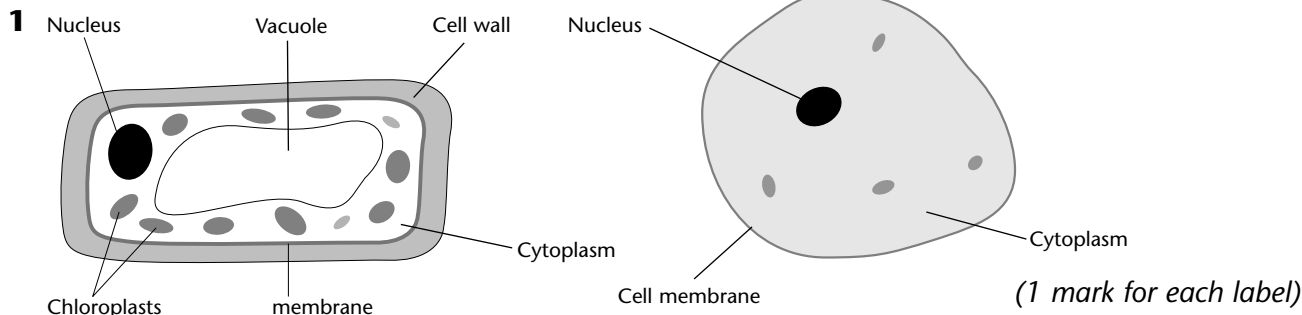
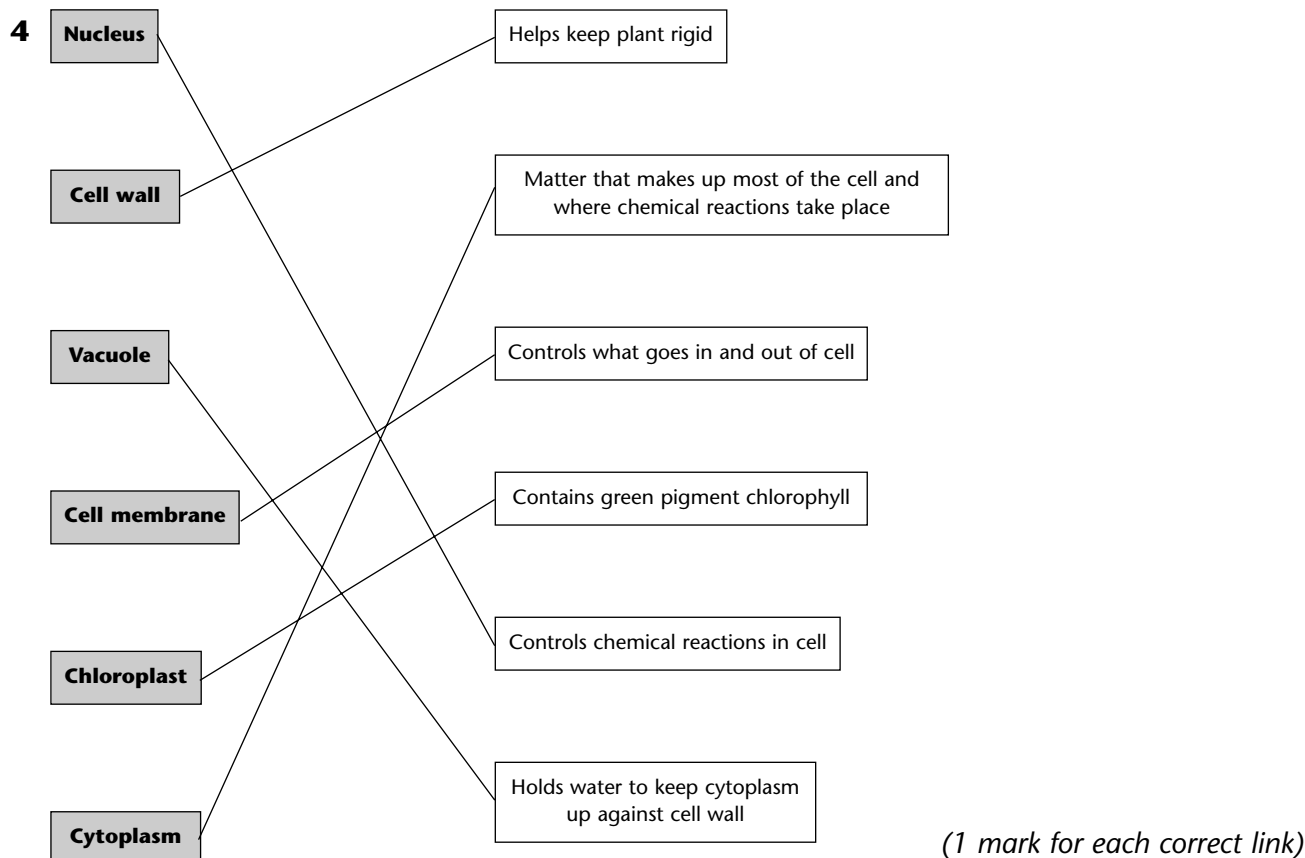


## Pages 4-5 Cell structure



**2 a** Nucleus    **b** Cytoplasm    **c** Cell membrane    (1 mark each any order)

**3 a** Cell wall    **b** Vacuole    **c** Chloroplasts    (1 mark each any order)



**5** Chloroplasts contain the green pigment chlorophyll which plants use for photosynthesis

**6** The cell membrane controls what goes in and out of the cell – this is important for all types of cell

(1) = 1 mark

### Pages 6–7 Specialist cells

- 1 a** Chloroplasts
- b** Root hair cells are underground (1) and so cannot carry out photosynthesis so do not need chloroplasts (1)
- c** They are long and narrow
- 2 a** Both sperm and egg cells are adapted by having only half the genetic material of other cells
- b** Egg cells have a supply of food to provide energy for the embryo
- 3 a** **Cell A** Nerve cell (1) **Cell B** Red blood cell (1)
- b** **i** Cell A is very long and thin
- ii** This enables it to carry messages to all parts of the body
- c** **i** Cell B is biconcave
- ii** This gives it the biggest possible surface area for trapping oxygen

### Pages 8–9 Tissues and organs

- 1 a** D C B A (1 mark for each diagram in correct order)
- b** Tissues
- 2 a** Movement (1) Respiration (1) Sensitivity (1) Growth (1) Reproduction (1) Excretion (1) Nutrition (1)
- b** Growth or Respiration (as the chemical reaction takes place in every cell in the body)
- c** **Excretion** Any 1 of kidneys, lungs or skin  
**Nutrition** Any organ of the digestive system
- d** **i** Leaf
- ii** Nutrition
- 3 a** Respiration
- b** Muscle tissue (1) Nerve tissue (1)
- c** A system

### Pages 10–11 The digestive system

**1 a** A stomach (1) B large intestine (1) C small intestine (1)

**i** C small intestine

**ii** A stomach

**iii** B large intestine

**2 a** Enzymes

**b** Saliva

**3 a** Growth (1) Movement (1) Warmth (1)

**b** Growth

### Pages 12–13 The reproductive system

**1 a** Label drawn to uterus

**b** Label drawn to placenta

**c** Because the harmful substances will pass to the baby (1) It will mean the baby gets less nutrients/oxygen, which can lead to low birth weight (1)

**2 a** Every 28 days

**b** Ovulation

**c** The uterus wall becomes thicker so that a fertilised egg can be implanted

**d** The uterus wall breaks down (1) and is passed out of the body with the unfertilised egg (1)

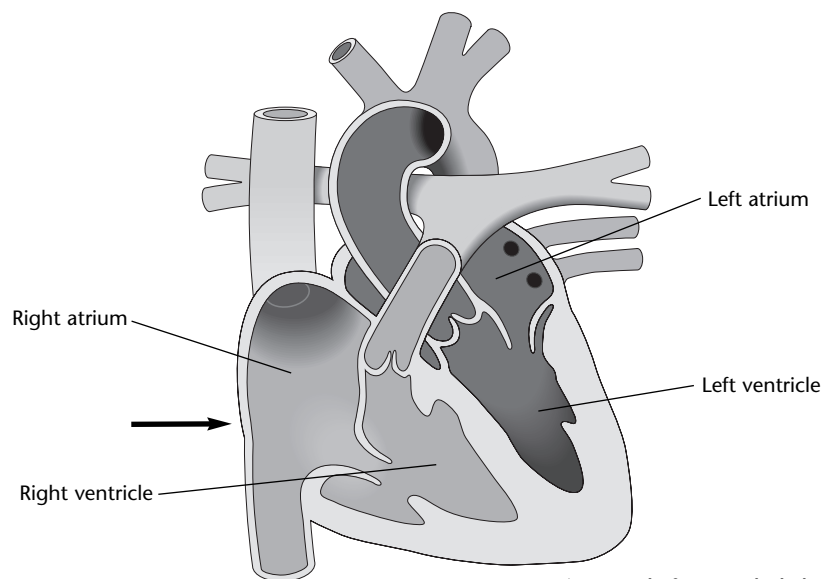
**e** The menstrual cycle

**f** It has only half the genetic material *or* Has a supply of food

**g** 40 weeks

### Pages 14–15 The circulation system

1 a & b



(1 mark for each label and 1 mark for arrow)

c Left-hand side

d Blood is sent by the heart to the lungs to collect a supply of oxygen (1)

The blood with oxygen – called oxygenated blood – then comes back into the left-hand side (1) of the heart and is then sent off around the body (1)

(Maximum of 2 marks for any of above)

2 a Artery

b Thick muscular walls (1) to stand the pressure of the blood being pumped away from the heart (1)

3 Cell → tissue → organ → system → organism

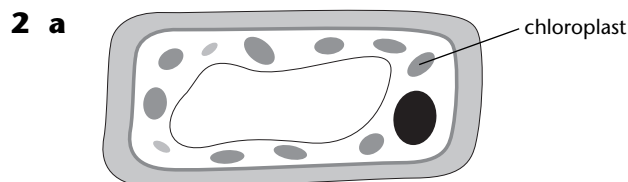
(1 mark for each one in correct place)

4 a Breathing is the mechanism by which we take in oxygen and get rid of carbon dioxide (1) through the lungs (1) Respiration is the chemical reaction that takes place in every cell in the body (1) to release energy from food (1)

b To speed up the flow of blood to your muscles (1) to deliver the oxygen and glucose you need (1) and take away the carbon dioxide (1)

## Pages 16–17 Photosynthesis

- 1** Because only plants can make their own food (1) by trapping the energy in sunlight/by photosynthesis (1)



- b** Root (hair) cells

- c** Because they are underground and cannot be used in photosynthesis

- 3 a** Carbon dioxide (1) Water (1)

- b** Oxygen

- c** Carbon dioxide + water  $\xrightarrow[\text{chlorophyll}]{\text{light}}$  glucose + oxygen

(1 mark for reactants, 1 for products, 1 for conditions;  
each given only if written in correct format)

- 4** As the shrub grew and became more dense, it blocked the light from the area underneath (1)  
This meant that the grass could not carry out photosynthesis and so could not grow (1)

- 5** In the light, plants are carrying out both photosynthesis and respiration (1) They take in more carbon dioxide for photosynthesis then they give out by respiration, and photosynthesis gives out oxygen (1) In the dark there is no photosynthesis only respiration so carbon dioxide is given out, but no carbon dioxide is taken in or oxygen given out (1)

## Pages 18–19 Photosynthesis and respiration as chemical reactions

- 1 a** Glucose + oxygen  $\rightarrow$  carbon dioxide + water + ENERGY is released

(1 mark for reactants, 1 for products, 1 for energy; each given only if written in correct format)

- b** Oxygen

- c** Green plants take in carbon dioxide and give out oxygen (1), as our lungs take in the gas we need and give out a gas that is a waste product. This provides a continuing supply of oxygen for the people and animals in the city (1) and takes away the carbon dioxide produced by combustion of fossil fuels as well as by people (1)

**2 a & b** It may get bigger (1)

as there would be more light (1) and more space (1) or more water (1)

It may get smaller (1)

as bluebells may grow less well (1) in very strong light (1)

*(1 mark each for effect and maximum of 2 for the explanation provided that they match)*

**3** Plants carry out both photosynthesis and respiration (1) Animals only respire (1)

In photosynthesis plants take in the carbon dioxide from respiration and give out oxygen to be used for respiration (1) Animals have no way of removing the carbon dioxide and replacing the oxygen, so the goldfish will die unless there is a constant source of oxygen to replace what it is using (1)