



Year 8 Science

Body Systems

**HOMEWORK
BOOK**



Find-a-word

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

ARTERY
 BIOLOGY
 BLADDER
 BLOOD
 BONES
 BRAIN
 CELL
 CIRCULATORY
 DIGESTIVE
 DISEASE
 EAR
 ENDOCRINE
 ENERGY
 EPIGLOTTIS
 EXCRETORY
 EYE
 FOOD
 FOOD PYRAMID
 GLANDS

HAIR
 HEART
 HUMAN
 IMMUNE
 INTESTINES
 KIDNEY
 LIVER
 LUNGS
 MOUTH
 MUSCLE
 MUSCULAR
 NERVOUS
 NEURON
 NOSE
 NUTRITION
 ORGAN
 ORGANISM
 ORGAN SYSTEM

OXYGEN
 PANCREAS
 RED BLOOD CELL
 REPRODUCTIVE
 RESPIRATORY
 SENSES
 SKELETAL
 SKIN
 SLEEP
 SPINAL CORD
 STOMACH
 TEETH
 THROAT
 THYROID
 TISSUE
 TONGUE
 VEIN
 VESSELS
 WHITE BLOOD CELL

Parent's/guardians' signature: _____

Worksheet 2

Interpreting and Presenting Data

The nutrition panels from six breakfast cereal packets are reproduced below.

Nutrition Information			
SERVINGS PER PACKAGE: 16.5 SERVING SIZE: 30g			
	QUANTITY PER SERVING	QUANTITY PER SERVING WITH 1/2 CUP SKIM MILK	QUANTITY PER 100g
ENERGY	460kJ	640kJ	1520kJ
PROTEIN	3.3g	7.8g	10.9g
FAT, TOTAL	0.7g	0.8g	2.2g
- saturated	0.3g	0.4g	1.1g
CARBOHYDRATES	20.4g	26.7g	68.0g
- sugars	0.3g	6.6g	1.1g
DIETARY FIBRE	3.6g	3.6g	12.0g
- insoluble	3.1g	3.1g	10.5g
- soluble	0.5g	0.5g	1.5g
SODIUM	120mg	175mg	405mg
THIAMIN (VIT B1)	0.28mg (25% RDI*)	0.33mg	0.92mg
RIBOFLAVIN (VIT B2)	0.43mg (25% RDI*)	0.68mg	1.42mg
NIACIN	2.5mg (25% RDI*)	2.6mg	8.3mg
FOLATE**	100µg (50% RDI*)	100µg	333µg

All specified values are averages
* Recommended Dietary Intake (Aust/NZ)
** Women of child bearing age need double the normal requirements

Weeties

Nutrition Information			
SERVINGS PER PACKAGE: 24 SERVING SIZE: 33.3g 2 Biscuits			
	QUANTITY PER SERVING	QUANTITY PER SERVING WITH 1/2 CUP SKIM MILK	QUANTITY PER 100g
ENERGY	500kJ	680kJ	1510kJ
PROTEIN	3.6g	8.1g	10.9g
FAT, TOTAL	0.7g	0.8g	2.2g
- saturated	0.4g	0.5g	1.1g
CARBOHYDRATES	22.5g	28.8g	67.6g
- sugars	0.4g	6.6g	1.1g
DIETARY FIBRE	4.0g	4.0g	11.9g
- insoluble	3.5g	3.5g	10.4g
- soluble	0.5g	0.5g	1.5g
SODIUM	135mg	190mg	400mg

All specified values are averages

Vita Brits

NUTRITION INFORMATION Serving size: 30g (2 Biscuits) Servings Per Package: 24				
	Per Serve	Per 100g	30g with 1/2 cup (125mL) So Good®	Whole Milk
Energy (kJ)	417	1390	750	765
(Cal)	100	332	179	183
Protein (g)	3.6	12.0	7.9	7.7
Fat (g)	0.4	1.3	4.7	5.2
Carbohydrate - Total (g)	20	67	26	26
- Sugars (g)	0.8	2.8	3.2	6.7
Dietary Fibre (g)	3.3	11.0	3.3	3.3
Cholesterol (mg)	0.0	0.0	0.0	16.3
Sodium (mg)	84	280	143	135
Potassium (mg)	102	340	312	292
Thiamin (mg)	0.55 (50%)	1.83	0.65	0.55
Riboflavin (mg)	0.42 (25%)	1.4	0.62	0.72
Niacin (mg)	2.5 (25%)	8.3	2.5	2.5
Folate (µg)	100 (50%)	333	104	106
Iron (mg)	3.0 (25%)	10.0	3.6	3.0

Weetbix

Servings per package - 10 Average serving size - 30 g (1 metric cup)			
	per 30 g SERVE	per 30 g with 1/2 cup skim milk	per 100 g
ENERGY	479 KJ (115 Cal)	673 KJ (161 Cal)	1596 KJ (382 Cal)
PROTEIN	6.6 g	11.2 g	21.9 g
FAT			
-TOTAL	0.2 g	0.3 g	0.6 g
-SATURATED	< 0.1 g	0.2 g	0.1 g
CARBOHYDRATE			
-TOTAL	20.8 g	27.3 g	69.4 g
-SUGARS	9.6 g	16.1 g	32.0 g
DIETARY FIBRE	0.8 g	0.8 g	2.7 g
SODIUM	180 mg	237 mg	600 mg
POTASSIUM	44 mg	250 mg	147 mg
THIAMIN (VIT B-1)	0.55 mg (50%)	0.6 mg (55%)	1.83 mg (167%)
(%RDI)			
RIBOFLAVIN (VIT B2)	0.4 mg (25%)	0.7 mg (40%)	1.4 mg (83%)
(%RDI)			
NIACIN	2.5 mg (25%)	2.6 mg (26%)	8.3 mg (83%)
(%RDI)			
VITAMIN B6	0.4 mg (25%)	0.4 mg (25%)	1.3 mg (83%)
(%RDI)			
VITAMIN C	10 mg (25%)	11.3 mg (28%)	33.3 mg (83%)
(%RDI)			
FOLATE	50 mg (25%)	56 mg (28%)	167 mg (83%)
(%RDI)			
CALCIUM	80 mg (10%)	239 mg (30%)	267 mg (33%)
(%RDI)			
IRON	3 mg (25%)	3.1 mg (26%)	10 mg (83%)
(%RDI)			

Nutri-Grain®

Servings per package - 9 Average serving size - 30 g (1 metric cup)			
	per 30 g serve	per 30 g with 1/2 cup skim milk	per 100 g
ENERGY	475 kJ (114 Cal)	669 kJ (160 Cal)	1582 kJ (378 Cal)
PROTEIN	2.3 g	0.7 g	7.8 g
FAT			
-TOTAL	< 0.1 g	0.2 g	0.2 g
-SATURATED	< 0.1 g	0.1 g	< 0.1 g
CARBOHYDRATE			
-TOTAL	25.1 g	31.6 g	83.6 g
-SUGARS	2.4 g	8.8 g	7.9 g
DIETARY FIBRE	0.8 g	0.8 g	2.6 g
SODIUM	246 mg	303 mg	820 mg
POTASSIUM	28 mg	234 mg	93 mg
THIAMIN (VIT B-1)	0.28 mg (25%)	0.33 mg (30%)	0.92 mg (83%)
(%RDI)			
RIBOFLAVIN (VIT B2)	0.4 mg (25%)	0.7 mg (40%)	1.4 mg (83%)
(%RDI)			
NIACIN	2.5 mg (25%)	2.6 mg (26%)	8.3 mg (83%)
(%RDI)			
VITAMIN C	10 mg (25%)	11.3 mg (28%)	33.3 mg (83%)
(%RDI)			
FOLATE	100 mg (50%)	106 mg (53%)	333 mg (167%)
(%RDI)			
IRON	3 mg (25%)	3.1 mg (26%)	10 mg (83%)
(%RDI)			
ZINC	1.8 mg (15%)	2.3 mg (19%)	6 mg (50%)
(%RDI)			

Corn Flakes

Servings per package - 8 Average serving size - 30 g (1 metric cup)			
	per 30 g serve	per 30 g with 1/2 cup skim milk	per 100 g
ENERGY	481 kJ (115 Cal)	638 kJ (200 Cal)	1603 kJ (384 Cal)
PROTEIN	1.6 g	5.9 g	5.4 g
FAT			
-TOTAL	< 0.1 g	5.0 g	0.3 g
-SATURATED	< 0.1 g	3.3 g	0.2 g
CARBOHYDRATE			
-TOTAL	26.3 g	32.4 g	87.7 g
-SUGARS	11.0 g	17.0 g	36.5 g
DIETARY FIBRE	0.4 g	0.4 g	1.2 g
SODIUM	169 mg	222 mg	564 mg
POTASSIUM	73 mg	269 mg	243 mg
THIAMIN (VIT B-1)	0.28 mg (25%)	0.34 mg (31%)	0.92 mg (83%)
(%RDI)			
RIBOFLAVIN (VIT B2)	0.4 mg (25%)	0.7 mg (40%)	1.4 mg (83%)
(%RDI)			
NIACIN	2.5 mg (25%)	2.8 mg (28%)	8.3 mg (83%)
(%RDI)			
VITAMIN C	10 mg (25%)	11.3 mg (28%)	33.3 mg (83%)
(%RDI)			
FOLATE	50 mg (25%)	64 mg (32%)	167 mg (83%)
(%RDI)			
CALCIUM	80 mg (10%)	227 mg (28%)	267 mg (33%)
(%RDI)			
IRON	3 mg (25%)	3.1 mg (26%)	10 mg (83%)
(%RDI)			
ZINC	1.8 mg (15%)	2.3 mg (19%)	6 mg (50%)
(%RDI)			

Coco Pops®

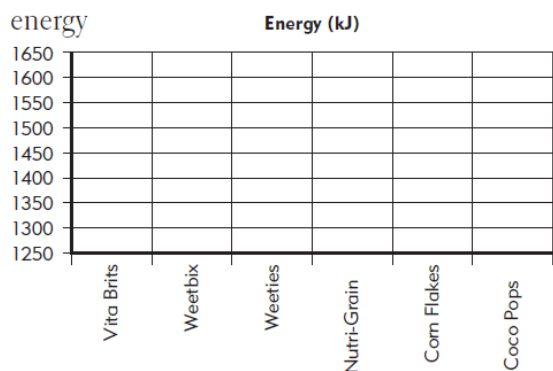
1 Complete the table below.

100 grams contains

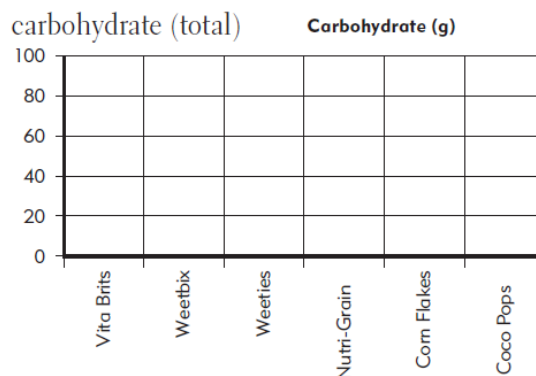
Cereal	Energy (kJ)	Protein (g)	Fat (g)	Carbohydrate (g)	Sugar (g)	Fibre (g)	Sodium (mg)	Potassium (mg)
Vita Brits								
Weetbix								
Weeties								
Nutri-Grain ®								
Corn Flakes								
Coco Pops ®								

2 Draw suitable graphs to compare the amount of the following nutrients per 100 g of each cereal:

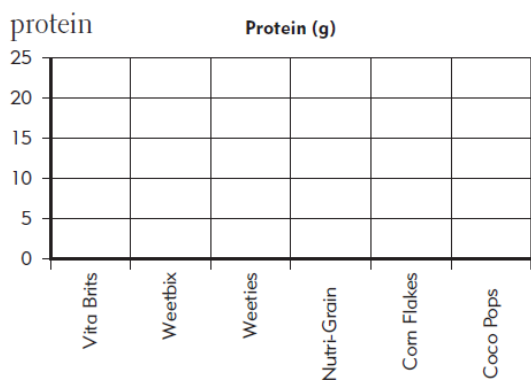
a energy



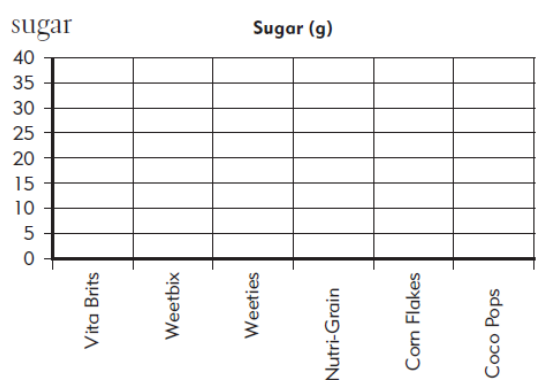
d carbohydrate (total)



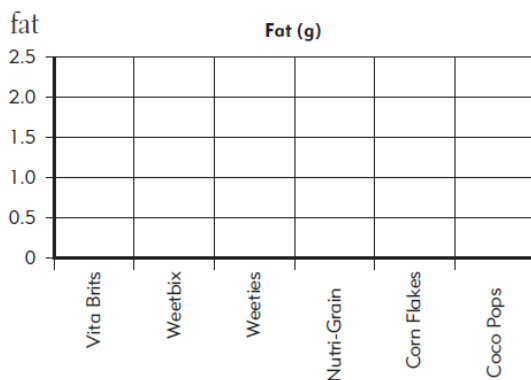
b protein



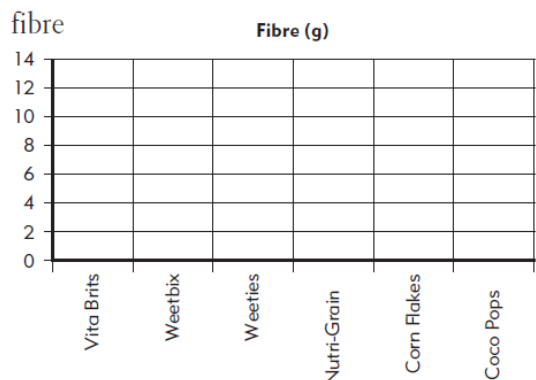
e sugar

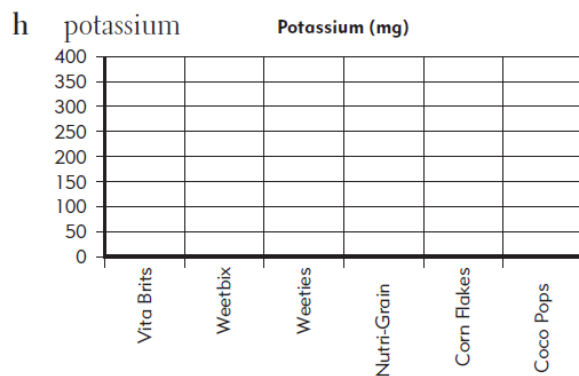
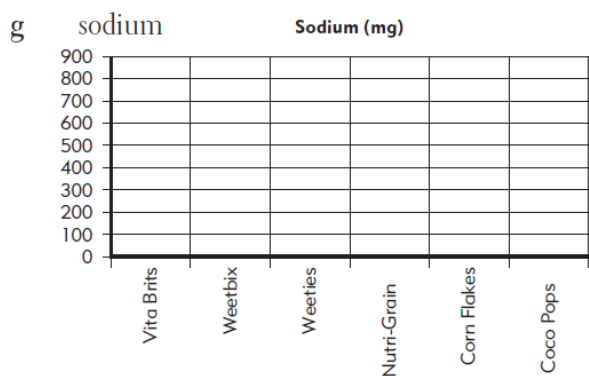


c fat



f fibre





3 Write a comment to compare levels of the following in each cereal.

a energy

b protein

c fat

d carbohydrate (total)

e sugar

f fibre

g sodium

h potassium

4 Identify the cereal/s you think is/are:

a healthiest. Why?

b least healthy. Why?

5 Design the perfect breakfast cereal for a growing, active teenager by completing the following table.

Cereal name: _____

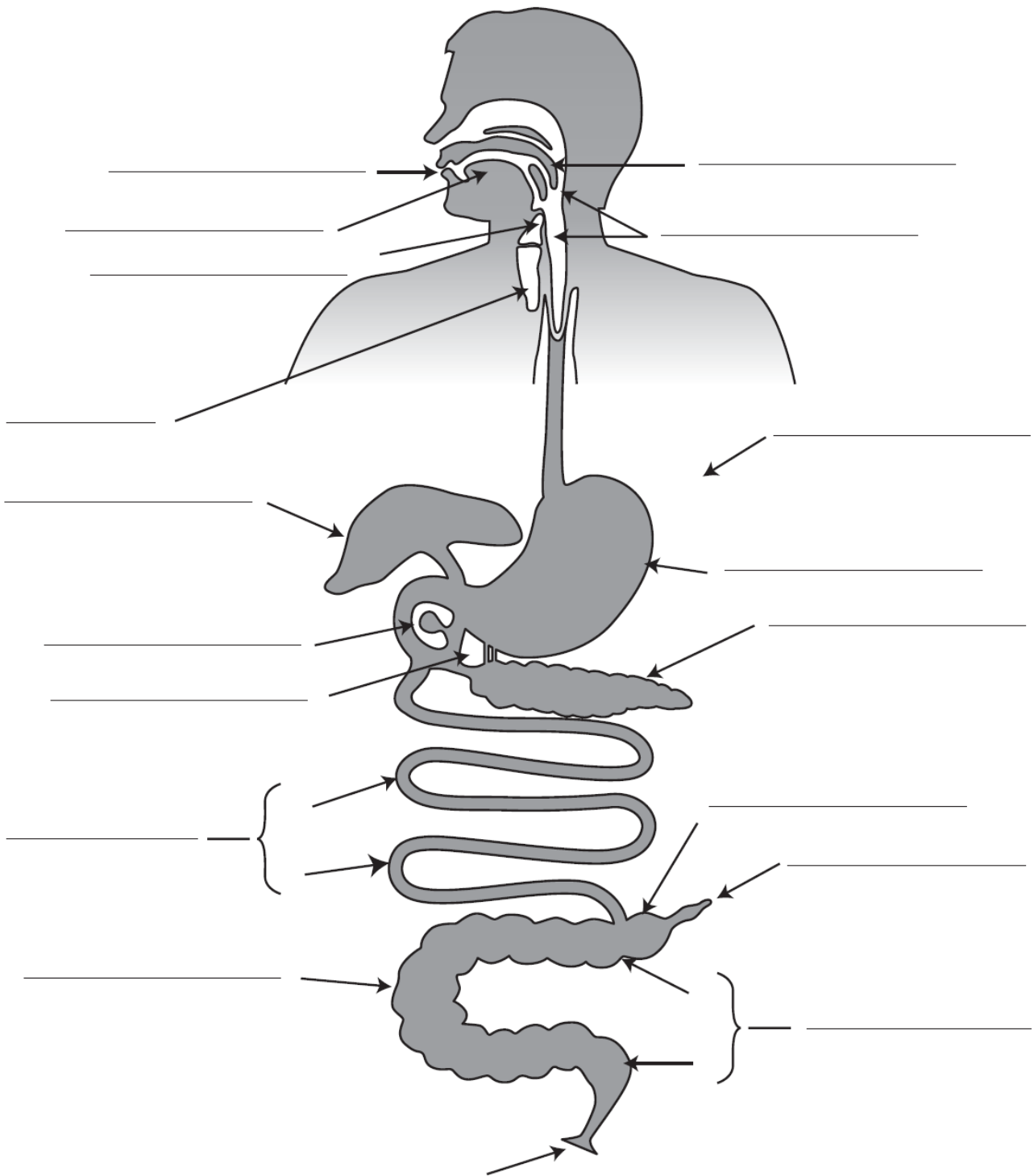
	Per 30 g serve	Per 100 g serve
Energy		
Protein		
Fat		
Carbohydrate – Total – Sugars		
Sugar		
Dietary fibre		
Sodium		
Potassium		

6 Describe your breakfast cereal, what it contains and why.

Parent's/guardians' signature: _____

Labelling the body

1 Label the parts of the digestive system shown with arrows.



2 Outline the function of the following organs.

a pancreas

b stomach

c teeth

d large intestine

e liver

f tongue

g salivary glands

h gall bladder

i small intestine

j oesophagus

3 Identify the part of the digestive system:

a where 'stools' are formed

b that produces insulin to control sugar in the blood

c that is lined with 'villi'

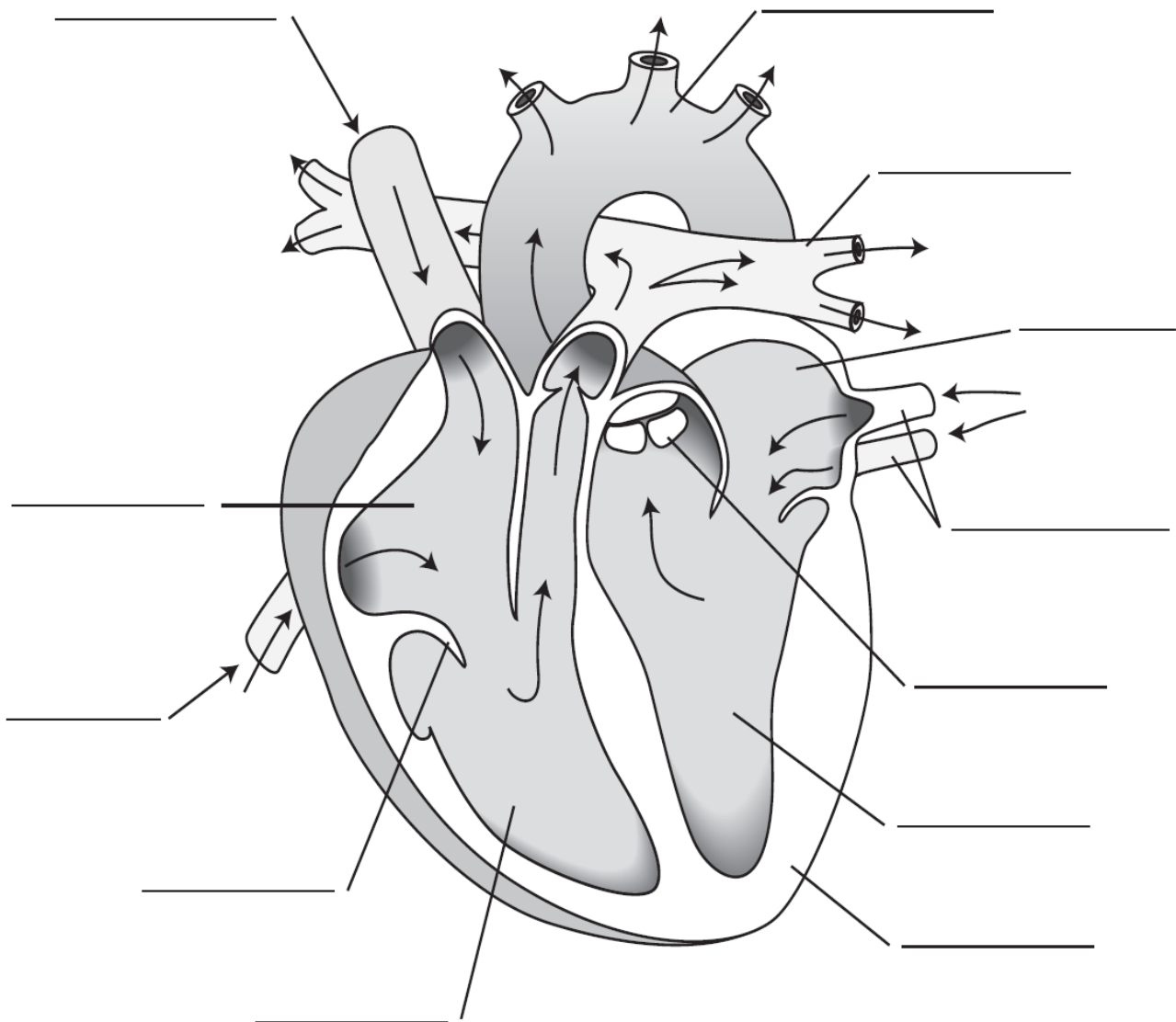
d where faeces are stored before being expelled

e that makes food into a small lump called a bolus

Parent's/guardians' signature: _____

The heart

- 1 Label the parts of the heart.
- 2 Colour appropriate parts of the heart in red to show the path of oxygenated blood, and blue to show deoxygenated blood.

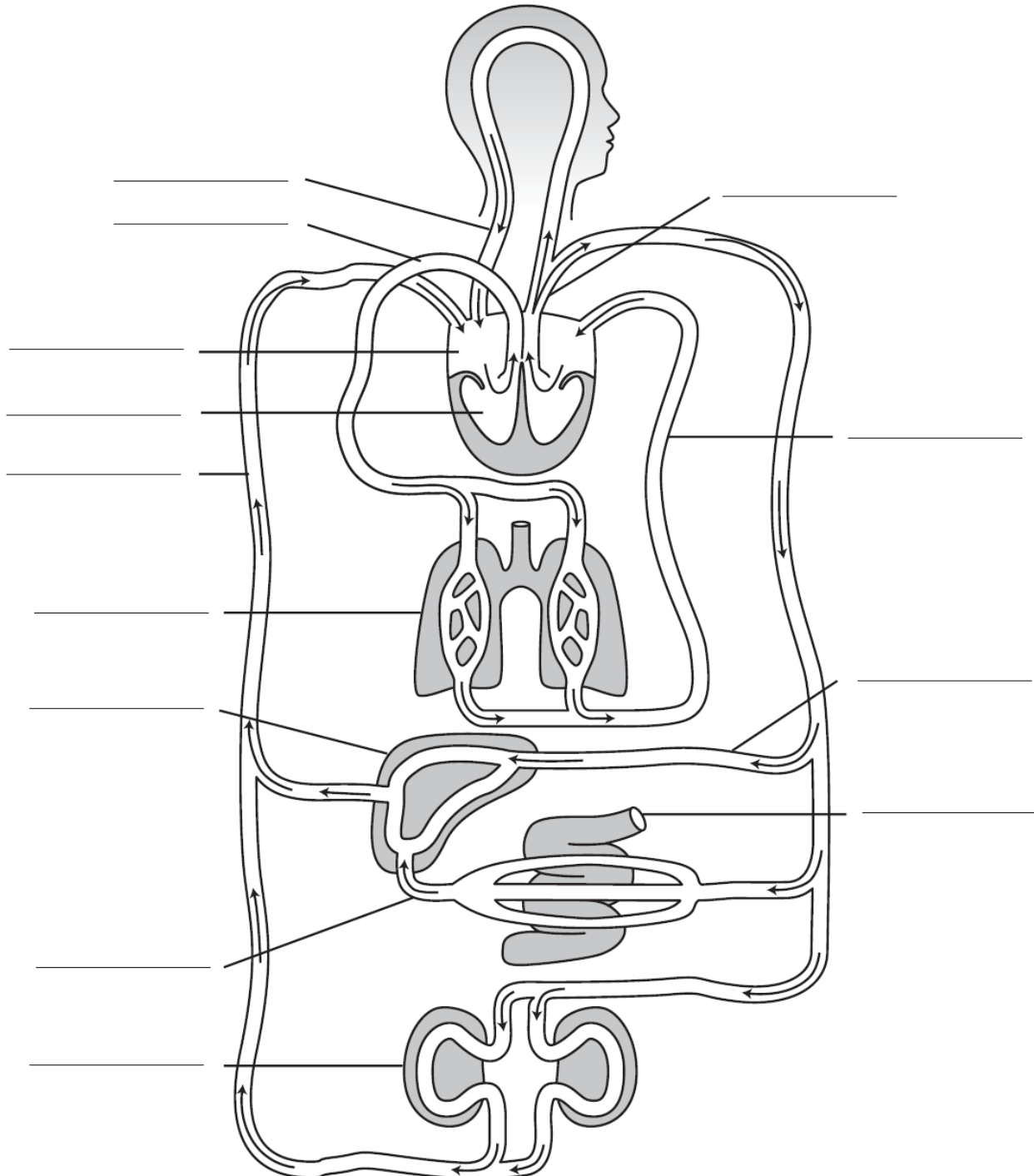


- 3 Explain why the left side of the heart has thicker muscle than the right.

Parent's/guardians' signature: _____

The circulatory system

- 1 Label each part of the circulatory system shown with an arrow.



- 2 Colour appropriate parts of circulatory system in red to show oxygenated blood and blue to show deoxygenated blood.

Parent's/guardians' signature: _____

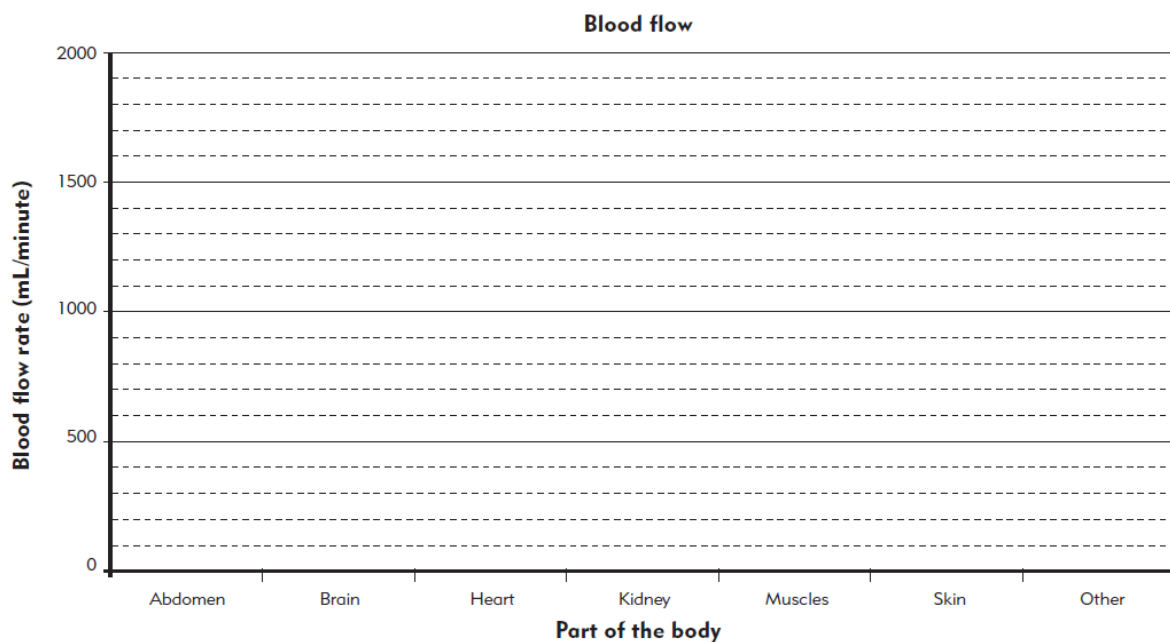
Blood flow rates

The rates of blood flow (in millilitres per minute) required by various parts of the body are listed below for an adult at rest and during strenuous exercise.

Blood flow (mL/minute)

Body part	At rest	During strenuous exercise
Abdomen	1400	600
Brain	750	750
Heart	250	750
Kidney	1100	600
Muscles	1200	12 500
Skin	500	1900
Other	600	400

- 1 Show this information as column graphs on the grid below. Use an arrow and number to indicate a value beyond the available grid.



- 2 Which part of the body has the same blood flow whether the body is at rest or during strenuous exercise?
- _____
- 3 Which part of the body has the greatest change in blood flow when the body begins strenuous exercise?
- _____
- 4 What is the total blood-flow rate through (as distinct from 'required by') the heart when the body is:
- a at rest? _____
- b strenuously exercising? _____

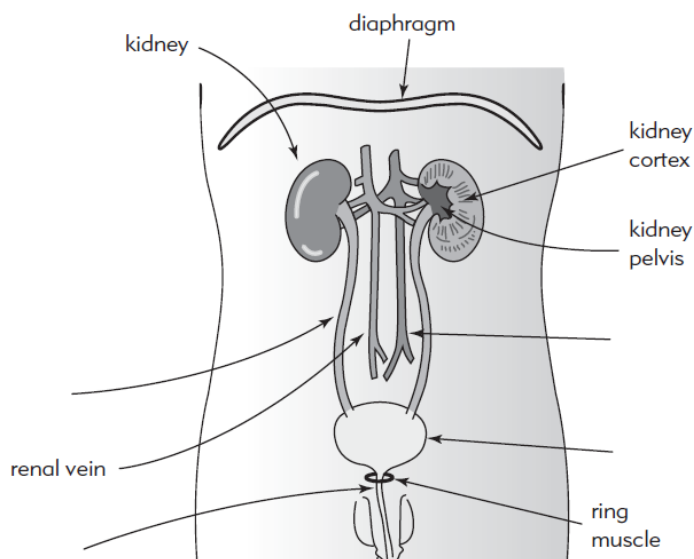
Parent's/guardians' signature: _____

The urinary system

In the urinary system your kidneys act like a filter. Blood flows through them and is 'cleaned', so that useful substances are kept in the blood, and the wastes are removed into the urine. The kidneys also make sure that the amount and composition of your body fluids are kept at levels that are safe. Wastes removed by the kidneys include urea formed by the breakdown of proteins, and excess salts and water. The adrenal glands are on top of the kidneys. These glands make hormones, including adrenaline. The urinary tract is made up of the following organs that work together to produce, transport, store and excrete urine:

- kidneys
- ureters
- bladder
- urethra.

1 Fill in the missing labels on the diagram of the urinary system below.



2 Identify what is filtered:

- a through the kidneys _____
- b out by the kidneys _____

3 Identify the four main organs of the urinary tract.

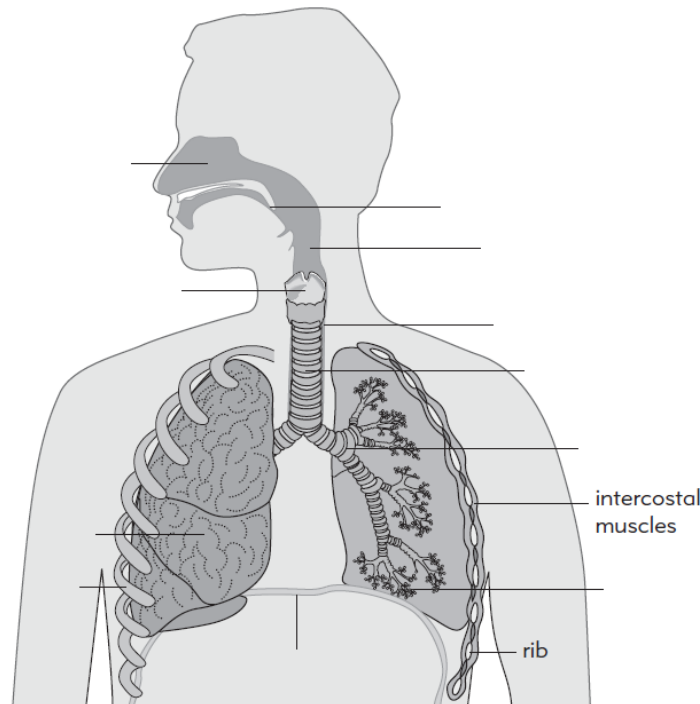
4 Describe the function of the urinary system.

Parent's/guardians' signature: _____

Asthma

A normal airway is like a tube with a thin lining. It produces mucus and is surrounded by bands of muscle. The airways are held open by the muscles, allowing the movement of air into and out of the air sacs (alveoli), where oxygen and carbon dioxide exchange places in the blood.

1 Label the parts of the respiratory system shown below.



Over 2.2 million Australians suffer from asthma, many of them children. Asthma is a disorder affecting the airways of the lungs.

The airways in asthma sufferers may be sensitive to certain triggers, such as dust, smoke, irritants, chemicals or exercise. In the case of an asthma attack the airways respond by becoming narrower. This is caused by the contraction of the airway muscles with swelling and inflammation of the airway lining. This then leads to the production of excess mucus, which also further restricts airflow. The result is a reduced amount of air going in and out of the lungs. Symptoms of an asthma attack may include wheezing, chest tightness, breathlessness and sometimes coughing.

When a person has an attack they are treated by inhaling reliever drugs that relax the muscles of the airways, allowing the airways to open and produce normal breathing.

Asthma requires an ongoing management plan, including taking a preventer medication. This reduces swelling and inflammation of the airways, which helps reduce excess mucus production. A preventer medication may take up to three weeks to take full effect and will reduce the likelihood of an attack. If a person does not take such medication, their airways will remain inflamed and swollen between attacks. This makes them more vulnerable to further attack.

2 Identify three triggers for an asthma attack.

3 Describe what happens in the lungs during an asthma attack.

4 Outline the symptoms that may be experienced during an asthma attack.

5 A management plan for asthma requires two types of medication. State what these are.

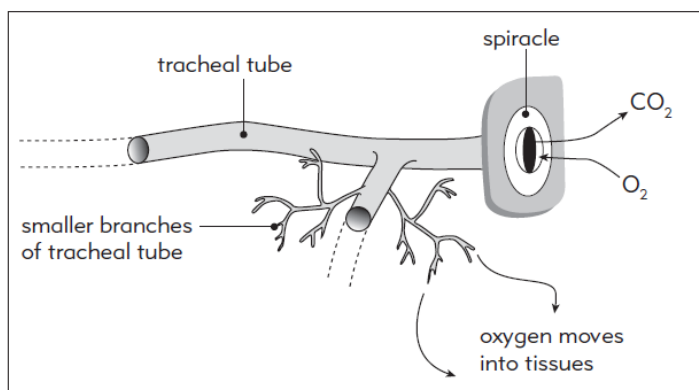
6 Outline what each type of medication does.

7 Contrast normal airways with those of an asthma sufferer between attacks who has not been taking a preventer medicine.

Parent's/guardians' signature: _____

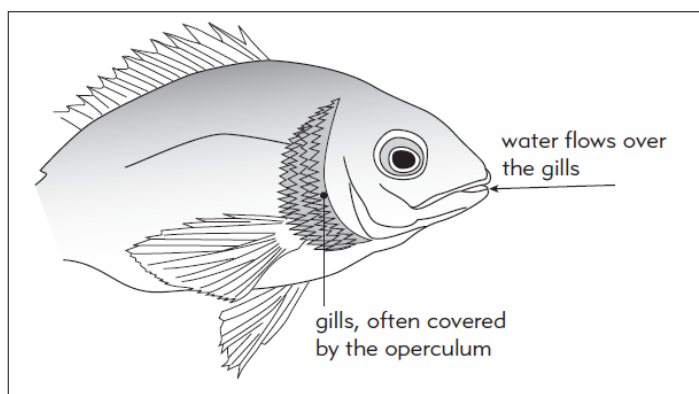
Other respiratory systems

The respiratory systems of two organisms are illustrated and briefly described below.



Insects

Air enters the insect's body through small openings in the body surface called spiracles. These open into tubes called tracheae. The tubes have moist linings, and branch throughout the body. Gases move from the tubes directly into the tissues of the insect.



Fish

A fish draws water through its mouth. The water flows between the gills and out through an opening called the operculum. Gills consist of many filaments, kept apart by the water. The outer gill surface contacts the water. The inner gill surface contacts blood vessels.

- 1 Explain why a respiratory system is necessary for organisms such as insects and fish.

- 2 Predict why a moist lining is necessary in the tracheae of an insect.

- 3 a Identify similarities in the respiratory systems of insects and fish.

- b Outline differences in the respiratory systems of insects and fish.

- c Outline similarities in the respiratory systems of insects, fish and humans.

Parent's/guardians' signature: _____