Answers will vary, according to the results obtained.

Page 175: Shadow sticks 2

The shadow is short – when it is midday.

At midday, the Sun is – at its highest in the sky.

The longest shadows are – when the Sun is low in the sky.

The Sun – does not move.

(For easy marking, notice that the lines form two crosses!)

- Because the Earth is spinning on its axis.

Page 176: Shadows throughout the day

6:00a.m.	12 noon (midday)
Long shadow.	Short shadow.

3:00p.m. Longer shadow than at noon, shorter than at 6:00a.m. / p.m.	6:00p.m. Same length shadow as at 6:00a.m. on the opposite side of the tree.
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Page 178: Shadows throughout the day

6:00a.m. Long shadow to the right of the stick person.
12:00 noon Very short shadow.
6:00p.m. Long shadow to the left of the stick person.

Page 180: Measuring light intensity

1. Personal response.
2. To obtain more accurate results.
- 3–4. Personal response.

Pages 182–83: Which material makes the best shadow? 1 & 2

1–4. Personal response.

5. a) opaque
- b) translucent
- c) Transparent

Pages 184–85: Which plastic bottle makes the best shadow? 1& 2

Answers will vary, according to the methods used.

Pages 186–87: Which liquid made the best shadow? 1 & 2

Personal response.

Page 189: Looking at light

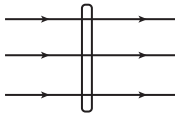
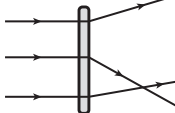
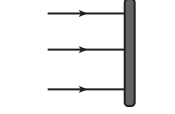
Revision for the Main activities on page 188.

Page 190: Shadow puppets

The learners do the activity as described on the photocopiable page.

Page 192: Opaque, transparent or translucent?

1.

Diagram	Opaque, transparent or translucent?	Name of an object that fits this description
	transparent	window glass bottle
	translucent	tissue paper
	opaque	block of wood brick

2. Because they block the light.