

This is an example of the sort of question you might find on a Functional Skills maths assessment paper.

You have the following Nutritional Information from the wrapper of a chocolate covered ice-cream lolly.

The table information is incomplete and needs to be filled in.

Nutritional Information	Per 100g	per 100ml	Per lolly
ENERGY	1300kj 300kcal	990kj 220 kcal	1100kj 260 kcal
FAT	19.9g	14g	
of which is saturated fat	14g	10g	
CARBOHYDRATES	29g	21g	
of which is sugar	27g	19g	
PROTEIN	3.5g	2.5g	
SALT	0.13g	0.093g	

1. Calculate the total weight of the lolly in grams and the total volume in millilitres
2. Fill in the blanks in the table for the Nutritional information for a lolly
3. Draw a pie chart to represent the information in the table

For each of the tasks, you need to show your working.

Show how you can check your answers.

Now answer the following questions:

Based on calories alone, how many lollies make up one person's daily allowance?
(Calculate daily allowance for adult male, adult female and child/adolescent)

What impact would this have on their daily intake of Fat, Sugar, and Salt? As above, calculate for Adult Male, Adult Female and child/adolescent.

Show your working and justify your answers.

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Explanations and worked example:

From the table, we know that the lolly must weigh less than 100 grams and have a volume of more than 100ml.

Nutritional Information	Per 100g	per 100ml	Per lolly
ENERGY	1300kj 300kcal	990kj 220 kcal	1100kj 260 kcal

Using this information, we can work out exactly what the weight and volume of a whole lolly is.

We know that 100 grams of the product contains 300 calories and that a whole lolly contains 260 calories so by working out from the percentage what the lolly actually weighs, we can work out all the other missing values:

To work out the percentage:

We know that 100 grams is 300 calories and a lolly is 260 calories so we need to work out what percentage of 300 260 is:

- 260 divided by 300 x 100 = 0.8667 or 0.87 when rounded up
- Multiply this by 100 gives 86.67%
- So a lolly is 86.7% of 100 grams

We can check this by calculating 86.67% of 300 = 300 x 86.67% = 260.01

We can now use the same method to work out the volume of the lolly.

- 260 divided by 220 x 100 = 118.18% - this is more than 100% which is correct because the volume of the lolly is larger than the volume of a 100 gram portion.

Now we have two ways we can work out the other values – we can work out the extra and add it on, or we can work out the lesser percentage.

This is useful to know because we can use one method to do the calculations and the other method to check the answers.

For question 3, to draw a pie chart, first we need to work out the *angles* of the segments. Because we know that a circle has 360⁰ we need to work out how many degrees each of the segments will need to be – this is the *angle*.

To do this, you need to calculate what percentage of 360 each component of the lolly represents, then, plot this on your circle.

First, we need to add up how many grams in total the components make up:

FAT	19.9
of which is saturated fat	14
CARBOHYDRATES	29
of which is sugar	27
PROTEIN	3.5
SALT	0.13
TOTAL	93.53

We have a grams total of 93.53 grams per lolly.

Now we can calculate the degrees in each segment of our pie chart as follows:

$$(19.9/93.53) \times 360$$

- this works out what proportion of the 93.53 grams the FAT represents and then calculates this as a percentage of the total number of degrees in a circle

$$19.9/93.53 = 0.2127659 \text{ or } 0.21 \text{ rounded up}$$

We now need to multiply this by 360 = 76.595 or 76.6 rounded up. So our segment for FAT should cover 76.6 degrees.

We can also calculate this as a percentage – to do this, we simply substitute the 360 degrees in the formula for 100 and this will give us the percentage:

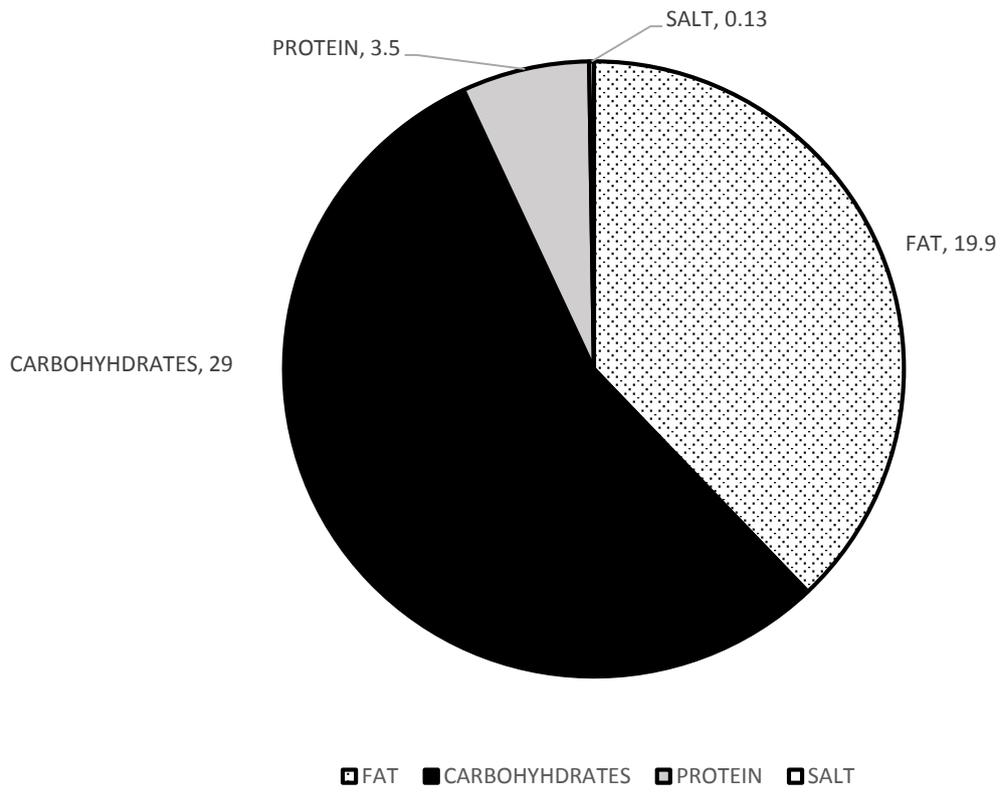
$$19.9/93.53 = 0.2127659 \times 100 = 21.27\%$$

So our segment should cover just over 20% or a fifth of the circle.

Once you have calculated all the values, you can check them by making sure that the total degrees is 360 when all the components are added together, and that the percentage figure is not greater than 100 when they are all added together.

Your finished pie chart should look a little something like this:

Nutritional makeup of lolly X



Happy lolly challenging!

Teacher's notes

This scenario can be adapted to cover percentages, ratios, charts (pie), using formulae and other mathematical concepts.

The scenario can be shared as a group and the first set of calculations, which can be found in the Explanations and Worked Example, worked through as a group.

Learners can then be left to work through the three questions to complete the tasks either alone or in pairs or groups.

Responses can then be shared and the final answers collated onto a single class sheet

Learners may be allowed to use Excel to complete some of the tasks, including actually drawing the pie chart (although they should be taught how to carry out the calculations manually first).

This is good practice as it allows learners to see the connection between ICT and Maths and allows learners to practice their ICT skills which will support them in their Functional Skills ICT assessments.