

## 7A Cells, tissues, organs and systems

### 7Aa Life processes

#### Student Book

##### 1: 7Aa Doctors past and present (Student Book)

- L3** 1 a symptoms b bad cold, flu  
**L4** 2 a lot of pimples or spots on the skin  
**L4** 3 a an organ **L5** b pumps blood

##### 2: 7Aa Life processes (Student Book)

**L3** 1

Organism	Not an organism
cow	car
daffodil	chair
goldfish	coal
mouse	robot
octopus	rock
snake	Sun

- L4** 2 Mrs Gren  
**L3** 3 Animals can usually move their whole bodies from place to place but plants can only move parts of themselves.  
**L3** 4 one of: make seeds, make fruit, produce flowers, use insects  
**L4** 5 two suitable answers such as: pupils getting smaller in bright light, moving a hand away from something hot  
**L4** 6 Humans stop growing after a while, trees continue to grow.  
**L5** 7 Fish get oxygen from water/using gills but humans get oxygen from air/using lungs.  
**L5** 8 a A car will move, it will sense certain things (e.g. being broken into) and it will respire in the sense that it uses oxygen to release energy from fuel. Most cars will excrete exhaust gases and require a source of energy (nutrition).

b A car will not grow and will not reproduce; something can only be an organism if it shows all seven life processes.

#### Activity Pack

##### 7Aa-1 Life processes

- L4** 1 excretion, growth, movement, nutrition, reproduction, respiration, sensitivity  
**L3** 2 any living thing  
**L4** 3 excreting – getting rid of waste; growing – increasing in size; reproducing – making copies; respiring – releasing energy  
**L2** 4 a car  
**L4** b it does not grow and it does not reproduce (see answer to Q7 in SB above).

##### 7Aa-2 Life processes in seedlings

- L3** E measuring cylinder; grow; seeds; respiration; carbon dioxide; excreted; limewater  
**L3** 1 After several days, the limewater will become milky.  
**L4** 2 The limewater went milky. This is evidence that plants respire.

##### 7Aa-5 Trees and growth

- L4** 1 growth  
**L4** 2 X – 11 years old, Y – 23 years old, Z – 11 years old  
**L4** 3 a X – 1998, Y – 2005, Z – 2008  
**L4** b These are the years corresponding to the widest rings.  
**L4** 4 a X – 1994 or 1995, Y – 1991, Z – 2006 or 2007  
**L4** b These are the years corresponding to the narrowest rings.

##### 7Aa-6 Living and non-living

- L3** 1 these words should be underlined: cactus, gerbils, birds, eggs  
 these words should be circled: Sun, clouds, water, nest  
**L3** 2 reproduction  
**L3** 3 grow; move/reproduce; move/reproduce; food; organisms; organisms; grow/reproduce/move

**7Aa-7 Life processes and robots****L4 1**

Question	Life process	ASIMO	Human
Can it move?	movement/ moving	✓	✓
Can it produce babies?	reproduction/ reproducing		✓
Does it grow?	growth/ growing		✓
Does it need oxygen?	respiration/ respiring		✓
Does it produce waste products?	excretion/ excreting		✓
Can it sense things around it?	sensitivity/ sensing	✓	✓
Does it need a source of energy?	nutrition	✓	✓

**L4 2** respiration and excretion**L4 3** No. A fire does not sense things around it or reproduce. A fire could be said to do all of the other life processes.**Teacher and Technician Planning Pack****7Aa Homework 3****L4 1** life processes and if they are found in each item**L5** – suitable presentation (e.g. multicolumn table)

Life process	car	cow	fish	river	robot
movement	✓	✓	✓	✓	✓
reproduction		✓	✓		
sensitivity	✓	✓	✓		✓
growth		✓	✓	✓	
respiration	✓	✓	✓		
excretion	✓	✓	✓		
nutrition	✓	✓	✓		✓

**2** Students' own ideas about how we can tell that a life process is occurring in a certain item/organism.**L4 3** The life process that can never be said to occur in non-living things (for the moment) is reproduction.**Student Book****7Ab Organs****1: 7Ab Conventions in writing (Student Book)****L3 1 a** lansoprazole and naproxen**b** 28 lansoprazole and 56 naproxen**L4 2 a** The requirements are written in the same order on both prescriptions.**b** It means that the pharmacist/another doctor/chemist can easily/quickly understand the information. It also prevents mistakes like getting the quantity of tablets muddled with the dose of medicine in each tablet.**L5 3** penicillin V; tablets 125 mg; one tablet to be taken four times each day; quantity 20 tablets**L4 4 a** mg **b** milligrams**L5 5** [The top prescription in 7Ab/Conventions in Writing/Photo B copied. Labels added:]

[label to first line] name of medicine

[label to second line] form of medicine and amount of medicine in each dose

[label to third line] instructions to the patient on when to take and how much/many

[label to fourth line] total amount of medicine to be given to the patient

**L5 6** It makes it easier for other scientists to find information (they know where to look), to understand the information and to compare information.**2: 7Ab Organs (Student Book)****L4 1** any five organs and their functions copied from diagram B on page 12 (extra credit should be given for a neatly drawn table with correct headings; further credit could be given for ordering the organs in some way, e.g. alphabetically)**L4 2** lung**L5 3** food pipe/gullet/oesophagus, stomach, small intestine

Some students might have included mouth, even though it is not labelled on the diagram. Note that the large intestine has little role in getting nutrients into the body, only reabsorbing water.

**L5 4** kidney, lungs, liver**L5 5** rectum, bladder**L5 6** leaf**L6 7 a** photosynthesis**b** Light is needed for photosynthesis – with less light, less food will be made.**L6 8** liver, as it makes and stores some substances and destroys other substances**Activity Pack****7Ab-1 Using conventions in writing****L3 1** warfarin – name of medicine; tablets 1 mg – the form the medicine takes; one to be taken at the same time each day – instructions to the patient; quantity 50 tablets – total amount in prescription**L4 2 1** – ibuprofen SR; **2** – capsules 800 mg; **3** ONE TO BE TAKEN ...; **4** quantity 10 capsules**L4 3 1** – Aim; **2** – Prediction; **3** – Method; **4** – Results; **5** – Conclusion; **6** – Evaluation

**L4 4** It makes it easier to find/understand/compare information.

### 7Ab-2 Organs

**L4**

[first picture] intestines – breaks up food and takes it into the blood

[second picture] lungs – gets oxygen into the blood

[third picture] heart – pumps blood

[fourth picture] liver – makes and destroys substances

[fifth picture] leaf – makes food

[sixth picture] stomach – breaks up food

[seventh picture] brain – controls the body

### 7Ab-6 Investigation reports

**L4 1** Aim, Prediction, Method, Results, Conclusion, Evaluation

**L4 2** It makes it easier for all scientists to find/understand/compare information.

**L4 3** Aim – Does temperature affect how many cress seeds germinate?/ I wanted to find out which material was the best insulator out of wool, cotton, paper and felt./ My aim was to see whether adding salt to water changed its freezing point.

Prediction – I predict that if a surface is rougher then it will take more force to move it across another surface./ I think that the warmer the water, the greater the amount of salt that will dissolve.

Method – I measured out 20 cm<sup>3</sup> of water using a measuring cylinder./ I used a Bunsen burner that was set to a blue flame./ We put on safety goggles in case the liquid splashed in our eyes.

Results – There were a total of 140 daisy plants growing in the lawn./ We found that 10 woodlice moved into the dark and damp area of the dish.

Conclusion – More photosynthesis happens when there is more light./ My evidence shows that when you double the mass you also double the amount the spring stretches by.

Evaluation – I would repeat my measurements to be more sure of my results./ Next time I will use a tape measure because it was difficult to take measurements using a short ruler.

### 7Ab-7 Where the organs are

**L4 1** *Students' own answers:* diagram correctly labelled

**L4 2** Credit should be given for placing the heart in a reasonably central position between the two lungs but drawn so that more of it is on the right (see Student Book page 12).

**L5 3** *Students' own answers:* two organs and their correct functions

**L5 4** *Students' own answers:* two organs and their correct functions

**L4 5** part of an organism with an important job

### 7Ab-8 Organ evidence

**L4 1 a** It makes it easier for people to understand quickly, even if they don't speak English.

**L5 b** 9.5 people per 100 000 for liver disease; 68.8 people per 100 000 for heart disease; 21.5 people per 100 000 for lung disease; 3.2 people per 100 000 for kidney disease

**L4 c** ordered list of the data in part **b**, either alphabetically or ascending/descending death rates

**L5 d** *Students' own answers*

**L4 e** A major cause of death in the UK is heart disease.

**L5 f** liver – makes and destroys substances; heart – pumps blood; lungs – get oxygen into the blood; kidneys – clean the blood/produce urine

**L4 2 a** B, E or F

**L4 b** A or D

**L5 c** C

**L5 3** nutrition

### 7Ab-9 A new organ

**L4 1 a** kg, m

**L4 b** It makes it easier/quicker for all scientists to understand information, even if they don't speak a certain language.

**L5 2 a** sensitivity

**L5 b** nutrition, movement

**L5 3 a** sensitivity – skin, eye, ear, nose, tongue (students are not expected to get all of these); nutrition – oesophagus, stomach, small intestine; movement – brain, tongue, heart, diaphragm (students are not expected to get all of these)

**L5 b** descriptions of organ functions

**L5 4** Brain because it receives and sends out information/controls things. Credit could also be given for skin, eye, ear, nose, tongue, since they are all organs that sense things in the same way that the 'new organ' senses krill.

**L5 5** The list should be presented in order: krill detection – jawbone movement downwards & tongue flattening – jawbone movement upwards – tongue pressing water out – krill swallowing.

### 7Ac Tissues

#### Student Book

#### 1: 7Ac Tissues (Student Book)

**L4 1** the stab in his upper back; it is thought that this went through to the heart

**L3 2** Students should spot that it has different parts that are different colours.

**L5 3 a** fat, muscle (there are others, e.g. nerve tissue, but these have not been mentioned yet)

**b** Fat protects the heart; muscle moves the heart.

**L5 4** Students should spot that the two livers are not the same colour and the one in photo D

## Cells, tissues, organs and systems

appears to have spots in it. The spots are the same colour as the fat tissue in the heart in photo B: this is evidence that the liver in photo D has fatty liver disease.

**L5** 5 muscle

**L4** 6 a storage organ

**L5** b at least two of: From photo F, a central disc can be seen surrounded by an outer disc with slightly different colouration. These are essentially two tissues. There are also smaller areas of different colours and these are other tissues (e.g. phloem tissue that carries sugars down into the root to be stored).

**L5** 7 a root hair tissue, xylem tissue

b Root hair tissue takes in water; xylem tissue transports water in the plant.

**L5** 8 stem or leaf

**L6** 9 nutrition

## 2: 7Ac Microscopes (Student Book)

**L4** 1 There are two types of lenses: eyepiece lens and objective lens.

**L4-5** 2 a and b Rules might include: never run when carrying a microscope; handle the glass slide very carefully **L4**; do not point the mirror at the Sun; do not use the coarse focusing wheel when the objective lens is close to the slide **L5**.

**L5** 3 focusing wheels

**L6** 4 the object that you look at under a microscope

**L5** 5  $\times 150$

**L5** 6 so that the light from the microscope can get through it

**L5** 7 to keep the specimen flat/hold the specimen in place/stop the specimen drying out

**L5** 8 any two plant and animal tissues (e.g. fat tissue, muscle tissue, root hair tissue, xylem tissue)

**L5** 9 Student plans should include step-by-step instructions on slide preparation and microscope use. Plans should include safety advice. Additional credit should be given for writing a simple aim for the plan (e.g. to see what rhubarb stem tissue looked like) and possibly an introduction about what a microscope does.

**L6** 10 The light source is not on or is not adjusted properly, the objective lens may not be straight over the hole in the stage, there may be a cap over one or both lenses or the specimen is too thick.

## Activity Pack

### 7Ac-1 Tissues

**L5** 1 tissues correctly labelled

**L5** 2 that different areas are different colours

**L5** 3 tissues, tissue, root, hair, water, xylem

### 7Ac-2 Microscopes and slides

**L3** 1 to make things appear larger

**L4-5** 2 diagram correctly labelled:

course focusing wheel – adjusts the clearness of the image in large amounts

fine focusing wheel – adjusts the clearness of the image in small amounts

eyepiece lens – part you look through

objective lens – lens closest to the specimen

mirror – directs light through the specimen

coverslip – stops the specimen drying out

stage – supports the slide

slide – supports the specimen

### 7Ac-4 Microscope card sort

**L4** The instructions should follow the order of those on page 16 of the Student Book.

### 7Ac-5 Tissues and organs crossword

**L4-5**



### 7Ac-6 Using microscopes

**L4** 1 1 Place the smallest objective lens over the hole in the stage; 2 Turn the coarse focusing wheel until the objective lens and the stage are as close as possible; 3 Place the slide on the stage; 4 Look into the eyepiece lens; 5 Adjust the light source; 6 Turn the coarse focusing wheel until what you see is clear.

**L4** 2 The instructions should follow the order of those on page 17 of the Student Book.

**L5** 3 to hold the specimen in place; to stop the specimen drying out

### 7Ac-7 Organs and tissues

**L5** 1 fat tissue (which protects) and muscle tissue (which moves) found in the heart; root hair tissue (which takes in water) and xylem tissue (carries water in the plant) found in the root; xylem tissue (which carries water in the plant) found in the stem

**L4 2** The definition should include reference to an organ being something that has a very important job in an organism and to an organ being made out of different types of tissues.

**7Ac-8 Microscope problems**

**L5 1 a** The mirror is pointing in the wrong direction.

**b** Viewing through a microscope using direct sunlight will damage eyesight.

**c** Liquids should be added with a dropper or pipette.

**d** The specimen is too thick so not enough light will get through it.

**L5-6 2**  $\times 50$ ;  $\times 200$ ;  $\times 15$

**L5 3** makes parts of a specimen stand out

**7Ac-9 Microscope magnification**

**L4 1 a** Microscopes have two lenses, the *eyepiece* lens and the *objective* lenses.

**L5 b** A coverslip is used to *hold a specimen in place and to stop a specimen drying out*.

**L5 c** To start using a microscope, you should turn the focusing wheel so that the objective lens and the stage are as *close* as possible.

**L5 d** You should not aim the mirror of a microscope at the Sun *because it will damage your eyes*.

**L5 e** A stain is used to *make parts of the specimen stand out*.

**L5 f** The magnification of a microscope is worked out by *multiplying* the magnifying power of the two lenses together.

**L5 2 a** an air bubble.

**L5 b** Lower the coverslip down onto the specimen slowly and carefully.

**L6 c** 0.05 mm (width of hair on drawing = 5 mm; magnification =  $5 \times 20 = 100$ , so actual width =  $5 \text{ mm} \div 100 = 0.05 \text{ mm}$ )

**L6 3**

Total magnification required	Magnification of eyepiece lens	Magnification of objective lens
$\times 30$	$\times 2$	$\times 15$
$\times 100$	$\times 5$	$\times 20$
$\times 300$	$\times 7.5$	$\times 40$
$\times 400$	$\times 10$	$\times 40$

**Teacher and Technician Planning Pack**

**Homework 5: Organs and their tissues**

**L5** Indicative answers are in the table. For a full discussion of tissues and their subtypes, see Background information.

Organ	Tissues	Job of tissue
heart	fat	protection
	muscle	movement
	nerve	communication/control

brain	nerve	communication/control
	connective	supports and connects tissues
skin	muscle	movement
	fat	protection
	epithelial	sweating, protection, sensing
	connective	joining tissues
plant stem	xylem	carrying water
	phloem	carrying dissolved substances/sugars
	cambium	growth
	epidermis	protection

**7Ad Cells**

**Student Book**

**1: 7Ad Cells (Student Book)**

**L5 1** the basic building block from which all organisms are made

**L5 2** Granville's microscope had a better magnification. You could mention to more able students that Hooke was observing dead cells that had not been preserved. The quality of the glass in Granville's microscope is also likely to have been better.

**L5 3** cells

**L6 4 a** nuclei

**b** control the cell

**c** cytoplasm, cell surface membrane, mitochondria

**d** cytoplasm is where the cell's activities occur; the cell surface membrane controls what goes in and out of the cell; mitochondria release energy for the cell by respiration

**L6 5 a** widest part is approximately 2.8 cm; actual size is  $28 \text{ mm}/600 = 0.047 \text{ mm}$

**b** length is approximately 6.2 cm; actual size is  $62 \text{ mm}/275 = 0.23 \text{ mm}$

**L6 6**

Part of cell	Animal cell	Plant cell
cell surface membrane	✓	✓
cell wall		✓
chloroplast		✓
cytoplasm	✓	✓
mitochondria	✓	✓
nucleus	✓	✓
vacuole	*	✓

\*Note that animal cells can have vacuoles but they are small and not permanent.

**L6 7 a** chloroplasts (or chlorophyll)  
**b** Chloroplasts are clearly visible in photo E but mitochondria are not.

**L6 8** The shape of the root hair cell should be similar to that shown in photo F on page 19. There should not be any chloroplasts shown. The following should be labelled: nucleus, cytoplasm, vacuole, cell surface membrane, cell wall.

### Activity Pack

#### 7Ad-1 Cells

**L4 1 a** The microscope on the far right.  
**L5 b** It has the highest magnification.  
**L6 2** Label lines as for diagrams C and E on page 19 of the Student Book.  
**L6 3** See Student Book answer to Question 5 (above) although there are no mitochondria on this sheet.

#### 7Ad-7 Discovering cells

**L5 1** 1590; 1932; 1830; 14th century, 18th century  
**L6 2 a** cell surface membrane – controls what goes into and out of a cell; chloroplast – makes food in plant cells; nucleus – controls the cell; mitochondrion – where respiration happens  
**L6 b** nucleus; chloroplast; mitochondrion; cell surface membrane  
**L6 c** Smaller things have been discovered as the magnifying power of microscopes has increased.

#### 7Ad-8 Plant and animal cells

**L6 1 a** Labels as for diagram E on page 19 of the Student Book.  
**L6 b** chloroplast – makes food; nucleus – controls the cell; cell wall – helps support the cell; cytoplasm – where the cell's activities happen; vacuole – stores substances; cell surface membrane – controls what goes in and out  
**L6 2 a** nucleus, cell surface membrane, cytoplasm. Additional credit should be given for 'mitochondria'.  
**L6 b** change shape  
**L6 3 a** to carry liquids  
**L6 b** It is hollow, like a straw.

#### 7Ad-9 Plant or animal?

**L5 1 a** x500  
**L5 b** i flagellum  
 ii light detector  
 iii chloroplast  
**L6 c** mitochondrion  
**L6 d** It has features of both plant (e.g. chloroplast/vacuole) and animal cells (no large permanent vacuole/no cell wall/it can move).

**L6 2 a** animal cell – it has no chloroplasts and no cell wall

**L6 b** cell wall – some plant cells (e.g. in roots) don't have chloroplasts, whereas some animal cells have large storage areas

**L7 3 a** thicker cell wall because cell walls help to support cells  
**b** more mitochondria because muscle cells need a lot of energy to move  
**c** lots of chloroplasts since the cells are in a good place to trap light energy from the Sun for photosynthesis  
**d** no chloroplasts because no light gets to the roots

#### 7Ad-10 Cells and organelles

**L6 1 a** W – an animal cell; X – a plant cell; Y – an animal cell; Z – a plant cell  
**L6 b** W – no cell wall, no chloroplasts; X – has a cell wall; Y – no cell wall, no chloroplasts, no vacuole; Z – has a cell wall, has a vacuole  
**L7 c** W – has a large storage space; X – no chloroplasts, extended/no vacuole (depending on how you look at it), strands running through it, large holes in the cell wall, no nucleus; Y – branched; Z – has a hair-like bit sticking out of it, has no chloroplasts  
**L7 d** W – storing substances. This is in fact a human fat cell; X – transporting things, since the holes allow the flow of substances from one cell into another. This is in fact a phloem sieve cell, which transports dissolved sugars around a plant; Y – movement or high amounts of substance production because the cells are packed with mitochondria; Z – absorbing liquids because it has a large surface area  
**L6 2** chloroplasts, mitochondria, nucleus  
**L7 3** Lysosomes can be seen with a laser microscope and an electron microscope. At 0.1  $\mu\text{m}$  (100 nm) in diameter they are too small to be resolved by a light microscope. Melanosomes and peroxisomes can be seen with all three types of microscope.

### 7Ae Organ systems

#### Student Book

##### 1: 7Ae Organ systems (Student Book)

**L4 1** nerves, muscle, fat  
**L4 2 a** They only saw blood vessels in dead bodies by which time the blood had drained out of the tubes and they contained air.  
**L5 b** any suitable answer, from surgical procedures to internal scanning of the body  
**L5-6 3** a group of organs working together  
**L5-6 4** trachea/windpipe, lungs, diaphragm

**L5-6 5**

Organ system	Organs it contains
breathing	trachea/windpipe, lungs, diaphragm
circulatory	heart, blood vessels
digestive	gullet/oesophagus/food pipe, stomach, small intestine, large intestine, rectum
locomotor	muscles, bones
nervous	brain, spinal cord, (nerves)
urinary	bladder, kidneys

Consider awarding extra credit if the table is ordered in a logical manner (e.g. alphabetical order).

**L5-6 6** C nutrition; D excretion; E sensitivity

**L5 7** a root, stem, leaf b xylem

**L5-7 8** See the planning strand of the Working Scientifically Investigation assessment grid in the ASP.

**2: 7Ae Transplants (Student Book)**

**L6 1** a Cell copied with nucleus, cytoplasm and cell surface membrane labelled.

b sample Y

**L6-7 2** Diagram should look similar to one of figures B-E and one of figures F-G from pages 20-21.

**Activity Pack**

**7Ae-1 Organ systems**

**L5 1** a Completed diagram, showing smooth muscle cells making smooth muscle tissue and nerve cells making nerve tissue, with both tissues going into the stomach

**L5** b digestive system.

**L5 2** a group of organs working together

**L5 3**

Organ system	Function	Organs
circulatory system	to carry food and oxygen to all parts of the body	heart, blood vessels
digestive system	to break down food and take it into the blood	gullet/oesophagus/food pipe, stomach, small intestine, large intestine, rectum
locomotor system	movement	bones, muscles
nervous system	communication, sensing things	spinal cord, brain, nerves
urinary system	to get rid of waste	bladder, kidneys

**7Ae-5 Organ systems wordsearch**

**L6**

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

**7Ae-7 Organs in systems**

**L5 1** nutrition – digestive system – stomach, small intestine

respiration – breathing system – lungs, windpipe

excretion – urinary system – kidneys, bladder

sensitivity – nervous system – spinal cord, brain

**L5 2** roots, stem, leaves

**L5 3** a breathing system

**L5** b circulatory system

**L5** c The breathing system only takes oxygen into the body. It is the circulatory system that carries this oxygen to all parts of the body.

**L5 4** a tissue

**L5** b organ

**L5** c organ system

**7Ae-8 Human organ systems**

**L5 1** a digestive system; any two of food pipe/oesophagus/gullet, stomach, small intestine, large intestine, rectum, anus, liver

b nervous system; any two of brain, spinal cord, nerves

c urinary system; bladder, kidneys

d locomotor system; bones, muscles

e breathing system; any two of diaphragm, lungs, windpipe/trachea

**L4 2** a *Students' own numbering* – ensure that no numbers are repeated

**L5** b 'I wanted to find out whether tissue X was the same as tissue Y.'

**L5** c 'I had taken a small piece of tissue and put it on some stain on a slide. Then I lowered a coverslip onto the specimen in order to keep it flat and stop it drying out.' and 'I looked at them under the microscope'

**L6** d 'The cells in tissue X were long and thin.' and 'Its cells were rounded.'

**L6** e 'Tissue X was not the same as tissue Y.'

**L5** f an organ

### 7Ae-9 Kidney failure

**L5** 1 digestive system (breaks down food and takes it inside the body); circulatory system (carries food and oxygen to all parts of the body); urinary system (removes wastes like urea).

**L5-6** 2 a and b gullet (carries food to stomach); stomach (starts to break down food); small intestine (breaks down and absorbs food); blood vessels (carry blood that carries oxygen and food); heart (pumps the blood); liver (breaks down extra protein and stores substances like glycogen); kidneys (remove waste from the blood, like urea, and produce urine); bladder (stores urine)

**L5** 3 a It helps to remove substances that the body does not need.

**L5** b It has many functions (e.g. storing glycogen) and so is not just an organ that gets rid of things that the body does not need.

**L6** 4 Heart attack. Urea at too high a concentration damages organs like the heart.

**L6** 5 The body does not have a use for the red substance.

**L7** 6 It filters the blood and removes waste from the blood.

**L7** 7 It is the additional protein in the diet that causes urea production. Urea production will be lower if there is less protein in the diet.

**L7** 8

Treatment	Advantages	Disadvantages
dialysis	does not rely on donors; does not require person to take medicines	time consuming; expensive
transplant	cheaper than dialysis; allows a more normal life	may not work; have to take medicines for rest of life; relies on suitable donors

**L7** 9 A transplant allows them to lead a more normal life (e.g. going on holiday).