

EVERYDAY MATHS PROBLEMS

Maths for health

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It is important to read the information on medicine labels carefully so that you give or take the correct dose. Use the information on these labels to answer the questions on this page and on page 5.

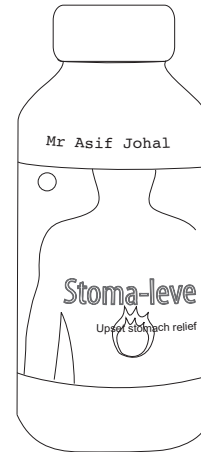
Active ingredient (in each 15ml tablespoon):

Bismuth subsalicylate 262mg

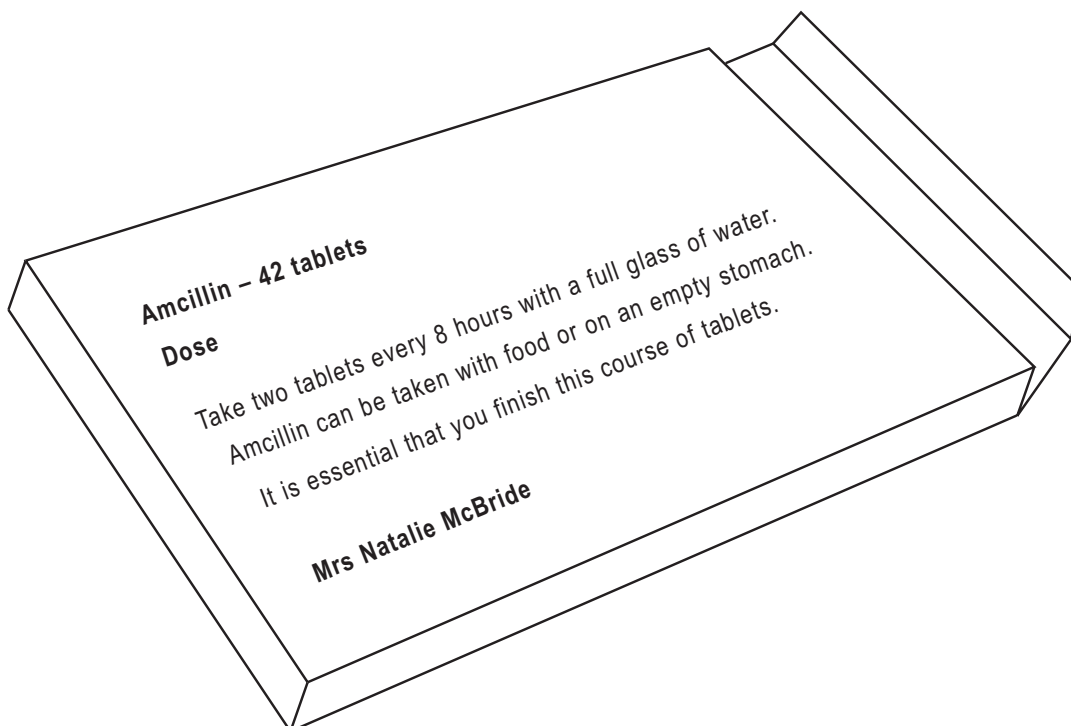
Purpose: Upset stomach and diarrhoea relief

Directions:

- Shake well before use.
- Adults and children 12 years and over:
1 dose (2tbsp or 30ml) every $\frac{1}{2}$ to 1 hour as needed
- Do not exceed 8 doses (16tbsp or 240ml) in 24 hours.
- Use until diarrhoea stops but not for longer than 2 days.

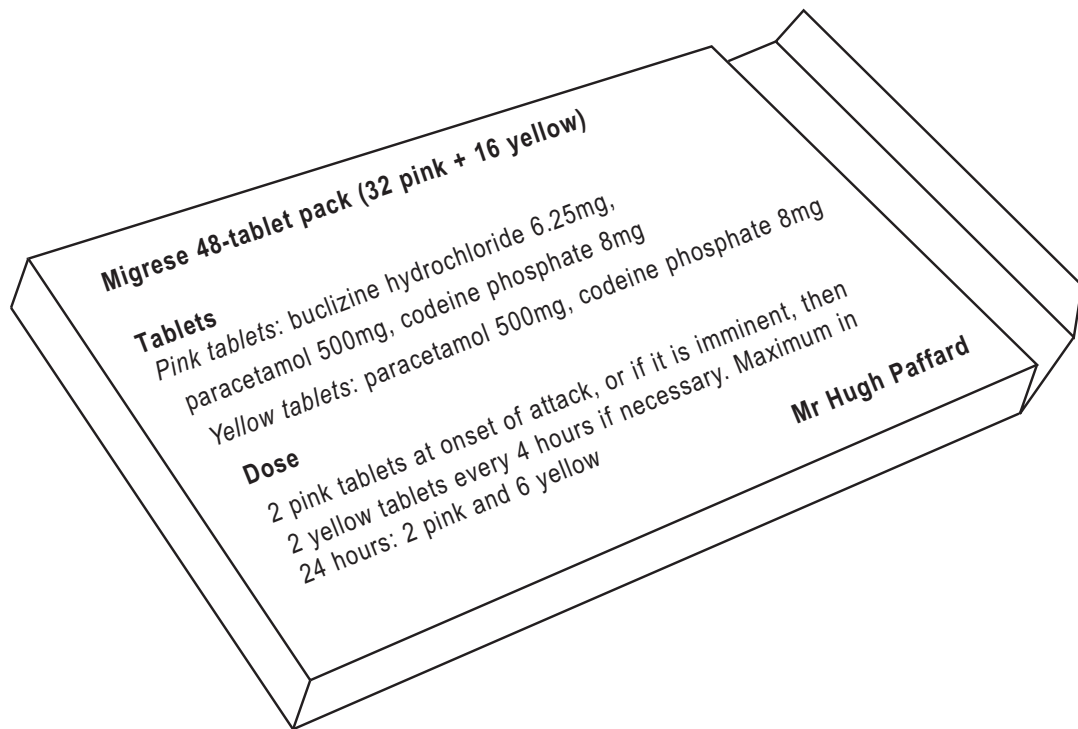


1. What should Asif do before he takes Stoma-leve? _____
2. What is the maximum dose he could take in one day? _____



3. How many tablets will Natalie take in a 24-hour period?

4. How many days will this course of tablets last?



5. If Hugh took two pink tablets at 12.25pm, when can he take the next dose and what is it?

6. What is the difference between the pink and yellow tablets?

Use the information on these medicine labels to answer the questions on this page and page 7.



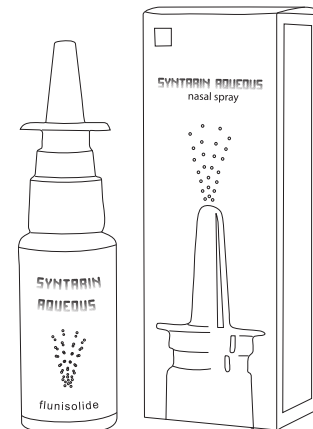
1. Brian wakes at 6am and goes to bed at 11pm. At what times would it be best to take his pills?

2. How many pills will Brian take in a week?

Aqueous nasal spray, flunisolide 25 micrograms/metered spray. 240-spray unit with pump and applicator

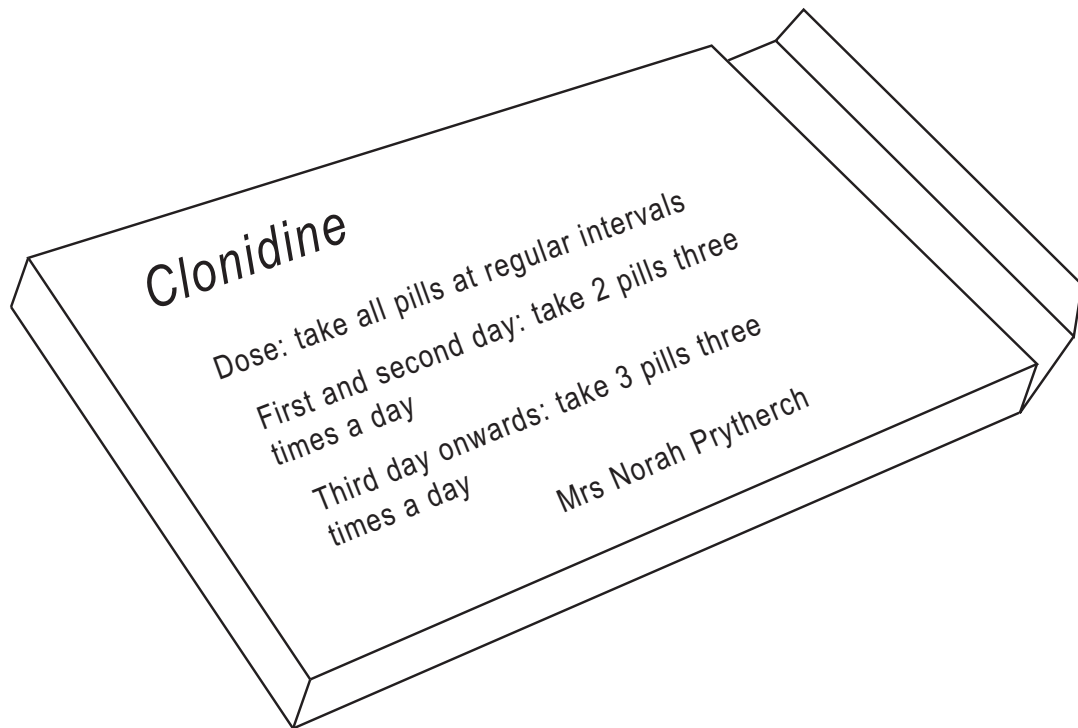
Dose

ADULT, apply 50 micrograms (2 sprays) into each nostril twice daily, increased if necessary to max. 3 times daily then reduced for maintenance; CHILD 5–14 years initially 25 micrograms (1 spray) into each nostril up to 3 times daily.



3. If an adult uses the spray twice a day, how long will the bottle last?

4. What is the ratio of an adult to child dose?



5. On the first day if Norah takes her first pills at 7am, what times should she take the next two doses before she goes to bed at 10pm?

6. How many pills will Norah take in the first week on this medication?

It is essential for your health to read and understand instructions on medicines. Use the information from the labels of two different paracetamol products for children to answer the questions on page 9.

Paramol Junior

- Suitable for children aged 6 years plus
- Relieves pain
- Reduces fever
- Original and sugar-free varieties
- Each pack contains a measuring spoon

Paramol Infant

- Suitable for infants aged 2 months plus
- Relieves pain
- Reduces fever
- Strawberry flavour
- Original and sugar-free varieties
- Each pack contains a double-ended measuring spoon

Paramol Junior 250mg paracetamol per 5ml

Suitable from six years onwards, Paramol Junior is a liquid paracetamol available in a bottle or in packs of 10 handy sachets containing exactly the right amount for a 5ml dose. Every pack contains a 5ml spoon.

Age

Dosage

Children under 6 years	Ask a pharmacist to recommend a suitable product.
Children 6–12 years	1–2 5ml spoonfuls (sachets) every 4 hours
Adults and children over 12 years	2–4 5ml spoonfuls (sachets) every 4 hours

- Leave at least 4 hours between doses.
- Do not use more than 4 doses each day.
- Do not give your child this medicine for more than 3 days without speaking to your doctor.

Paramol Infant 120mg paracetamol per 5ml

Age

Dosage

Infants under 2 months	Consult your doctor.
Infants 2–3 months (weighing 4 kg and not a premature baby)	A single 2.5ml spoonful may be given if necessary, after 4–6 hours. Read the leaflet before dosing in case medical advice should be sought.
Do not give more than 2 doses. If further doses required consult your doctor.	

Age

Dosage

Infant 3–12 months	1–2 small (2.5ml) spoonfuls (half a sachet) up to 4 times a day
Children 1–6 years	1–2 large (5ml) spoonfuls (sachets) up to 4 times a day

For children over 6 years: ask a pharmacist to recommend a suitable product.

- Leave at least 4 hours between doses.
- Do not use more than 4 doses each day.
- Do not give your child this medicine for more than 3 days without speaking to your doctor.

1. You have a 3-year-old with a fever. Which medicine should you give?

2. You have a 6-week-old with a fever. Which medicine should you give?

3. The last dose given to a 4-year-old was at 4pm. It is now 6pm. How long is it until the child can next have some medicine?

4. A 6-year-old has just been given 1 dose of 10ml. How much more medicine can you give in the next 24 hours?

5. What is the maximum amount in ml that a 2-month-old can have in one day?

6. In ml, how much more medicine can a 14-year-old have in a 24-hour period than a 10-year-old?

7. You want to spread the dose evenly during a 24-hour-period. What time gap between doses allows you to give the maximum daily amount of each medicine?

8. How much more paracetamol per 5ml is there in the Paramol Junior than in the Paramol Infant?

9. If an 8-year-old took the maximum dose of Paramol Junior in a 24-hour period how much paracetamol will he have taken?

10. If a 3-year-old took the maximum dose of Paramol Infant in a 24-hour period how much paracetamol will she have taken?

Use the information from these two different allergy relief products to answer the questions on page 11.

Allegon allergy tablets

Each tablet contains 4mg of the antihistamine chlorpheniramine maleate. The tablets also contain lactose, maize starch, magnesium stearate, and the colouring material yellow iron oxide (E1 72). This pack contains 30 tablets.

How to take your tablets

Swallow the tablet with a drink of water.

Adults: 4mg (one tablet) every 4–6 hours (maximum 24mg in one day).

Children aged 6–12: 2mg (half a tablet) every 4–6 hours (maximum 12mg in one day).

Not recommended for children under 6.

Storing your medicine

Keep your tablets in a safe place where children cannot reach them.

Store the tablets in a dry place at room temperature below 30°C (86°F).

Do not use after the date shown as 'EXP' on the pack.

For children aged one year and over, Allegon Syrup is available.

Allegon syrup dosage

Adults: two 5ml spoonfuls (10ml) every four to six hours

Children aged 6–12: one 5ml spoonful every four to six hours

Children aged 2–6: one 2.5ml spoonful every four to six hours

Children aged 1–2: one 2.5ml spoonful twice a day

Children under 12 months: not recommended

Allegon syrup contains chlorpheniramine maleate Ph.Eur. 2mg in 5ml. Bottle size 150ml.

Do not take more than this. If symptoms persist consult your doctor.

Do not take Allegon syrup if you are taking Maoi drugs.

Store below 25°C. Protect from light.

1. What is the maximum tablet dose for an adult in one day?

2. What is the maximum syrup dose for a child in one day?

3. What is the difference in storage temperatures between the two medicines?

4. How much more syrup can a 7-year-old have per day than a 1-year-old?

5. How many mg of the antihistamine are in one pack of Allegon tablets?

6. If an adult needed to take the tablets at the maximum dose, how many days would one pack last?

7. How many mg of antihistamine are in one bottle of syrup?

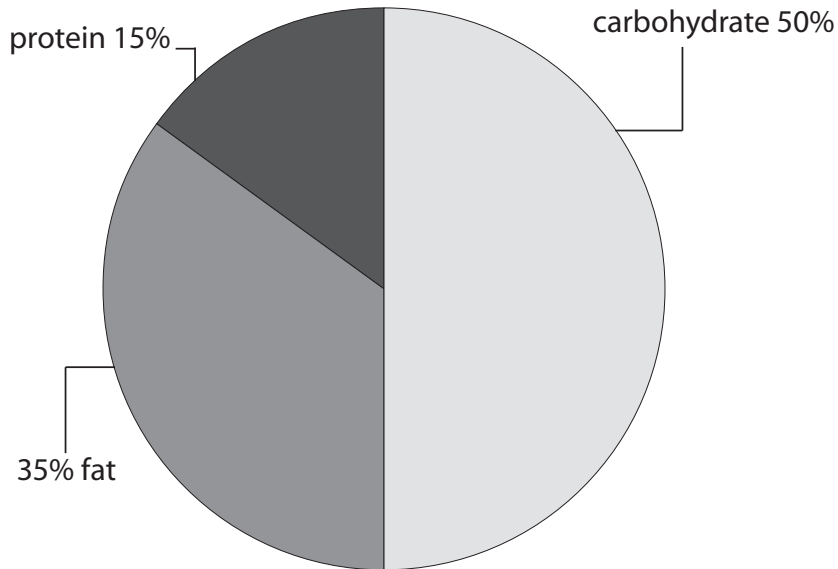
8. You have a new bottle of syrup. Over three days you give 4 x 5ml doses a day to an 8-year-old. How many ml of syrup do you have left?

9. You have half a bottle of syrup. Over five days you give 6 x 2.5ml doses a day to a 4-year-old. How many ml of syrup do you have left?

10. An adult starts with a full pack of tablets. She takes one tablet every six hours for four days. How many tablets are left in the packet?

Use this information about healthy eating and lunch choices to answer the questions on page 13.

This pie chart shows the proportions of food types that make up a healthy diet:



On a day-to-day basis it isn't practical to work out exact percentages of the food types you eat. This table gives a ready-reckoner of what you should be eating.

Food type	Number of helpings
Fish, meat, poultry, tofu	2
Dairy produce	2
Fruit and vegetables	5
Cereals, pasta, bread, potatoes	5-11

Sandwich	Calories (kcal)	Protein (g)	Carbohydrate (g)	Fat (g)
Cheddar and pickle	538	21.3	51.5	27.5
Chicken, bacon and tomato	548	24.9	60.2	23.0
Salmon and egg	309	13.3	30.2	15.0
Tuna mayonnaise	301	22.2	35.9	8.3

Healthy lunches 2

1. Which sandwich has the most calories? _____
2. Which sandwich has the most fat? _____
3. Which sandwich has the least protein? _____
4. Which sandwich has the least carbohydrate? _____
5. Which sandwich is closest to the proportions of food types that make a healthy diet? _____
6. What percentage of the chicken and bacon sandwich is carbohydrate? _____
7. What percentage of the salmon and egg sandwich is fat? _____
8. Choose one of the sandwiches and draw a pie or bar chart to show the proportions of protein, carbohydrate and fat in the space below.

1. Conduct a survey of 20 people to find out how many of them eat five portions of fruit and vegetables a day.
2. Use the information below to devise a one-page questionnaire.
3. Present your findings on a separate piece of paper in a table and as either a bar or pie chart.
4. Use your data to calculate the percentage of people questioned that ate five-a-day.

Fresh, dried, frozen and canned fruit and vegetables all count, as does 100% fruit juice. Potatoes do not count. A portion is equivalent to about 80g (3oz).

- 1 portion is:
- 2 satsumas
 - 1 handful of grapes
 - 1 medium banana
 - 2 halves of canned peaches
 - 1 medium pear
 - 2 florets of broccoli
 - half a large courgette
 - 2 medium plums
 - 12 chunks of canned pineapple
 - 1 tablespoon of raisins
 - 3 heaped tablespoons of carrots
 - 3 heaped tablespoons of peas
 - 3 whole dried apricots
 - 1 medium glass of fruit juice
 - 7 strawberries
 - 1 cereal bowl of mixed salad

Use this information about the McDonalds' menu to answer the questions.

	Energy (KCal)	Protein (g)	Carbohydrates (g)		Fat (g)	
			Total	Sugars	Total	Saturated
Big Mac	493.00	26.70	44.00	11.60	22.90	9.80
Chicken McNuggets™	208.00	14.20	7.90	0.20	13.30	1.30
Filet-O-Fish™	385.00	15.90	40.40	5.50	17.80	4.80
Hamburger	271.00	14.30	33.80	7.20	8.80	3.10
Quarter pounder with cheese	516.00	31.20	37.50	11.30	26.70	13.30
McChicken™ sandwich	375.00	16.50	38.60	7.20	17.20	3.30
French fries (large)	450.00	5.40	56.70	0.70	22.50	3.50
French fries (medium)	321.00	3.80	40.40	0.50	16.00	2.50
French fries (small)	225.00	2.70	28.30	0.30	11.30	1.80
Coca-Cola (medium)	172.00	0	42.00	42.00	0	0
Coca-Cola (small)	108.00	0	26.30	26.30	0	0
Coca-Cola (large)	226.00	0	55.10	55.10	0	0

- Which burger has the most calories? _____
- What is the percentage of fat in a large portion of French fries and a Big Mac? _____
- The recommended daily energy needs for a 19-year-old male are 2550 calories per day. What percentage of the daily allowance would he have used if he has a Big Mac, large fries and a large cola for lunch? _____
- What are the percentages of protein, carbohydrate and fat in a quarter pounder with cheese? _____
- Which do you think is the healthiest burger and why? _____

Use this information about fat to answer the questions on page 17.

In the UK, most adults get between 35–40 per cent of their calories from fat. But for good health, national guidelines recommend that no more than 35 per cent of calories should come from fat.

The amount of fat most people should have will depend on their calorie intake. The table below gives rough guidelines.

Daily calorie intake	Recommended intake of fat grams where...		
	... 20% of calories come from fat	... 25% of calories come from fat	... 30% of calories come from fat
1,500	33	42	50
1,600	36	44	53
1,700	38	47	57
1,800	40	50	60
1,900	42	53	63
2,000	44	56	67
2,100	47	58	70
2,200	49	61	73

Work out the percentage of calories that come from fat

1. To calculate the number of calories that have come from fat, multiply the grams of fat you've had in a day by 9 (each gram of fat provides 9 calories).
2. Divide this value by the number of calories you've had in the day.
3. Multiply this by 100 to give you the percentage of calories that have come from fat.

For example, if you've had a daily intake of 35g of fat and 1,250 calories, the calculation is as follows: $35 \times 9 = 315 \div 1,250 = 0.25 \times 100 = 25$. This means 25 per cent of your calories has come from fat.

How much fat? 2

1. John had a daily intake of 60g of fat and 2,000 calories. What percentage of his calories came from fat?

2. Guran had a daily intake of 175g of fat and 2,700 calories. What percentage of his calories came from fat?

3. Debbie had a daily intake of 62g of fat and 1,900 calories. What percentage of her calories came from fat?

4. Aisha had a daily intake of 60g of fat and 1,500 calories. What percentage of her calories came from fat?

5. Government guidelines state that no more than 35 per cent of your daily calorie intake should be from fat. Which of the above people stuck to the guidelines?

6. If Emily ate 2,000 calories and 30 per cent of these were from fat, how many grams of fat did she eat?

7. If Dan ate 2,500 calories and 35 per cent of these were from fat, how many grams of fat did he eat?

8. The average adult male needs about 2550 calories a day. How many grams of fat should his diet be made up of?

9. The average adult female needs about 1940 calories a day. How many grams of fat should her diet be made up of?

10. If John ate 61g of fat and his diet consisted of 25 per cent calories from fat, how many calories will he consume in one day?

Use this information about types of fat to answer the questions on page 19.

This table shows the maximum percentage of total daily intake of energy that should come from different types of fats for adults to help prevent heart disease and obesity.

Type of fat	Source example	No more than % of energy intake
Saturated fats	Meat, cheese, milk	11%
Polyunsaturated fats	Vegetable oils, nuts	6%
Monounsaturated fats	Olive oil, avocados	12%

Having too much saturated fat can increase the amount of cholesterol in the blood, which increases the chance of developing heart disease. So it is better to eat foods rich in monounsaturates (olive oil and rapeseed oil) and polyunsaturates (sunflower oil and soya oil), than foods rich in saturates.

Comparing butters/fats

Fat	Average cost per kilo	Kcal per 100g	Fat in grams per 100g	Saturates per 100g	Poly-unsaturates per 100g	Mono-unsaturates per 100g
Butter	£3.96	742	82	53	4.5	24.5
Spreadable butter	£3.88	728	80	32	11.1	30.9
Olive oil spread	£2.32	536	58	14	14	30
Sunflower spread	£2.52	531	59	13	28	17.9
Buttery taste spread	£2.88	654	72	18.9	10.5	28.8

How much is a lot of fat?

20g fat or more per 100g is a lot of fat.

5g saturates or more per 100g is a lot.

3g fat or less per 100g is a little fat.

1g saturates or less per 100g is a little fat.

Use this information about salt and sodium to answer the questions below and on page 21.

The table shows the recommended daily amount of sodium and its salt equivalent. Food labels don't have to list the salt content, but they do have to list sodium content. To find the salt content you need to multiply the sodium level by 2.5. As a guide, high sodium products contain 0.5g or more sodium per 100g and low sodium products contain 0.1g or less of sodium per 100g.

Recommended maximum daily amounts for each age group

	As sodium	As salt
Children 1-3	0.8g	2g
Children 4-6	1.2g	3g
Children 7-10	2.0g	5g
Children 11+	2.4g	6g
Adults	2.4g	6g

- An apple crumble contains 0.1g of sodium. How much salt is this equivalent to? _____
- A sandwich contains 2.4g of sodium. How much salt is this equivalent to? _____
- You share a can of beans between two 4-year-olds for tea. They also have one slice of toast each. The beans contain 5g of salt and the slices of bread have 0.5g salt each. Does this meal come within the daily salt intake guidelines? By how much is it over/under? _____
- Janice is 15 and she eats cake that contains 0.2g of sodium. What percentage of the recommended daily salt intake does this represent? _____

5. For breakfast you have a bowl of cornflakes with 1.4g salt. For lunch you have a cheese sandwich and a packet of crisps with 3.5g salt. For dinner you have a pizza with 2.8g salt. Do these meals come within the daily salt intake guidelines for adults? By how much are they over/under?

6. Dev is 9. For lunch he has half a pizza that contains 1.9g of sodium. What percentage of the recommended daily salt intake does this represent?

7. Hannah is 24. She has a ready-made spaghetti bolognese that contains 4.5g of salt. What percentage of the recommended daily salt intake does this represent?

8. In one day Mike has cereal for breakfast with 0.3g sodium, a sandwich with 0.8g of sodium for lunch and in the evening he has curry and rice with 1.2g of sodium and a yoghurt with 0.1g of sodium. Do these meals come within the daily salt intake guidelines for adults? By what percentage is it over/under?

9. Ranesh is 7. For a snack he has two biscuits that each contain 0.1g of salt. How much more salt can he eat before he exceeds the recommended daily intake?

10. Danni is 9. For a snack she has a packet of crisps that contains 1.6g of sodium. How much more sodium can she eat before she exceeds the recommended daily intake?

Use this information about sugars to answer the questions on page 23.

The two main types of carbohydrates are sugars and starch. Sugars and starch provide energy: 1 gram provides 16 kJ (3.75 kcal). At least half the energy in our diets should come from carbohydrates, mostly as starchy carbohydrates.

Sugars occur naturally in foods such as fruit and milk, but we don't need to cut down on these types of sugars. It is food containing added sugars that we should be cutting down on. Guidelines are that no more than 10 per cent of your calories should come from 'free' or added sugars – for women, whose estimated average energy requirement is 1940 kcalories a day, 10 per cent of calories from sugar is about 50g sugar a day, which is about 10tsp sugar. For men, requiring on average 2550 kcalories a day, it means no more than about 70g sugar (14tsp) a day. This sugar can of course be 'hidden' in biscuits, sweets, breakfast cereals and many other sources as well as table sugar.

Checking food labels

Find out how much sugar is in a food by looking for the 'Carbohydrates (of which sugars)' figure in the nutrition information panel on the label.

10g sugars or more per 100g is a lot of sugar

2g sugars or less per 100g is a little sugar

If the amount of sugars is between 2g and 10g per 100g, this is a moderate amount of sugar.

Sometimes the figure you see in the nutrition panel is a total figure for 'Carbohydrates', and not for 'Carbohydrates (of which sugars)'. This means that the figure will also include starchy carbohydrates so you can't work out the exact amount of added sugars. However you can get a good idea whether or not the product is high in added sugars by looking at the ingredients list.

Look out for these words used to describe added sugars: sucrose, glucose, fructose, maltose, hydrolysed starch and invert sugar, corn syrup and honey. If you see any of these near the top of the list of ingredients, the product is likely to be high in added sugars.

1. A chocolate muffin contains 38.9g of sugar per 100g. Is this classified as a lot, a moderate amount or a little?

2. The muffin contains 28g of sugar in total. How many calories does this represent?

3. A supermarket ready meal contains 3.4g of sugar per 100g. Is this classified as a lot, a moderate amount or a little?

4. A portion of half of the meal contains 8.6g of sugar in total. How many calories does this represent?

5. A 420g can of baked beans contains 5.9g of sugars per 100g. How many grams of sugars are in half a can and what percentage of the average woman's recommended daily added sugars intake does this represent?

6. A chocolate éclair contains 10.5g of sugar. What percentage of the average man's recommended daily added sugars intake does this represent?

7. A pastry contains 2.3g of sugars per 100g. The pastry weighs 227g. How many grams of sugars are in the pastry and what percentage of the average woman's recommended daily added sugars intake does this represent? Round answers to the nearest whole number.

8. An apple pie to serve 6 contains 29.3g of sugar per 100g. The pie weighs 500g. How many grams of sugars are in the pie? What percentage of the average man's recommended daily added sugars intake does one portion represent?

Use this information about protein to answer the questions on page 25.

Our bodies need protein to grow and repair. At least 15 per cent of the calories you eat each day should come from protein. If you're eating a balanced diet you're probably getting enough protein.

Depending on their size, men need about 44–55g of protein a day and women need about 36–45g protein each day.

Children need lots of protein to help them grow. Exactly how much protein they need depends on their weight, but this is a rough guide:

- children aged 4 to 6 need about 15–20g protein each day
- children aged 7 to 10 need about 23–28g protein each day.

Most adults and children in the UK eat more protein than they need each day.

Amounts of protein in foods

an average portion of roast chicken breast	27g
an average portion of bolognese sauce	28g
an small can of tuna	24g
an average portion of poached cod fillet each contain	24g
an average cheese sandwich on white bread	17g
an average boiled egg	6g
a 300ml glass of semi-skimmed milk	10g
three tablespoons of boiled red lentils	9g
a slice of wholemeal bread	3g

1. Using the lowest given amounts, how many more grams of protein per day do 9-year-olds need than 5-year-olds?

2. Express your answer to question 1 as a percentage.

3. Using the highest given amounts, how many more grams of protein per day do men need than women?

4. Express your answer to question 3 as a percentage.

5. For breakfast an adult male has a slice of wholemeal bread and a boiled egg. How many grams of protein is this and what percentage of his daily recommended amount does this represent? (Take the median of the range.)

6. For lunch an adult female has two slices of wholemeal bread and a chicken breast. How many grams of protein is this and what percentage of her daily recommended amount does this represent? (Take the median of the range.)

7. For lunch a 5-year-old has an average cheese sandwich on white bread. How many grams of protein is this and what percentage of the child's daily recommended amount does this represent? (Take the median of the range.)

8. In a day an adult female has a slice of wholemeal bread and a boiled egg for breakfast, an average cheese sandwich on white bread for lunch and a an average portion of spaghetti bolognese for dinner. How far under or over the recommended daily intake of protein is this? (Take the top of the range.)

9. Express your answer to question 9 as a percentage.

10. On a separate piece of paper represent the data for the recommended intake of protein for adults and children in an appropriate chart.

Use this information on this food label together with the information you have learned about fats, sugars, protein and salt on pages 16–25 to answer the questions on page 27.

Chicken chow mein		
Ingredients		
<p>Cooked Egg Noodles (31%) (Wheat Flour, Pasteurised Whole Egg, Salt, Raising Agents: Sodium Carbonate, Potassium Carbonate; Citric Acid, Colour: Beta-Carotene), Water, Marinated Chicken Breast (16%) (Chicken, Ginger Purée, Sugar, Soya Bean Oil, Sesame Oil, Rice Flour, Rice Wine, Salt), Bean Sprout (9%), Pak Choi (4%), Oyster Sauce (Water, Sugar, Oyster Extract, Salt, Modified Maize Starch, Yeast Extract, Colour: Ammonia Caramel, Flavour Enhancers: Disodium Inosinate, Disodium Guanylate, Stabiliser: Xanthan Gum), Carrot (2%), Bamboo Shoot (2%), Chinese Mushroom, Rapeseed Oil, Modified Maize Starch, Chicken Stock (Chicken Extract, Chicken, Chicken Fat, Salt, Yeast Extract, Flavourings (Contains Whey Powder from Cow's Milk), Sugar, Dried Yeast, Modified Maize Starch, Emulsifier (Mono- and Diglycerides of Fatty Acids), Thickeners (Locust Bean Gum, Guar Gum, Citric Acid), Dark Soy Sauce (Soya Bean, Sugar, Salt, Wheat Flour, Water), Sugar, Ginger Purée, Sesame Oil, Rice Wine (from Wheat Gluten), Garlic Purée, Pork Gelatine</p>		
Nutrition	Per pack	Per 100g
Energy	1701kJ/403kcal	377kJ/89kcal
Protein	32.4g	7.2g
Carbohydrate	45.9g	10.2g
of which sugars	7.2g	1.6g
Starch	38.7g	8.6g
Fat	10.0g	2.2g
of which saturates	1.4g	0.3g
mono-unsaturates	5.4g	1.2g
polyunsaturates	3.2g	0.7g
Fibre	8.1g	1.8g
Salt	2.3g	0.5g
of which sodium	0.9g	0.2g

1. For the average male, what percentage of daily recommended calories does this meal represent?

2. For the average female, what percentage of daily recommended calories does this meal represent?

3. For the average male, what percentage of daily intake of sodium does this meal represent?

4. For the average female, what percentage of daily recommended added sugar intake does this meal represent?

5. For the average male, what percentage of daily recommended fat intake does this meal represent?

6. For the average female, what percentage of daily recommended fat intake does this meal represent?

7. For the average male, what percentage of daily recommended protein intake does this meal represent? (Take the highest amount.)

8. On a separate piece of paper, draw a pie chart to show the proportions. Ingredients listed:
 - Cooked egg noodles 31%
 - Marinated chicken breast 16%
 - Bean sprout 9%
 - Pak choi 4%
 - Carrot 2%
 - Bamboo shoot 2%
 - Other ____ % (You will need to work this out yourself).

A healthy weight range is based on a measurement called the Body Mass Index (BMI) which is worked out from height and weight measurements. Use this information about BMI to answer the questions on page 29.

Recommended BMI

Underweight	BMI less than 18.5
Ideal	BMI 18.5–25
Overweight	BMI 25–30
Obese – should lose weight	BMI 30–40
Very obese – lose weight now	BMI greater than 40

IMPORTANT: BMI is not as accurate if you are an athlete or very muscled (muscle weighs more than fat), as it can push you into a higher BMI category despite having a healthy level of body fat. BMI is also not accurate for women who are pregnant or breastfeeding, or for people who are frail.

The BMI calculator is just one guide about your overall health. Other issues are also important to take into consideration, including waist measurement, body fat level, blood pressure, cholesterol, physical activity, smoking and diet.

To work out BMI

1. Work out the height in metres and multiply this figure by itself.
2. Measure the weight in kilograms.
3. Divide the weight by the height squared (i.e. the answer to Q1). For example you might be 1.8m (5 feet 3 inches) tall and weigh 65kg (10 stone). The calculation would then be:

$1.8 \times 1.8 = 3.24$. BMI would be 65 divided by 3.24 = 20.06 – in the ideal range.

1. Nick has a BMI of 18. How would you describe his weight?

2. Emma has a BMI of 32. How would you describe her weight?

3. Joe is 2m tall and weighs 80kg. What is his BMI?

4. Sanjay is 1.87m tall and weighs 74kg. What is his BMI?

5. Teresa is 1.83m tall and weighs 72kg. What is her BMI?

6. Eva is 1.87m tall and weighs 68kg. What is her BMI?

7. Shobna is 1.7m tall and weighs 75kg. How many kilos does she need to lose to reach her ideal weight range? Round your answer to the nearest whole kilo.

8. Tommy is 1.96m tall and weighs 110kg. How many kilos does he need to lose to reach his ideal weight range? Round your answer to the nearest whole kilo.

9. Tara is 1.82m tall and weighs 90kg. How many kilos does she need to lose to reach her ideal weight range?

10. Janey is 1.83m tall and weighs 55kg. How many kilos does she need to gain to reach her ideal weight range?

Use this information about burning calories to answer the questions below.

The total amount of calories used when doing an activity depends on your body weight and how generally active you are. The calories used in the table below are based on someone weighing 60kg.

Activity	Calories used every 30 minutes
Ironing	69
Walking	100
Hoovering	105
Golf	129
Mowing lawn	165
Cycling	180
Aerobics	195
Running gentle pace	300
Running fast pace	405

1. Which activity burns the most calories per minute?

2. How many calories would you burn if you walked for one hour?

3. You spend 30 minutes ironing, 30 minutes hoovering and one hour mowing the lawn. How many calories have you used?

4. How many minutes would you have to run at a gentle pace to burn off 400 calories?

5. If you cycle for 40 minutes how many calories will you use?

This table shows the calorific values of food and how much activity a woman weighing between 9 and 10 stone (57kg and 64kg) would need to do to use those calories. Use the information in the table to answer the questions below.

Food	Calories	Mins cycling (moderate speed)	Mins jogging (medium pace)
Small glass of wine	100	15	8
Packet of crisps (small)	180	30	12
Pint of beer	220	35	15
Takeaway cheeseburger	250	40	18
Chocolate bar	280	45	20
Packet of nuts (50g)	300	50	22
Pepperoni pizza (half)	540	90	40

1. If you had half a pepperoni pizza and a small glass of wine, how many calories will you have eaten?

2. How many minutes medium pace jogging will it take to burn off the food listed in question 1?

3. If you cycle at moderate speed for 45 minutes, how many calories will you have burned?

4. An average adult woman needs 1940 calories a day. If she jogs for an hour, roughly how many extra calories could she eat that day?

5. Which exercise is quicker at burning calories – cycling or jogging?

Use this information about blood pressure to answer the questions on page 33.

Blood pressure is simply the pressure of blood in your arteries, the vessels that carry blood from your heart around the body. It can be affected by a whole range of different, everyday events.

When blood pressure is measured you get two readings that look like a fraction. The first reading is always the higher and is called the systolic pressure. This measures your blood pressure when your heart beats and pushes blood around the body. The second reading is the diastolic pressure and records your blood pressure when your heart relaxes between beats.

For example a healthy adult may have a systolic blood pressure of 120mmHg (millimetres of mercury – a standard measure of blood pressure) and a diastolic blood pressure of 80mmHg. This would be described as a blood pressure reading of 120 over 80 or 120/80.

The target is to have a blood pressure below 140/85 mmHg. Readings above this level are generally considered to be high.

What is high?

Blood pressure rises naturally with age due to the reduced elasticity of the arterial system. Age is one of the factors that needs to be taken into account in deciding whether a person's blood pressure is too high.

In general terms, people with a systolic blood pressure consistently above 160mmHg and/or a diastolic pressure over 100mmHg need treatment to lower their blood pressure. Doctors differ in how they interpret 'borderline' blood pressure levels. People with slightly lower blood pressures (140–159mmHg systolic or 90–99mmHg diastolic) may also need treatment if they have a high risk of developing cardiovascular disease, e.g. stroke or angina (chest pains).

What is low?

Low blood pressure, or hypotension, is when the systolic blood pressure is below 90–100mmHg and the diastolic below 60mmHg of mercury. This is not a cause for concern.

1. If you have a blood pressure reading of 135/73, what is the diastolic pressure measurement? _____
2. If you have a blood pressure reading of 139/83, what is the systolic pressure measurement? _____
3. Is a blood pressure reading of 150/90 high, average or low? _____
4. Is a blood pressure reading of 80/59 high, average or low? _____
5. How many of the blood pressure readings in the box below are high? _____
6. How many of the blood pressure readings in the box below are low? _____
7. How many of the blood pressure readings in the box are normal? _____
8. What is the ratio of high readings to low readings? _____
9. What is the ratio of normal readings to high readings? _____
10. What is the ratio of low readings to normal readings? _____

160/90	85/60	100/70	110/80	95/72	150/90
85/55	155/90	115/75	80/55	100/80	130/80
170/90	125/90	125/100	120/95	100/70	155/100
110/75	75/55	160/100	175/110	175/90	120/80
120/75	165/95	110/75	95/80	80/55	

Use this information about units of alcohol to answer the questions on page 35.

The government issues guidelines for drinking alcohol. For men there is no risk to health if they regularly drink 3–4 units or less each day, but if they regularly drink 4 or more units each day there is a health risk. For women there is no risk to health if they regularly drink 2–3 units or less each day but if they regularly drink 3 or more units a day there is a risk to health.

One unit of alcohol is about:

- 1 small glass of wine
- half a pint of standard-strength beer, cider or lager
- 25ml measure of spirits.

If you know the alcohol by volume(abv) of a drink you can work out the units.

- Multiply the volume of the drink in millilitres by the abv then divide the result by 1000.
- For example, to work out the total units in a 12%abv 750ml bottle of wine:

$$750 \times 12 = 9000$$

$$9000 \div 1000 = 9 \text{ units.}$$



1. Use a calculator to work out how many units are in each of these drinks:

a) a 250ml bottle of 7.5%abv lager

b) a 750ml bottle of 14%abv wine

c) a litre bottle of 41.5%abv gin

d) a 330ml bottle of 5%abv WKD

e) a 400ml can of 4% bitter

f) a 400ml bottle of 5.5%abv cider

2. Colin and Catherine share a 750ml bottle of 13%abv wine equally each night for dinner. How many units each is this a day and are either of them putting their health at risk?

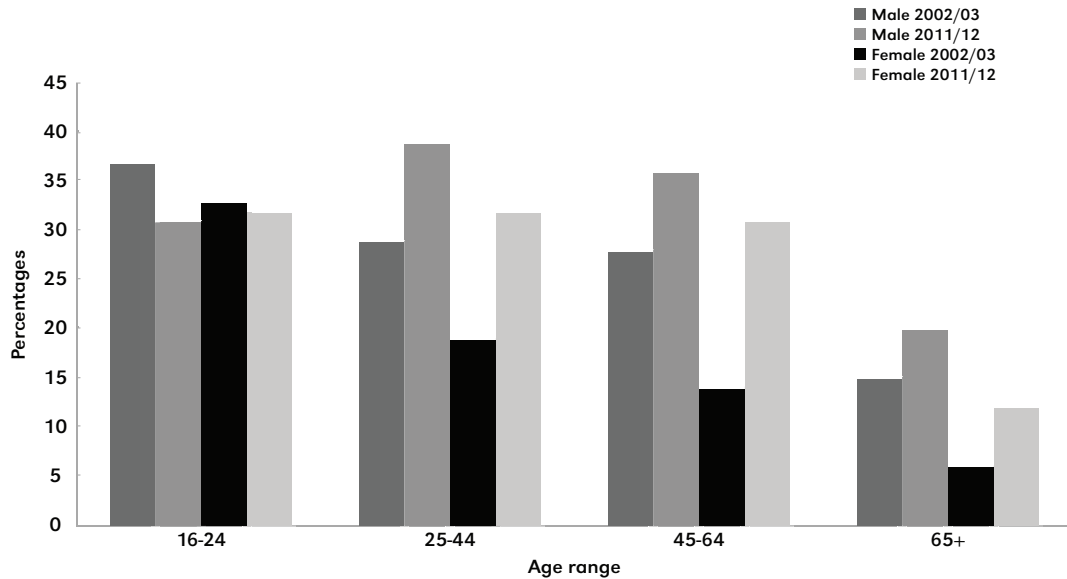
3. Pete has two pints of standard-strength beer each night of the week. How many units is this a day and is he putting his health at risk?

4. Kamaljit drinks nothing in the week, but on Fridays, Saturdays and Sundays she usually has 8 x 330ml bottles of 6%abv alcopops each day. How many units is this a day and is she putting her health at risk?

5. George drinks a 250ml glass of 14%abv wine each night. How many units is this a day and is he putting his health at risk?

Use the information about alcohol consumption below to answer the questions on page 37.

**Adults in Britain exceeding weekly benchmarks of alcohol:
by sex and age, 2002/03 and 2011/12**



In 2011/12, around two thirds of adults aged 16 and over in Great Britain had had an alcoholic drink on at least one day during the previous week (73 per cent of men and 56 per cent of women).

Nearly one in three adults (30 per cent) had exceeded the recommended daily benchmark (of 4 units for men and 3 units for women) on at least one day during the previous week. Men were more likely to exceed the benchmark than women – 34 per cent of men compared with 28 per cent of women.

In 2011, there were 6,730 drink-drive accidents in Great Britain, resulting in 280 deaths. It is estimated that there were 8,748 alcohol-related deaths in total in the UK in 2011.

1. Which age group is exceeding the weekly benchmarks of alcohol by the most amount?

2. What is the trend in alcohol consumption from 2002/03–2011/12?

3. Which age and sex has seen the biggest rise in consumption from 2002/03–2011/12?

4. Which age and sex has seen the lowest rise in consumption from 2002/03–2011/12?

5. Which age range of males has seen the biggest rise in consumption from 2002/03–2011/12?

6. Which age range of females has seen the lowest rise in consumption from 2002/03–2011/12?

7. How many fewer 16–24 year old men exceeded the weekly benchmarks in 2011/12 compared to 2002/03?

8. What percentage of adults stayed within the recommended daily benchmark all week?

9. What percentage more men of 64 and over than women of the same age range exceeded the weekly benchmarks of alcohol in 2011/12?

10. In 2011/12 what was the rate of deaths per drink-drive accident in Great Britain?

Use this information about sun exposure to answer the questions on page 39.

Type I Often burns, rarely tans. Tends to have freckles, red or fair hair, blue or green eyes.

Type II Usually burns, sometimes tans. Tends to have light hair, blue or brown eyes.

Type III Sometimes burns, usually tans. Tends to have brown hair and eyes.

Type IV Rarely burns, often tans. Tends to have dark brown eyes and hair.

Type V Naturally black-brown skin. Often has dark brown eyes and hair.

Type VI Naturally black-brown skin. Usually has black-brown eyes and hair.

The BBC weather forecast tells you the UV index so you can work out your skin's burn risk on a daily basis.

Index	Fair, burns	Fair, tans	Brown	Black
1–2	Low	Low	Low	Low
3–4	Medium	Low	Low	Low
5	High	Medium	Low	Low
6	Very high	Medium	Medium	Low
7	Very high	High	Medium	Medium
8	Very high	High	Medium	Medium
9	Very high	High	Medium	Medium
10	Very high	High	High	Medium

Low risk

No protection needed.

Medium risk

Take care around midday and do not spend too long in the sun unprotected.

High risk

Cover up or seek shade between 11am and 3pm. Use at least factor 15 sunscreen on exposed skin.

Very high risk

Be sure to cover up or stay in the shade between 11am and 3pm. And use at least factor 15 sunscreen.

Sun exposure 2

1. Which skin type is most at risk from sun damage?

2. How many hours a day are UV rays at their strongest?

3. From what UV index upwards should people with fair skin that burns wear minimum protection of factor 15?

4. Use this list of values to present the information in the UV index table as a bar chart in the space below.

Low risk = 1, Medium risk = 2, High risk = 3, Very high risk = 4

Use this information about recommended sun protection factors to answer the questions on page 41.

Sun lotions are graded with an SPF (sun protection factor) which refers to the multiples of time you could theoretically stay in the sun with that particular cream. Factor 50, for example, has high protection and factor 6 would allow someone to stay six times longer in the sun without burning. These figures are for guidance only. Perspiration and water from the sea or swimming pool will dilute the effect and the cream would need to be applied more often. Most sunscreens concentrate on blocking UVB light – the type that causes sunburn (with SPF numbers). However, research has found that it is UVA light which causes longer-term skin damage and premature ageing. For the best type of sun protection, you need a suncream that offers very high protection against both UVB and UVA light. The current system for rating UVA protection goes from 1 star to 5 stars.

For children under 3 years use a minimum SPF of 25. Babies under 6 months should be kept out of the sun as much as possible.

Remember, SPFs of 15 or above will help reduce the risk of burning and they won't stop you tanning.

This chart shows the recommended SPF creams needed in different parts of the world.

	Moderate Northern Europe UK / Eire		Hot Southern Europe / Mediterranean		Very hot Tropics / Africa / Australia	
	First 3 days	3 days +	First 3 days	3 days +	First 3 days	3 days +
Children (3 years +)	25	15	35	25	35+	25
Sensitive / fair	25	15	25	15	35	25
Tans / tans easily	15	8	15	15	25	15

1. Helen has very fair skin and she normally burns within 10 minutes of sun exposure. How long could she stay in the sun before reapplication if she used a cream with an SPF of 35?
2. Josette has dark skin and can stay in the sun for an hour without burning. If she wanted to stay out in the sun from 9am until 6pm without reapplying cream, what minimum factor cream should she apply before she goes outside?
3. Rod has fair skin and he normally burns within 20 minutes of sun exposure. How long could he stay in the sun before reapplication if he used a cream with a factor of 20?
4. Colin has medium skin and can stay in the sun for 40 minutes without burning. If he wanted to stay out in the sun from 10am until 4pm without reapplying cream, what minimum factor cream should he apply before he goes outside?
5. Holly is going on holiday to Southern Spain. She has very fair skin and normally burns within 10 minutes of sun exposure. If she uses factor 35, stays outdoors between 10am and 5pm and doesn't go swimming, how many times should she reapply sun cream?
6. Phil is going on holiday to Kenya. He has medium skin and normally burns within 40 minutes of sun exposure. If he uses factor 8, stays outdoors between 9am and 3pm and goes swimming twice, how many times should he reapply sun cream?
7. Amanda has very fair skin. She put one application of factor 40 cream on at 10am. If she stays in the sun without reapplying, at what time will her skin start to burn?
8. Callum has fair skin but he wants to get a tan too. Without cream he burns after 20 minutes in the sun. He puts on factor 15 cream at 10am and stays in the sun for six hours. How long will his skin have been unprotected from the sun?

Use this information about temperatures to answer the questions below.

A fever, or pyrexia, is when the body's temperature rises above normal. Normal body temperature can vary and is affected by factors such as exercise, eating, sleeping and the time of the day (the lowest temperature is usually recorded at around 3am; the highest at 6pm).

The average normal body temperature taken in the mouth is 37°C (98.6°F), but anything between 36.5°C and 37.2°C (97.7°F and 99°F) may be normal. Normal armpit temperatures are 0.2°C to 0.3°C lower than this.

A temperature of 38°C (100.4°F) or above is usually considered to be a significant fever – you should measure it again after two to three hours. You can take paracetamol or ibuprofen to control fever. If you have a child with a persistently high fever you should take them to see a doctor. Temperature can also be controlled by removing unnecessary clothing and having a cool bath or shower or sponging.

1. You take a thermometer reading in the mouth of 37.2°C. Is this normal or high? _____

2. You take a thermometer reading in the armpit of 38°C. Is this normal or high? _____

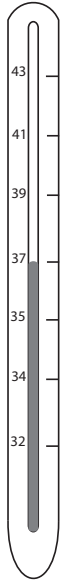
3. You take a thermometer reading in the mouth of 39.2°C. Is this normal or high? _____

4. You take a thermometer reading in the mouth of 41.2°C. How many degrees above normal is this? _____

5. You take a thermometer reading in the mouth of 36.5°C. How many degrees below fever temperature is this? _____

6. At 10pm you take a temperature reading of 38.6°C. Two hours later the temperature is 41.2°C. By how many degrees has the temperature risen? _____

Read the thermometers and write the readings in the boxes provided.

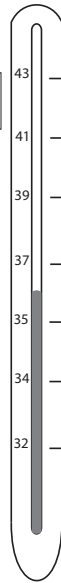


1.

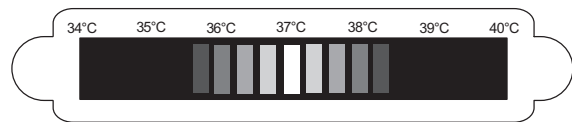


2.

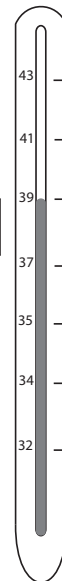
3.



4.



5.



6.



7. Which thermometers record a high temperature?

8. Which thermometers record a low temperature?

Medicine doses 1, pages 4–5

1. Shake the bottle well.
2. 8 doses, which is 16 tablespoons or 240ml
3. 6 tablets
4. 7 days
5. 4.25, 2 x yellow pills
6. Both pink and yellow tablets contain codeine phosphate and paracetamol in equal quantities. The pink tablets have buclizine hydrochloride as an additional ingredient.

Medicine doses 2, pages 6–7

1. Your answers may vary so check with your teacher; our suggestion is: 6am, midday and 6pm
2. 21 pills
3. 60 days
4. 2:1
5. 2.30pm and 10pm
6. 57

Paracetamol 2, page 9

1. Paramol Infant
2. Nothing before seeking medical advice
3. 2 hours
4. 30ml
5. 5ml
6. 40ml
7. 6 hours
8. 130

9. 2000mg
10. 960mg

Allergies 2, page 11

1. 6 tablets
2. 30ml
3. 5°C
4. 25ml more
5. 120mg
6. 5 days
7. 60mg
8. 90ml
9. 0ml
10. 14 tablets

Healthy lunches 2, page 13

1. Chicken bacon and tomato
2. Cheddar and pickle
3. Salmon and egg
4. Salmon and egg
5. Cheddar and pickle
6. 51.3%
7. 26%
8. You should discuss your answer with your teacher.

Five-a-day survey, page 14

You should discuss your answer with your teacher.

Fast food, page 15

1. Quarter pounder with cheese
2. Big Mac 24%, large French Fries 27%
3. 45.8%
4. 28% fat, 33% protein, 39% carbohydrate
5. You should discuss your answer with your teacher.

How much fat? 2, page 17

1. 27%
2. 58%
3. 29.4%
4. 36%
5. John and Debbie
6. 66.6g
7. 97.2g
8. 99g
9. 75g
10. 2196 calories

Types of fat 2, page 19

1. Olive oil spread
2. Butter
3. Butter
4. Spreadable butter

5. Sunflower spread
6. 26.42g
7. 13.62g
8. Sunflower spread, Olive oil spread, Buttery taste spread, Spreadable butter, Butter

Sodium and salt, pages 20–21

1. 0.25g
2. 6g
3. The meal contains 3g of salt, which is the maximum daily amount for a 4-year-old.
4. 8.3%
5. The meals exceed the daily salt intake guidelines for adults by 1.7g.
6. 95%
7. 75%
8. The meals contains 6g of salt, which is the maximum daily amount for an adult.
9. 4.8g
10. 0.4g

Sugars 2, page 23

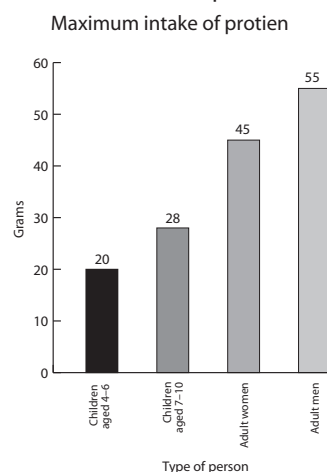
1. A lot
2. 105kcal
3. A moderate amount
4. 32.25kcal
5. 12.4g of sugar which is 24.8% of a woman's recommended daily intake of added sugars.

6. 15% of a man's recommended daily intake of added sugars.
7. 5g of sugar which is 10% of a woman's recommended daily intake of added sugars.
8. 146.5g of sugar in the pie. One portion of pie is 34.88% of a man's recommended daily intake of added sugars.

Protein 2, page 25

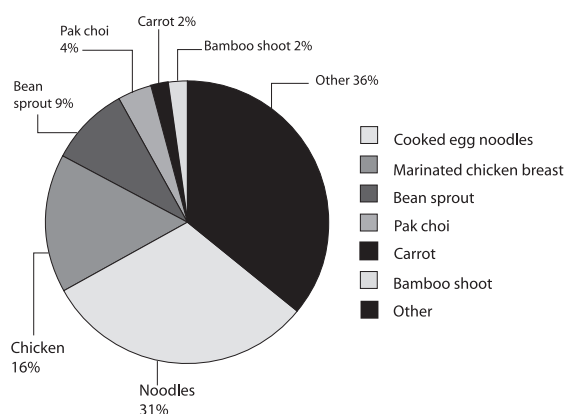
1. 8g more
2. 9-year-olds need 65% more protein per day than 5-year-olds.
3. 10g more
4. Men need 12% more protein per day than women.
5. 9g of protein which is 18% of a man's recommended daily intake of protein.
6. 33g of protein which is 81% of a woman's recommended daily intake of protein.
7. 17g of protein which is 97% of a 5-year-old's recommended daily intake of protein.
8. 54g of protein which is 9g more than the top of the range of the recommended daily intake of protein for a woman.
9. 16.6% more

10. Recommended protein



Food labels 2, page 27

1. 15.8%
2. 20.7%
3. 37.5%
4. 14.4%
5. 10%
6. 13.3%
7. 58.9%
8. Percentages of ingredients in chicken chow mein



BMI 2, page 29

1. Underweight
2. Obese
3. 20
4. 21
5. 21.5
6. 19.5
7. 3kg
8. 14kg
9. 7.19kg
10. 6.95kg

Using calories 1, page 30

1. Running at a fast pace
2. 200 calories
3. 504 calories
4. 40 minutes
5. 240 calories

Using calories 2, page 31

1. 640 calories
2. 48 minutes
3. 280 calories
4. 880 calories
5. jogging

Blood pressure 2, page 33

1. 73mmHg
2. 139mmHg
3. slightly low

4. low
5. 9
6. 5
7. 15
8. 9:5
9. 15:9 or 5:3
10. 5:15 or 1:3

Alcohol units 2, page 35

1. a) 1.88
b) 10.5
c) 41.5
d) 1.65
e) 1.6
f) 2.2
2. 4.87 units a day each. They are both putting their health at risk.
3. 4 units a day. He is not putting his health at risk.
4. She had 15.84 units 3 nights a week. She is putting her health at risk.
5. 3.5 units a day. He is not putting his health at risk.

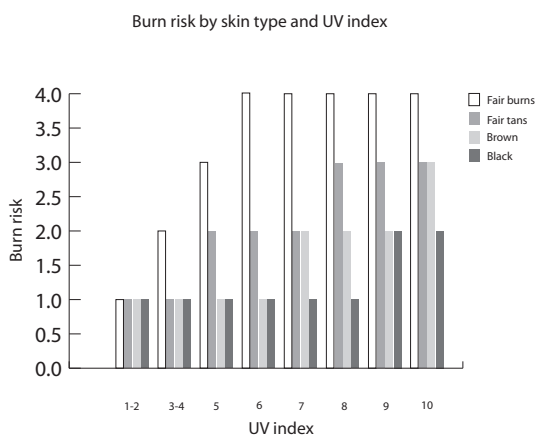
Alcohol statistics 2, page 37

1. 25–44 year olds
2. It has increased for every age and sex apart from 16–24 and 45–64 year old men and 16–24 year old females.
3. 45–64 year old females
4. 65+ males and females
5. 25–44 year olds

6. 65+
7. 6%
8. 70%
9. 8%
10. 4.16%

Sun exposure 2, page 39

1. Type 1
2. 4 hours
3. 6-7
- 4.



Temperatures 1, page 42

1. Normal
2. High
3. High
4. 4°C
5. 1.5°C
6. 2.6°C

Temperatures 2, page 43

1. 37°C
2. 40.2°C
3. 36°C
4. 37°C
5. 39°C
6. 49.4°C
7. 2, 5 and 6
8. 3

Sun protection 2, page 41

1. 5 hours and 50 minutes
2. Factor 9
3. 6 hours and 40 minutes
4. Factor 9
5. Once
6. Twice
7. 4.40pm
8. 1 hour

The activities in *Everyday maths problems for health* have been carefully designed to practise everyday maths skills in a way that is true to life and meaningful for learners. The activities principally target skills at Functional Skills Level 1. The books are suitable for secondary school students aged 11+ as well as for students in further education. Mapping to Functional Skills Standards and the 2014 National Curriculum is available electronically. For a copy please email enquiries@axiseducation.co.uk.

Everyday maths problems for health is not intended to be used as a teaching programme to be followed from beginning to end. Teachers should dip in and out of the book according to student need and interest. You may need to spend time before each activity explaining any difficult terms or unfamiliar vocabulary.

Locating tasks

To make task selection easier there are two routes to finding them:

1. Activities index. The types of activities on each page are indexed on page 49.
2. Topic index. The topics covered are indexed on page 50.

Numeracy activities index

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20–21, 24–25, 28–29, 30, 31, 38–39, 42

Averages

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12–13, 14, 24–25, 36–37, 38–39

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Using a calculator

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Weights and measures

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Alcohol

34–35, 36–37

Blood pressure

32–33

Body mass index

28–29

Calories

30, 31

Food labels

26–27

Healthy eating

12–13, 14, 15, 16–17, 18–19, 20–21, 22–23, 24–25

Medicine labels

4–5, 6–7, 8–9, 10–11

Sun exposure

38–39, 40–41

Temperatures

42–43