

WORKSHEET 1.1 *Food labels*

- 1 Which food group occurs in the largest amount in each of the four foods shown on the labels on sheet 2?
- 2 In one serving of spaghetti in tomato sauce (half a can), how much more carbohydrate is there than protein?
- 3 How much energy is provided by one can of spaghetti in tomato sauce?
- 4 How much higher is the energy content of one Chicken Kiev than one serving of spaghetti in tomato sauce?
- 5 Which food group seems to be the source of the higher energy content of Chicken Kiev compared with spaghetti in tomato sauce?
- 6 Around 70–80 g of fat a day is considered healthy. If someone ate a Chicken Kiev for lunch, about what proportion of their recommended daily fat amount would this be?
- 7 How much more carbohydrate is there than protein in Smash with Smoked Bacon?
- 8 If a serving of Smash with Smoked Bacon provides 33% of the recommended daily amount of vitamin C, how many grams of vitamin C do we need each day?
- 9 What percentage of Smash with Smoked Bacon is fibre when it has been made?
- 10 Snack-a-Jacks are high-carbohydrate foods. What percentage of the total mass is the carbohydrate content of this food?
- 11 Snack-a-Jacks are advertised as being a low-fat snack, having less than 3% fat. Check the data on the food label to see if this is true.
- 12 If someone had a meal of Chicken Kiev and Smash with Smoked Bacon, how many kilojoules of energy would this provide? How much carbohydrate, protein and fat would they eat?
- 13 **a)** If a person requires about 8500 kJ of energy per day, what fraction of their daily need is the Chicken Kiev and Smash meal? How many Snack-a-Jacks could they eat to provide the same energy input?
b) Would this many Snack-a-Jacks provide more or less protein than the Chicken Kiev and Smash meal?

Spaghetti *in* TOMATO SAUCE

NUTRITION INFORMATION		
TYPICAL VALUES (based as per instructions)		
	per 1/2 CAN	per 100g
ENERGY	558 k J 132 k cal	273 k J 64 k cal
PROTEIN	3.9g	1.9g
CARBOHYDRATE	27.2g	13.3g
of which sugars	10.0g	4.9g
of which starch	17.2g	8.4g
FAT	0.8g	0.4g
of which saturates	0.2g	0.1g
FIBRE	1.0g	0.5g
SODIUM	0.8g	0.4g
per 1/2 CAN 132 CALORIES 0.8g FAT		
GUIDELINE DAILY AMOUNTS		
EACH DAY	WOMEN	MEN
CALORIES	2000	2500
FAT	70g	95g

OFFICIAL GOVERNMENT FIGURES FOR AVERAGE ADULTS

Approximately 2 servings per can.

LESS THAN 3% FAT

QUAKER *Snack-a-Jacks* CARAMEL FLAVOUR
RICE & CORN SNACKS

UK NUTRITION INFORMATION

TYPICAL VALUES	Per 100g	Per 13g cake
Energy	1640kJ/392kcal	213kJ/51kcal
Protein	5.0 g	0.7 g
Carbohydrate	86.0 g	11.2 g
(of which sugars)	29.0g	3.8 g
Fat	2.5 g	0.3 g
(of which saturates)	0.9 g	Trace
Fibre	1.0 g	0.1 g
Sodium	0.2 g	Trace

INGREDIENTS: Rice (30%), Maize (with germ removed) (30%), sugar, Flavouring (contains Colour: Caramel), Salt, Colour: Annatto. Contains Milk Protein and Lactose

INGREDIENTS :

Chicken (49%), Butter (14%), Water, Breadcrumbs, Vegetable Oil, Wheatflour, Lemon Juice Concentrate (0.9%), Wheat Starch, Potato Starch, Salt, Coriander, Flavouring, Soya Protein Concentrate, Parsley, Skimmed Milk Powder, Whole Egg Powder, Raising Agents: E450, E500.

Although every care has been taken to remove bones, some bones may still remain.

This product may contain traces of nuts or nut derivatives.

NUTRITION INFORMATION

TYPICAL VALUES	PER KIEV COOKED	PER 100g COOKED
ENERGY	1096kJ/264kcal	1109kJ/268kcal
PROTEIN	17.2g	12.9g
CARBOHYDRATE	16.5g	12.4g
of which sugars	0.6g	0.6g
FAT	27.7g	20.8g
of which saturates	12.6g	9.5g
FIBRE	1.3g	1.0g
SODIUM	0.5g	0.4g

PER KIEV COOKED 384 CALORIES 27.7g FAT

INSTANT MASHED POTATO WITH BACON

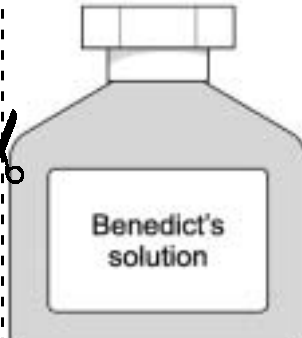
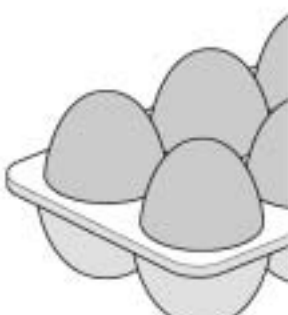
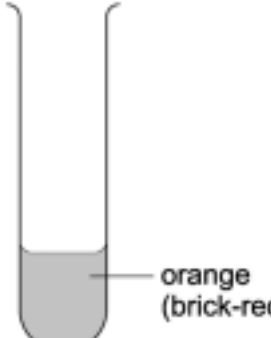

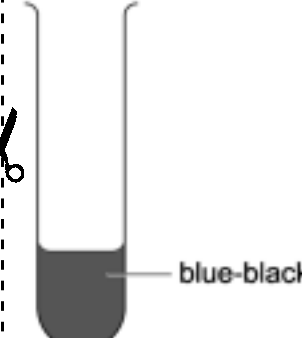


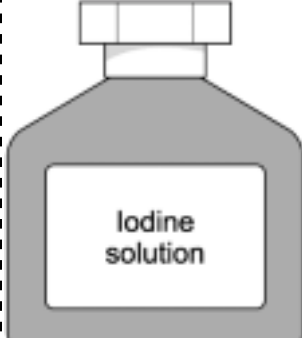


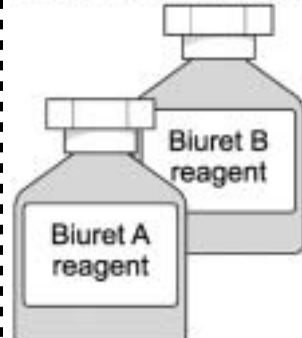
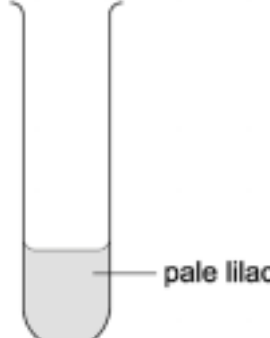



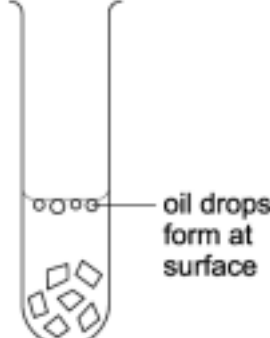
3 Large Servings

NUTRITION INFORMATION

Typical values made with water.	Per 100g	Per serving
Energy	142kJ/34kcal	578kJ/137kcal
Protein	1.7g	2.9g
Carbohydrate	11.4g	23.8g
(of which sugars)	(0.3g)	(0.5g)
Fat	2.1g	2.7g
(of which saturates)	(0.3g)	(0.5g)
Fibre	0.4g	1.1g
Sodium	0.1g	0.4g
Vitamin C	12mg	26mg
Recommended daily allowance	10%	11%

Suitable for a Gluten Free Diet.

WORKSHEET 1.2 Food tests

<p>2 TESTING REAGENT</p>  <p>Benedict's solution</p>	<p>1 FOOD: PROTEIN</p> 	<p>4 POSITIVE RESULT</p>  <p>orange (brick-red)</p>	<p>3 NO HEAT</p> 
<p>4 POSITIVE RESULT</p>  <p>blue-black</p>	<p>1 FOOD: SIMPLE SUGAR</p>  <p>GLUCOSE</p> <p>HONEY</p>	<p>1 FOOD: FAT</p>  <p>chopped in water</p>	<p>2 TESTING REAGENT</p>  <p>Iodine solution</p>
<p>3 NO HEAT</p> 	<p>3 NO HEAT</p> 	<p>2 TESTING REAGENT</p>  <p>Biuret A reagent</p> <p>Biuret B reagent</p>	<p>4 POSITIVE RESULT</p>  <p>pale lilac</p>
<p>1 FOOD: STARCH</p> 	<p>2 TESTING REAGENT</p>  <p>Ethanol</p>	<p>3 HEAT REQUIRED</p> 	<p>4 POSITIVE RESULT</p>  <p>oil drops form at surface</p>

WORKSHEET 1.3 *Meal planning*

The table below gives information on the energy value and composition of 100 g of some items of food. Use the information to plan three meals (breakfast, lunch and dinner) to give a healthy, balanced diet. Aim for a total energy value of 12 500 kilojoules. Try to include fibre, vitamins and minerals. You will need to decide how many grams of each food you need for a portion – recipe books will help you.

Type of food		Energy value	Protein	Fat	Carbohydrate
		(kilojoules)	(g)	(g)	(g)
Meat	bacon, grilled	1852	24.5	38.8	0
	beef, roast	932	30.9	11.0	0
	chicken, roast	621	24.8	5.4	0
	liver, fried	1020	24.9	13.7	5.6
	luncheon meat	1298	12.6	26.9	5.5
	pork chop, grilled	1380	28.5	24.2	0
	sausage, beef	1242	9.6	24.1	11.7
Dairy produce	butter	3006	0.5	81.0	0
	cheese	1708	25.4	34.5	0
	eggs, raw, one	612	12.3	10.9	0
	ice-cream	805	4.1	11.3	19.8
	milk, liquid whole	274	3.3	3.8	4.8
	yoghurt, fruit	410	4.8	1.0	18.2
Fish	cod, fried in batter	834	19.6	10.3	7.5
	kipper	770	19.8	11.7	0
	sardines, canned	906	23.7	13.6	0
Cereals	bread, white	1068	8.0	1.7	54.3
	bread, wholemeal	1025	9.6	3.1	46.7
	rice, steamed	1531	6.2	1.0	86.8
Vegetables	beans, canned	266	5.1	0.4	10.3
	Brussels sprouts, cooked	75	2.8	0	1.7
	cabbage, cooked	66	1.7	0	2.3
	carrots, cooked	98	0.7	0	5.4
	lettuce	36	1.0	0	1.2
	peas, cooked	208	5.0	0	7.7
	potatoes, boiled	339	1.4	0	19.7
	potato chips, fried	1028	3.8	9.0	37.3
tomatoes	52	0.8	0	2.4	

1.3 MEAL PLANNING

Fruit	apples	197	0.3	0	12.0
	bananas	326	1.1	0	19.2
	oranges, peeled	150	0.8	0	8.5
	plums	137	0.6	0	7.9
	strawberries	109	0.6	0	6.2
Miscellaneous	apple pie	1179	3.2	14.4	40.4
	buns, currant	1385	7.8	8.5	58.6
	coffee, white, 1 cup	84	0	0.5	0.5
	fruit cake, rich	1546	4.6	15.9	55.0
	rice pudding	594	3.6	7.6	15.7
	sugar, white	1654	0	0	100.0
	tea with milk, 1 cup	84	0	0.5	0.5

- Write out your menu for three meals.

- *Either* write a few paragraphs explaining why your menu is healthy and balanced,
or use bar charts or pie charts to show the food groups in each meal.

WORKSHEET 1.11 *Test on food and digestion*

1 a) What is digestion?

2 marks

b) How do enzymes help digestion?

1 mark

c) Which type of food is digested in the mouth?

1 mark

d) What physical digestion takes place in the mouth?

1 mark

2 Link each part of the gut (left) with the statements (right).

mouth	acid conditions
stomach	absorption of water occurs here
small intestine	food is chopped and digested
large intestine	waste food leaves the body
anus	absorption of food occurs here

5 marks

3 List the components of a healthy diet.

6 marks

4 What is the chemical test for:

a) starch? _____

b) protein? _____

4 marks

WORKSHEET 4.3 *Finding out about elements*

Most of the elements have been listed in the second table below, in batches of five. For one of the batches, find out the following information about the five elements. You can use a CD-ROM, library books or the internet:

Name of element	Symbol	Atomic number	State at room temp.	Metal, non-metal or semi-metal	One fascinating fact

Batch no.	Elements
1	hydrogen, carbon, nickel, calcium, beryllium
2	manganese, arsenic, iron, vanadium, potassium
3	lithium, zinc, nitrogen, sodium, copper
4	helium, boron, magnesium, titanium, cobalt
5	silver, strontium, oxygen, scandium, rubidium
6	aluminium, fluorine, cadmium, tin, gallium
7	molybdenum, lead, iodine, neon, silicon
8	barium, sulphur, bismuth, phosphorus, palladium
9	chlorine, chromium, rhodium, gallium, mercury
10	gold, caesium, argon, tungsten, indium
11	thallium, argon, germanium, palladium, platinum
12	iridium, selenium, niobium, bromine, osmium
13	antimony, zirconium, tantalum, xenon, rhenium

WORKSHEET 4.10 *Is it elementary?*

You will be given a small amount of an unknown green powder. Your task is to plan an investigation to see if it is an element or a compound.

Planning

The following questions may help you with your plan:

- 1 What is the difference between an element and a compound?
- 2 How did Antoine Lavoisier decide whether a substance was an element?
- 3 What could you do to the substance to find out if it is an element?

In the plan for your investigation, you should think about:

- If the green powder is a compound, what could you do to split it up?
- Which tests or reactions you could do on the products?
- What would be the steps in your plan? – draw a flow diagram.
- How will you make the investigation safe? – what are the different hazards (dangers)? What risk could each hazard present? What will you do to protect yourself from each of the hazards?

Discuss the questions in your group and be prepared to share your answers with the whole class.

Carrying out

Once your plan has been checked by the teacher, you can carry out your investigation. Remember to work scientifically:

- Carefully note down all observations.
- Think about the results – you may think of further experiments to do. In this case, ask your teacher before doing them.

Analysing

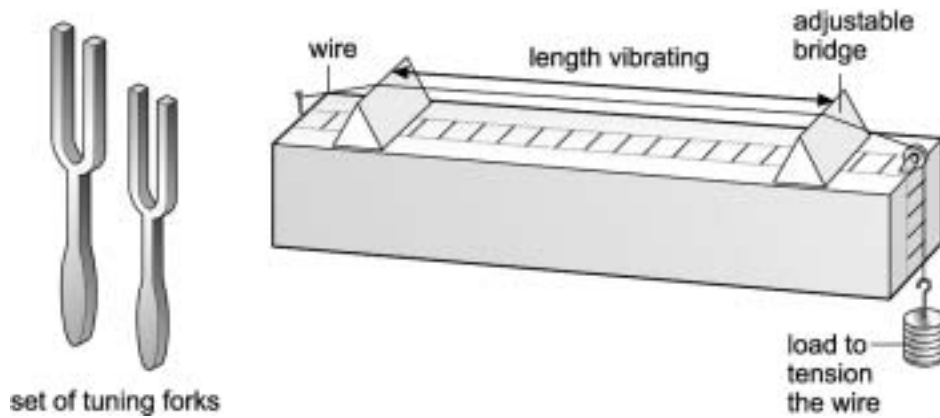
- Describe your results.
- Do the results show that the green powder is an element or a compound?

Evaluating

Examine your results:

- Is there still some doubt about your conclusion? If so, explain why.
- Are there any further experiments that you would like to do?

WORKSHEET 5.1 *Investigating the note from a vibrating wire*



Some pupils did an experiment using equipment similar to that shown. They were provided with a set of tuning forks of known frequencies. They used them to investigate how the frequency of a note changes with the length of the wire.

The results they obtained are shown in the table below.

Frequency of note produced (Hz)	Length of wire (cm)
192	100
256	74
288	66
341	56
384	49
512	37

- 1 What did they change (the independent variable)?
- 2 What did they measure?
- 3 Use the results that they obtained to plot a graph. Remember, the independent variable is plotted on the horizontal axis.
- 4 Write a sentence to describe the shape of the graph.
- 5 Write a sentence to explain how frequency and length are related.
- 6 How do you think the results would be different if they had used wires of different thickness? (Think about the strings on a guitar.)
- 7 What effect would increasing the tension in the wire have on the note produced?

WORKSHEET 5.5 *Noise survey*

Sometimes sound is a nuisance. We call this type of sound 'noise'. This activity allows you to measure the noise levels in different places.

You are provided with a sound level meter. You will need to decide what you are going to measure. You could:

- monitor the sound level near a road at different times of the day
- measure the noise levels in different areas of the school
- compare noise levels with windows or doors open and closed
- or perhaps find out who can shout the loudest!

Decide on the readings you are going to take, and how you will record and present your results.

After you have carried out your survey, write up your findings as a report. Your report should include the following:

- title
- what you decided to measure
- a description of where the measurements were taken
- what your reason is for taking these measurements
- what you hope to show
- what equipment you used
- any special precautions that you took
- a diagram to help with the explanation
- the results you obtained, displayed in a suitable way
- a conclusion indicating what your results show
- how confident you are of the conclusion
- how you could improve this survey.

