



SINUS - Thüringen

Steigerung der Effizienz des
mathematisch-naturwissenschaftlichen
Unterrichts

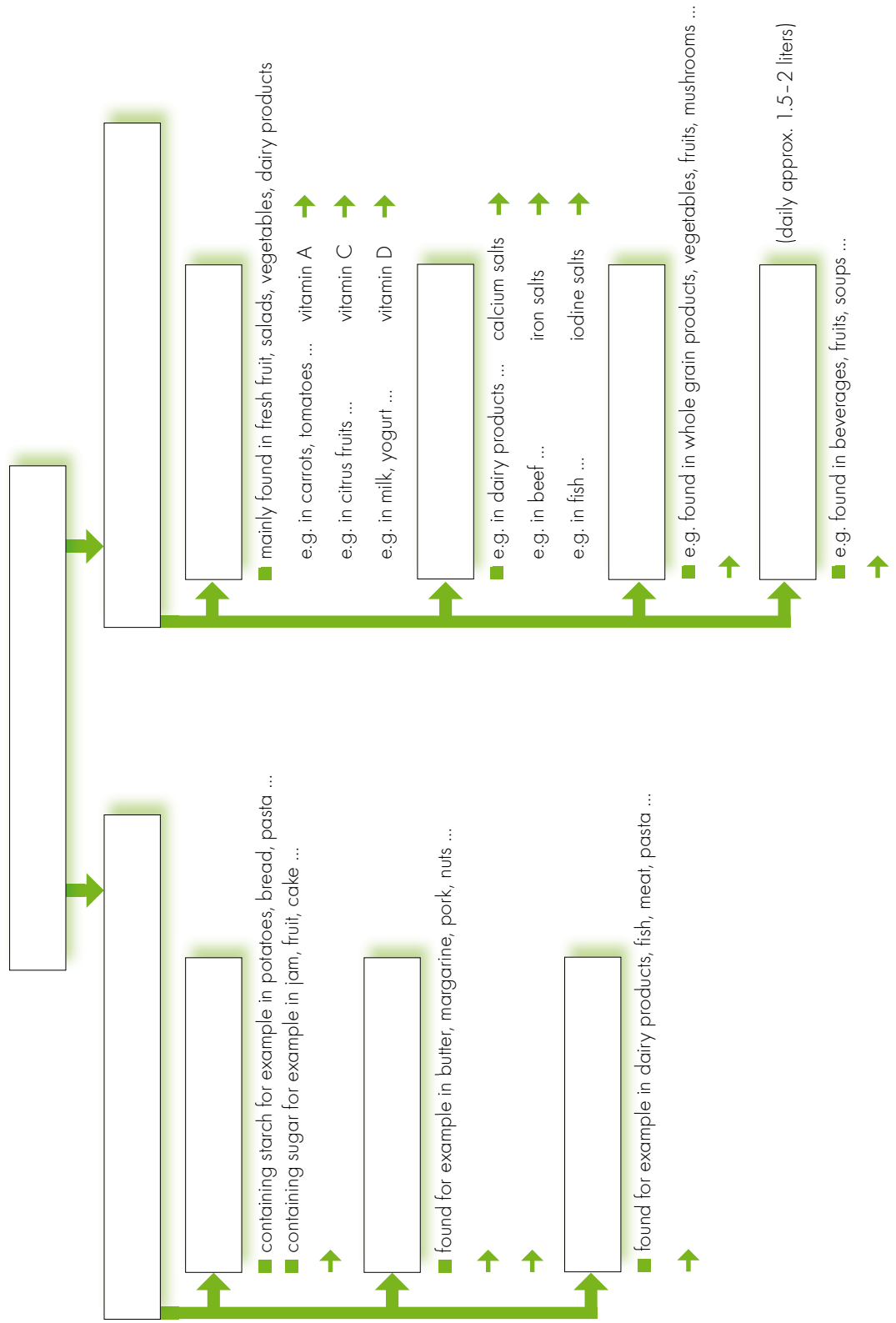
Documentation for the teaching material »Healthy Nutrition«

School:	Staatliche Regelschule »Hermann Danz« Schmalkalden (grades 5 – 10)
Grade:	5
Subject:	Human-Nature-Technology
Authors:	Heike Kretzer, Hartmut Recknagel, Rosemarie Bohn, Sabine Raßbach
Target:	Theory: digestive organs of humans, consistence of nutrition, nutrition rule practice: preparing, organizing and decorating a healthy breakfast, common consumption of food
Organization form/time needed:	Project day: theory and practice as a unit theoretical preliminary considerations are digestive organs of humans, nutrition, and nutrition rules (3 lessons) (UG, LV, SST) 3 lessons are a practical part: preparing, organizing, and decorating a healthy breakfast, (work in 4–5 students' groups of 2–4 students each, selecting a student as the group leader
Evaluation of the students' performances:	Verbal evaluation of the SST at the end of a project day: working approach, independence, cleanliness at the place of work, discipline Little competition: What is most tasty? Which decoration is most convincing?
Material Requirements:	For the theory part: Torso of the human body, AT digestive organs, AT nutritive and supplementary substances, AT with food nutrition pyramid; students' worksheets → see students' materials; for the practical part: → see students' materials
Methodical Indications:	The theory part is composed of simple knowledge transfer. The students field of experience is included. An accordant consolidation follows by the use of the work sheets. The practical part deepens the knowledge. The students are motivated accordingly for this part and guided in the work group. For this, at least three teachers should be scheduled who support and control the activities of the students, but leave enough scope for creativity. The highlight for the students is the common meal. After an assessment of the day, the common clearance follows (define responsibilities).
Students' Materials:	Theory: each student gets students' worksheets: nutritive and supplementary substances, nutrition rules and food pyramid Practice: each group of students receives laminated working instructions for the practical part, photocopied templates for the desired results, and food and kitchen aids, see material list each student: plate, glass, teaspoon, small bowl
Literature:	»Biologie« Volume 1, Volk und Wissen; »Du Mont's phantasievoller Ratgeber für vergnügte Köche« M. Schuyt/J. Eiffers, Du Mont Buchverlag Köln 1982

Project »Healthy Nutrition«

■ 1. Important components of the human nutrition – source and importance

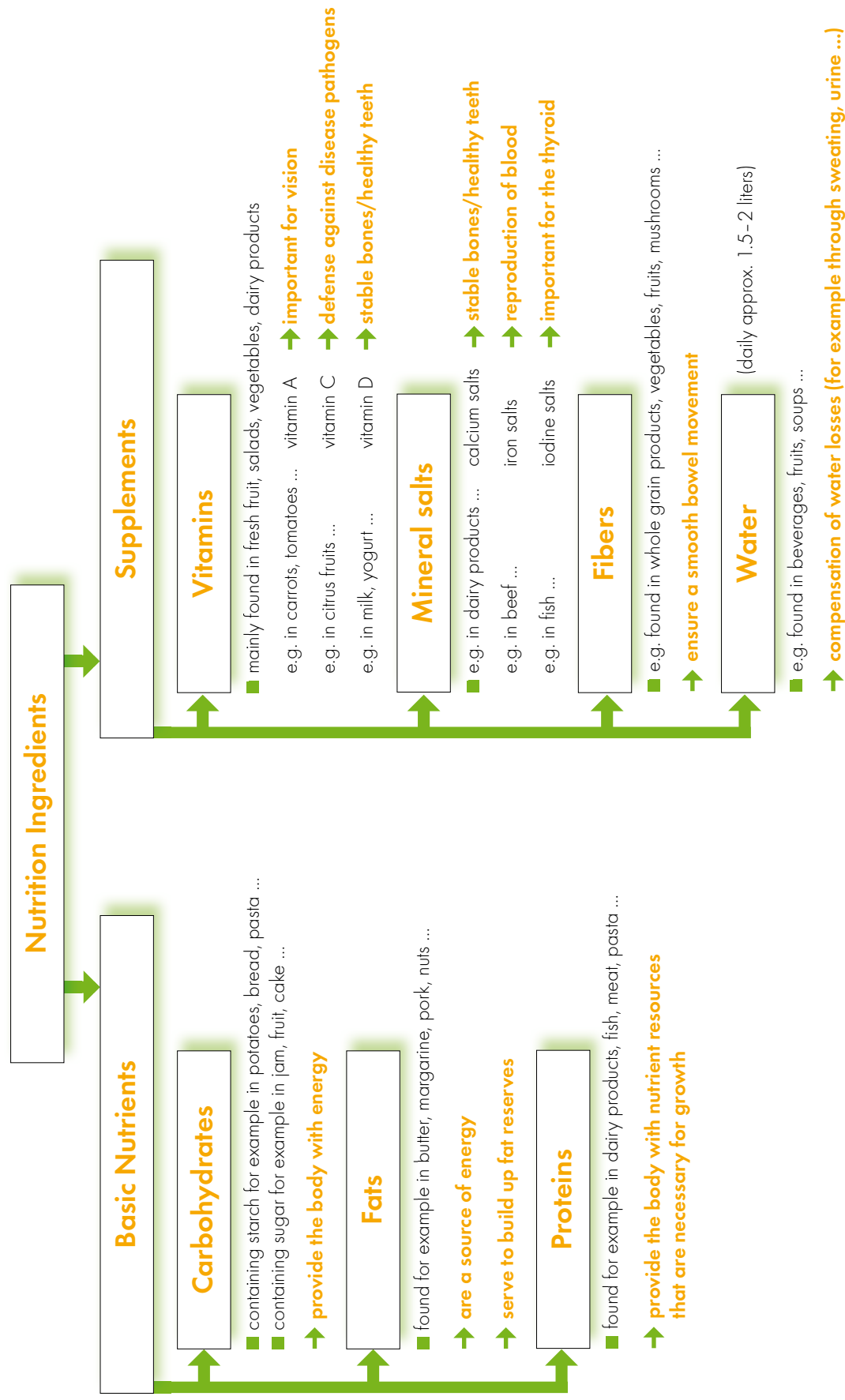
To stay healthy you have to consume certain nutrients in sufficient quantities with your food every day.



Project »Healthy Nutrition«

■ 1. Important components of the human nutrition – source and importance

To stay healthy you have to consume certain nutrients in sufficient quantities with your food every day.



■ 2. Some rules for a healthy nutrition

1. Divide the amount of food that has to be consumed during the day to at least 5 different meals so that your body is provided with the necessary nutrients at any time.

beneficial distribution:

1. Breakfast (before school): 25 %
2. Breakfast (at school): 10 %
3. Lunch (at school): 30 %
4. Snack (afternoon): 10 %
5. Dinner: 25 %

2. Chew the food thoroughly, so it can be digested more easily!
3. Eat a variety, so that your body is provided with all important nutrients and supplements in sufficient quantities daily!
4. Eat fruit, vegetables and salads preferably every day, because they provide your body with important vitamins and mineral salts, as well as with fibers and carbohydrates!
5. Lean towards nutrition low in fat and sugar, because then you can prevent obesity which harms your circulation!

Determination of body mass index (BMI) – a way to assess ones own body weight

$$\text{BMI} = \frac{\text{body weight (in kg)}}{\text{size (in m)} \times \text{(size in m)}}$$

example: A man is 1.75 m tall and weighs 82 kg.

$$\text{BMI} = \frac{82}{1,75 \times 1,75} = \frac{82}{3,0625} = 26,77$$



This person is overweight and should try to lose weight.

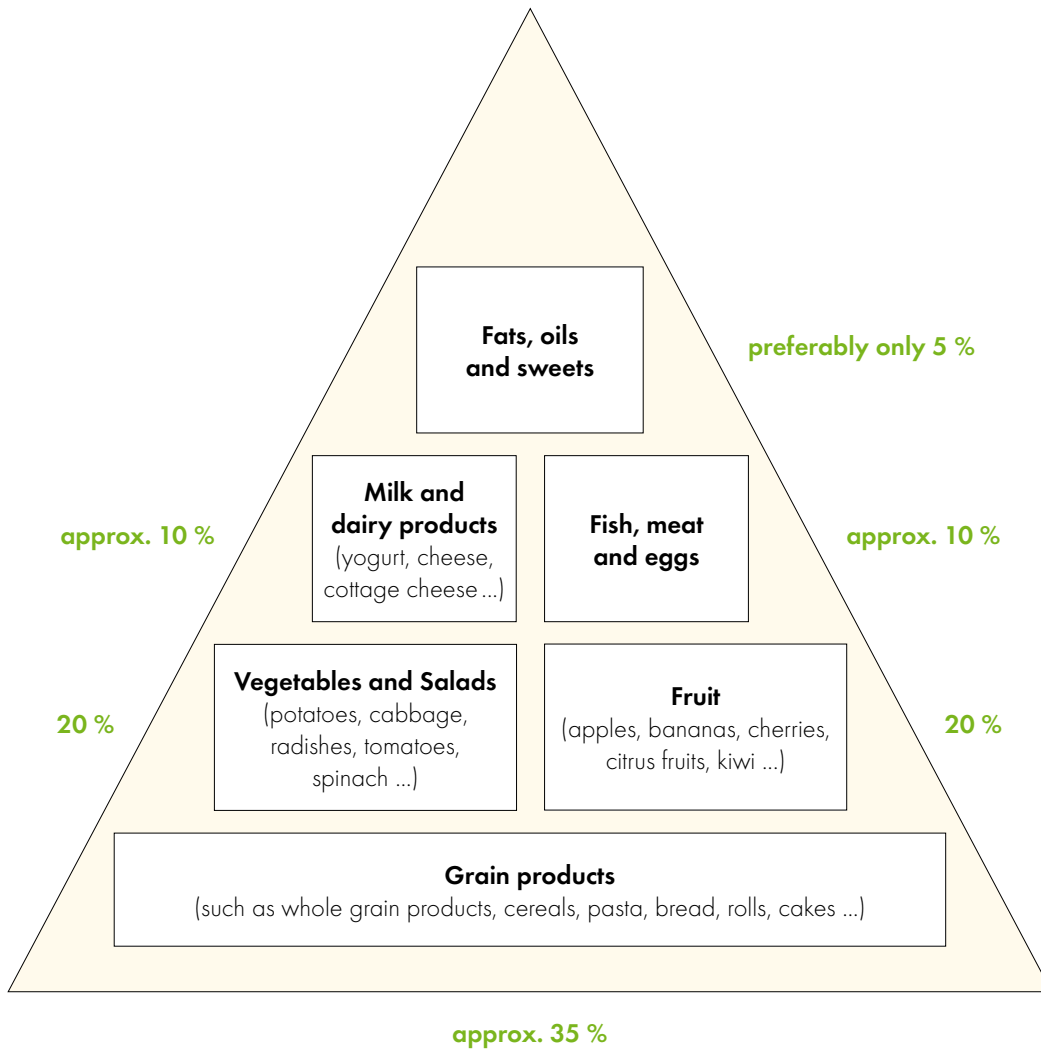
Statements of the BMI:

- under 18 = underweight
- 18-25 = normal weight
- 26-30 = overweight
- older than 30 = obese

6. Eat enough dairy products (cottage cheese, cheese, yogurt ...), because they provide your body with proteins for growth, but also contain lots of calcium and vitamin D for healthy bones and teeth!
7. Whole grain (such as whole-grain bread, cereals ...) is a healthier alternative to bread rolls or cake, because the whole-grain products contain, next to carbohydrates and proteins, fibers, that stimulate your bowel and prevent constipation!
8. Eat fish products once or twice a week, because they're easily digestible and low-fat, and contain proteins for growth and much iodine which is important for the thyroid!
9. Avoid excessive salting of the food because too much salt invites the formation of kidney and gall stones!
10. Drink plenty of fluid every day so that your body fluid losses (e. g. through urine, sweat ...) can be compensated!

■ 3. The nutrition pyramid

- Complete a pyramid which foods you should provide for your body for a healthy nutrition in small or large amounts.



■ Mice in the cheese hole

(A task for two students)

■ Task:

Manufacture »mice« with the help of radishes, and place it on a piece of cheese.

■ Work equipment:

- 1 bunch of radishes
- 1 piece of cheese
- peppercorns
- 2 knives
- 2 cutting boards
- 2 boards for the cheese

■ Prep work:

Prepare the equipment.

Remove the leaves from the radishes, so that some of it is left for the nose of the mice.

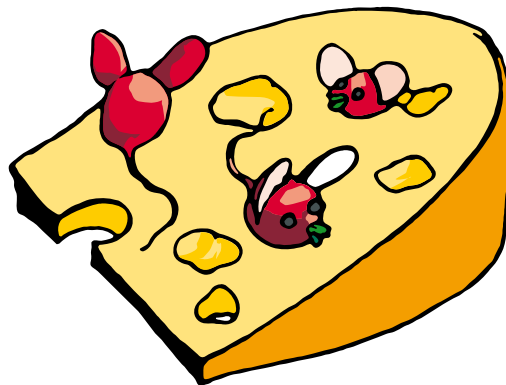
Wash the radishes thoroughly and place them on a plate.

Divide the cheese into two halves and put each half on a board.

Look at the picture (in the book »Die schönsten Ideen zum Garnieren und Verzieren« – Naumann & Göbel Verlagsgesellschaft mbH) before you start with the mice.

Place the mice on the finished cheese.

When ready, clean up your work place!



■ Fruit Salad

(A task for four students)

■ Task:

Prepare a fruit salad.

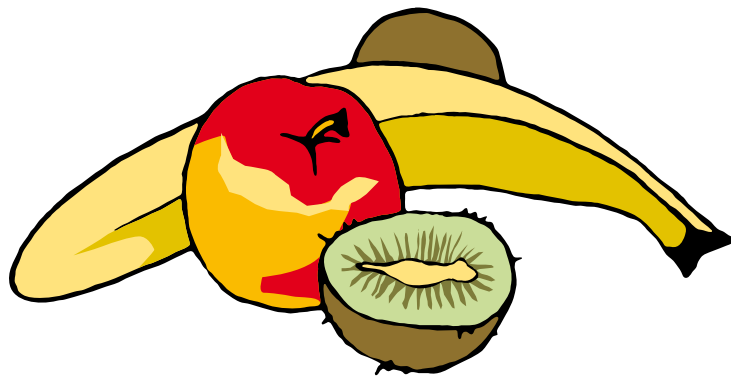
■ Work equipment:

7 apples
7 oranges
4 bananas
4 kiwi
walnuts
2 sachets of vanilla sugar
4 knives
4 cutting boards
2 tablespoons
1 nutcracker
1 large bowl for the salad
1 plate for the nuts
1 waste bowl
paper towels

■ Prep work:

Wash the apples and remove the cores.
Peel the remaining fruit on the paper towels and throw away the waste immediately.
Then cut the fruit into small pieces and put it in a large bowl.
Mix the fruit pieces with the spoon and add sugar according to taste.
Now crack the nuts, crush them slightly and put them on a separate plate,
because not everyone likes nuts.

When ready, clean up your work place!



■ Decorations with Fruit and Vegetables

(A task for four students)

■ Task:

Produce different garnishes of fruit and vegetables.

■ Work equipment:

- 1 bunch of radishes
- 1 cucumber
- 2 carrots
- 6 kiwi
- 2 apples
- 5 mandarins
- 3 large plates
- 4 knives
- 4 boards
- different cookie cutters
- 1 bowl of cold water for radish roses

■ Prep work:

Prepare the equipment.

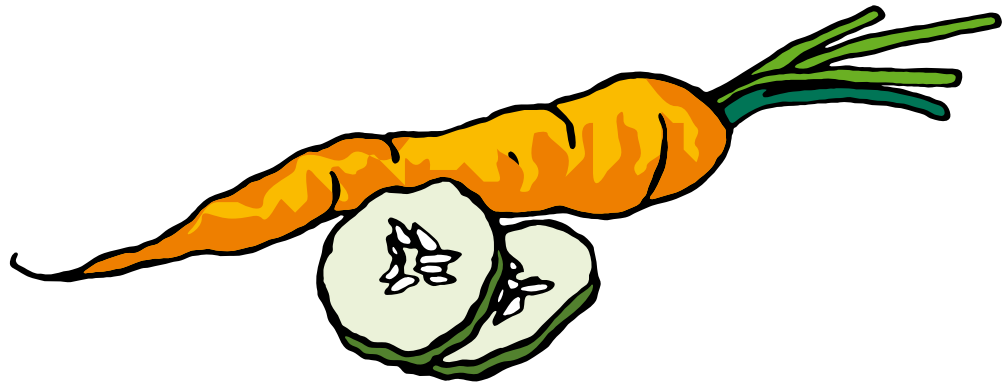
Wash the cucumbers and radishes thoroughly, peel the carrots.

The group decides in advance as to who produces what.

Look at the images (in the book »Essbare Tischdekorationen«, Heel Verlag GmbH) exactly, before you begin to work.

Put everything onto the plate provided.

When ready, clean up your work place!



■ Cottage cheese with lemon

(A task for one student)

■ Task:

Prepare lemon with cottage cheese.

Ask in advance how many students eat lemon cottage cheese.

■ Work equipment:

700 g cottage cheese

1 cucumber

2 carrots

6 kiwi fruit

2 apples

5 mandarins

1 board

1 knife

1 lemon squeezer

1 bowl

1 tablespoon

■ Prep work:

Prepare the equipment.

Put the cottage cheese into a bowl and stir it well.

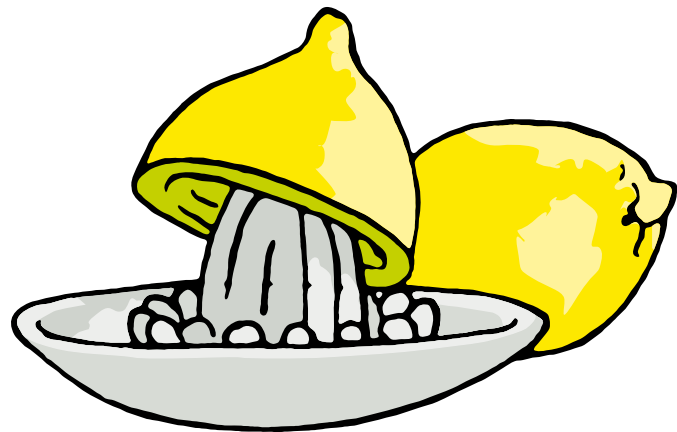
Add one level tablespoon of sugar and continue to stir.

Press half of a lemon and add the juice gradually.

Taste in between, so that the cottage cheese does not become too acidic.

As a final touch, put the milk into the cottage cheese.

When ready, clean up your work place!



■ Cottage cheese with herbs

(A task for one student)

■ Task:

Prepare cottage cheese with herbs.

Ask in advance how many students eat herb cottage cheese.

■ Work equipment:

300 g cottage cheese

1 onion

chives

sugar

milk

salt, pepper

1 board

1 tablespoon

1 knife

1 chopping knife

1 garlic press

1 bowl

■ Prep work:

Prepare the equipment.

Put the cottage cheese into a bowl and stir it well.

Put in $\frac{1}{4}$ teaspoon of sugar and continue to stir.

Wash the chives and cut it very small.

Put the chives in the bowl.

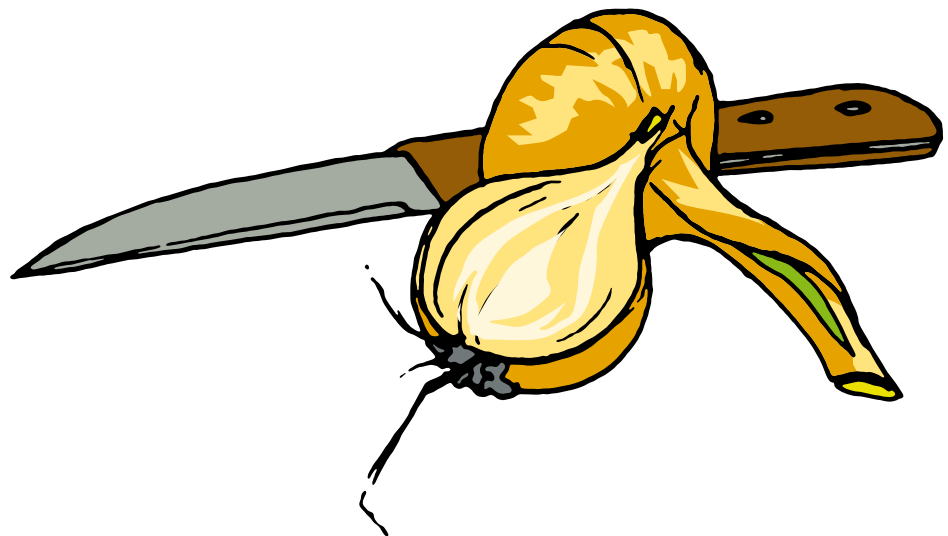
Peel an onion.

Cut $\frac{1}{4}$ of the onion very small and press the juice with the garlic press in the bowl.

Add some salt and pepper.

Stir the cottage cheese with some milk and add salt and pepper to taste.

When ready, clean up your work place!



■ Banana Milk

(A task for two students)

■ Task:

Prepare 3 liters of banana milk.

Ask in advance how many students like banana milk.

■ Work equipment:

3 liters of milk

6 bananas

sugar

1 blender

1 board

1 knife

waste bowl

one glass per student

■ Prep work:

The blender needs a safe location near a power outlet. Prepare the equipment.

Place the glasses for your classmates next to it.

Peel 2 bananas and cut them into small pieces.

Blend the banana pieces in a blender.

Add one liter of milk and mix the ingredients.

Add sugar to taste.

Do not forget to unplug the blender before you take off the mixing jug to fill the glasses.

Now repeat the process to include all the ingredients.

When ready, clean up your work place!



	Cheese mice	Fruit salad	Decoration	Lemon cottage cheese	Herb cottage cheese	Banana milk	Total
Ingredients				700 g cott. cheese milk sugar 1 lemon	300 g cott. cheese milk sugar chives salt 1 onion pepper	3 l milk sugar 6 bananas	1000 g cott. cheese 3 l milk sugar 1 lemon chives salt 1 onion pepper 9 apples 9 oranges 10 kiwi 10 bananas 5 mandarins physalis walnuts
		7 apples 7 oranges 4 kiwi 4 bananas	2 apples 2 oranges 6 kiwi				
			5 mandarins physalis				
		walnuts 2 sachets of vanilla sugar					2 sachets of vanilla sugar
			1 cucumber 2 carrots 1 bunch of radishes				1 cucumber 2 carrots 2 bunches of radishes
	1 bunch of radishes 1 piece of cheese peppercorns						1 piece of cheese peppercorns
	2 knives 2 cutting boards	4 knives 4 cutting boards 2 bowls 2 tablespoons	4 knives 4 cutting boards 1 bowl	1 knife 1 cutting board 1 bowl 1 tablespoon	1 knife 1 cutting board 1 bowl 1 tablespoon	1 knife 1 cutting board 1 bowl 1 tablespoon	13 knives 13 cutting boards 6 bowls 5 tablespoons
	2 boards for the cheese	1 nutcracker paper towels	3 large plates different cookie cutters	lemon squeezer	garlic press chopping knife	1 blender	
Devices							
Additional devices							

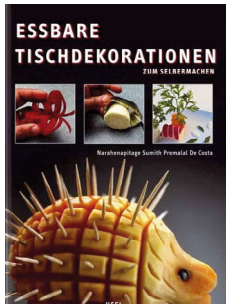
Each student receives **additionally**: 1 small plate, 1 teaspoon, 1 small bowl, 1 glass

■ Further references:

1. Another task for 3-4 students is the preparation of bread appetizers.

■ Task: Prepare skewers from bread, cheese, fruit and vegetables.

For this one should pick out decorations templates from magazines or cookbooks. Compose the ingredients and the equipment according these images, for example:



»Essbare Tischdekorationen«
ISBN: 3-89880-166-7
Heel Verlag GmbH



»Die schönsten Ideen zum Garnieren und Verzieren«
ISBN: 978-3-625-12812-0
Naumann & Göbel Verlagsgesellschaft mbH

2. The banana milk thickens when you let it stand longer than 20 minutes.
Suggestion: The student group that is ready first, can do the job.

3. Also fruit tea with lemon is advisable to be served as a beverage.

