



Teaching Material

Suggested Lesson Plan

The lesson plan consists of three teaching units. From a mathematical point of view, it serves the purpose of introducing circular diagrams (inclusive of the application of percentage calculation), from a biological point of view, of stimulating healthy eating habits. It starts with homework, the students have to do before starting of the sequence (worksheet 1): They are asked to exactly weigh all the foods they eat for one day and to enter the quantities in the respective categories of the nutrition circle (see table; remark: As one can assume that sweets are eaten as well, a further category is made in the worksheet).

First Teaching Unit:

Introduction of the DGE-nutrition circle and comparison with one's own eating habits

- 1 The DGE-nutrition circle is introduced (see master copy next page), and a discussion is initiated.
- 2 Stimulus: Do my eating habits conform to the diet, suggested by the nutrition circle? (worksheet 2, percentage calculation). The objective is to make the students draw their own nutrition circle.

Second Teaching Unit

Translation of one's own eating habits into a nutrition circle and setting up a perfect nutrition plan, which closely follows the DGE guidelines.

- 1 By converting the percentages to angular measures, students can make their own pie charts.
- 2 Discussion of differences and common features in class.
- 3 Drawing up a perfect nutrition plan in group work.

The unit ends with the homework task of making a perfect nutrition plan for two fictitious students and thereby showing up the limits of the pie chart (worksheet 3).

Third Teaching Unit

Presentation of the results and final discussion

Homework Task

Write down what you ate in one day (in grams)!
As a guide for the measurements, you will find some basic measures on the back!

	Bread, noodles Potatoes, cereals	Vegetables salads	fruit	milk, cheese, yoghurt (milk products)	meat, sausage fish, eggs	sweets
Breakfast						
School						
Lunch						
Afternoon						
Supper						
Other						

The **ScienceMath** Project: **Nutrition circle and pie charts**
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Photo-copiable DGE-Nutrition Circle, Bonn 2005

Do my eating habits conform to the diet, suggested by the German Nutrition Association?

Task 1

Calculate the total amount of food that you ate in one day.
State the result in grams (g).

Total amount: _____g

Task 2

(2a) Work out the percentages of each group of food.

(2b) Display the percentages of the individual groups of food in a pie chart. Convert the individual percentages to angular measures (degrees).

	bread, noodles, potatoes (cereals)	vegetables, salads	fruit	milk, cheese, yoghurt (milk products)	meat, sausage, fish, egg	sweets
(2a) percent- age						
(2b) angular measure						

Task 3

Present your results in a pie chart (in your exercise book).

Homework Task

Task

- (1) Make one pie chart for Bastian and Heiko each (in your exercise book).
- (2) Compare the diagrams. What do you notice?

Bastian

Total amount: 2260 g

	bread, noodles, potatoes (cereals)	vegetables, salads	fruit	milk, cheese, yoghurt (milk products)	meat, sausage, fish, eggs	sweets
(2a) percent- age	31%	24%	13%	19%	8%	3%
(2b) angular measure	111.6 °	933.6°	46.8°	68.4°	28.8°	10.8°

Heiko

Total amount: 650 g

	bread, noodles, potatoes (cereals)	vegetables, salads	fruit	milk, cheese, yoghurt, (milk products)	meat, sausage, fish, eggs	sweets
(2a) percent- age	31.0%	23%	15%	19%	9%	3%
(2b) angular measure	111.6°	82.8°	54°	68.4°	32.4°	10.8°

Bastian's Dietary Plan

	bread, noodles, potatoes (cereals)	vegeta- bles, sal- ads	fruit	milk, cheese, yoghurt, (milk products)	meat, sausage, fish, eggs	sweets
breakfast	150 g bread	50 g cucumber		100 g milk, 100 g cheese (3)		30 g Nutella
school	100 g bread		200 g ba- nana	150 g milky drink	40 g ham	
afternoon			100 g apple (1)	100 g yoghurt		30 g chocolate bar
supper	200 g bread	100 g tomato			60 g egg	
extras						
total amount	700 g	550 g	300 g	450 g	200 g	60 g

Heiko's Dietary Plan

	bread, noodles, potatoes, cereals	vegetables, salads	fruit	milk, cheese, yoghurt, (milk products)	meat, sau- sage, fish, eggs	sweets
breakfast	40 g rolls			50 g cheese		
school			½ ba- nana 100g			
lunch	100 g noodles	80 g peas			60 g ground beef	
afternoon				75 g yoghurt		15 g chocolate
supper	60 g roll	70 g tomato				
extras						
total amount	200 g	150 g	100 g	125 g	60 g	15 g