



Food and Agriculture  
Organization of the  
United Nations



INTERNATIONAL  
FOOD  
WASTE  
COALITION

EDUCATION MATERIAL PACKAGE ON FOOD WASTE REDUCTION  
IN PRIMARY AND SECONDARY SCHOOLS

# DO GOOD: SAVE FOOD!

For age group 3

10 TO 13 YEARS OLD



FOODSAVERS



10-13  
years



FEED YOURSELF, DON'T FEED THE BIN ·



TO REDUCE FOOD WASTE.

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IN PRIMARY AND SECONDARY SCHOOLS

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## Foreword

*Making children aware of world food challenges “is about involving them in building the future we want.”  
(José Graziano da Silva, FAO Director-General)*

Today, an estimated 1.3 billion tons of all food produced for human consumption is lost or wasted on an annual basis, at a cost of more than USD 940 billion to the global economy, while approximately 815 million people across the globe suffer from chronic malnutrition and more than 2000 million people suffer from micronutrient deficiencies.

Educating young people to value food, in an effort to reduce food waste, will go a long way to bringing about the behavior change required to stem the problem now and in the future.

“DO GOOD: SAVE FOOD!” is an education package designed for that purpose. This education package is the output of a comprehensive, scientific and inclusive development process that involved the input of both public and private sector stakeholders. It responds to the growing public demand for information on the causes of and solutions to addressing food waste and seeks to engage children in the global endeavour to reduce food waste and alleviate its associated economic, environmental and social impacts.

The package lays out a holistic food systems perspective in tandem with a communication style and tools that are appropriate for the sensitisation of children to the issues. It is designed to enable teachers and educators to select and implement components they consider to be most pertinent. Examples and tips on how children can become active ‘food-savers’ as well as agents of change through transmitting the messages to their families and friends are also provided.

The content of the package has been designed in a format that can be easily adapted for different target audiences, whether from developed or developing countries.

The package will contribute to meeting the global target for food loss and waste reduction: Sustainable Development Goal (SDG) target 12.3 - *halve per capita global food waste at the retail and consumer levels and reducing food losses along production and supply chains (including post-harvest losses) by 2030* as well as addressing other related targets such as malnutrition, climate change and natural resource preservation.

We hope that this training package will stimulate thought and action among children and their families, to reduce food waste.

**Anna Lartey**  
  
Director  
Nutrition and Food Systems Division

## Acknowledgements

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## ■ INTRODUCTION



### Background

Food loss and waste are a massive global problem: One-third of all the food produced in the world is either lost or wasted, which means that every year, a staggering 1.3 billion tonnes of perfectly good and edible food does not reach the end-consumer – 100 kg for each of us. Not only does this wastage create immense economic costs of around USD 1 trillion; food loss and waste also come at a high environmental and social price.

Reducing food loss and waste is an important global endeavour that we can, and should, all take part in – particularly in industrialised countries, changes in consumer behaviour can significantly reduce the amount of food wasted. Getting children and teenagers involved is a central aspect of fighting waste: they are the future of our planet, and their knowledge and actions will shape future life on Earth.

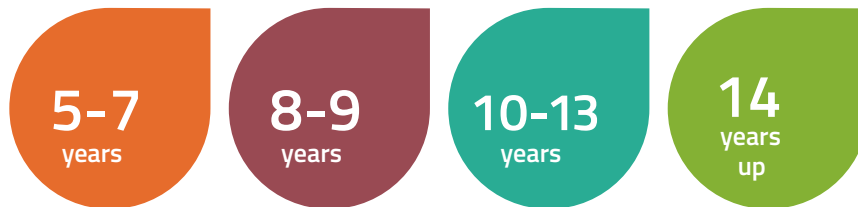
From a pedagogical point of view, discussing the reasons for, and consequences of, food loss and waste with students touches upon and reinforces central educational aspects: It encourages children and teenagers to think about their relationship with the environment and their own important place in the social, political and ecological world. Students have the opportunity to appreciate their role as global citizens and agents of change. The role students can play as disseminators of food waste reduction knowledge and as experts within their families and local and school communities has the potential to raise their level of self-assurance and self-esteem.

This development of an education material package on food waste reduction for primary and secondary schools, under the slogan “DO GOOD: SAVE FOOD!” by the Food and Agriculture Organization (FAO), in close collaboration with the International Food Waste Coalition (IFWC), took place against this backdrop.

This resource, conceptualised as a teaching material package, aims to raise awareness among school children, teachers and staff and their related families/networks on food loss and waste issues, and to introduce good practices that are conducive to food waste prevention and reduction, with an expected long-term impact. It also contributes to the achievement of multiple Sustainable Development Goals (SDGs), particularly target 12.3, which aims to halve food waste and to reduce food loss globally by 2030.

## How to use this teaching material

This teaching material on food waste reduction in primary and secondary schools has been tailored for four age groups: five to seven (age group 1), eight to nine (age group 2), ten to thirteen (age group 3) and fourteen years and above (age group 4), reflecting the different abilities and interests that exist throughout the wide age range covered.



For each age group, the package consists of **two core lessons** and **various follow-on activities**. Our rationale in designing this material has been to make it as flexible as possible: You will find enough material here to fill a whole series of lessons, but if you have limited lesson time available, one or a few activities can stand on their own.

The core lessons consist of a series of **illustration slides** (these can be found in the appendix) plus accompanying voice-over scripts (these can be found within the main body of the material). The core lessons provide students with the fundamental knowledge required before moving on to the follow-on activities. The starting-point is the information-centred **core lesson 1, “DO GOOD: SAVE FOOD!”**, which outlines the causes and consequences of food waste while offering some initial practical solutions. Practice-based **core lesson 2, “Feed yourself, don’t feed the bin: nine easy tips to reduce food waste”**, on the other hand, features a more hands-on approach and introduces concrete actions to reduce food waste. Depending on time and resource availability, technical appliances in the classrooms, as well as the age and abilities of the students, teachers can decide to project or print the illustration slides and then read the voice-over in the form of a story (probably most suitable for younger students), have it read out by the students themselves, adapt it to form a small drama/role-play exercise, or assign the thorough reading of it as a homework task (more suitable for the older students of age group 4).

### 2 CORE LESSONS

Starting point: the information-centered core lesson 1  
“DO GOOD: SAVE FOOD!”

2nd step: The practice-based core lesson 2  
“Feed yourself, don’t feed the bin: nine easy tips to reduce food waste”






Each presentation is accompanied by a set of follow-on activities that aim to reinforce the message conveyed. The activities come in a variety of forms. These range from worksheets to discussions, games, drama/writing exercises and projects suitable for students and groups with diverse interests, talents and creative, analytical and content-related experience. Each activity includes learning objectives and useful instructions that detail the time and resources required for successful implementation.


FOLLOW-ON ACTIVITIES	
Worksheets	Foster a deeper understanding of the topic's main issues, enable textualisation and consolidate content.
Discussions	Content-driven group activities that allow for further intellectual and/or creative involvement with the topic.
Games	Revisit the topic's main issues to give students the opportunity to deepen their understanding in a playful manner.
Writing exercises	Foster creative and cognitive involvement with the topic.
Projects	Hands-on, practice-based activities that take place over the course of several days and encourage behavioural changes.

Flexibility was at the forefront of the planning process. The materials have been structured in a way that enables teachers to select those activities that best match the needs, abilities and interests of their students while also conforming to time and resource constraints. Both core lessons and most follow-on activities exist for all age groups and only differ in terms of the depth in which they discuss the topic, so if you feel that a particular exercise is too challenging or not challenging enough for your students, the material will give you the opportunity to choose the same activity from a different age group. The majority of the activities can be completed within 45 minutes; those that cannot have been split up into different parts. These particular lessons can be conducted over the course of a few days. Further materials, such as posters, leaflets and brochures, can be found on the FAO website.


We would love to hear about your experience of using these materials! Your feedback will help us to improve and update the product. Please get in touch by email: [Save-Food@fao.org](mailto:Save-Food@fao.org).

## Overview of the core lessons and follow-on activities


Activity	Students are asked to ...	Learning objective	Time requirement
<b>CORE LESSON 1: DO GOOD: SAVE FOOD!</b>			
DO GOOD: SAVE FOOD! 	... read or listen to a presentation about the problems and consequences of food waste, and about solutions for avoiding food waste at home and school.	Students can recall key facts about, and techniques for, saving food.	45 min
Revision sheet: DO GOOD: SAVE FOOD!	... answer worksheet questions by extrapolating from the presentation the key facts and techniques for saving food.	Students can extrapolate key facts and techniques for saving food.	20 min
<b>FOLLOW-ON ACTIVITIES FOR CORE LESSON 1: DO GOOD: SAVE FOOD!</b>			
<b>WORKSHEETS</b>			
Crossword puzzle	... solve a crossword puzzle featuring some of the key tips and concepts of food saving.	Students recall key facts about, and techniques for, saving food.	15 min
We are the food savers	... discuss the "personalities" of the Food Savers and create their own superhero persona.	Students can explain the reasons for needing to save food.	60 min
Food waste pop quiz	... answer food-waste-related questions based on the presentation.	Students can extrapolate key facts about food waste and food-saving techniques.	15 min
Food waste or food loss? 	... determine whether various examples represent food waste or food loss.	Students can distinguish between food loss and food waste.	20 min
Sum it up, waste it down	... solve mathematical exercises based on the theme of food waste.	Students can apply their understanding of food loss and waste and translate this to a mathematical level.	25 min
<b>DISCUSSIONS</b>			
The long way from the farm to the table 	... think their way through the food supply chain, using an example of their choice.	Students can apply their understanding of food loss and waste and transfer this to the food supply chain.	90 min
<b>GAMES</b>			
Memothree	... play a food-waste-themed game of Memory.	Students can recall key facts about, and techniques for, saving food.	45 min
Dont waste it! Bingo	... play a game of food-waste-themed Bingo.	Students can recall key facts about, and techniques for, saving food.	20 min





Activity	Students are asked to ...	Learning objective	Time requirement
<b>WRITING EXERCISES</b>			
DO GOOD: SAVE FOOD! 	... write a story that takes the reader on a journey about food saving.	Students can determine and creatively translate food-saving techniques.	30–40 min
I am a food saver!	... write an imagined adventure featuring themselves as Food Savers.	Students can imagine and verbalise possibilities for behavioural change.	30–40 min
Food supply chain interview	... pick an actor from the food supply chain and conduct an imagined interview with them.	Students can determine and translate problems associated with food loss and waste along the food supply chain.	30–40 min

**CORE LESSON 2: Feed yourself, don't feed the bin!**

Feed yourself, don't feed the bin! 	... read or listen to a presentation highlighting nine key tips for avoiding food waste at home.	Students can recall the key tips for saving food.	30 min
Revision sheet: Feed yourself, don't feed the bin!	... answer worksheet questions by extrapolating the key techniques for saving food from the presentation.	Students can extrapolate and reproduce key techniques for saving food.	20 min

**FOLLOW-ON ACTIVITIES FOR CORE LESSON 2: Feed yourself, don't feed the bin!**

<b>WORKSHEETS</b>			
You can do better!	... determine food-wasting actions in a story about Anna and Theo, and think of food saving alternatives.	Students can determine food-wasting behaviour and recall and discuss food-saving practice.	25 min
Let's fight food waste!	... repeat the key ways to reduce food waste.	Students investigate key food-saving tips and specify tips of their own.	20 min
Stop food waste! 	... evaluate their treatment of food at home and consider steps to reduce food waste in their family.	Students can identify and explore their food-saving practices at home.	25 min
DO GOOD: SAVE FOOD!	... recapitulate what they have learned about food waste and how their knowledge has translated into practice.	Students can recall key facts about techniques for saving food and can relate them to their personal lives.	25 min
<b>DISCUSSIONS</b>			
Fight the waste!	... create posters on "How we can avoid wasting food", and "What we can do with left-overs".	Students can recall key concepts of food-waste reduction and investigate their application at home.	90 min

Activity	Students are asked to ...	Learning objective	Time requirement
Poster 	... illustrate one poster for each key tip and discuss how food-saving practices can be implemented at home and in school.	Students can recognise and discuss key concepts of food-waste reduction.	100 min
Storage knowledge	... determine the perishability of certain foods, and think about where these would best be stored.	Students acquire and discuss information about safe food storage.	40 min
Fridge frenzy 	... after a group discussion, students colour in, cut out and paste different items of food onto a picture of a fridge.	Students recall and discuss information about safe food storage.	25 min
<b>GAMES</b>			
Speed storage	... in a game of speed and knowledge, students rush around the room correctly storing food in pre-determined spaces and containers.	Students can determine the perishability of certain foods, and can extrapolate information about safe food storage.	40 min
Don't waste it! Board game	... play a board game featuring key facts of how to avoid food waste.	Students recall key tips for food-waste reduction.	30 min
<b>WRITING EXERCISES</b>			
You can do better!	... spot food-wasting actions in a story with Anna and Theo, and to write a story featuring food-saving alternatives.	Students can determine food-wasting behaviour and recall food-saving practices.	45 min
Covering food waste	... write and/or illustrate a newspaper, journal or blog article about food waste.	Students can recall and adapt key food-saving issues and tips.	30–40 min
<b>PROJECTS</b>			
Save food diary 	... keep track of and evaluate their efforts to reduce food waste at home.	Students practice and evaluate food-saving actions and introduce these to their families.	3 day period
Get cooking 	... come up with recipes for commonly wasted food and try these at home.	Students determine and practice effective ways to re-use food that might otherwise have gone to waste.	45 min
Spread the word	... design and distribute flyers with the key tips and lead a guided interview with the people they shared the flyers with.	Students can recall, categorise and evaluate food-saving practices.	90 min



■ CORE LESSON 1

# DO GOOD: SAVE FOOD!

## ■ CORE LESSON 1: DO GOOD: SAVE FOOD!



**CORE LESSON 1: DO GOOD: SAVE FOOD!** explains the problems and consequences of food waste and introduces solutions for avoiding food waste at home and school. In the first core lesson, students learn about the problems and consequences of food waste and also beginning to understand how they can avoid food waste at home and in school. The main tool to teach the contents of core lesson 1 is Presentation 1: "DO GOOD: SAVE FOOD!" Depending on the time and (technical) resources available, you can decide to project or print the illustration slides (to be found in the annex of this document).

The presentation is designed to go with the accompanying voice-over text (to be found on the following pages) for you to read out or draw inspiration from for telling a story. For older students, it might be more suitable to have it read by the students themselves, adapt it to form a small drama/role-play exercise, or assign the thorough reading of it as a homework task. Use the accompanying revision sheet to help students extrapolate the key issues from the presentation.

Within the voice-over text you will find questions for discussion and engagement with the students. These are only suggestions, so feel free to change, complement or shorten them.

*NB: The voice-over to slide 4 mentions the possibility of war and conflict as a result of climate change. If you feel that this will disturb your students, please feel free to leave that sentence out.*



# 45 min

### You will need:



- A video projector and a computer that can open PDF files
  - A digital copy of the presentation
- Alternatively, print the slides on transparencies and use an overhead projector, or else print them on A4 sheets of paper and have a student hold them up while you are reading the voice-over to the class.*
- If you want to use them: printouts of the voice-over and revision sheet RS 1 (one per student)



### Instructions:

1. Show the presentation and read/narrate the accompanying voice-over script or have students read the voice-over script during class or as homework.
2. Discuss the content with the students. You might find the questions provided in the voice-over a good starting-point for discussion.
3. Hand out the revision sheet and ask students to fill it in.
4. Compare and discuss results: What did the students learn from the core lesson? What is the relevance of this information to their own lives? How can they change their own behaviour to reduce food waste? Why is it important for each of us to change our behaviour?

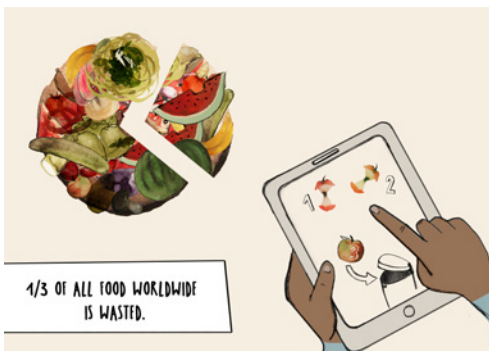


## ■ CORE LESSON 1: VOICE-OVER

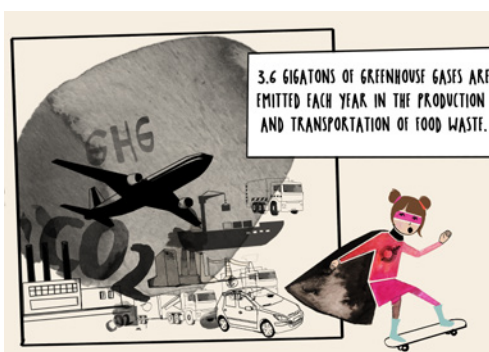
DO GOOD: SAVE FOOD!



**1** Next time you're out shopping for more food than you can actually carry or loading food onto an already overflowing plate: beware! You might be wasting food! Let's have a look what food savers Lou, Amal, and Sam can show us about why and how we can avoid wasting food.



**2** Every year, an estimated 1.3 billion tonnes of food is lost or wasted worldwide. This means that nearly one-third of all food produced is not actually consumed. This equates to approximately 100 kg of food loss or waste for every person on the planet. That means that for every two apples that are eaten, one apple goes to waste. You buy three yoghurts but you only eat two and throw away the other one because it has gone off in your fridge. Three carrots are harvested, but one of them is thrown away because it is too small or too crooked or because mice have eaten it while it was being stored.

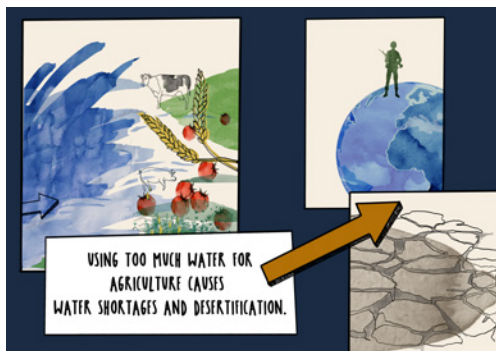


**3** Producing food uses up energy and produces greenhouse gases. A total of 3.6 gigatons of greenhouse gases are emitted each year in the production, processing, storage and transportation of food that is later thrown away. When we compare this to the emissions of all the countries in the world, only China and the USA produce more greenhouse gases every year.

*Q: Do you know what greenhouse gases are? What do they do?*



**4** The Earth is wrapped in various layers of what we call greenhouse gases. Together, these make up the atmosphere. The Earth's atmosphere prevents it from cooling off in space: It lets some rays of the sun in but also stops some of the heat from leaving the Earth again. Greenhouse gases occur naturally, and without them, there would be no life on Earth. However, humans have been producing more and more greenhouse gases, e.g. in industry, agriculture, waste management activities, and by burning fossil fuel in cars and coal-fired power stations. The greenhouse gases we produce have unbalanced the natural atmosphere and contributed to climate change: Too great a volume of these gases is in the atmosphere and not all of the heat that should leave the Earth can escape into space. Climate change makes our planet warmer than it should be. If we continue producing such high amounts of greenhouse gases, a lot of the ice on Earth will melt, the sea level will rise, and there will be less land for people and animals to live on. The weather will become more extreme. Some animals and plants will not survive the new temperatures, and it will become more difficult for a lot of people to grow food and to find places to live. Most likely, the risk of conflicts will also increase due to challenges in the distribution of land, water and food.



**5** Among other things, climate change, which is accelerated by the amount of food we are wasting, leads to water shortages, droughts and desertification in many places on Earth. At the same time, producing food uses a lot of water. One-quarter of all the water we use for agriculture is used to grow food that later ends up as loss or waste. This is roughly the same amount of water as all the people on the planet use per year.



**6** The way we grow food can also be very harmful to what we call biodiversity. Forests are cut down to make space for fields and other places used to produce food.

*Q: Do you have any idea what biodiversity is?*

*A: The term biodiversity refers to the variety of life on Earth at all its levels, from genes to microbes, and from animals to ecosystems. All species and organisms contribute something to their common environment, so it's very important to interfere as little as possible with functioning ecosystems.*

This means that the plants in the forest are lost, which increases the problems associated with CO<sub>2</sub> emissions and other greenhouse gases.

*Q: Why does cutting down forests contribute to climate change?*

*A: Plants use sunlight and CO<sub>2</sub> to produce energy. During this process, they release oxygen. Plants thus filter the air and capture CO<sub>2</sub>. When we cut down forests, all the CO<sub>2</sub> is released into the atmosphere, which contributes to climate change.*

Cutting down forests also means that a lot of animals lose their habitat and are ultimately threatened by extinction.

**Q:** Can you think of some animals that might be endangered by deforestation, i.e. cutting down forests?

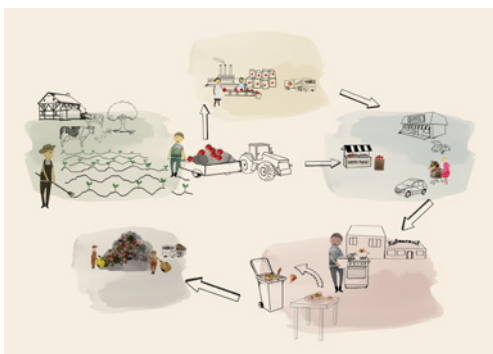
**A:** e.g. fox, wolf, orangutan, panda, gorilla.



**7** Food that is later wasted is grown on about 1.4 billion hectares of land, which is a larger area than China or Canada, the second- and third-largest countries in the world. This land cannot be used to grow other food or to provide habitats for animals and plants, or to create living space for humans.



**8** Using so much water and land to grow food that is later lost or wasted will become an even bigger problem in the future: A growing number of people are living on Earth, and there is only a limited amount of water and land on which to grow food for everyone. Avoiding food loss and waste means that we directly reduce the number of people going hungry in the world. In order to feed us all, we will have to be much more careful about not wasting any food.



**9** Shopping for food and preparing food to be eaten takes time and physical effort. Even more resources go into getting the food ready to be sold before it's taken to our homes. If you throw away food, all the labour that has gone into growing, processing and transporting food products has been wasted too. Moreover, throwing away food creates waste that needs to be taken care of, and a lot of labour is expended on the disposal of waste that could have been avoided.



**10** Food is lost or wasted all along what we call the food supply chain, so all the way from the farm to the table. The food supply chain starts with the farmer. Fruits, grains and vegetables are grown in a field or a greenhouse. Animals are raised on farms or in fisheries. Fruit and vegetables are taken to markets to be sold or to handling and processing centers where they are packaged, sometimes processed and prepared for transport. Animals are taken to the slaughterhouse and their meat is then also taken to handling and processing centers. From here, they are taken to markets, shops and other retailers. The last step takes the food either to a restaurant or cafeteria or else to our homes. Ideally, the food supply

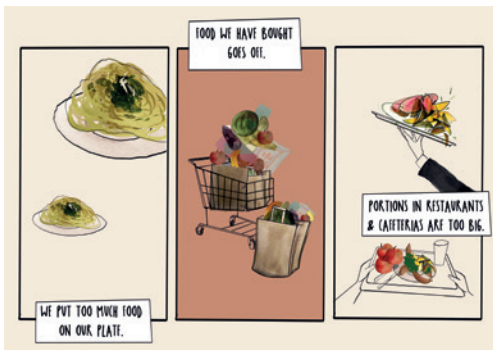
chain would end here, but as you already know, a lot of food is not in fact eaten but thrown away and fed into the system of food-waste disposal.

**Q: Do you know what happens to your food waste?**

**A: Depending on each country, county and municipality, there are different systems of waste disposal. Ideally, food waste should be used as animal feed or in home composting. A second option is its use in anaerobic digestion plants, in which the waste is used to create a biogas that can be used to generate electricity and heat. Sadly, however, most of the wasted food is transported to landfills, where its decomposition produces a greenhouse gas called methane.**



**11** Any food that is unintentionally lost because of malfunctioning or inadequate food supply chains (e.g. lack of appropriate storage or refrigeration) is called food loss. If stored corn, for instance, is eaten by mice, if fish goes off during transportation because the cooling system has stopped working, or if you drop and break your eggs on the way home from the shop, this is food loss. Any food that could have been eaten but is wasted due to neglect and our behaviour (e.g. poor planning or overshopping) is called food waste. If something goes off in your fridge because you haven't eaten it in time or if you have put too much on your plate and then throw away your left-overs instead of eating them later, this is food waste. We as individuals cannot do much to reduce food loss, but we can do a lot to reduce the amount of food that is wasted after it has left the shop.



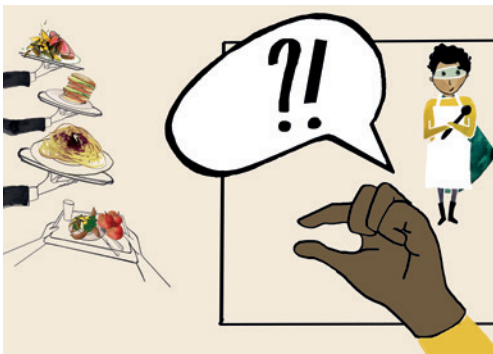
**12** Food is wasted because we put too much food on our plates, we buy too much food and don't eat it before it goes off, or because restaurants or school cafeterias serve portions that are too big.



**13** So you can simply take smaller portions and go back for more should you still be hungry. Put whatever left-overs you have in a closed container and then in the fridge to eat the next day, or in the freezer to eat at another time. Try and think of ways to use food that is in danger of spoiling – freezing is an option, but you can also use vegetables to make a stew or a smoothie. Fruit about to spoil can also become a smoothie, or you can make a fruit salad, chutney or jam out of it.



**14** Together with your parents or guardians, think carefully about what you need when you shop. Take a shopping list and stick to it. When you're out shopping, consider buying oddly shaped vegetables and fruits. Many supermarkets offer them at lower prices, and even if they don't, by choosing the oddly shaped fruit you show the owner that you're buying food for its taste and nutritional value and not its shape. Finally, when taking your shopping home and putting it in the fridge or cupboard, rotate it so that the freshest stuff is at the back.



**15** If you're at a restaurant or a cafeteria that you know tends to serve too much, ask for a smaller portion to start with. If you cannot finish your plate, ask for a doggie bag and enjoy the rest of your meal at home the next day. Lobby for your school cafeteria to install a system of food-waste reduction.



**16** Wasting food means wasting energy, land and water. If we avoid wasting food, fewer people in the world will go hungry, fewer animals will lose their habitat, and climate change will slow down. Every one of us can make a difference – by putting smaller portions on our plates, by keeping and reusing left-overs and by shopping sensibly. Together, we can fight food waste. So DO GOOD: SAVE FOOD!

# REVISION SHEET: CORE LESSON 1

- How much food is estimated to be wasted every year...
  - ◆ per person? .....
  - ◆ in the world? .....
  - ◆ in percentage terms (in relation to all the food available)? .....
- What happens to the food we throw away? → .....
- What problems are associated with disposing of food waste? → .....
- What is a food supply chain? → .....
- Briefly outline the various stages of a food supply chain. → .....
- Producing, distributing and preparing food uses up fuel and energy and produces greenhouse gases such as CO<sub>2</sub>, methane and nitrous oxide. How many tonnes of greenhouse gases are emitted by food-waste-related processes and actions every year? Why is this harmful to our planet? → .....
- The amount of CO<sub>2</sub> produced through food loss and waste is called the carbon footprint of food loss and waste. Which other two footprints are relevant to food waste? How high are they? → .....
- How is food waste related to biodiversity? → .....
- What is the difference between food waste and food loss? → .....
- What can we as consumers do to avoid food waste? → .....

## ■ Revision Sheet: Core Lesson 1 (Solutions)

### 1. How much food is estimated to be wasted every year ...

- ◆ per person? 100 kg
- ◆ in the world? More than 1.3 billion tonnes
- ◆ in percentage terms (in relation to all the food available)? 33.3 % (1/3)

### 2. What happens to the food we throw away?

Food that has gone to waste might be taken to anaerobic digestion plants where it is used to create power. Some of it is used as animal feed or in household or industrial compost plants. Most of it is taken to landfills, where it rots away unused.

### 3. What problems are associated with disposing of food waste?

Transportation: Transporting food waste to digestion or compost plants or to landfills costs energy and money and produces CO<sub>2</sub>.

Pollution: If it is taken to a landfill, wasted food occupies land that could have been used for other purposes. It also pollutes the surrounding area and produces methane.

### 4. What is a food supply chain?

The term "food supply chain" refers to the process of how food from a farm or another production site ends up on our plates. It encompasses all the different stages that food goes through along this path.

### 5. Briefly outline the various stages of a food supply chain.

1. Farm: Fruits, grains and vegetables are grown in a field or a greenhouse. Animals are raised on farms or in fisheries.
2. Markets / handling or processing centres: Fruits and vegetables are taken to markets or handling and processing centres, where they are packaged and prepared for transport. Animals are taken to the slaughterhouse and their meat is then also taken to handling and processing centers.
3. Processing centres: Most fruits, vegetables, grains, and meat become parts of different products, so from the packaging centre they are taken into a production plant, where they are processed into ready-made meals or other foods. Again, these are packaged and then distributed to retailers.
4. Retailer: Here, food items are sold to individuals or companies.
5. Consumption: From the retailer, the food is taken to a restaurant or cafeteria or to our home. Ideally, the food supply chain would end here.
6. Waste disposal: Food that is not eaten is disposed of in digestion or compost plants, fed to animals, or taken to landfills.

### 6. Producing, distributing and preparing food uses up fuel and energy and produces greenhouse gases such as CO<sub>2</sub>, methane and nitrous oxide. How many tonnes of greenhouse gases are emitted by food-waste-related processes and actions every year? Why is this harmful to our planet?

3.6 gigatonnes of greenhouse gases are emitted each year. This is very harmful because the rise in greenhouse gases has unbalanced the Earth's natural atmosphere and has led to climate change. Climate change makes our planet warmer than it should be. In the future, as a result of climate change, a lot of the ice on Earth may melt, the sea level may rise, and there may be less land for people and animals to live on. The weather may become more extreme. Some animals and plants may not survive these new temperatures, and it may become more difficult for a lot of people to grow food and to find places to live.

**7. The amount of CO<sub>2</sub> produced through food waste is called its carbon footprint. Which other two footprints are relevant to food waste? How high are they?**

1. Water footprint: One-quarter of all the water we use for agriculture is used to grow food that later ends up as waste. The water footprint of food waste is roughly the same amount of water as all the households in the world use per year and as much as the Volga river – the longest river in Europe – discharges over the course of a whole year.
2. Land occupation footprint (the amount of land that is used to grow food that is later wasted): Food that is later wasted is grown on about 1.4 billion hectares of land. If we compare this area to the surface of the largest countries on Earth, it is second only to the total land area of the Russian Federation. Production sites for food later wasted thus occupy a land mass bigger than that of China or Canada.

**8. How is food waste related to biodiversity?**

Forests are cut down to make space for crop fields, production and processing sites and landfills. Through this process, which is called deforestation, a lot of animals lose their habitat and become threatened by extinction. Moreover, the plants in these forest are lost, which intensifies the problems associated with CO<sub>2</sub> and other greenhouse-gas emissions.

**9. What is the difference between food waste and food loss?**

Any food that could have been eaten but is wasted because of neglect and our behaviour (e.g. poor planning, overshopping) is called food waste.

Any food that is unintentionally lost because of malfunctioning or inadequacies in food supply chains (e.g. lack of appropriate storage or refrigeration) is called food loss.

**10. What can we as consumers do to avoid food waste?**

Food waste exists because we put too much food on our plates or are served excessive portions in restaurants or cafeterias, or because we let food spoil after we have bought it. In order to save food, we can take or ask for smaller portions and go back for more if we are still hungry. We can put left-overs in the fridge to eat the next day or in the freezer to eat at another time. Food which is about to spoil can also be frozen or used to make stews, smoothies, chutneys or jams. An even easier way to avoid spoiling food is to shop carefully and only buy what we really need and can be sure of using up in time.

To discourage shops from throwing away food, we can consider buying oddly shaped fruits and vegetables. Many supermarkets offer these at lower prices than “correctly” shaped produce, and even if they don’t, by choosing the oddly shaped fruit we can show the retailer that we’re buying food for its taste and nutritional value and not its shape.





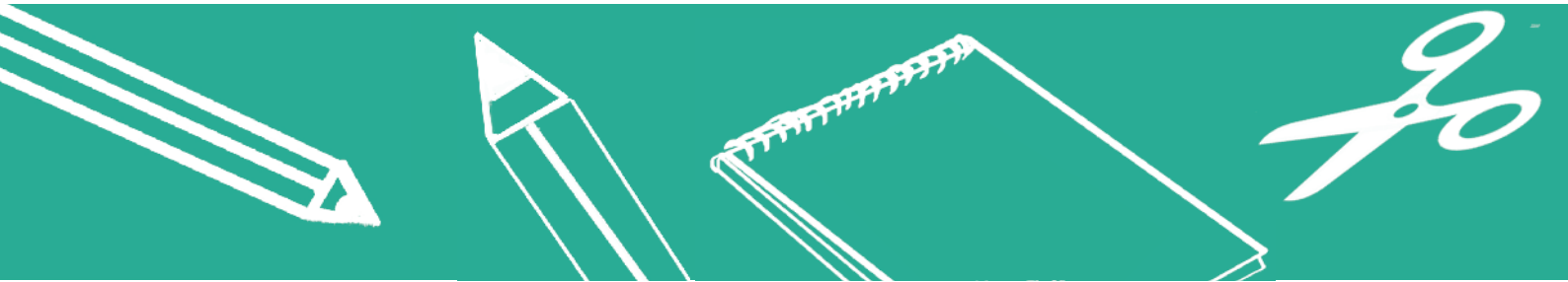
## ■ FOLLOW-ON ACTIVITIES

for core lesson 1

# DO GOOD: SAVE FOOD!

*The FOLLOW-ON ACTIVITIES are designed to further engage the students and deepen their understanding of the key points outlined in core lesson 1.*

## ■ CORE LESSON 1: WORKSHEETS



### ■ Crossword puzzle

The repetition of some of the presentation's key terms in this crossword puzzle helps strengthen the central ideas of food waste reduction.



25 min

#### You will need:



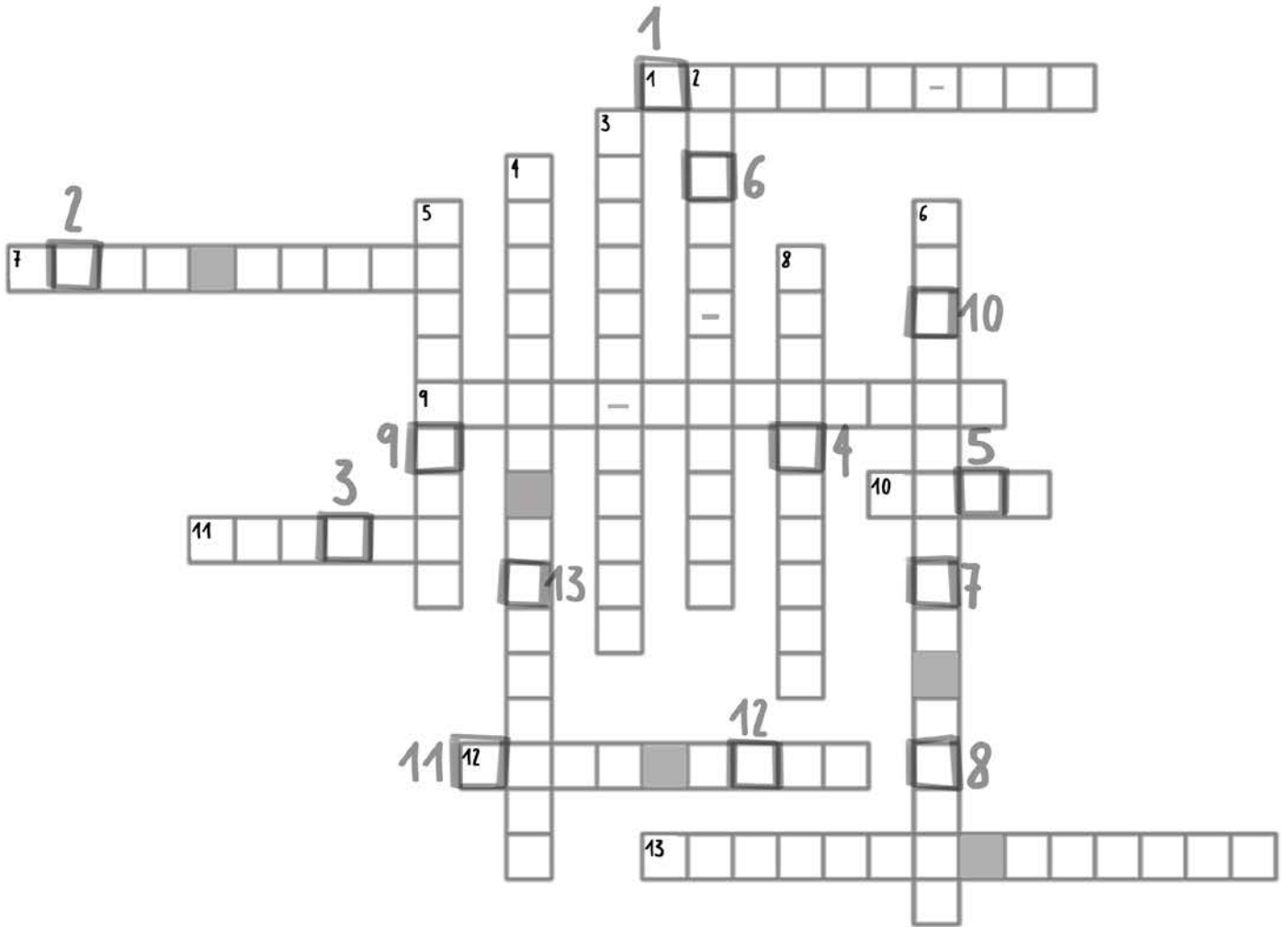
- Printouts of worksheet WS 1 (one for every two students)
- One copy of the solution sheet for yourself



#### Instructions:

1. Split the students into groups of two.
2. Hand out crossword puzzles and ask students to solve them together.
3. Compare results.

# CROSSWORD



ACROSS	DOWN
1. AT THE RESTAURANT, ASK FOR A ... TO TAKE LEFTOVERS HOME IN.	2. BUY ... FRUIT AND VEGETABLE TO AVOID THEM GOING TO WASTE.
7. ANY FOOD WASTED FOR AVOIDABLE REASONS.	3. THE ROUTE OUR FOOD TAKES FROM THE FARM TO OUR TABLE.
9. CAN BE AVOIDED BY TAKING A SHOPPING LIST.	4. ASK FOR ... TO AVOID WASTING LEFTOVERS.
10. DO GOOD: SAVE ... !	5. KEEP THESE IN THE FRIDGE FOR ANOTHER DAY.
11. FOOD WASTE CONTRIBUTES TO WORLD ... .	6. OUR ATMOSPHERE IS MADE UP OUT OF ... .
12. ANY FOOD LOST FOR REASONS OUT OF YOUR CONTROL.	8. TURNS KITCHEN SCRAPS INTO NEW SOIL.
13. MAKES OUR PLANET WARMER THAN IT SHOULD BE.	

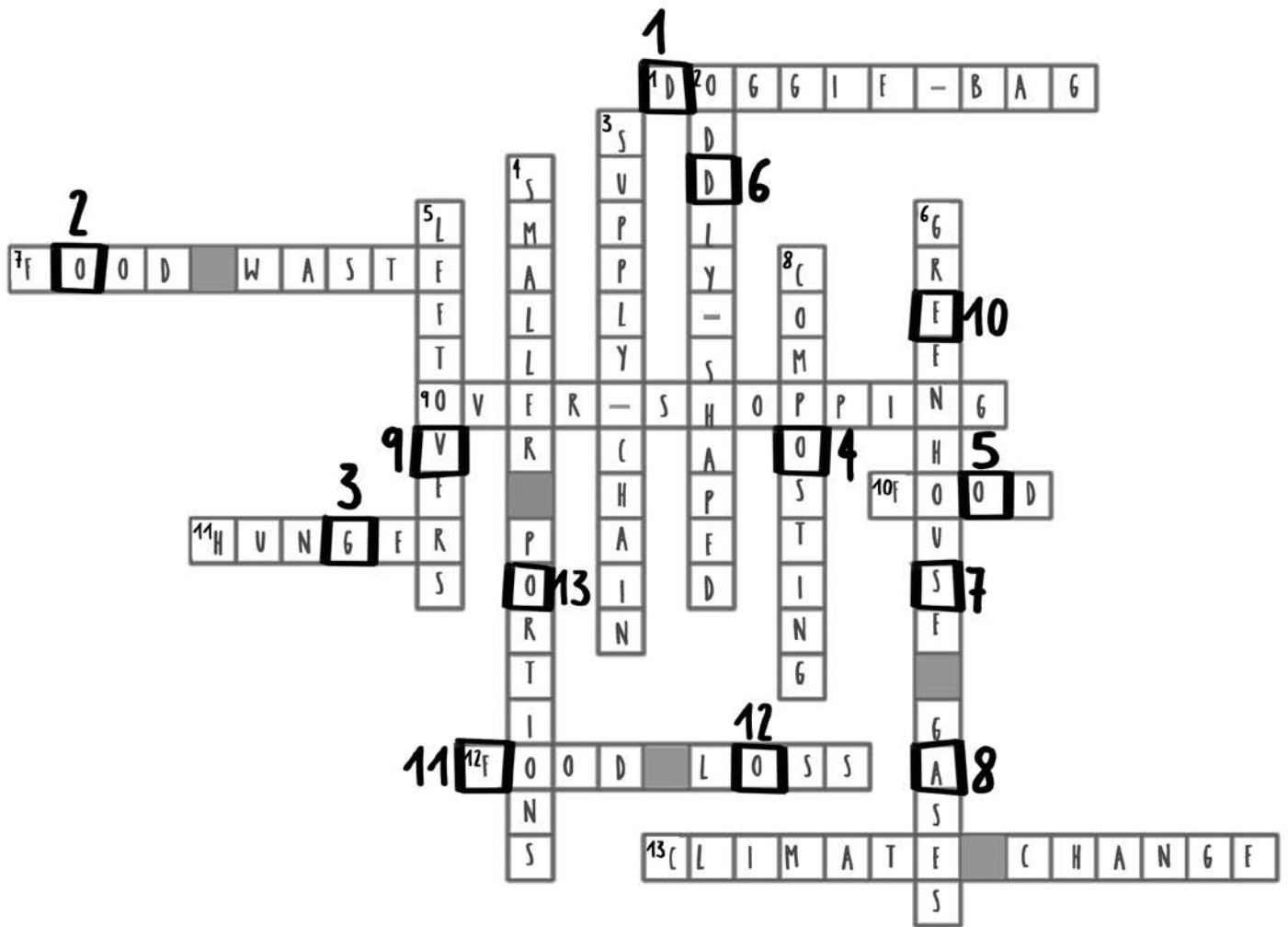
:




!

1 2   3 4 5 6      7 8 9 10   11 12 13

# SOLUTION CROSSWORD



DO
GOOD
:
SAVE
FOOD
!

1 2
3 4 5 6
7 8 9 10
11 12 13

## ■ We are the food savers!

Through discussing the “personalities” of the food savers and creating their own superhero personas, students become aware of their role in fighting food waste and imagine themselves as key agents of change.

*This exercise is best suited for the younger students within this age group.*



**60 min** (45 min for part 1, 15 min for part 2)

### You will need:



- Printouts of worksheet WS 2a (“We are the food savers”) and WS 2b (“You can fight food waste”) (one per student).



### Instructions:

#### Part 1:

1. Hand out worksheet WS 2a and read the descriptions of the food savers together. Discuss: Which of the food savers is your favourite? What do you like about them?
2. Hand out WS 2b, “You can fight food waste” and encourage the students to come up with their own food waste fighter.

#### Part 2:

3. Split students into groups of four and let them read their hero’s description out to each other. (Depending on the size of your class and the amount of time you have, you can also invite students to read out their description to the whole group instead of forming small groups.)

# FOOD SAVERS



Reyna is the youngest and the smartest of the Food Savers. She always knows the answers to the trickiest questions, and if you were to wake her up in the middle of the night (which Mika routinely does), she could tell you exactly what the next steps in your food waste reduction plan are. Reyna will not take "no" for an answer, and she will bother the others until they end up doing exactly what she wants them to.

**LIKES:** DOING MULTIPLICATION TABLES WHILE HANGING OFF HER BEDROOM CLIMBING FRAME.  
**HATES:** WHEN MIKA TIES HER SHOE LACES TOGETHER, OR STEALS HER LAST COOKIE.  
**NICKNAME:** BRAINA.  
**FAVOURITE FOOD:** CHICKEN ENCHILADAS.  
**SUPERPOWER:** CAN CALCULATE ANYONE'S FOOD WASTE WITHIN SECONDS.

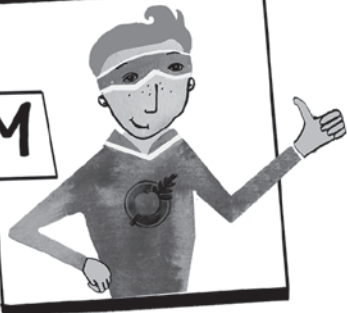


Why walk if you can run? Why whisper if you can shout? Mika is the loudest, most energetic and troublesome whirlwind ever to become a Food Saver. Even though he is little, the others are always able to spot Mika in a crowd: He is at the centre of the action. Mika had to spend quite a lot of time in hospital when he was younger, so he knows all there is to know about eating food that you can't choose and being given portions that aren't the right size. Mika is fast and witty, and he is feared for his devious little tricks and pranks. The other food-waste fighters are just pleased he hasn't figured out how to use their emergency helicopter yet.

**LIKES:** STEALING LOU'S SKATEBOARD AND TAKING IT FOR A RIDE DOWN HELL'S SLOPE.  
**HATES:** GOING TO BED BEFORE TEN P.M.  
**FAVOURITE FOOD:** PIZZA.  
**NICKNAME:** THE FLASH.  
**SUPERPOWER:** ENDLESS ENERGY.

# FOODSAVERS

**SAM**



Sam is a wizard when it comes to whipping up delicious meals from leftovers. He dreams of setting up his own leftover restaurant but hasn't figured out the colour of the curtains yet. Sam likes playing rugby and lecturing his team-mates about not eating their pizza crusts. They tend not to argue because they know Sam could pick them up and score a try with them at the opposite end of the pitch.

**LIKES:** KNITTING.  
**HATES:** HOW MOST T-SHIRTS ARE TOO TIGHT OVER HIS CHEST.  
**FAVOURITE FOOD:** BREAD DUMPLINGS.  
**NICKNAME:** RED HULK.  
**SUPERPOWER:** PHYSICAL STRENGTH.

**AMAL**



Amal is slow. Amal is easy. Amal is like a bear that wakes up from a long winter sleep and spends the first two hours just rubbing his eyes and blinking into the morning sun. But boy oh boy, that bear has some sharp claws and big teeth, and you'd better not make him angry! Amal can spend hours patiently lecturing people about food waste, and he will do it again and again even to the slowest of learners.

But if he thinks you're not taking the issue seriously enough? Man, can he get mad!

**LIKES:** WATCHING THE SUN RISE OVER A CORN FIELD.  
**HATES:** GETTING UP EARLY.  
**NICK NAME:** BALU.  
**FAVOURITE FOOD:** VEGETABLE PIE.  
**SUPERPOWER:** PATIENCE. AND A BLOOD-CURDLING BEAR'S GROWL IF NECESSARY.

**LOU**



Lou's always busy, and she's always on top of things – quite literally: Lou loves riding her skateboard just as much as she loves whizzing around after the newest tech device or the newest food waste development.

Lou is not one to push her opinion, but she can be brutally honest if she thinks someone's being stupid – and to her, being stupid includes wasting food. So don't let her see you throw away your leftovers.

And never ask for her opinion if you can't take an honest answer!

**LIKES:** EVERYTHING FAST AND GEEKY.  
**HATES:** HIGH HEELS. THEY MAKE YOU TRIP.  
**FAVOURITE FOOD:** FRUIT SMOOTHIES.  
**NICKNAME:** LOU IS IN FACT ALREADY HER NICKNAME. HER REAL NAME IS LUDMILLA – BUT DON'T SNITCH ON US HAVING TOLD YOU!  
**SUPERPOWER:** GEEK POWER – LOU COMMANDS ALL TECH MATTER.

# YOU CAN FIGHT FOOD WASTE !

Mika and Reyna are always looking for back-up, so let them know you want to become a food waste fighter, too!



My food waste fighter name:

---

I like:

---

---

---

---

I hate:

---

---

---

---

My favourite food:

---

My superpower:

---

---



## ■ Food waste pop quiz

In this nine-question pop quiz, students can revisit and test their knowledge of food waste.



15 min

### You will need:



- Printouts of worksheet WS 3 (one per student)
- One copy of the solution sheet for yourself



### Instructions:

1. Hand out worksheets.
2. Split students into groups of two and ask them to work on the quiz together.
3. Compare results.

# FIGHTING FOOD WASTE POP QUIZ



Tick the boxes with the correct answers. Sometimes multiple answers are correct.

1. How much food does each of us waste every year?
  - An estimated 50 kg.
  - An estimated 100 kg.
  - An estimated 200 kg.
2. How much of the food produced worldwide is lost or thrown away instead of being eaten?
  - One-fifth.
  - One-quarter.
  - One-third.
3. How much water is used for food that is later lost or thrown away?
  - One quarter of all the water used in agriculture.
  - As much as China and Canada use per year.
  - As much as all the households in the world use each year.
4. Shortage of water may lead to:
  - droughts.
  - desertification.
  - global warming.
5. How big is the land occupation footprint of food waste together with that of food loss, i.e. how much land does food later lost or wasted occupy?
  - An area the size of the Atlantic ocean.
  - An area bigger than China or Canada.
  - 1.4 billion hectares.



6. What is the volume of greenhouse gases produced in the production and transportation of food that is later lost or wasted?
- More than by any country in the world except the US and China.
  - 1.3 gigatons.
  - 3.6 gigatons.
7. Greenhouse gases:
- contribute to global warming.
  - are produced by burning fossils, e.g. in cars or coal-fired power stations.
  - are produced in agriculture, industry and waste management activities.
8. What is the difference between food waste and food loss?
- Food loss refers to vegetables that go to waste while food waste refers to all meat products wasted along the supply chain.
  - Any food that is wasted even though it could once have been eaten because of neglect and our behaviour (e.g. poor planning, overshopping) is called food waste. Any food that is unintentionally lost because of malfunctioning or inadequacies in food supply chains (e.g. lack of appropriate storage or refrigeration) is called food loss.
  - Food loss is all the food wasted before it reaches the shop. Food waste is any food wasted after it has reached the consumer.
9. We can fight food waste by:
- putting only what we will actually be able to eat on our plates.
  - asking for smaller portions in school cafeterias and restaurants.
  - shopping carefully.

## ■ Fighting food waste – Pop quiz (Solutions)

Tick the boxes with the correct answers. Sometimes, multiple answers are correct.

### 1. How much food does each of us waste every year?

- An estimated 50 kg.
- An estimated **100 kg.**
- An estimated 200 kg.

### 2. How much of the food produced worldwide is lost or thrown away instead of being eaten?

- One-fifth.
- One-quarter.
- One-third.**

### 3. How much water is used for food that is later lost or thrown away?

- one quarter of all the water used in agriculture.**
- as much as China and Canada use per year.
- as much as all the households in the world use each year.**

### 4. Shortage of water may lead to:

- droughts.
- desertification.**
- global warming.**

### 5. How big is the land occupation footprint of food waste together with that of food loss, i.e. how much land does food later lost or wasted occupy?

- an area the size of the Atlantic ocean.
- an area bigger than China or Canada.**
- 1.4 billion hectares.**

### 6. What is the volume of greenhouse gases produced in the production and transportation of food later lost or wasted?

- more than by any country in the world except the US and China.**
- 1.3 gigatons.
- 3.6 gigatons.**

### 7. Greenhouse gases:

- contribute to global warming.**
- are produced by burning fossils, e.g. in cars or coal-fired power stations.**
- are produced in agriculture, industry and waste management activities.**

### 8. What is the difference between food waste and food loss?

- Food loss refers to vegetables that go to waste while food waste refers to all meat products wasted along the supply chain.
- Any food that is wasted even though it could once have been eaten because of neglect and our behaviour (e.g. poor planning, overshopping) is called food waste. Any food that is unintentionally lost because of malfunctioning or inadequacies in food supply chains (e.g. lack of appropriate storage or refrigeration) is called food loss.**
- Food loss is all the food wasted before it reaches the shop. Food waste is any food wasted after it has reached the consumer.

### 9. We can fight food waste by:

- putting only what we will actually be able to eat on our plates.**
- asking for smaller portions at school cafeterias and restaurants**
- shopping carefully**

## ■ Food waste or food loss?

This worksheet deepens students' understanding of the difference between food loss and food waste.



20 min



### You will need:



- Printouts of worksheet WS 4 (one per student)
- One copy of the solution sheet for yourself
- Computer, projector, and digital copy of presentation 1, "DO GOOD: SAVE FOOD!"  
*Alternatively: printout of slide 11 from presentation 1, "DO GOOD: SAVE FOOD!"*



### Instructions:

1. Ask whether students remember the difference between food loss and food waste. (Any food that is wasted even though it could once have been eaten because of neglect and our behaviour [e.g. poor planning or overshopping] is called food waste. Any food that is unintentionally lost because of malfunctioning or inadequacies in food supply chains [e.g. lack of appropriate storage or refrigeration] is called food loss.) Show slide 11 from the presentation to refresh their memory.
2. Hand out worksheets.
3. Split students into groups of two or let them work individually on the worksheet.
4. Compare results and discuss why the different examples can be defined as food loss or food waste.

## FOOD WASTE OR FOOD LOSS?



Any food that is wasted even though it could once have been eaten because of neglect and our behaviour (e.g. poor planning or overshopping) is called food waste. Any food that is unintentionally lost because of malfunctioning or inadequacies in food supply chains (e.g. lack of appropriate storage or refrigeration) is called food loss. Sometimes it is easy to differentiate between food loss and waste; sometimes it is a little tricky. Try to determine which of the following examples involve food loss and which involve food waste.

1. Because of rigorous quality standards concerning weight, size, shape and appearance, crops are sometimes rejected by shops. **This is an example of** .....
2. Crops are contaminated by animal droppings during storage. → .....
3. Customers do not buy oddly-shaped and -sized vegetables. → .....
4. In standardised production lines, errors during processing lead to final products with the wrong weight, shape or appearance, or damaged packaging, without affecting the safety, taste or nutritional value of the food. → .....
5. Due to a lack of infrastructure for transportation, storage and cooling, fresh products are spoilt in hot weather. → .....
6. In order to ensure delivery of agreed quantities to retailers, farmers end up producing larger quantities than needed and sell the surplus to processors or as animal feed. → .....
7. Consumers do not buy food close to its sell-by date and the food goes off before it is bought. → .....
8. Left-overs from the family dinner are eaten by pets. → .....
9. Toxic residues (e.g. from the use of pesticides or veterinary treatment) make food unfit to be consumed by humans. → .....
10. Left-over food is sent back to the restaurant kitchen. → .....

## ■ Food waste or food loss? (Solutions)

1. **Because of rigorous quality standards concerning weight, size, shape and appearance, crops are sometimes rejected by shops.**

This is an example of **food waste**: The crops would have been good to eat; it is just the retailers' and/or customers' idea of what they should look like that keeps them from being sold in shops. We can try to change shopkeepers' minds about this by consciously choosing oddly-shaped fruit and vegetables when we're out shopping. Often, these products are even available at a reduced price.

2. **Crops are contaminated by animal droppings during storage.**

This is **food loss**: The crops aren't wasted by choice but due to this contamination, they became unfit for human consumption. This type of food loss can be reduced by improved storage systems; it is not something that we as consumers can influence directly.

3. **Customers do not buy oddly-shaped and -sized vegetables.**

This practice leads to **food waste** because many of us do not buy oddly-shaped or -sized fruits and vegetables, and shop keepers won't accept non-standard crops from farmers. This means that a lot of good and healthy crops either aren't even harvested because they are the wrong size or shape, or are used for animal feed, or again taken directly to waste disposal. As in example 1, we can directly influence this practice by buying oddly-shaped crops.

4. **In standardised production lines, errors during processing lead to final products with the wrong weight, shape or appearance, or to damaged packaging, without affecting the safety, taste or nutritional value of the food.**

This often leads to **food waste** because most shops won't offer any items that are seen as even slightly imperfect. Processed food that features such an imperfection (e.g. a wonky label or discoloured packaging) will not even be offered to consumers.

5. **Due to a lack of infrastructure for transportation, storage and cooling, fresh products are spoilt in hot weather.**

This is an example of **food loss**: Because of infrastructural problems, some food is spoilt so that it is unfit for human consumption. As in example 2, there is little we as individual consumers can do about this type of food loss: Improved infrastructure, particularly in developing countries, is required to reduce this type of food loss.

6. **In order to ensure delivery of agreed quantities to retailers, farmers end up producing larger quantities than needed and sell the surplus to processors or as animal feed.**

This is an example of **food waste**: Retailers want to make sure that they have a consistent and calculable supply of products at all times. If farmers cannot meet the agreed amounts, they risk having to pay fines and/or the loss of contract for the following season. To avoid this for instance in case of a bad harvest, farmers sometimes overproduce and end up leaving their crop in the field, selling it off for animal food, or disposing of it (e.g. in landfills).

7. **Consumers do not buy food close to its best-before date, and the food goes off before it is bought.**

This leads to **food waste**: Even though most food is still good to eat after its best-before date, many consumers don't want to buy food once it is close to its best-before date, and shops end up throwing away perfectly good food. We can reduce this type of food waste by not refusing to buy food close to its best-before date. If we plan our shopping carefully, food bought that is close to its best-before date won't go to waste in our homes.

8. **Left-overs from the family dinner are eaten by pets.**

This is **food waste**. Having pets eat left-overs is better than throwing left-overs away altogether but it still involves wasting food that would have been fit for human consumption. A better way to use left-overs is to put them in the fridge and eat them the following day. An even better way of avoiding this type of food waste is to cook and serve more appropriate portions to start with.

9. **Toxic residues (e.g. from the use of pesticides or veterinary treatment) make food unfit to be consumed by humans.**

This is an example of **food loss**. Food that was initially fit for human consumption isn't healthy for humans any longer. There is little we as individuals can do to stop this kind of food loss. One small way of helping to reduce it is to shop for organic food, in which the use of pesticides and antibiotics for the treatment of animals is not permitted to start with.

10. **Left-over food is sent back to the restaurant kitchen.**

This is a form of **food waste**. If there is too much on your plate in a restaurant, ask for a doggie bag and take the food home with you to eat another time. If this happens to you regularly, try asking for a smaller portion to start with.



## ■ Sum it up, waste it down!

This activity allows students to connect with the presentation's content on a mathematical level.

*Worksheet WS 5a is aimed at younger students within this age group, who will need to be able to multiply. Students working with worksheet WS 5b will need to know how to calculate percentages and decimals and to apply the rule of three.*



25 min

### You will need:



- Printouts of worksheets WS 5a and/or WS 5b (one per student)
- Printout of solution sheet(s) for yourself



### Instructions:

1. Determine which worksheet is appropriate for your students and hand them out.
2. Ask students to solve the exercises (in groups or individually).
3. Compare results.

SUM IT UP,  
WASTE IT DOWN!



**1. Worldwide, 1/3 of all food is wasted: Out of 3 apples, 2 are eaten and 1 is thrown away.**

Out of 6 carrots, 4 are eaten and 2 are thrown away.

Out of 9 cucumbers, how many are eaten?  cucumbers are eaten.

cucumbers are thrown away.

Out of 12 pizza slices, how many are eaten?  pizza slices are eaten.

pizza slices are thrown away.

**2. Every year, each of us throws away 100kg of food.**

a) Together, 10 people throw away  kg of food every year.

b) Together, 15 people throw away  kg of food every year.

c) If we only throw away half of the food we waste now, how much food will be saved?

Each of us will save  kg of food per year.

Each of us will still throw away  kg of food every year.

d) If we can manage to throw away 4 times less than we do now, how much food will be saved?

Each of us will save  kg of food per year.

Each of us will still throw away  kg of food every year.

e) If 10 people throw away 4 times less than they do now, how much food will be saved?

kg of food will be saved every year.

## ■ Sum it up, waste it down! (Solutions)

### 1. Worldwide, 1/3 of all food is wasted: out of 3 apples, 2 are eaten and 1 is thrown away.

Out of 6 carrots, 4 are eaten and 2 are thrown away.

Out of 9 cucumbers, how many are eaten?  cucumbers are eaten.

cucumbers are thrown away.

Out of 12 pizza slices, how many are eaten?  pizza slices are eaten.

pizza slices are thrown away.

### 2. Every year, each of us throws away 100kg of food.

a) Together, 10 people throw away  kg of food every year.

b) Together, 15 people throw away  kg of food every year.

c) If we only throw away half of the food we waste now, how much food will be saved?

Each of us will save  kg of food per year.

Each of us will still throw away  kg of food every year.

d) If we can manage to throw away 4 times less than we do now, how much food will be saved?

Each of us will save  kg of food per year.

Each of us will still throw away  kg of food every year.

e) If 10 people throw away 4 times less than they do now, how much food will be saved?

kg of food will be saved every year.

## SUM IT UP, WASTE IT DOWN! [ADVANCED VERSION]



### 1. Anna and Theo buy 1 apple, 1 packet of walnuts, 1 bunch of grapes, 3 pears, and 2 bananas.

They use  $\frac{3}{4}$  of an apple,  $\frac{1}{3}$  of a packet of walnuts,  $\frac{2}{3}$  of a bunch of grapes,  $2\frac{1}{2}$  pears, and  $1\frac{3}{4}$  bananas. Please calculate what fraction and percentage of the food they have used.

Overall, they have used  or  % of the food.

### 2. In the last year, Anna and Theo's family has wasted 310 kg of food.

Sofia's family has wasted 505 kg, Raheem's 265 kg. Please calculate the mean wastage per family.

On average, each family has wasted  kg of food.

Anna and Theo live with their dad; Sofia, with her parents and her sister. Raheem lives with his parents and has no siblings. On average, how much food has **each individual** wasted?

The mean wastage of each individual was  kg

### 3. The food we waste and throw away needs to be picked up and removed.

If it takes 10 workers 3 days to remove the food waste of a city, how long would it take 4 workers?

It would take 4 workers  days to clear away the same amount of waste.

If only  $\frac{1}{3}$  of the food was wasted, how long would it take 5 workers to clear it away?

It would take 5 workers  days to clear away  $\frac{1}{3}$  of the waste.

## ■ Sum it up, waste it down! (Advanced version - Solutions)

### 1. Anna and Theo buy 1 apple, 1 packet of walnuts, 1 bunch of grapes, 3 pears, and 2 bananas.

They use  $\frac{3}{4}$  of an apple,  $\frac{1}{3}$  of a packet of walnuts,  $\frac{2}{3}$  of a bunch of grapes,  $2\frac{1}{2}$  pears, and  $1\frac{3}{4}$  bananas. Please calculate what fraction and percentage of the food they have used.

Overall, they have used  $\frac{3}{4}$  or 75 % of the food.

### 2. In the last year, Anna and Theo's family has wasted 310 kg of food.

Sofia's family has wasted 505 kg, Raheem's 265 kg. Please calculate the mean wastage per family.

On average, each family has wasted 360 kg of food.

Anna and Theo live with their dad; Sofia, with her parents and her sister. Raheem lives with his parents and has no siblings. On average, how much food has **each individual** wasted?

The mean wastage of each individual was 108 kg

### 3. The food we waste and throw away needs to be picked up and removed.

If it takes 10 workers 3 days to remove the food waste of a city, how long would it take 4 workers?

It would take 4 workers 7.5 days to clear away the same amount of waste.

If only  $\frac{1}{3}$  of the food was wasted, how long would it take 5 workers to clear it away?

It would take 5 workers 2 days to clear away  $\frac{1}{3}$  of the waste.

## ■ CORE LESSON 1: DISCUSSIONS



### ■ The long way from the farm to the table

Students are asked to choose an ingredient from a dish of their choice and to identify causes of, and solutions to, food loss and waste that occur at each step of the food supply chain. This discussion aims to deepen their understanding of the many factors and resources involved in bringing food to our plates.



**90 min** (45 min for part 1; 45 min for part 2)



#### You will need:



- Printouts of support sheet D 1a and worksheet D 1b (one per student)
- Computer, projector and digital copy of presentation 1, "DO GOOD: SAVE FOOD!"  
*Alternatively: printout of slide 10 from presentation 1, "DO GOOD: SAVE FOOD!"*
- A2 or A3-size paper (one for every four students)
- Coloured pencils, watercolours or crayons
- Adhesive tape  
*Alternatively: one overhead transparency for every four students, overhead markers, and overhead projector*



#### Instructions:

##### Part 1:

1. Introduce the food supply chain and its various stages by using the diagram from slide 10 of presentation 1 ("The food supply chain: from the farm to your table").
2. Split the students into groups of three. Ask them to make a list of the various supply chain steps displayed in the diagram (see support sheet). Beside each step, the groups should attempt to note what they think happens at that particular stage of the supply chain. Groups will then feed back their ideas to the entire class, with the teacher consolidating all ideas on the board.

##### Part 2:

3. Explain to students that they are going to investigate the food supply chain of a simple dish of their choice. Instruct the students that meals are composed of a number of ingredients and that it will be their job to attempt to determine the process that the particular item of food undergoes before it reaches their plate. Each group will be asked to look at one of the ingredients that make up the chosen dish.

- 4 Hand out a copy of the support sheet and Discussion sheet 1, "From the farm to your table: the food supply chain." Each group D 1a should clearly label the sheet with the ingredient of their choice. Then, they should attempt to determine what happens to the ingredient at each stage of the supply chain, starting at the farm stage. Groups are encouraged to use the support sheet as guidance. It is important to stress to students that they may not necessarily know everything about the supply chain. Rather, the exercise seeks to introduce the concept of a value chain while simultaneously instilling a sense of appreciation of the value of food.
5. Instruct the groups to try to identify factors that could cause loss or waste at each stage of the supply chain. Following this, students are encouraged to propose possible solutions that address the previously identified factors that cause loss or waste.
6. Ask each group to present their findings to the class. As a concluding plenary activity, ask the students what they have learned about where their food comes from in order to reinforce a sense of appreciation of the value of food.

## ■ The long way from the farm to the table: support sheet

Supply chain stage	Description	Potential problems
Farm/production	Crops, fruits and vegetables are grown and stored at this stage. Animals are raised.	<ul style="list-style-type: none"> <li>▪ Disease.</li> <li>▪ Bad weather.</li> <li>▪ Lack of equipment and knowledge.</li> </ul>
Processing	Fruits and vegetables are taken to markets or handling and processing centres, where they are packaged, sometimes processed, and prepared for transport. Animals are taken to the slaughterhouse, and their meat is then also taken to handling and processing centres.	<ul style="list-style-type: none"> <li>▪ Lack of cold storage.</li> <li>▪ Rough handling.</li> <li>▪ Inefficient processing.</li> <li>▪ Poor hygiene.</li> </ul>
Transportation	Food is distributed to retailers.	<ul style="list-style-type: none"> <li>▪ Lack of cold storage during transport.</li> <li>▪ Delays in transport.</li> <li>▪ Poor organisation.</li> </ul>
Retail	Food is sold at the retail stage.	<ul style="list-style-type: none"> <li>▪ Shops order too much food.</li> </ul>
Consumption	Food is taken to homes or restaurants to be cooked and eaten.	<ul style="list-style-type: none"> <li>▪ People/restaurants buy and cook more food than they need.</li> <li>▪ People buy food and forget about it.</li> </ul>
Disposal	Food that is no longer good to eat is thrown away.	<ul style="list-style-type: none"> <li>▪ If disposed of in a landfill, food waste can lead to greenhouse-gas emissions and other issues.</li> </ul>





## THE LONG WAY FROM THE FARM TO THE TABLE: THE FOOD SUPPLY CHAIN

On its way from farm to fork, our food goes through various steps in the food supply chain. Pick one main ingredient from a dish of your choice and try to determine what happens to it at the various stages of the food supply chain. Think about problems that may arise at each step that could lead to food loss or waste. Think also about possible solutions.

My ingredient: \_\_\_\_\_

What happens at the **farm**: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Problems** that might lead to food loss and waste: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**Possible solutions**: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

What happens at the **processing centre**: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Problems** that might lead to food loss and waste: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**Possible solutions**: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

What happens during **transport**: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Problems** that might lead to food loss and waste: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**Possible solutions**: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

What happens at the **shop**: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Problems** that might lead to food loss and waste: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**Possible solutions**: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

What happens at **home/the restaurant**: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Problems** that might lead to food loss and waste: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**Possible solutions**: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

## ■ Tomato sauce (Solutions)

Supply chain stage	Description	Factors leading to food loss or waste
Farm/production	<ul style="list-style-type: none"> <li>Field is prepared for cultivation.</li> <li>Seeds are planted.</li> <li>Tomato plants grow and are tended.</li> <li>Fertiliser and pesticides may be used.</li> <li>Irrigation/watering may take place.</li> <li>Tomatoes are harvested.</li> <li>Tomatoes are stored.</li> </ul>	<ul style="list-style-type: none"> <li>Bad weather (too much/not enough rain or sunshine).</li> <li>Disease may damage fruits.</li> <li>Pests e.g. aphids may attack the tomato plant.</li> <li>Rough handling during harvest and storage.</li> <li>Inadequate or prohibitively costly labour during key stages of production (e.g. harvesting).</li> <li>Prohibitive cost, inadequate supply or improper use (e.g. due to lack of training) of essential inputs such as fertiliser and pesticides.</li> <li>Inadequate/improper storage.</li> </ul>
Processing	<ul style="list-style-type: none"> <li>Tomatoes are initially washed.</li> <li>The pulp is then extracted.</li> <li>The pulp is filtered to eliminate any unwanted material.</li> <li>The product undergoes pasteurisation. [There are a number sterilizing technologies including pasteurisation. You can just say "using technologies to ensure that the product is sterile".]</li> <li>Water may be removed to obtain a concentrated product.</li> <li>Other ingredients such as sugar, salt, and other preservatives may be added.</li> <li>The sauce is then packaged, usually into glass, plastic or metal jars or cans. The packaging must be sterilised.</li> </ul>	<ul style="list-style-type: none"> <li>Careless handling at the processing centre.</li> <li>Unhygienic equipment.</li> <li>Accidental breakage/power outage.</li> <li>Lack of safe operating procedures.</li> <li>Lack of training for staff on safe operating procedures.</li> <li>Lack of food regulations, or lack of enforcement of these.</li> </ul>
Transportation	<ul style="list-style-type: none"> <li>Sauce is taken from the processing centre to depots/warehouses.</li> <li>Sauce is transported to supermarkets/retail outlets, usually via lorry. Depending on the nature of the sauce, it may need to be refrigerated during transit.</li> </ul>	<ul style="list-style-type: none"> <li>Accidental breakage.</li> <li>Inadequate cold storage during transport.</li> <li>Unhygienic conditions.</li> <li>Improper storage practice.</li> </ul>
Retail	<ul style="list-style-type: none"> <li>Sauce is ordered.</li> <li>Jars are placed on shelves for customers to purchase.</li> </ul>	<ul style="list-style-type: none"> <li>Accidental breakage.</li> <li>Ordering too much stock.</li> <li>Improper handling or storage.</li> </ul>
Consumption	<ul style="list-style-type: none"> <li>Sauce is purchased at a shop and transported to the home/restaurant.</li> <li>Sauce is stored.</li> <li>Sauce is used as an ingredient during meal preparation.</li> </ul>	<ul style="list-style-type: none"> <li>Consumer purchases sauce and does not use it before the use by date.</li> <li>Consumer cooks too much food, cannot eat it all and throws it into trash.</li> <li>Consumer uses some of the sauce, but allows the rest of it to spoil.</li> </ul>

## ■ CORE LESSON 1: GAMES



### ■ Memothree

In this version of the popular “Memory” game, students revisit some of the key ideas and concepts of the presentation.

*Some students may find this game too childish, while other groups may be up for some fun in between all their studying. You're the best judge of this!*



# 30 min

### You will need:



- Printouts of the “Memory” game G 1a (one per three to four students)
- One printout of teacher cards G 1b
- Scissors



- Mix up the cards and lay them in rows, face down. The first player turns over any three cards. If they match, the player keeps them and is allowed to go again; if they don't match, it's the next player's turn.
- The game is over when all the cards have been matched. The player with the most matches wins.

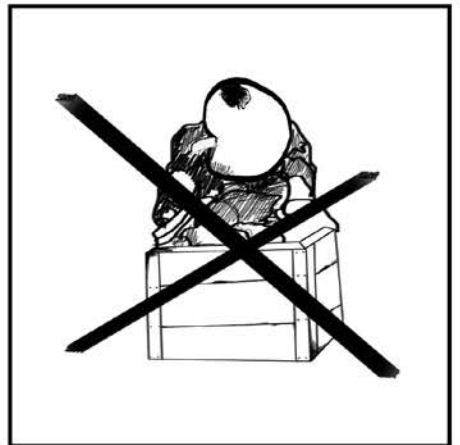
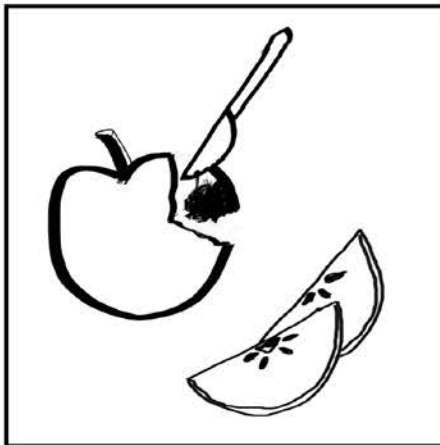
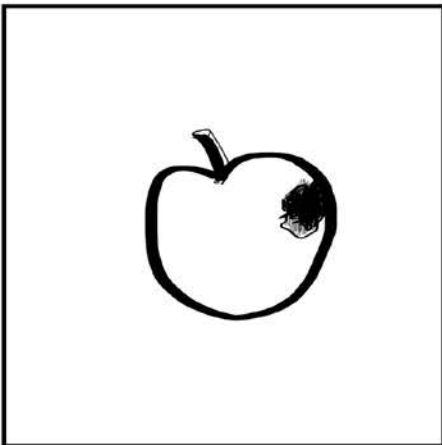
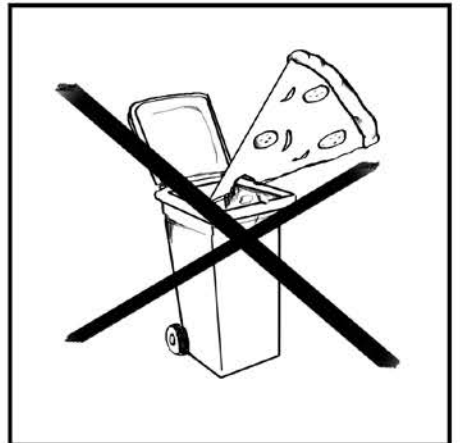
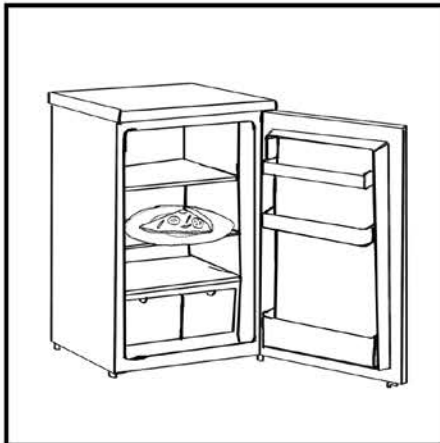
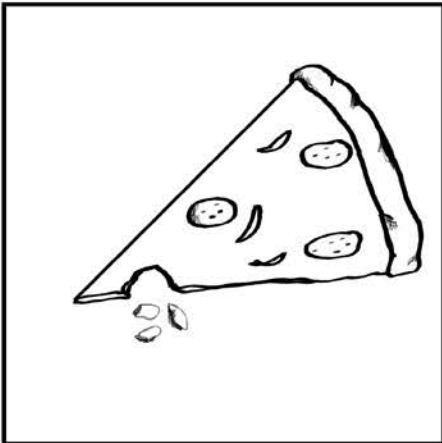
*Note: Unlike in regular “Memory”, the matching cards here do not depict the same image. Rather, the images are associated with each other. Check the flash cards to see which cards go together.*



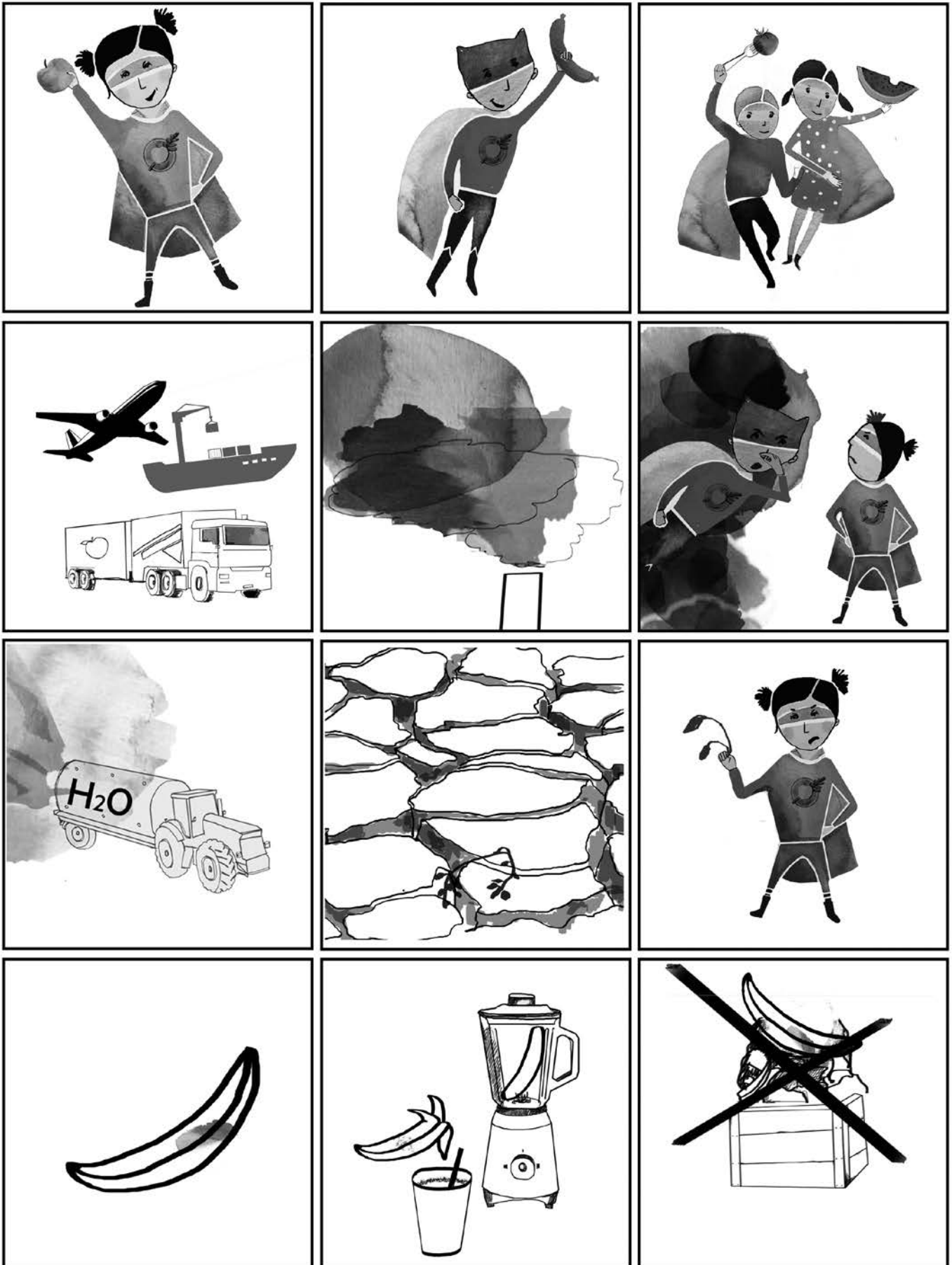
### Instructions:

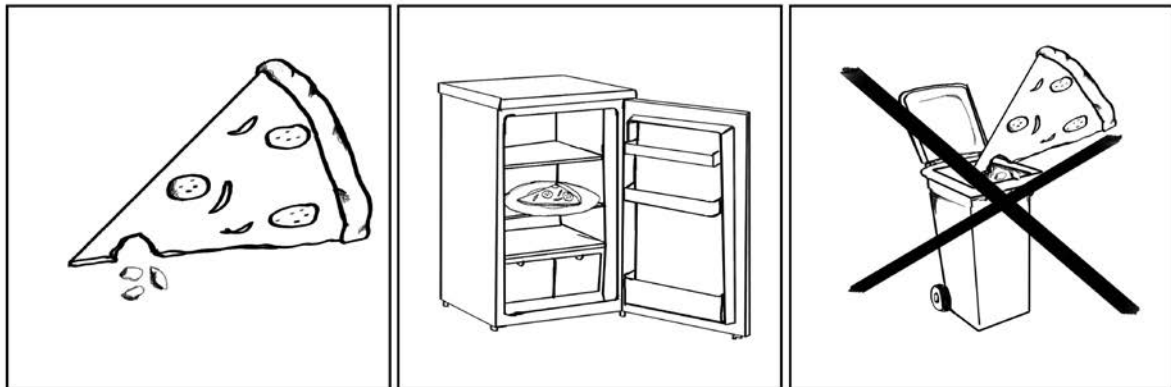
1. Using the teacher cards or the presentation, go through each set of pictures to make sure students understand which cards belong together. Discuss what is depicted in each set.
2. Split students into groups of three to four. You will need one printout of the Memothree game per group.
3. Ask the students to cut out the game.
4. Explain the rules (see above).
5. Play!

# MEMO THREE

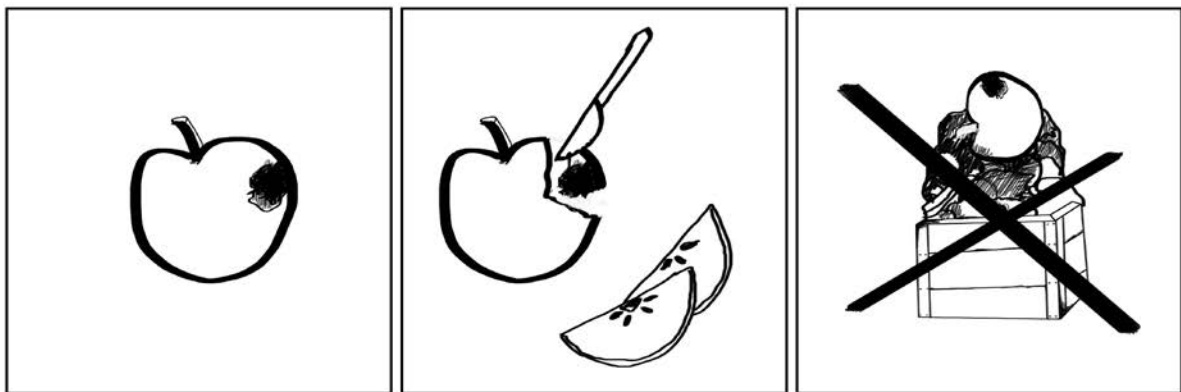


# MEMO THREE



**■ Memothree (teacher cards)**

KEEP LEFT-OVER PIZZA IN THE FRIDGE TO EAT ANOTHER DAY INSTEAD OF THROWING IT AWAY.



IF YOUR APPLE HAS A BROWN SPOT, CUT IT OUT AND EAT THE REST OF THE FRUIT INSTEAD OF THROWING IT AWAY.



TAKE A SHOPPING LIST TO THE MARKET OR SHOP IN ORDER TO AVOID OVER-SHOPPING.



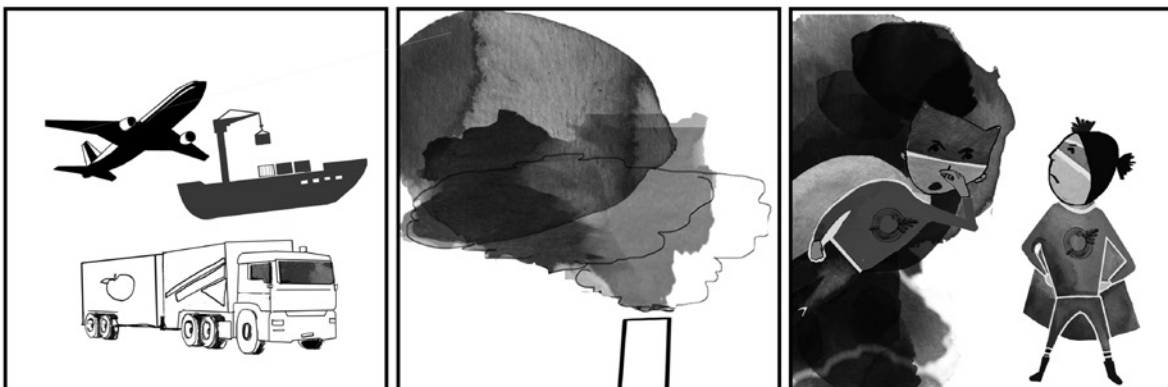
4

HELP YOURSELF TO SMALLER PORTIONS OR ASK FOR SMALLER HELPINGS TO AVOID WASTING FOOD.



5

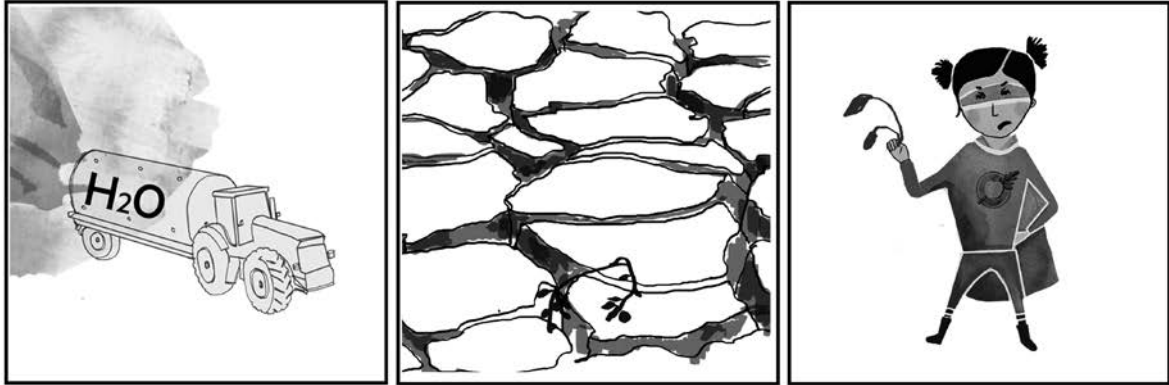
JOIN THE NO-WASTERS IN THEIR FIGHT AGAINST FOOD WASTE!



6

PRODUCING AND TRANSPORTING FOOD PRODUCES GREENHOUSE GASES WHICH CONTRIBUTE TO CLIMATE CHANGE.





7

GROWING AND PRODUCING FOOD CAN LEAD TO WATER SHORTAGES.



8

INSTEAD OF THROWING AWAY OVER-RIPE FRUIT, USE IT FOR SMOOTHIES OR JAMS.

## ■ Don't waste it! Bingo

This activity playfully revisits some of the key ideas of the presentation.

*As with G1 (Memothree), some students may find this game too childish, while other groups may be up for some fun in-between all their studying. You're the best judge of this!*



15-20 min

### You will need:



- Printouts of the Bingo cards G 2a (one per student)
- One printout of teacher cards G 2b
- Plastic chips, little stones or other small items (e.g. paper clips)



#### Rules:

- Each player is given a Bingo card. From the flash cards, the teacher draws different pictures and calls out their name.
- If a picture is on a player's card, it can be covered with a chip or crossed out with a pencil. (Bear in mind that cards cannot be used again if items have been crossed out on them.)
- When a player has a full line straight across a row or straight down a column, he or she yells out "Save Food!" and wins the game.



#### Instructions:

1. Hand out the Bingo cards.
2. Explain the rules of Bingo.
3. Show the flash cards. Name and discuss what is depicted.
4. Mix up the flash cards.
5. Draw a card and call out its name.
6. Play!

# BINGO!



# BINGO!

BINGO

BINGO

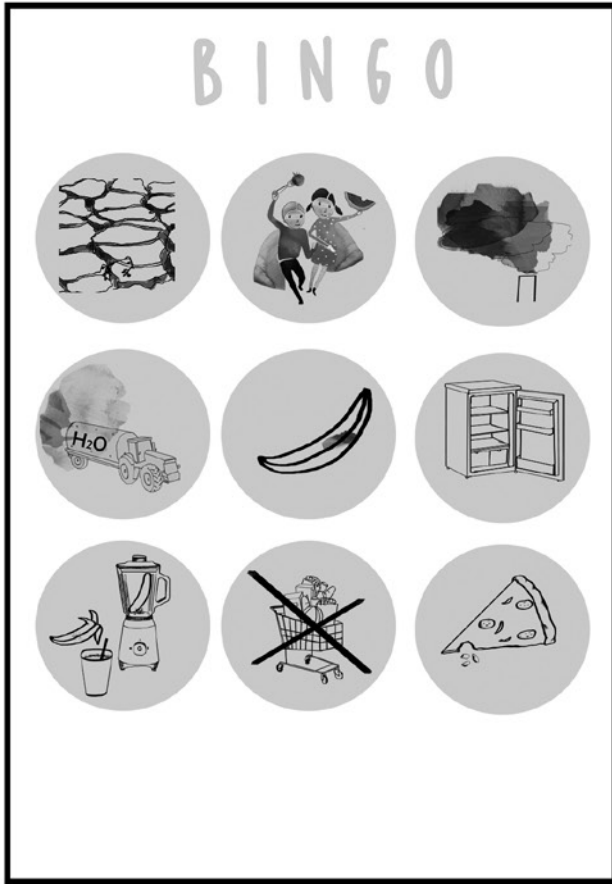
BINGO

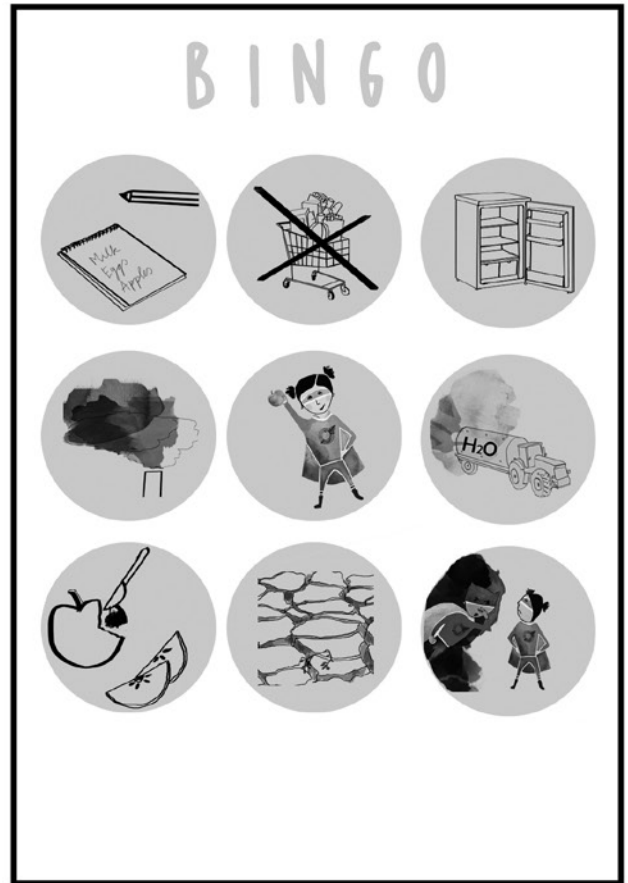
BINGO

# BINGO!



# BINGO!






# BINGO!

BINGO

BINGO

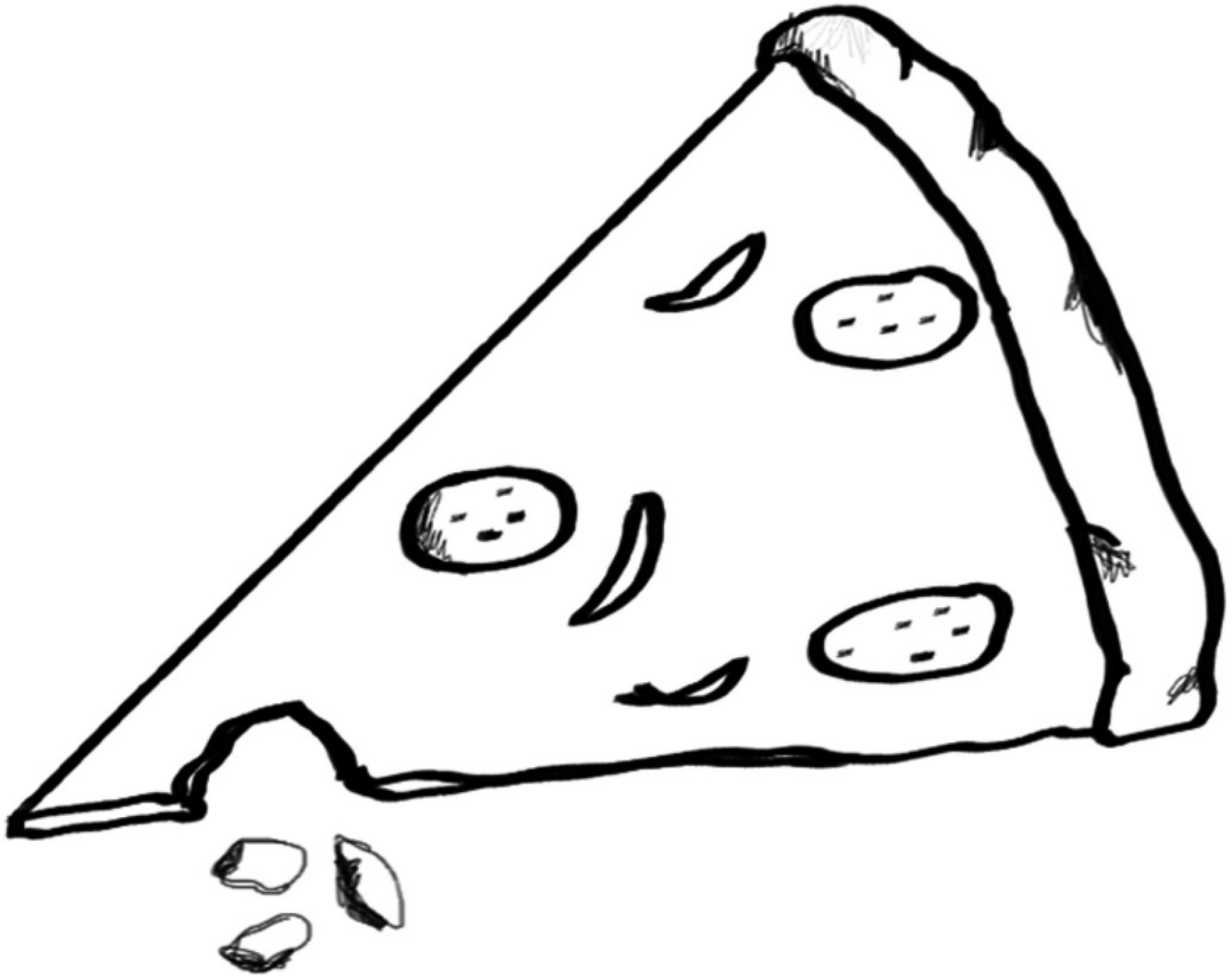
BINGO

BINGO

# BINGO!



KEEP ANY LEFTOVER PIZZA FOR THE NEXT DAY!

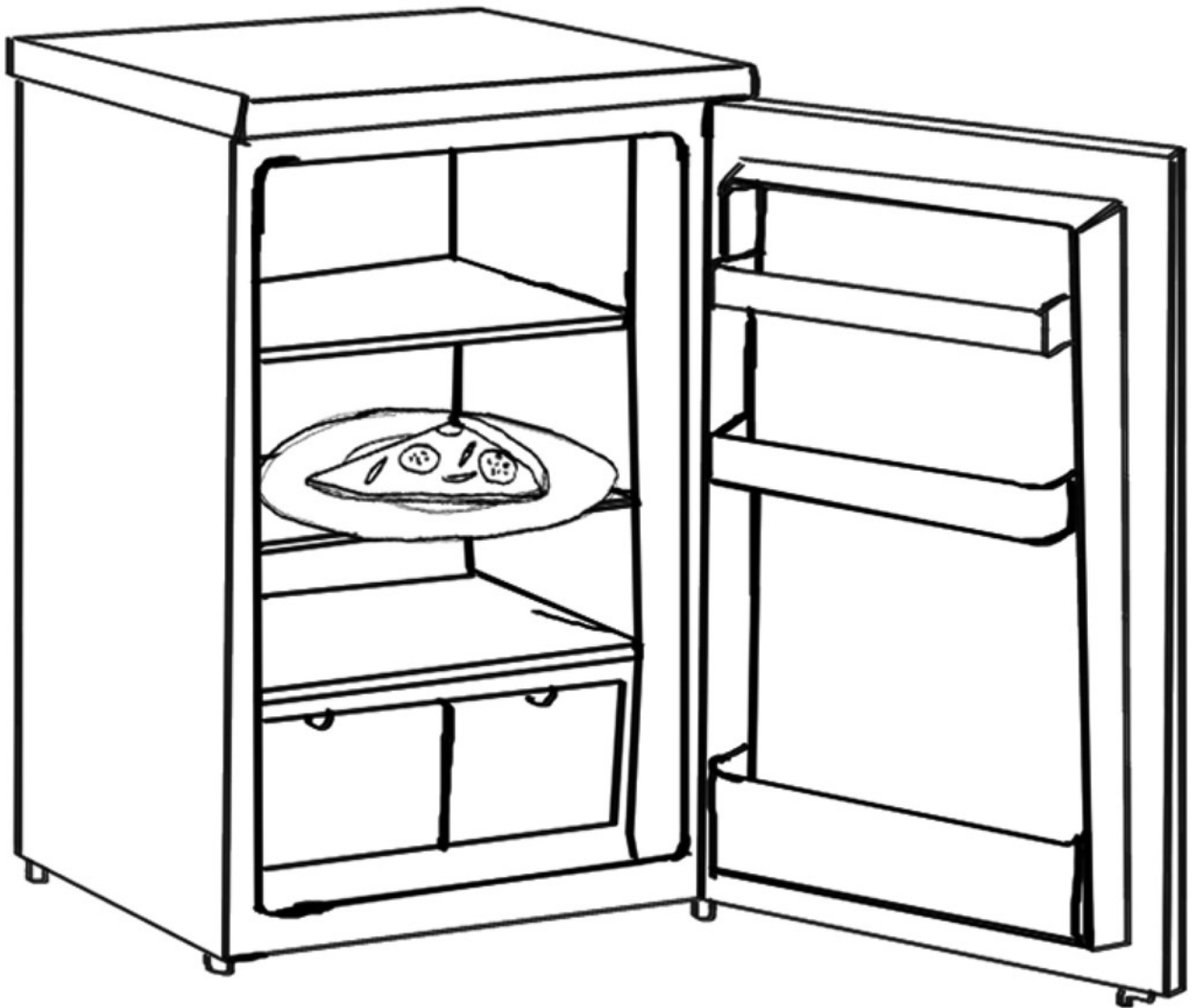


# BINGO!



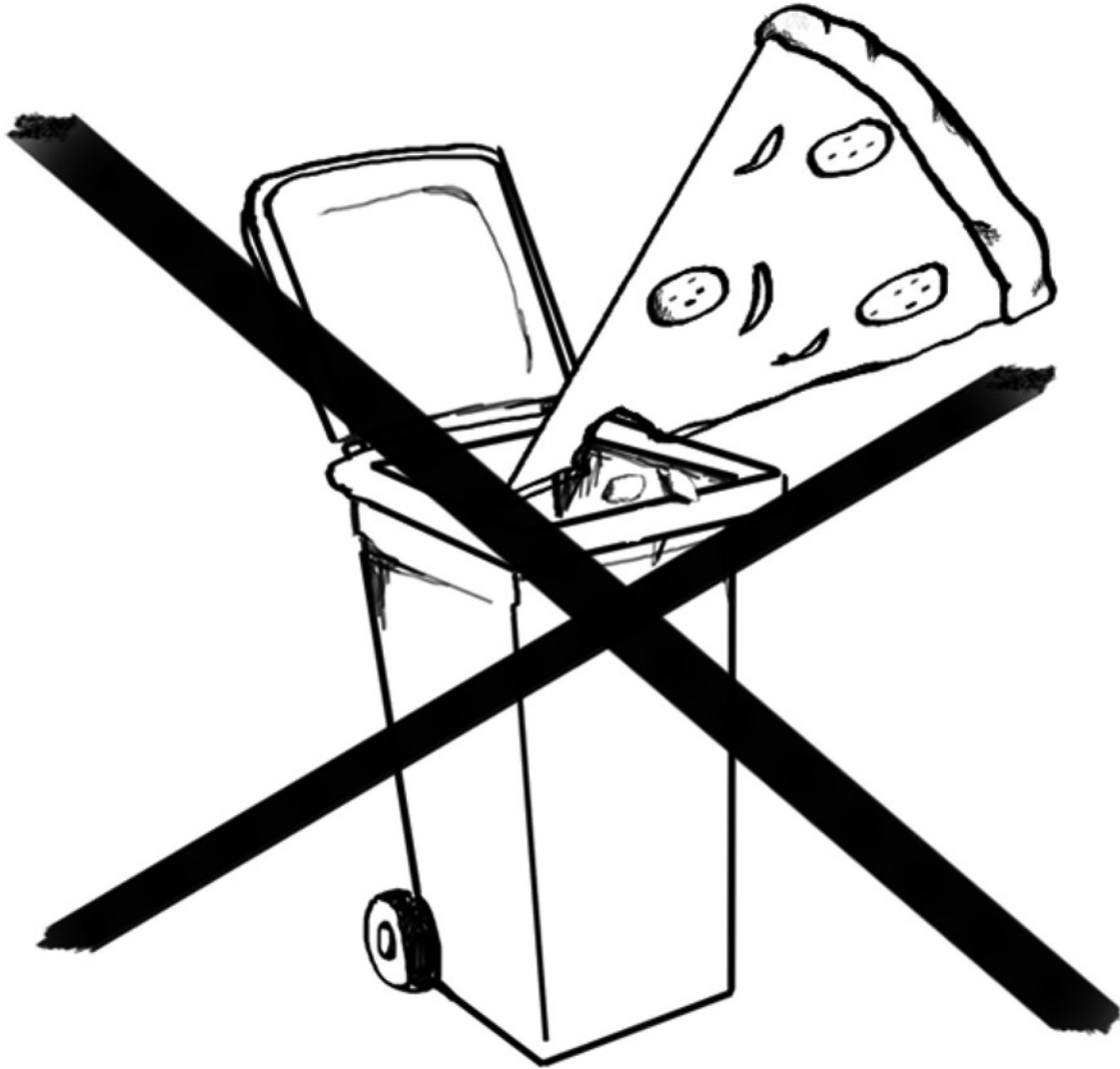
ANNA IS ENJOYING HER FOOD.

# BINGO!



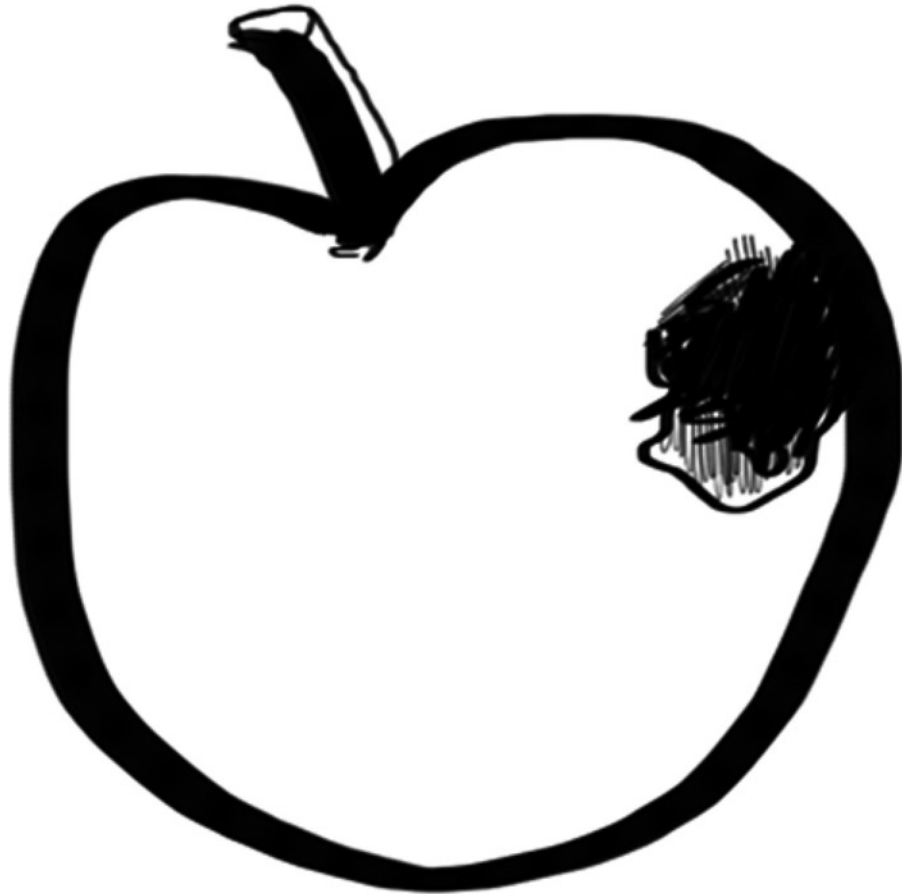
KEEP YOUR LEFTOVERS IN THE FRIDGE TO EAT ANOTHER DAY!

# BINGO!



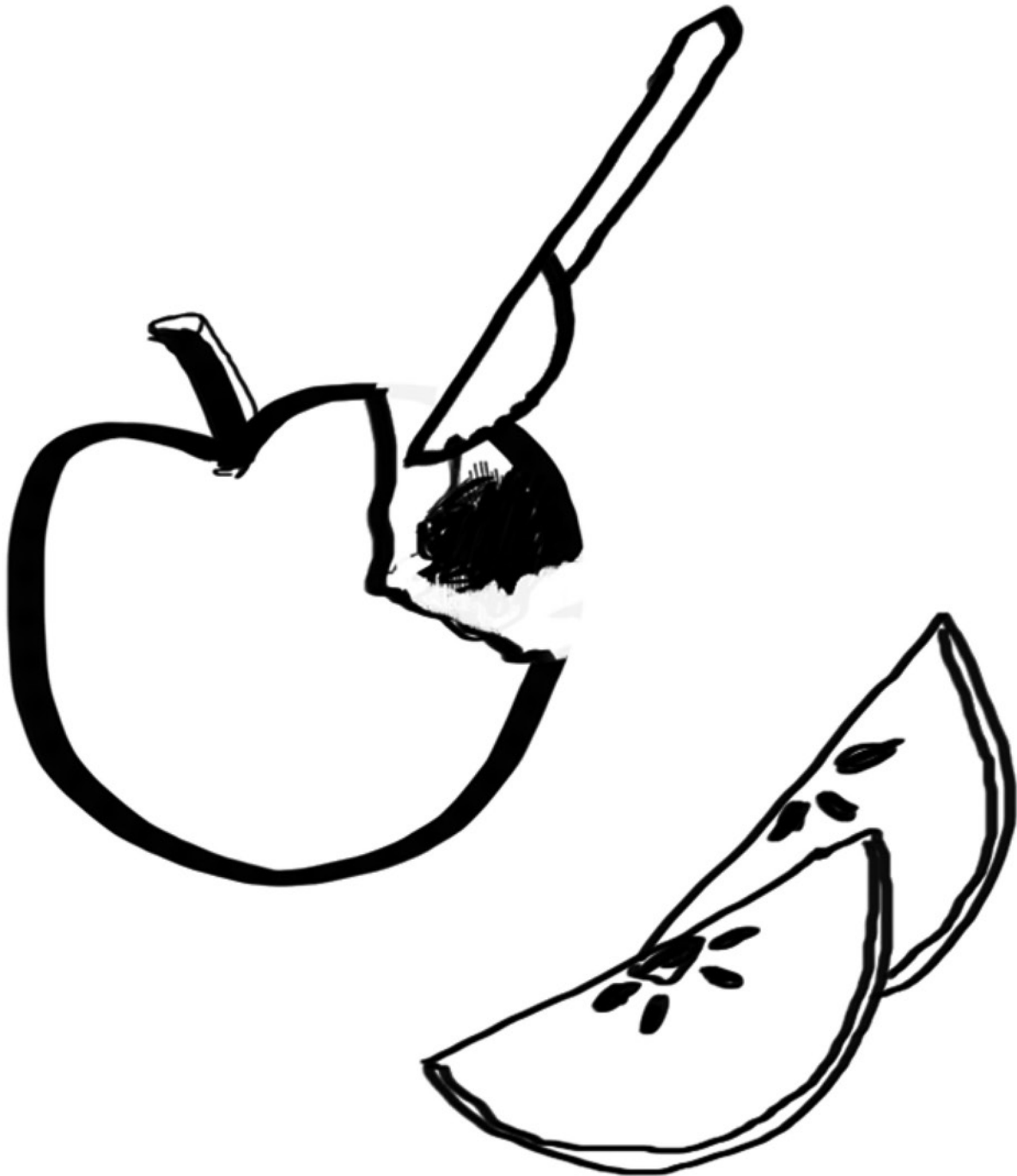
FEED YOURSELF, DON'T FEED THE BIN!

# BINGO!



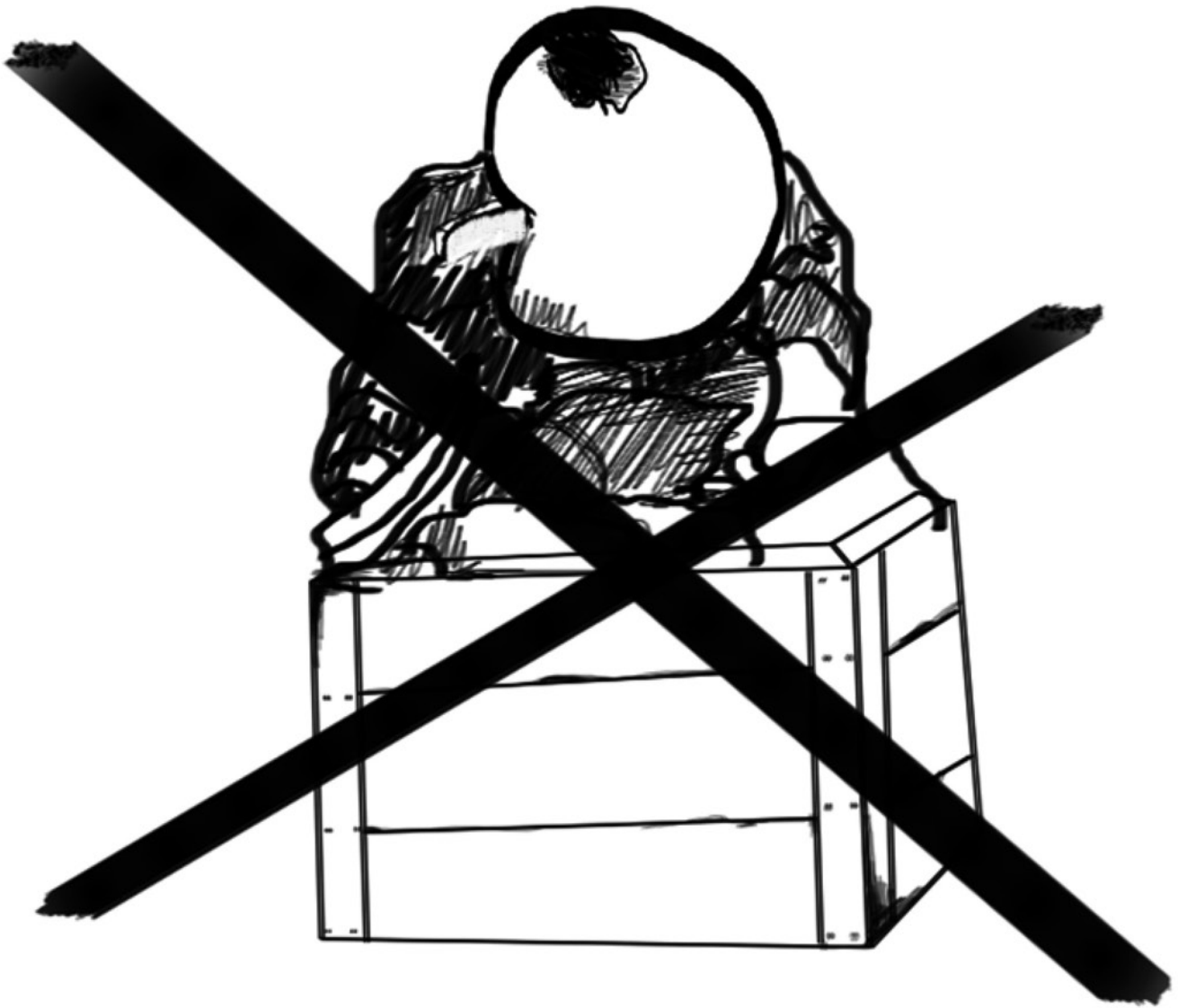
AN APPLE WITH A BROWN SPOT CAN STILL BE EATEN.

# BINGO!



CUT OUT ANY BAD SPOTS AND EAT THE REST OF YOUR APPLE.

# BINGO!



DON'T THROW AWAY ANY FOOD THAT IS STILL GOOD TO EAT!

# BINGO!



THINK BEFORE YOU SHOP!

# BINGO!



TAKE A SHOPPING LIST WITH YOU TO THE MARKET.

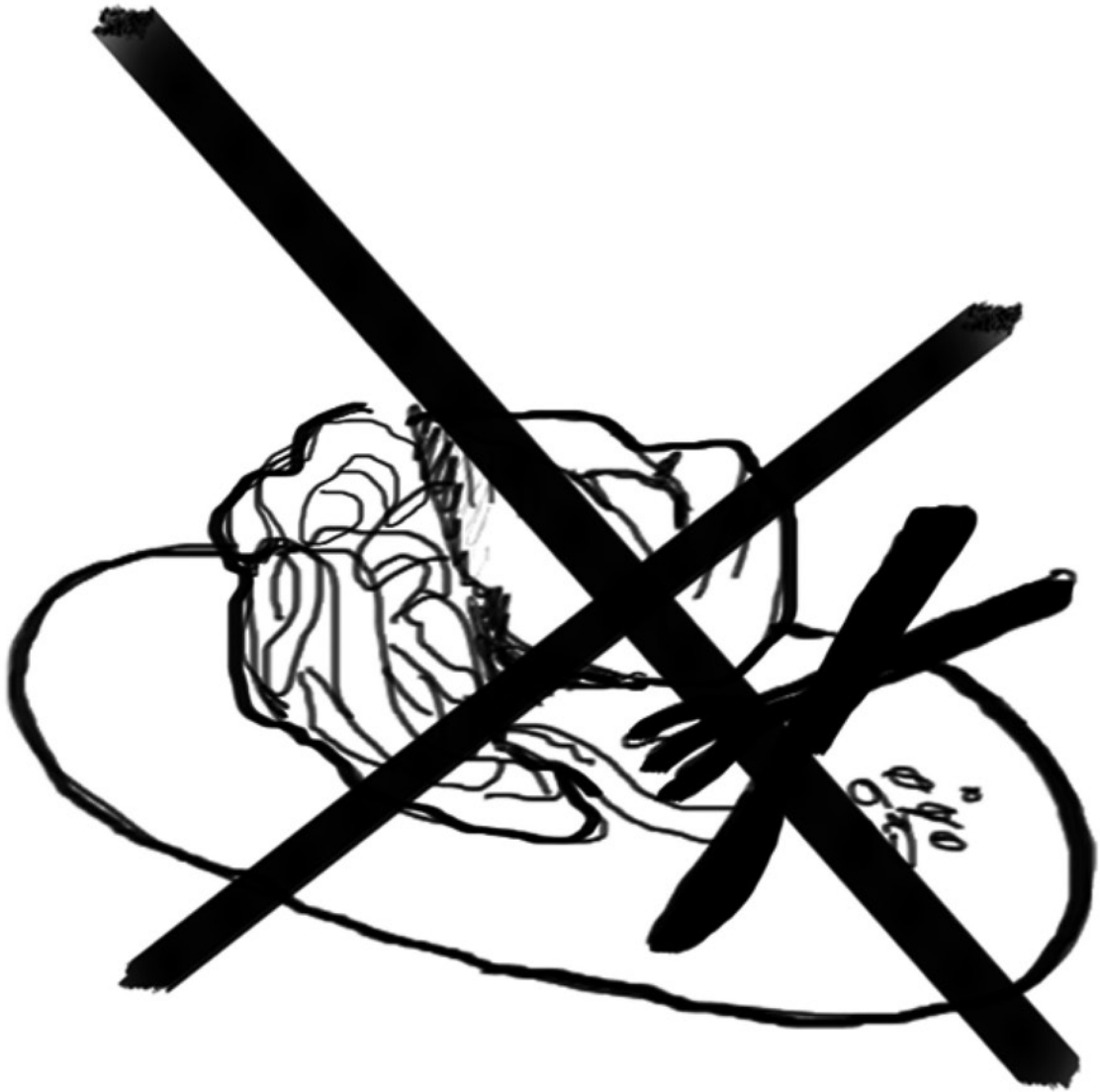


# BINGO!



ANNA ASKS FOR A SMALLER PORTION.

# BINGO!



DON'T THROW AWAY ANY FOOD!

# BINGO!



DON'T BUY MORE THAN YOU NEED!

# BINGO!



REYNA, THE FOOD SAVER

# BINGO!



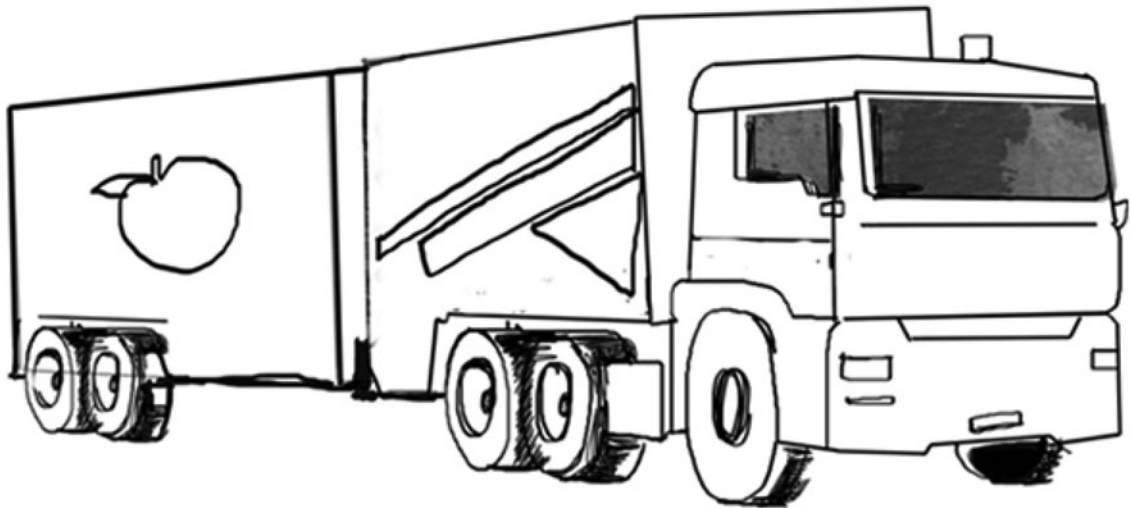
MIKA, THE FOOD SAVER

# BINGO!



ANNA AND THEO AS FOOD SAVERS

# BINGO!



OUR FOOD IS TRANSPORTED A LONG WAY.

# BINGO!



FOOD PRODUCTION AND TRANSPORTATION PRODUCE  
GREENHOUSE GASES.

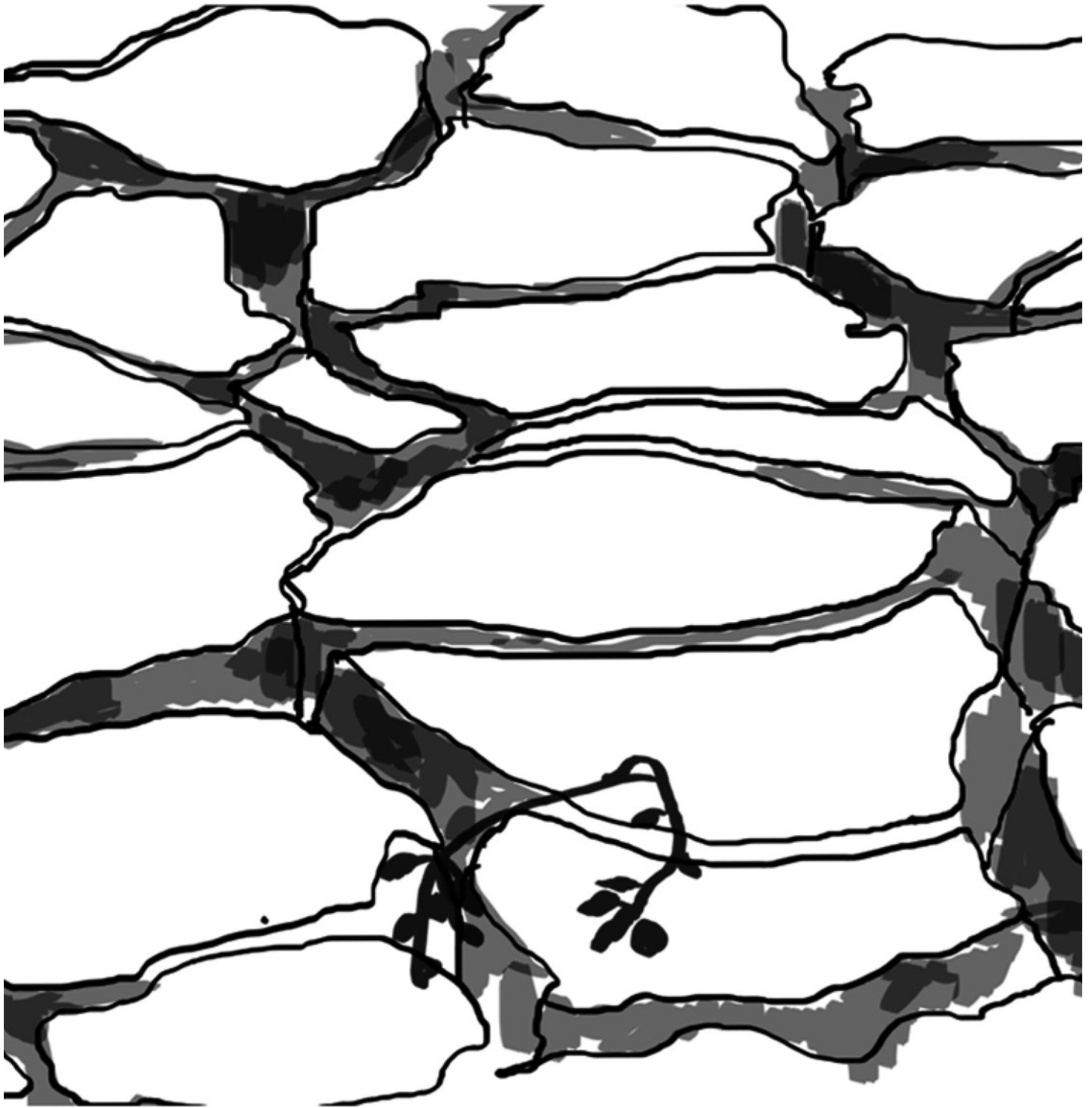


# BINGO!



GROWING AND PRODUCING FOOD USES UP WATER.

# BINGO!



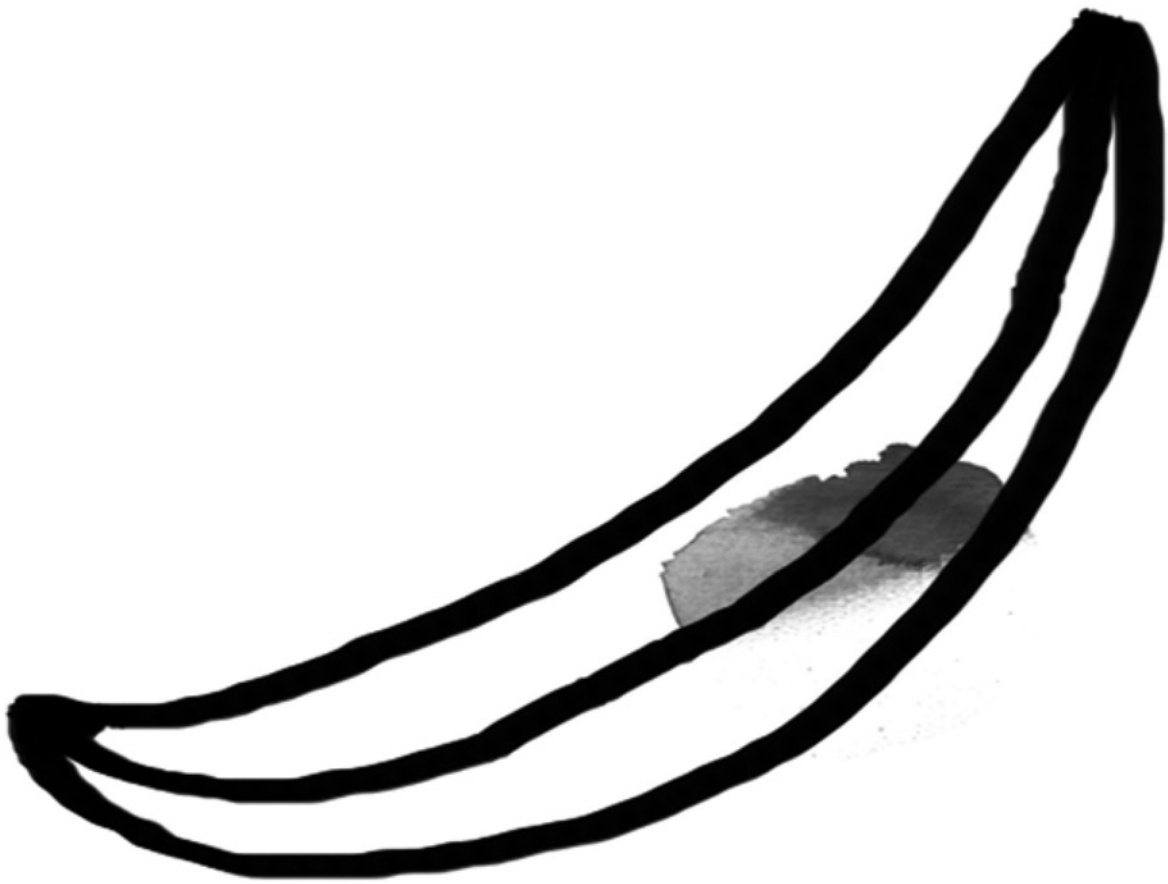
GROWING AND PRODUCING FOOD CAN LEAD  
TO WATER SHORTAGES.

# BINGO!



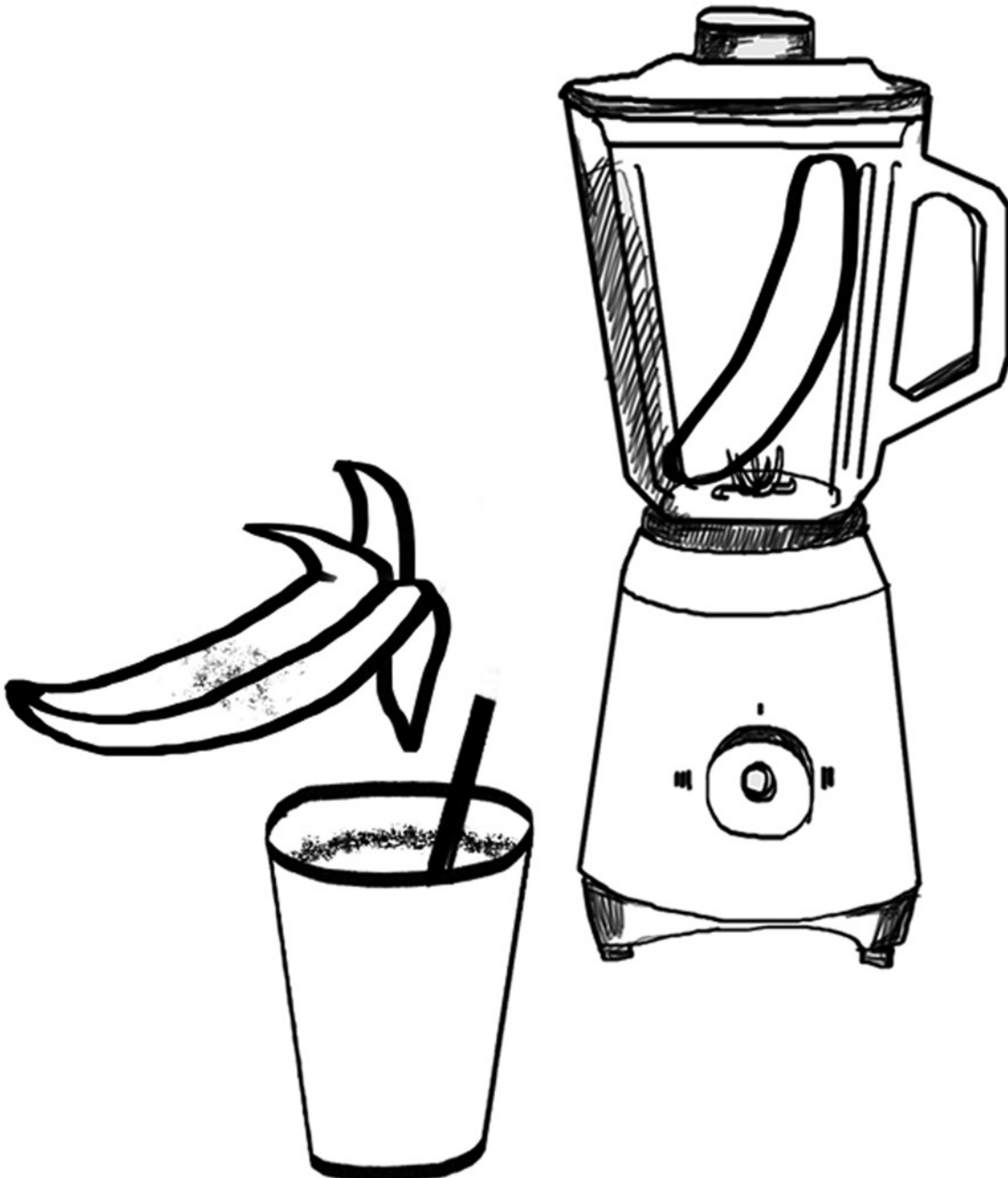
PLANTS CANNOT GROW WITHOUT WATER.

# BINGO!



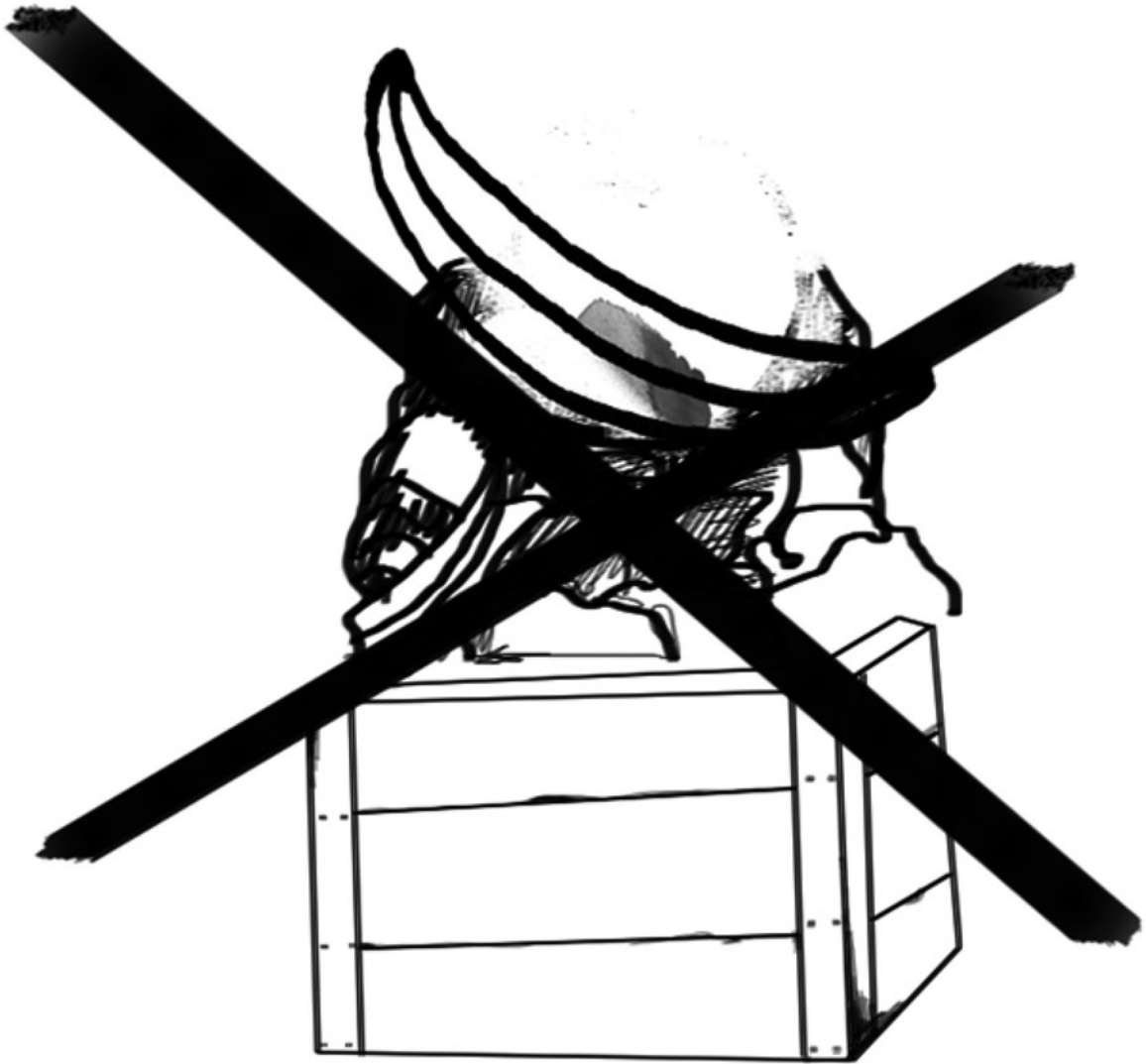
EAT YOUR BANANA EVEN WHEN IT IS A LITTLE BROWN.

# BINGO!



USE EXTRA-RIPE FRUIT TO MAKE SMOOTHIES AND JAMS.

# BINGO!



DON'T THROW AWAY ANY FOOD THAT IS STILL GOOD TO EAT!

## ■ CORE LESSON 1: WRITING EXERCISES



Writing exercises foster creative and cognitive involvement with the topic. Invite your students to join in these exercises individually or in pairs and ask them to share their written work with each other.

### **WE 1: DO GOOD: SAVE FOOD!**

"Wasting food is not such a big issue," one of your friends proclaims. Take them on a journey to see why food waste is such an important issue and what we can do to stop wasting so much food.



### **WE 2: I am a food saver!**

Imagine you are one of the food savers and write down an adventure you might have fighting against food waste. Alternatively, students can also draw a comic strip.

### **WE 3: Food supply chain interview**

Think back to the description of the food supply chain and pick an actor from within that chain (e.g. a farmer, a truck driver, a chef, a parent or guardian cooking dinner, someone working in waste disposal). Imagine you are interviewing her or him for a newspaper. What would you ask her/him? How would she/he reply?



# 9 EASY TIPS

## ■ CORE LESSON 2

### FEED YOURSELF, DON'T FEED THE BIN: NINE EASY TIPS TO REDUCE FOOD WASTE



## ■ CORE LESSON 2: FEED YOURSELF, DON'T FEED THE BIN: NINE EASY TIPS TO REDUCE FOOD WASTE

# 9 EASY TIPS

**CORE LESSON 2** highlights nine key tips for avoiding food waste at home, and briefs the students on how they and their families can reduce the amount of food they waste.

The main tool to teach the contents of core lesson 2 is Presentation 2, "Feed yourself, don't feed the bin! Nine easy tips to reduce food waste!" Depending on the time and (technical) resources available, you may decide to project or print the illustration slides (to be found in the annex of this document).

The presentation is designed to go with the accompanying voice-over text (to be found on the following pages) for you to read aloud or draw inspiration from. For older students, it might be more suitable to have it read by the students themselves, or to assign the thorough reading of it as a homework task. Use the accompanying revision sheet to help students extrapolate the key issues from the presentation.

Within the voice-over text, you will find questions for discussion and engagement with the students. These are only suggestions, so feel free to change, complement or shorten them.



45 min



### You will need:



- A video projector and a computer that can open PDF files
- A digital copy of the presentation
 

*Alternatively, print the slides on transparencies and use an overhead projector, or else print them on A4 sheets of paper and have a student hold them up while you are reading the voice-over to the class.*
- If you want to use them: printouts of the voice-over and the revision sheet (RS 2) (one per student)



### Instructions:

1. Show the presentation and read/narrate the accompanying voice-over script, or else have students read the voice-over script during class or as homework.
2. Discuss the content with the students. You might find the questions provided in the voice-over a good starting-point for discussion.
3. Hand out the review sheet and ask students to fill it in.
4. Compare and discuss results: What did the students learn from the core lesson? What is the relevance of this information to their own lives? How can they change their own behaviour to reduce food waste? Why is it important for each of us to change our behaviour?

## ■ CORE LESSON 2: VOICE-OVER

### FEED YOURSELF, DON'T FEED THE BIN: NINE EASY TIPS TO REDUCE FOOD WASTE



Wasting food is bad for the environment: It contributes to climate change and to water shortages. Food later wasted needs land to grow on, and many animals lose their habitat because the forests they live in are cut down to make room for more fields. Food loss and waste contribute to world hunger and inequality. Wasting food means wasting money, labour and resources.

But the good news is that wasting food can be avoided: Reducing the amount of waste we produce is quite easy, and we can all do something to stop wasting food!



**1 Help yourself to smaller portions.** The easiest way to reduce food waste is to put less on your plate. Serve yourself a smaller plateful and go back for seconds if you still feel hungry after finishing it. That way, you only eat as much as you need, and no left-over food is thrown away. You can do the same at the restaurant or cafeteria: If you know that the portions tend to be too big for you, ask for a smaller helping to start with in order to avoid left-over food being thrown away.



**2 Love your left-overs.**

*In your family, what do you do with left-overs?*

*Can you think of (other) ways to love your left-overs?*

If you do end up with left-overs, keep them for another day. Using left-overs to make meals is a smart way to ensure you eat everything you buy. Instead of scraping them into the bin, why not use left-overs as tomorrow's ingredients? Or, having put what is left of your meal into the fridge, simply reheat it again and have the left-over portion of that delicious vegetable curry the next day? A bit of tuna could be added to pasta and made into a baked dish. A tablespoon of cooked vegetables can be the base for a soup. If you're not sure whether you will be able to eat left-overs the day after they have been cooked, freeze and save them for later, or ask your parents to do so.

Remember that it is very important to store left-overs in the fridge or freezer within two hours of their having been prepared. In the summer months when it is warm, this time should be reduced to one hour. By dividing left-overs into several clean, shallow containers, you'll allow them to chill faster. Loving your left-overs means chilling or freezing them promptly so you can reuse them safely!



**3 Shop smart.** The pineapple that looks so appetising in the shop but half of which goes to waste because you're the only one in your family who likes its taste; the chicken you throw away after it has spoiled because you forgot there was already some mince at home waiting to be cooked; the biscuits that go to waste because you couldn't finish them off after all: We often buy more food than we are able to eat before it goes off. There are easy ways to avoid over-shopping, though.

*Q: Can you think of ways to reduce over-shopping?*

Most importantly, you should think before you buy: Ask your parents to plan meals, use grocery lists, and avoid impulse buys. That way, you're less likely to buy things you don't need and which you're unlikely to consume. Going shopping on a full stomach can also stop you from buying too much food.

*Why do you think shopping on an empty stomach might make you over-shop?*



**4 Buy "ugly" fruits and vegetables.** An apple should be round and plump, a carrot long and straight, a potato perfectly smooth – or should they? In fact, fruits and vegetables come in all sorts of shapes and sizes and each one of them is just as tasty and good to eat as the next. An apple can have rough spots, a carrot can be a little bent, and a potato can be crooked and knobbly: none of this affects their taste, nutritional value or other qualities in any way. As long as the outside is intact, the inside of fruits and vegetables is always sterile, and therefore safe to eat.

*Q: What is the funniest-looking fruit or vegetable you have ever seen?*

We are so used to the idea of what is considered perfectly shaped fruit and vegetables, that a lot of good and healthy food is not even put on the shelves for us to buy: Shop owners think that customers won't buy these foods, and so they are often thrown away before they even reach the shops.

Many shops are starting to offer "ugly" fruits and vegetables, though. If you see some oddly-shaped fruits and vegetables, consider buying them instead of the regular-looking ones, or ask your parents to do so. That way, you can show that you care about not wasting food, and you can do your part in making sure that less food is lost and wasted. And since many shops offer irregular food at reduced prices, you can save money at the same time. So remember: Shapes and sizes of fruits and vegetables vary, and this has nothing to do with their quality. Be open-minded and food-conscious, and buy oddly-shaped fruits and vegetables.

## 5 CHECK YOUR FRIDGE



## 5 Check your fridge.

*Q: What do you think we should bear in mind when checking our fridge?*

To keep it fresh and safe to eat, refrigerated food needs to be stored between 1 and 5 degrees Celsius. Make sure your fridge is set to the right temperature and get to know where in the fridge different types of food are best kept. Make sure that the fridge isn't packed too full! An overloaded fridge uses more energy, and it is quite likely that you will forget to use something that has been shoved into its furthest corner.

## 6 FIFO: FIRST IN, FIRST OUT!



## 6 FIFO: First in, first out!

*Q: What do you think FIFO could mean?*

What sounds vaguely like a strange football rule is actually one of the easiest ways to avoid food waste: When you or your parents put your shopping away, rotate the food in your fridge and cupboard so that the older stuff comes forward and the newest – which may keep the longest – goes right to the back. That way, you will use up your earlier buys and your newest food will still be good when you come around to eating it.

## 7 LEARN TO UNDERSTAND THE DATES ON YOUR FOOD



## 7 Learn to understand the dates on your food

*Q: Which date labels can you think of?*

*What do you think "Best before", "Sell by" and "Use by" mean?*

A lot of packaged food comes with dates stamped onto it. The most important date label is the "use-by" date. Some food, such as raw meat, has a very strict expiry date. Eating this food after the expiry date can make you very ill. If you find that you won't be able to eat food before the date on its "use-by" label, you can freeze it, and defrost and eat it at a later time. Once the "use-by" date has passed and you haven't frozen the food, you will have to throw it out.

Things are quite different with "best-before" dates: If something is labeled "best before" a certain date, it means just that: the food probably tastes, smells, and looks best before that date. The information says very little about when the food will actually lose quality or go off altogether and be no longer safe to use. If the packaging is intact and the food has been stored correctly, food is generally still safe to eat after the "best-before" date. You can normally tell by having a good look at your food or asking an adult to do so. If the food looks, smells, and tastes good after its "best-before" date, it is normally still good to eat.

## 8 TURN IT INTO GARDEN FEED



**8 Turn it into garden feed.** If you do end up wasting some of your food, recover it by turning it into garden feed.

*Q: Can you think of another word for garden feed? (A: compost) Why would we call call compost "garden feed"? (A: Because the composted soil is as nourishing to our garden as good food is to us.)*

Instead of throwing it in your regular bin and contributing to the greenhouse-gas emissions connected to the transport and disposal of waste, why not set up a compost bin for food waste and fruit and vegetable peelings? In a few months, you will end up with rich, valuable compost for your plants.

## 9 SHARING IS CARING



**9 Sharing is caring.** In the past few years, many people have become very aware of the problems connected with food loss and waste. In many places, initiatives have started that help people share food: Soup kitchens use food that is nearing its "best-before" date to make meals for poor people. School cafeterias donate left-overs to food banks, and "Taste the waste" restaurants cook only with food that was destined to be wasted in shops. There is a growing network of food savers – check them out and join them!

*Can you think of any local initiatives that help us save and re-use food?*

**Wasting food means wasting money, labour, energy and other resources. When we use our food smartly, we save money and fight climate change. So shop with care, store your food smartly, and re-use and share your left-overs. Get your friends and families to do the same: Together, we can DO GOOD: SAVE FOOD!**

# REVISION SHEET: CORE LESSON 2

1. Why is wasting food bad for the environment? → \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
2. What are the nine key tips for saving food? → \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
3. What precautions do we have to take when storing left-overs? → \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
4. What does FIFO stand for? → \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
5. What do the labels "Best before", "Sell by" and "Use by" mean? → \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
6. At what temperature should our fridge be set? How should we stock it in order to reduce greenhouse-gas emissions and avoid wasting food? → \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
7. What are the benefits of buying oddly shaped fruits and vegetables? → \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
8. How can we shop smartly? → \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Revision sheet: core lesson 2 (Solutions)

### 1. Why is wasting food bad for the environment?

Wasting food increases greenhouse-gas emissions, contributes to water shortages, occupies land, threatens biodiversity and pollutes and diminishes soils. Food loss and waste contribute to world hunger and inequality. Wasting food means wasting money, labour and resources.

### 2. What are the nine key tips for saving food?

1. Help yourself to smaller portions.
2. Love your left-overs.
3. Shop smart.
4. Buy ugly fruits and vegetables.
5. Check your fridge.
6. FIFO: First In, First Out!
7. Learn to understand the dates on your food.
8. Turn it into garden feed.
9. Sharing is caring.

### 3. Which precautions do we have to take when storing left-overs?

Left-overs need to be stored in the fridge or freezer within two hours after having been prepared (during the summer, this should be done within one hour). If left-overs are divided into several clean, shallow containers, they will chill faster. Cold temperatures slow the growth of harmful bacteria. Loving our left-overs means chilling or freezing them promptly so that we can re-use them safely.

### 4. What does FIFO stand for?

FIFO stands for First In, First Out: When we put our shopping away, we should rotate the food in the fridge and cupboard so that the older stuff comes forward and the newest – which may keep the longest – goes right to the back. That way, we can use up our earlier buys, and the newest food will still be good when we come around to eating it.

### 5. What do the labels “Best before”, “Sell by” and “Use by” mean?

“Best-before” dates are manufacturers’ suggestions for peak quality: They indicate the date until which the food will be at its best in terms of smell, texture, and taste. That information says very little about when the food will actually lose quality or go off altogether and be no longer safe to use. If the packaging is intact and the food has been stored correctly, food is generally still safe to eat after the “best-before” date.

Some food, such as raw meat, has a very strict expiry date. Eating this food after the expiry date can make us very ill. If we find that we won’t be able to eat food before the date on its “use by” label, we can freeze it and defrost and eat it at a later time. Once the “use-by” date has passed and the food hasn’t been frozen, it will need to be thrown away.

“Sell-by” dates are merely for the sellers’ information, and indicate by which time they should sell the product. Our food will still be good long after the “sell-by” date has passed.

**6. At what temperature should our fridge be set? How should we stock it in order to reduce greenhouse-gas emissions and avoid wasting food?**

Refrigerated food needs to be stored between 1 and 5 degrees Celsius for maximum freshness and longevity. To save energy and reduce greenhouse-gas emissions, we should make sure that the fridge is defrosted regularly. We should also make sure that the fridge is not packed too full. An overloaded fridge uses more energy, and it is quite likely that we will forget to use something that has been shoved into the back.

**7. What are the benefits of buying oddly shaped fruits and vegetables?**

Fruit and vegetables come in all sorts of shapes and sizes and each one of them is just as tasty and good to eat as the next. As long as the outside is intact, the inside of fruits and vegetables is always sterile, and therefore safe to eat. Increasingly, shops are offering “ugly” fruit and vegetables.

By buying these, we can show that we care about not wasting food, and we can do our part in making sure that less food is lost and wasted. And since many shops offer irregular food at reduced prices, we can save money at the same time.

**8. How can we shop smartly?**

Easy ways of shopping smartly include planning meals ahead, using shopping lists, and avoiding impulse buys. That way, we’re less likely to buy things we don’t need and which we’re unlikely to actually consume. Going shopping on a full stomach can also stop us from buying too much food.



# 9 EASY TIPS

## ■ FOLLOW-ON ACTIVITIES

for core lesson 2

## FEED YOURSELF, DON'T FEED THE BIN: NINE EASY TIPS TO REDUCE FOOD WASTE

*These FOLLOW-ON ACTIVITIES feature a more hands-on approach and introduce concrete action to reduce food waste as outlined in core lesson 2.*

*They are designed to encourage students to take action against food waste and to deepen their practical understanding and knowledge of how to do so.*

## ■ CORE LESSON 2: WORKSHEETS



### ■ You can do Better!

From a story about Anna and Theo wasting food, students determine food-wasting actions and think of food-saving alternatives.

*Writing exercise WE 1 continues from this worksheet by inviting students to write an alternative story in which no food is wasted.*



25 min

### You will need:



- Printouts of worksheet WS 6, "You can do better!"
- One copy of the solution sheet for yourself



#### Instructions:

1. Hand out copies of worksheet WS 6.
2. Split students into pairs and ask them to read through the story, then circle the sentences in which they think Theo and Anna have not acted in accordance with food-saving practices.
3. Compare results and discuss: What food-saving actions could Anna and Theo have taken instead?

## YOU CAN DO BETTER: DO GOOD: SAVE FOOD!

*Theo and Anna are hungry. Follow their story and see whether they remember everything the food savers have explained about avoiding food waste. Are they doing everything right, or could they have acted more sensibly to avoid wasting food?*

Anna and Theo are hungry. "Let's go buy something to eat!" Theo says, and Anna groans. "Don't we have anything left at home?" She says. They look around the kitchen and in the fridge, finding a few apples and oranges, some pasta and tomato sauce from yesterday, some bread, cheese and salami. They don't spot the strawberries hidden by the apples, and the yoghurts underneath the container with left-overs. "Nothing here that I want," Theo says, and Anna shrugs. "Okay, then. Do you think we'll need a shopping list?" "Nah," Theo says, "we're only going for some snacks."

At the shop, the children get a shopping trolley and start loading it. Anna points out a punnet of fresh strawberries, and Theo puts them in the trolley along with some pears. "Let's get some bananas, too," Anna says, "they're healthy and they last forever." The shopkeeper hears them talking. "Did you see we have a special offer for fruit that's a little crooked? Tastes just as nice!" The children look at the counter she's indicating but they're not convinced. "It's a lot cheaper," Anna says, "but surely it won't last as long as real fruit and veg?" Theo shakes his head. "And Dad is always going on about eating healthily. These don't look as if they're still full of vitamins". They walk on. "Do we need bread for tonight?" Theo asks and Anna frowns, trying to remember what there was at home. "Probably", she muses, and in a loaf of bread goes. "Look, there's a 'two for one' offer on yoghurts!" Theo beams, "and on my favourite kind, too!" They stock up on yoghurts, then march along the crisps aisle and fill up with some bags of those, too.

They pay and wander home, munching a banana on the way. "Just in time for *Star Crackers*," Anna calls when they get back, and they manage to drop down onto the couch just as their favourite show starts.

Half an hour later, they remember that they haven't finished their homework yet, so, with a lot of sighing and groaning, they get down to work on it. When their dad gets home, he shouts up from the kitchen: "What's all this? There's shopping all over the worktop!" Theo and Anna roll their eyes and trudge downstairs to put the food away in the fridge and the cupboards. The strawberries are a little squashed because they were at the bottom of the bag, so they push them right to the back of the fridge where their parents won't spot them and get mad. "Job well done," Theo says and they high-five.

*What do you think – is this really a job well done? Underline all the instances where you think Theo and Anna should have remembered the lessons on food waste and acted differently. Then discuss with your neighbour: What should they have done instead? Write an alternative story of your own.*

## ■ You can do better: DO GOOD: SAVE FOOD! (Solutions)

(food-wasting behaviour is underlined, suggestions for food-saving alternatives are *italicised*.)

Anna and Theo are hungry. "Let's go buy something to eat!" Theo says, and Anna groans. "Don't we have anything left at home?" She says. They look around the kitchen and in the fridge, finding a few apples and oranges, some pasta and tomato sauce from yesterday, some bread, cheese and salami. They don't spot the strawberries hidden by the apples, or the yoghurts underneath the container with left-overs. *(They should have looked more closely to see whether something was hidden. If they now go out to buy strawberries or yoghurts, some of the ones in the fridge are likely to go off because they might not eat them all.)* "Nothing here that I want," Theo says, and Anna shrugs. "Okay, then. Do you think we'll need a shopping list?" "Nah," Theo says, "we're only going for some snacks." *(You should always go shopping with a list, so as to avoid making impulse buys that you don't really need.)*

At the shop, the children get a shopping trolley and start loading it. Anna points out a punnet of fresh strawberries, and Theo puts them in the trolley along with some pears. *(There are already strawberries in the fridge.)* "Let's get some bananas, too", Anna says, "they're healthy and they last forever." *(There are already some apples at home. And they won't last forever!)* The shopkeeper hears them talking. "Did you see we have a special offer for fruit that's a little crooked? Tastes just as nice!" The children look at the counter she's indicating but they're not convinced. "It's a lot cheaper," Anna says, "but surely it won't last as long as real fruit and veg?" *(As long as the skin is intact, oddly-shaped fruit and vegetables last just as long as regularly shaped ones.)* Theo shakes his head. "And Dad is always on about eating healthily. These don't look as if they're still full of vitamins." *(Crooked fruits and vegetables are just as healthy as regularly-shaped ones.)* They walk on. "Do we need bread for tonight?" Theo asks and Anna frowns, trying to remember what there was at home. "Probably," she muses, and in a loaf of bread goes. *(They already have bread at home.)* "Look, there's a "two for one" offer on yoghurts!" Theo beams, "and on my favourite kind, too!" They stock up on yoghurts, *(There are already yoghurts at home! Don't be tempted by offers such as 'two for one' – only buy food when you actually need it, not just because it's cheap!)* then march along the crisps aisle and fill up with some bags of those, too.

They pay and wander home, munching a banana on the way. "Just in time for *Star Crackers*," Anna calls when they get back and they manage to drop onto the couch just as their favourite show starts. *(It's important to store food as quickly as possible. Perishable food such as meat and yoghurt, particularly, will go off very quickly if it is not cooled.)*

Half an hour later, they remember that they haven't finished their homework yet, so, with a lot of sighing and groaning, they get down to work on it. When their dad gets home, he shouts up from the kitchen: "What's all this? There's shopping all over the worktop!" Theo and Anna roll their eyes and trudge downstairs to put the food away in the fridge and the cupboards. *(They should have practiced FIFO [First In, First Out] and placed the freshest food towards the back, while bringing forward the food that has been in there longer.)* The strawberries are a little squashed because they were at the bottom of the bag, so they push them right to the back of the fridge where their parents won't spot them and get mad. *(If the strawberries are a little squashed, they should be used right away, e.g. to make a smoothie, a milk shake or a fruit salad. Pushing them out of sight means that they will probably go off before they can be eaten.)* "Job well done," Theo says and they high-five.

## ■ Let's fight food waste!

In this exercise, students are asked to repeat the key ways of reducing food waste.  
*This worksheet can be combined with discussion D 2.*



20 min

### You will need:



- Printouts of worksheet WS 7 (one per student)



#### Instructions:

1. Brainstorm with the students: What ways of reducing food waste were mentioned in the presentation? Can you come up with additional ideas?
2. Hand out copies of WS 7.
3. Ask students to fill in their worksheet.
4. Split students into groups of three to four.
5. Ask them to compare their findings within their groups and to add group members' ideas for reducing food waste that they hadn't thought of themselves.

LET'S FIGHT FOOD WASTE!



Wasting food is bad for the environment, it is costly and it contributes to world hunger. But you can do a lot to avoid food waste! Try to remember the most important steps:

I can avoid wasting food by \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

If there are any left-overs, I can \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

We should avoid wasting food because \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## ■ Stop food waste!

In this exercise, students are asked to evaluate their treatment of food at home and to consider steps to reduce food waste in their family. *Discussion D 2 (Poster)* incorporates this worksheet into a more detailed treatment of ways to reduce food waste.



25 min



### You will need:



- Printouts of worksheet WS 8 (one per student)



#### Instructions:

1. Explain: "Now that we've heard about ways to reduce food waste, let's think about how each of us can do so at home."
2. Ask students whether at home they already follow some of the advice given in the presentation. How could they avoid wasting food in the future and what could their next steps look like?
3. Hand out copies of worksheet WS 8 and ask students to fill it in.

## STOP FOOD WASTE!

This is how my family saves food at home ...

In order to save more food, my family should....

My next steps to save more food ...



## ■ DO GOOD: SAVE FOOD!

This worksheet allows students to recapitulate what they have learned about food waste and how their knowledge has translated into practice.

*Please consider implementing this worksheet at the end of the "DO GOOD: SAVE FOOD!" programme*



25 min

### You will need:



- Printouts of worksheet WS 9, "DO GOOD: SAVE FOOD!" (one per student)



#### Instructions:

1. In a classroom discussion, ask students to recapitulate the sessions on food waste: What activities did you do, what games did you play, what projects did you organise?
2. Discuss: What did you learn during this programme? Did your habits change? If you have completed the "Food-saver diary", did your tracking affect the way your family dealt with food and food waste? Do you think you can continue reducing the amount of food you waste? What might help you to do this?
3. Hand out and ask students to fill in worksheet WS 9, "DO GOOD: SAVE FOOD!", and to discuss their answers with the student sitting next to them.
4. Discuss: Do students think they can keep up their strategies to reduce food waste? What might help them stick to their goals?

## DO GOOD: SAVE FOOD!

Learning about food waste,  
I have found out that ...

Trying to reduce food waste  
at home has shown me that...

This is how my family reacted:

## ■ CORE LESSON 2: DISCUSSIONS



### ■ Fight the waste!

By creating posters together, this activity lets students revisit and deepen their understanding of the key concepts of food waste reduction.



**70 min** (35 min for part 1; 35 min for part 2)

#### You will need:



- Printouts of worksheet WS 7 p. 99 ("Let's fight food waste", one per student)
- A2 or A3 paper (one sheet for every four students)
- Coloured pencils, crayons, or water colours
- Scrap bits of material, newspaper and magazine clippings
- Scissors
- Glue
- Adhesive tape



#### Instructions:

##### Part 1

1. Brainstorm together: How can we avoid food waste? What can we do with left-over food?
2. Hand out copies of worksheet WS 7 and ask students to fill them in (individually or in groups).
3. Split students into groups of four.
4. Ask each group to choose one of the following topics: "How we can avoid wasting food", and "What we can do with left-overs".
5. Instruct students to create a mind-map of their topic.

##### Part 2

6. Pin up the mind-maps around the room.
7. Rotate group members: Assign students in each group a number from one to four, then ask all 1s, 2s, 3s and 4s to join up in new groups. You should now have four new groups, and each of these groups should have at least one member of the original groups in them.
8. Spread the groups out across the room so that each group is standing in front of a poster. Ask the group members who participated in creating that particular poster to explain it to their new group. Invite the other students to comment on the posters and point out oversights if they spot any.
9. After about two minutes, give a short signal (clap, whistle, etc.) and ask the groups to move on to the next poster.
10. Repeat until the groups have come full-circle.
11. Ask students to get back into their original groups and to include the feedback from their classmates in their poster.

## ■ Poster

Students illustrate one poster for each key tip and present it to the class.



# 100 min

(45 min for part 1; 25 min for part 2; 30 min for part 3)

### You will need:



- Coloured markers, pencils or water colours
- Nine sheets of flipchart or poster paper
- Adhesive tape or pins
- Slips of paper with numbers 1 to 9
- A small bell or whistle
- One copy of D2 (class contract template)



### Instructions:

#### Part 1:

1. Split students into nine groups and let each group draw a number. The number refers to the key tips from the presentation (e.g. the number 1 corresponds with the tip to “Shop smart”, number 2 to “Buy ugly fruits and vegetables” etc.).
2. Ask each group to design a poster illustrating the corresponding tip.

#### Part 2:

3. Pin up the posters along the available walls in the room and let students form new groups. Each group should consist of one member from the original groups.
4. Start the groups at opposite ends of the poster run. As they walk from poster to poster, the member of their group who helped create that particular poster should explain it to them. Every two to three minutes, ring the bell or blow your whistle to indicate that it's time to move on to the next poster.

#### Part 3:

5. After the round of poster presentations has been completed in this way, reassemble and discuss: Do you already follow some of this advice at home? What do you think will be the easiest tip for you to follow? What will you find the hardest? Why?
6. Brainstorm together: How could you reduce food waste at school and in your class? (Possible ideas include: visiting other classes and talking to them about food waste, distributing flyers, or organising a food waste audit in the school cafeteria).
7. Draw up a class contract detailing what, as a group, you intend to do about food waste at school, and pin up that contract. *Document D2 gives an example of what a class contract could look like.*

## WORKING TOGETHER TO SAVE FOOD: OUR CLASS CONTRACT

Wasting food is bad for the environment, it wastes money, and contributes to world hunger. In order to save food, we, the students of class \_\_\_\_\_, will:

1. Take our time to eat.
2. Ask for adequate portions in our lunch boxes.
3. Donate what we cannot eat ourselves to our free-for-all left-over plate.
4. Remind each other about not wasting food.
5. Compost or recycle food waste we can't avoid.

**Let's do good: Save food!**

*Name of school and town, date*

*Signatures*

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## ■ Storage knowledge

In a classroom discussion, students try to determine the perishability of certain foods, and think about where these would best be stored.



# 40 min (+ homework)

### You will need:



- One set of printouts of storage knowledge flash cards D 3a
- Printouts of support sheet D 3b and worksheets D 3c and D 3d (one each per student)
- Black-/whiteboard, chalk or board markers
- Adhesive tape
- Scissors



### Instructions:

1. Draw two big circles onto the black-/whiteboard and pin up the cards "Refrigerate as soon as possible" and "Won't spoil easily" above each. In the circle marked "Refrigerate as soon as possible", draw a smaller circle and pin up the card "Take great care!" within it.
2. Explain: "Storing food safely is a precondition for not wasting it because it stops it from going off before we can consume it." Ask students what they know about storing food correctly. What can happen if food is not stored safely?
3. Hand out the support sheet D 3b and read through it together. With the help of your students, fill in your overview on the black-/whiteboard with the food items mentioned on the worksheet. Underneath "Take great care with", you should add "raw meat"; underneath "Refrigerate as soon as possible", "cooked chicken", "cooked rice", "cooked pasta", "cheese" and "left-over pizza"; and underneath "Won't spoil easily", "bread" and "lettuce and strawberries".
4. Brainstorm with your students which other items of food and drink they can think of and where within your overview these should be placed.
5. Hand out copies of worksheet D 3c and D 3d and read through the instructions together. Ask students to cut out and place the food items on the second onto the first page (to be glued in after classroom discussion).
6. As homework, ask students to complete the worksheet by picking one of their favourite foods, researching how it should be kept and stored, and filling in the blanks on the worksheet.

## STORAGE KNOWLEDGE FLASHCARDS

**REFRIGERATE AS SOON  
AS POSSIBLE**

**WON'T SPOIL EASILY**

**TAKE GREAT CARE!**

## ■ Storage knowledge - Support sheet

Food is sometimes wasted because it has gone bad. If we store our food properly, we will waste less of it. Follow these tips to keep your food fresh and safe to eat!

### Take great care with ...

**... raw meat:** Raw meat absolutely needs to be kept refrigerated, so make sure you take it home straight from the shop, and put it in the fridge as soon as possible. Do not use raw meat after the “use-by” date has passed (unless it has been frozen from before that date). If you cannot use it before the “use-by” date has passed, freeze it. Frozen meat will stay edible for a very long time.

### Refrigerate these foods as soon as possible:

**Cooked chicken:** Cooked chicken needs to go into the fridge or freezer as quickly as possible. Help it cool down by putting it into several shallow dishes or containers. If you want to reheat it, make sure you heat it up thoroughly for at least two minutes to kill off any bacteria.

**Cooked rice:** Dried rice will last a very long time, but once it is cooked, it will only keep for two to three days. It is vital that cooked rice should be put into the fridge as quickly as possible. To cool it down quickly, put the rice into several shallow containers, and then place it in the fridge as soon as it is no longer hot. Cooked rice that is left to cool down slowly and is not refrigerated promptly can cause food poisoning.

**Cooked pasta:** Just like dried rice, dried pasta will keep for a very long time, but it needs to be consumed within two or three days of being cooked. Put left-over cooked pasta in the fridge once it has cooled down sufficiently. Put it into shallow containers to speed up the cooling-down. When cooked pasta is left to cool down slowly and is not refrigerated, it can cause food poisoning.

**Cheese:** Cheese needs to be refrigerated. Once opened, sliced cheese will stay soft and moist if you cover it with plastic foil or put it in an airtight container. If it not covered up properly, it will go hard.

**Left-over pizza:** Left-over pizza will stay safe for three to four days if it is refrigerated properly. Please make sure that you put it in the fridge as soon as it has cooled down.

### These food items don't spoil easily:

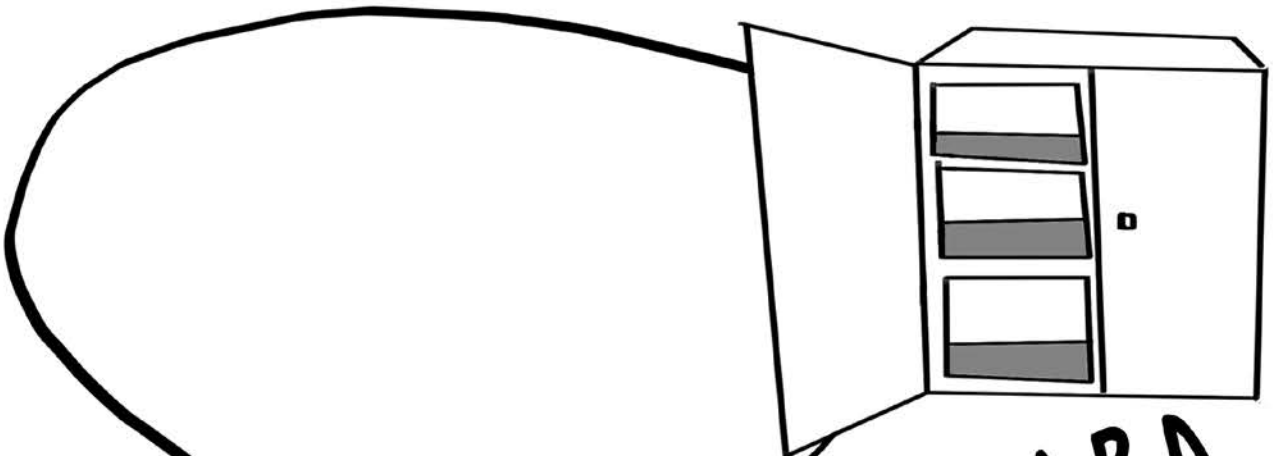
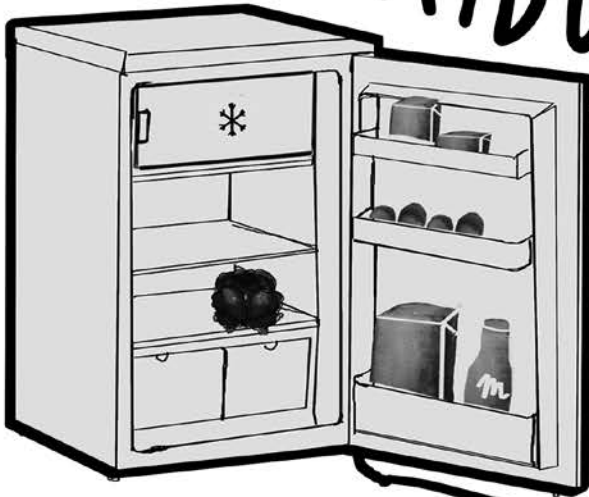
**Bread:** Fresh bread is best stored in a paper bag: the paper allows the bread to breathe, so there is less chance of mould affecting the loaf. Sliced bread is best stored in the plastic bag that it comes in to keep it fresh. You can also freeze bread in an airtight freezer container or in the plastic bag it came in. Pay close attention to mould on bread: Once the bread is mouldy, do not eat it. Even if the mould is only on one slice, throw away the whole loaf. If your bread has gone stale but there is no sign of mould, it is perfectly safe to eat and you can still use it for croutons, French toast, or stuffing.

**Fruits and vegetables:** Some fruits and vegetables, such as nectarines, peaches, tomatoes, kiwis and pears, can be left on the kitchen worktop to ripen. After they have ripened, they will keep longest if refrigerated. Sliced fruit should be covered up and placed in the fridge. This reduces discolouring and maintains quality and safety. Drizzling lemon juice onto sliced fruit and vegetables such as apples or avocados will keep them from going brown for a while. Apples will go brown rather quickly once they're cut, but they're still good to eat, as long as they are not slimy.



FOOD IS SOMETIMES WASTED BECAUSE IT HAS GONE BAD. IF WE STORE OUR FOOD PROPERLY, WE WILL WASTE LESS OF IT. CUT OUT THE ITEMS OF FOOD ON THE NEXT PAGE AND PASTE THEM WHERE YOU THINK THEY BELONG.

FRIDGE



CUPBOARD

ONE OF MY FAVOURITE ITEMS OF FOOD IS: .....

IT SPOILS IF I .. ..

TO KEEP IT FRESH AND SAFE FOR CONSUMPTION, I HAVE TO .....

.....

RAW MEAT



COOKED CHICKEN



COOKED RICE



COOKED PASTA



CHEESE



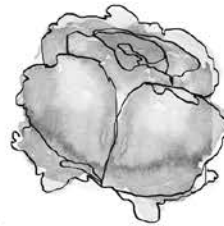
LEFTOVER PIZZA



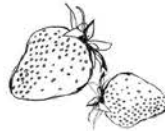
BREAD



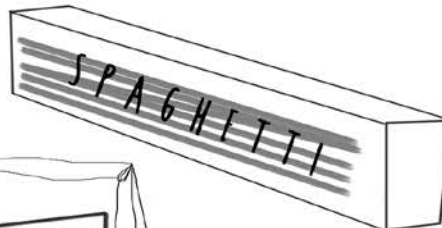
SALAD



STRAWBERRIES



DRY PASTA



FLOUR



## ■ Fridge frenzy

With the help of this discussion, students learn where to place certain foods within the fridge.



# 25 min (+ homework)



### You will need:

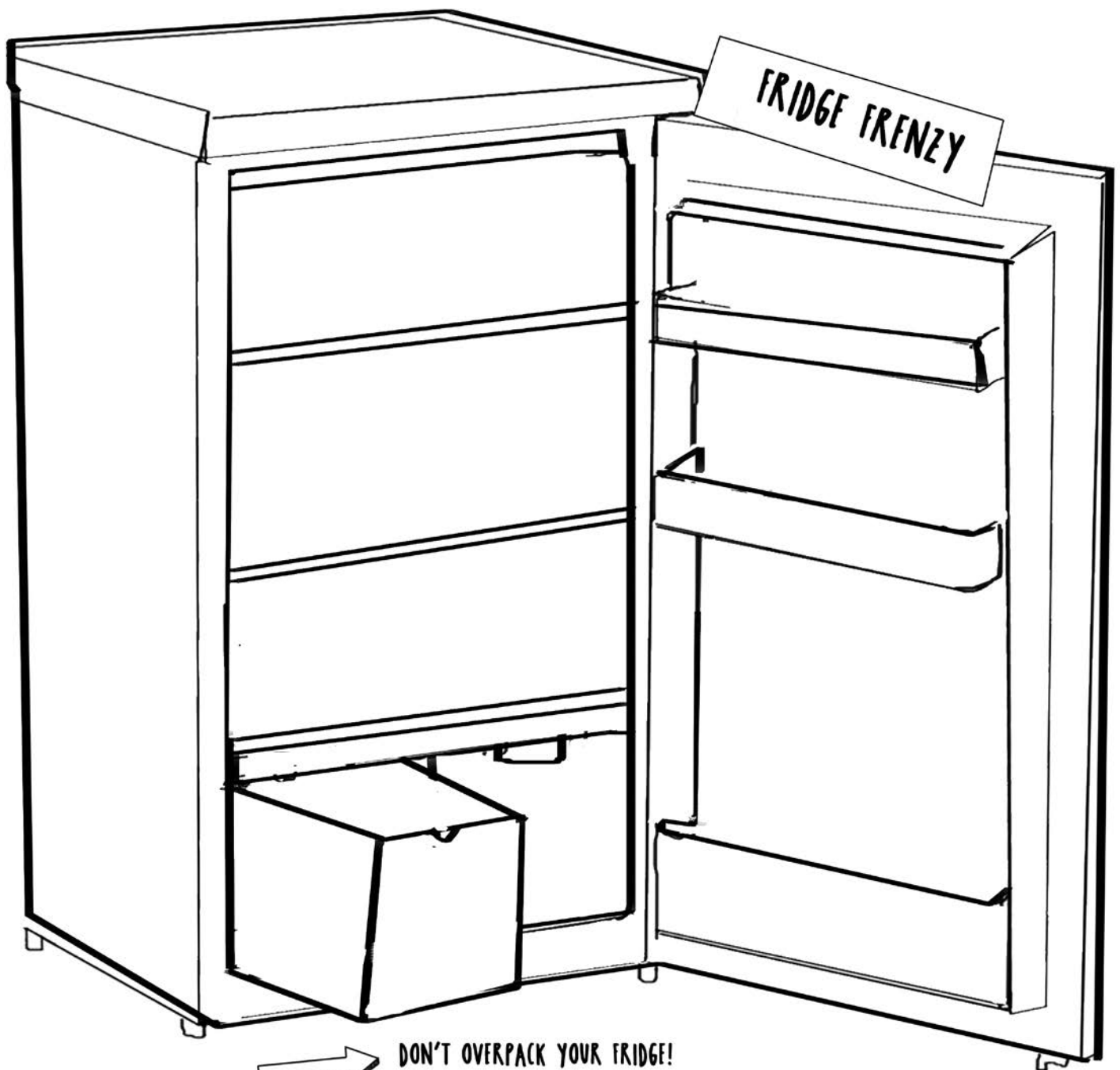


- Printouts of worksheet D 4a and the flyer “Fridge frenzy – What goes where?” (D 4b) (one of each per student)
- Coloured pencils



### Instructions:

1. Explain: The temperature in the fridge varies, and to keep your food fresh for the longest time possible, you have to know where is the best place for it in the fridge.
2. Hand out copies of D 4a and invite students to look at the first page (the depiction of the fridge). Ask students: *Where do you think is the coolest place in the fridge? What should be kept there? Where is the warmest part? What do you think should be kept there? Do you know where fruits and vegetables are supposed to go?*
3. Hand out the flyer D 4b and explain: “Most fridges have crisper drawers at the bottom, which keep fruits and vegetables moist. Use one of those drawers for vegetables, the other for fruits.” Instruct students to colour in the crisper drawers on the worksheet D 4a in green and to add a key to their worksheet in order to help them remember what each color represents.
4. Explain: “Above the crisper drawers (on the bottom shelf) is the coolest place within the fridge. This is where you should keep food that spoils easily: raw fish and meat. Make sure that you keep raw fish and meat in airtight containers. This will help to keep them fresh, but it will also stop juice from dripping onto other food: The juice from raw meat and fish can contain bacteria that can make you very ill, so make sure it doesn’t come into contact with any food that you might eat without cooking it first (such as salad or cheese).” Instruct students to colour in the bottom shelf in blue on their worksheet.
5. Explain: “The top shelves are the second-warmest part of the fridge. Here, you can store food that doesn’t need to be cooked, such as left-overs, sliced meat, yoghurts and cheese.” Ask students to colour in the two top shelves in orange.
6. Explain: “Doors are the warmest part of the fridge, so you should only keep food in there that won’t spoil easily, such as juices or tomato ketchup. Even though many fridges have a special compartment for eggs in their door, eggs should not be kept here but on the top shelves of the fridge. The same goes for milk.” Ask students to colour in the fridge doors in red.
7. Individually or in groups, ask students to stock the fridge on their worksheet by writing at least four items of food on the shelves and in the door.
8. Compare results.
9. As homework, students should have a look into their fridge at home together with their parents or guardians to check whether the food in there is stored correctly. If it is not, ask them to rearrange it with the help of their parents or guardians. Ask them to pin up their cut-out fridge on the door of their actual fridge.
10. When the homework is due, discuss: How did their fridge “hold up” in comparison to the instructions they received at school? Did they rearrange anything and if so, what?



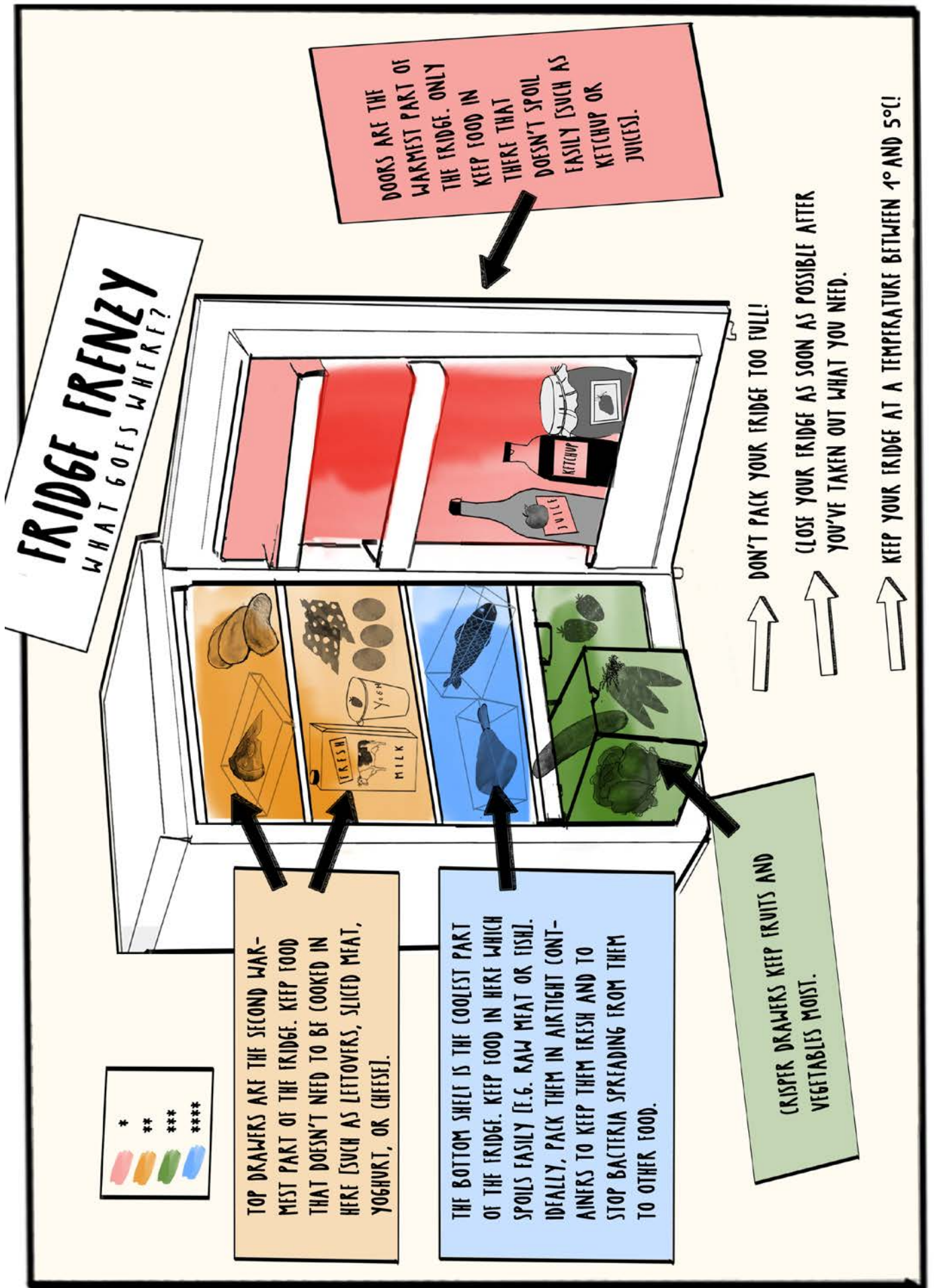
**DON'T OVERPACK YOUR FRIDGE!**



**CLOSE YOUR FRIDGE AS SOON AS POSSIBLE AFTER YOU'VE TAKEN OUT WHAT YOU NEEDED.**



**KEEP YOUR FRIDGE AT A TEMPERATURE BETWEEN 1 AND 5°C!**



# FRIDGE FRENZY

WHAT GOES WHERE?



TOP DRAWERS ARE THE SECOND WARMEST PART OF THE FRIDGE. KEEP FOOD THAT DOESN'T NEED TO BE COOKED IN HERE [SUCH AS LEFTOVERS, SLICED MEAT, YOGHURT, OR CHEESE].

THE BOTTOM SHELF IS THE COOLEST PART OF THE FRIDGE. KEEP FOOD IN HERE WHICH SPOILS EASILY [E.G. RAW MEAT OR FISH]. IDEALLY, PACK THEM IN AIRTIGHT CONTAINERS TO KEEP THEM FRESH AND TO STOP BACTERIA SPREADING FROM THEM TO OTHER FOOD.

CRISPER DRAWERS KEEP FRUITS AND VEGETABLES MOIST.

DOORS ARE THE WARMEST PART OF THE FRIDGE. ONLY KEEP FOOD IN THERE THAT DOESN'T SPOIL EASILY [SUCH AS KETCHUP OR JUICES].

- ↑ DON'T PACK YOUR FRIDGE TOO FULL!
- ↑ CLOSE YOUR FRIDGE AS SOON AS POSSIBLE AFTER YOU'VE TAKEN OUT WHAT YOU NEED.
- ↑ KEEP YOUR FRIDGE AT A TEMPERATURE BETWEEN 4° AND 5°C!

## ■ CORE LESSON 2: GAMES



### ■ Speed storage

In this game of speed and knowledge, players have to assign the correct storage places to different types of food.

**Please note:** Due to health and safety concerns, this exercise should only be undertaken in a wide and clear space (such as the gym hall). Depending on regional/national regulations, the exercise may have to be supervised by a PE teacher. Please make sure that you know the regulations applicable to your country/regions, and comply with them.



## 45 min

### You will need:



- Printouts of flash cards G 3a, "Speed storage" (one for every four students)  
*You will need to tell the cards from the different teams apart at the end of the game, so mark the cards on the back for each group (i.e. all the cards from one group should have the same number or symbol on them).*
- Non-transparent bags (one for every four students)
- Plastic food containers (one for every four students)
- Three big cardboard or plastic boxes (alternatively: stake out three sections of floor with string, or use table-tops)
- One set of printouts of the storage signs G 3b (fridge, cellar, cupboard, worktop)
- A printout of the solution sheet
- Printouts of support sheet D 3b, "Storage knowledge"



### Rules:

- You have just been shopping and are in a rush to put away your food. You have to make sure that the food is put away quickly, but you also have to make sure that it is stored safely, i.e. in a place where it will keep best.
- Each team has a bag of different items of food, represented by illustrated flash cards. You're only allowed to take out one at a time.
- When you have taken a card out, discuss where it should be placed. One of your team members should rush to place the card in the appropriate place. Once he or she is back, take out and discuss the next card. Repeat until your bag is empty.

- One of the food items needs to go into a container. Make sure you place it in the container and close the lid before you put it in the correct storage place.
- There are points for speed, but there are twice as many points for correct storage. So make sure you're fast, but be certain that you put the food away properly, too!

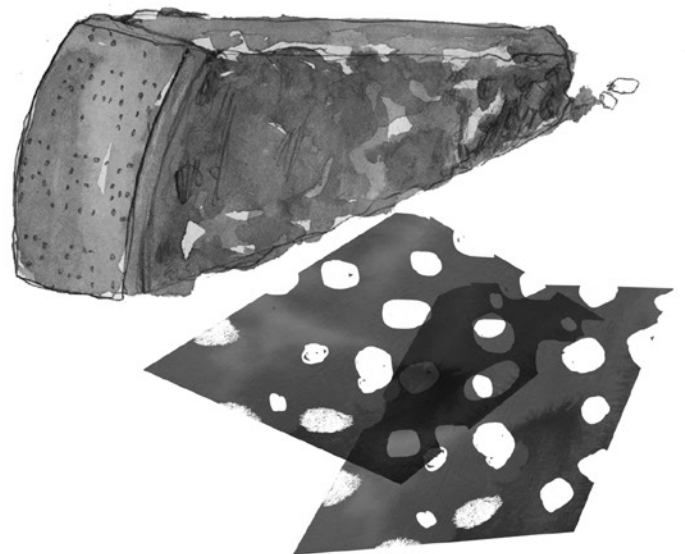
1 —  
2 —  
3 —

### Instructions:

1. Split the class into teams of three to four students. Hand each team a non-transparent bag containing one set of food-item printouts.
2. Place the cardboard boxes or tables in different corners of the room (or mark off sections with string). While designating each to be a fridge, cellar, cupboard or kitchen worktop by pinning up the storage signs on or above them, ask: "What makes this place special in terms of food storage?" (e.g. fridge: low temperatures; cellar: dark and cool; cupboard: dark but little air circulation; worktop: air circulation but fluctuating and generally higher temperature).
3. Explain the rules of the game.
4. Play!
5. Keep note of the order in which the different groups finish. The last group is awarded one point, and each subsequent group one more.
6. After the game has finished, take students to each storage place in turn and discuss: what should have gone into here? Why? (Check the support sheet D 3b, "Storage knowledge" on page 110) if you are unsure of the solutions yourself. Check which cards are in there and keep a tally of the different teams' records. The team with the lowest number of correct placements is awarded two points, and each subsequent group two more. The team with the highest number of overall points wins.
7. Ask students to sit down again and discuss: Why is it important to store food properly? (answer: storing food in the appropriate places makes sure that it keeps as long as possible. It can also help prevent you from falling ill from the effects of eating food that has gone off.) Do you know of any additional rules about storing food?
8. Hand out support sheet D 3b, "Storage knowledge" and read through the storage tips together. If you have come up with additional tips in the discussion before, let students add them to the worksheet.
9. As homework, instruct students to ask their (grand)parents or guardians about any additional tips they may have. Compare notes the following day.

# SPEED STORAGE

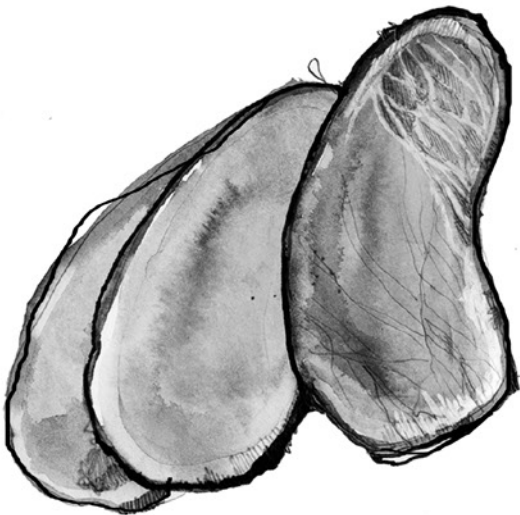
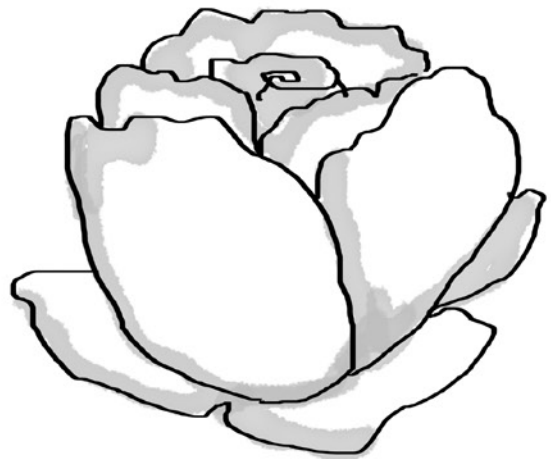
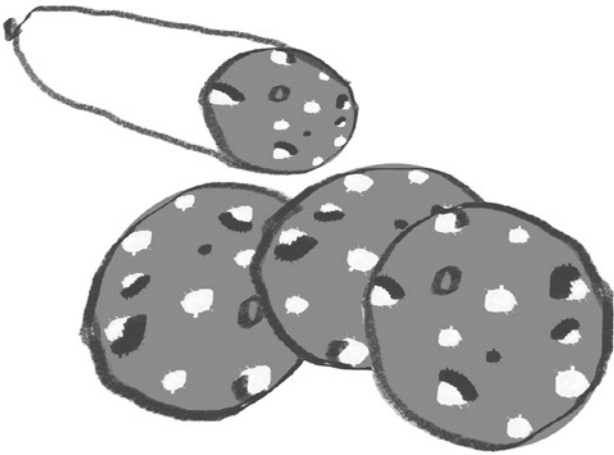
ONE





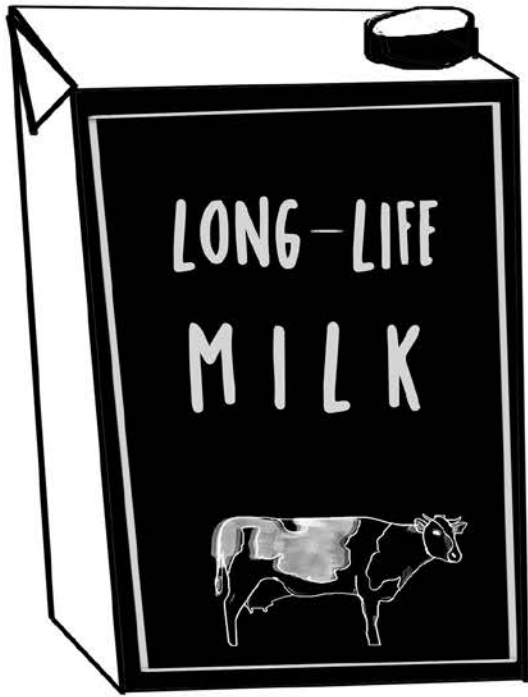
# SPEED STORAGE

TWO



# SPEED STORAGE

THREE

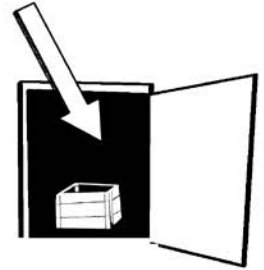


## SPEED STORAGE

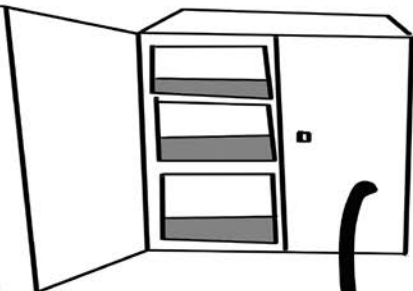


FRIDGE

CELLAR



WORKTOP



CUPBOARD

## ■ Don't waste it! Board game

Featuring key facts of how to avoid food waste, this game of chance can be played by two to six people. Students repeat key tips for food waste reduction along the way.



20 min

### You will need:



- Printouts of the board game G 4 (one for every three to four students)
- Game pieces (alternatively: differently coloured chips or little stones, one per student)
- Dice (one for every three to four students)



### Rules:

The object of the game is to be the first player to reach the final square.

The person who has thrown away the smallest amount of food over the last two days starts. If you cannot determine who that was, the person who first throws a six starts.

To take your turn, roll the die and move your game piece forward the number of spaces you threw. The person to your left goes next (unless you threw a six, in which case you are allowed to take an extra turn.)

If you land on an action space, read the message out loud and move your game piece accordingly.



### Instructions:

1. Split the students into groups of three to four.
2. Hand out the copies of the game.
3. Explain the rules.
4. Play!

# BOARD GAME

FORWARD

BACK

START

+2

YOU BOUGHT A CROOKED CARROT

-3

YOU PUT TOO MUCH ON YOUR PLATE AND COULDN'T EAT IT ALL

-3

YOU COULDN'T FINISH YOUR PLATE BECAUSE YOU ASKED FOR MORE THAN YOU COULD EAT

+2

YOU TOOK RESTAURANT LEFTOVERS HOME IN A DOGGIE BAG

-2

YOU DIDN'T FINISH AN APPLE BECAUSE IT HAD GONE BROWN

+3

YOU WENT SHOPPING WITH A SHOPPING LIST

+4

YOU PRACTICED FIFO: NEWEST FOOD TO THE BACK AND OLDEST TO THE FRONT

+2

YOU MADE SURE YOUR FRIDGE IS SET AT BETWEEN 1 AND 5°C

-4

LEFTOVERS SPOILT BECAUSE YOU FORGOT TO PUT THEM IN THE FRIDGE

+2

YOU INVITED FRIENDS OVER TO LOOK A MEAL WITH LEFTOVERS

-5

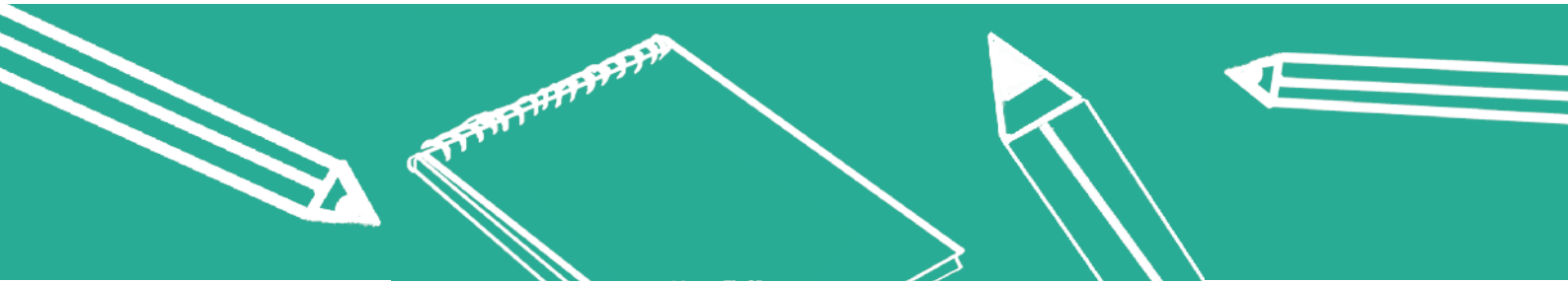
YOU THREW AWAY LEFTOVERS INSTEAD OF PUTTING THEM IN THE FRIDGE

-2

YOU HAD TO THROW OUT SPOILT FOOD AT THE BACK OF YOUR FRIDGE

END

## ■ CORE LESSON 2: WRITING EXERCISES



Writing exercises foster a creative and cognitive involvement with the topic. Invite your students to join in these exercises individually or in pairs and to share what each one has written with each other.

### ■ You can do better!

From a story about Anna and Theo wasting food, students circle food-wasting actions, then rewrite the story with Anna and Theo saving food.



45 min

### You will need:



- Printouts of worksheet WS 6, “You can do better”, (page 97, one per student)
- One copy of the solutions sheet for yourself



### Instructions:

1. Hand out copies of worksheet WS 6.
2. Split students into pairs and ask them to read through the story, then to circle the sentences in which they think Theo and Anna have acted incorrectly.
3. Compare results.
4. Ask students to rewrite the story with Anna and Theo behaving in a way that will prevent food waste (either individually or in groups).
5. Invite students to share their stories.

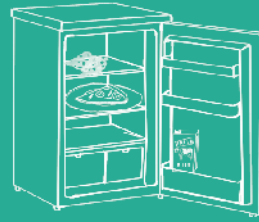
## ■ Covering food waste

Ask your students to do the following: "Imagine you're a journalist and choose a style of magazine or newspaper you would have fun writing for (e.g. a tabloid, a broadsheet, or magazine aimed at young women, sports enthusiasts, children etc.). Think about what messages you want to emphasise for your particular target audience, and which language would be appropriate for your audience. You have one page to write (and if you want, illustrate) your article."



## ■ CORE LESSON 2: PROJECTS

### BREAKFAST



### ■ Save food diary

The diary will help students keep track of their efforts at reducing food waste and will also introduce the topic to their families. Students are encouraged to keep the diary for three days.

#### You will need:



- Printouts of the Save food diary pages (P 1, one copy per student for each day)
- Red, yellow, and green sticky dots (about two per student)
- Letter to parents (one per student)



#### Instructions:

1. Sit down in a circle and ask children to evaluate themselves one after another: Do you think that you waste a lot of food? Why?
2. Ask each student to choose for themselves a coloured point: green if they think they are wasting nothing or very little, yellow if they think they are wasting a moderate amount, and red if they think they waste a high amount.
3. Hand out copies of the Save food diary (P 1) and ask students to stick their adhesive point in the corner.
4. Explain how the diaries work: After each meal (not at the end of the day!), each student should note what they threw away, and how much of it. At the end of the day, they should note any additional food they threw away during the day.
5. If you haven't done so already, hand out the letter to the parents and ask students to share it with their parents or guardians.
6. Each day, e.g. during morning circle, ask students how they fared with their diaries. After two days, discuss: Were they surprised by the amount of food they wasted? If so, do they think it is necessary to change the colour of their sticky dot?
7. After the week of keeping the diary, discuss: What did you learn during this week? Did your habits change? (If so, ask students to choose a different sticker and to stick it over the old one.) Did your tracking affect the way your family dealt with food waste? Do you think you can continue reducing the amount of food you waste? What might help you on that path?





# SAVE FOOD DIARY

MY NAME:

DATE:

I THREW AWAY...

BECAUSE...



BREAKFAST



LUNCH



DINNER



OTHER FOOD  
I THREW AWAY TODAY:

## ■ Get cooking!

Students are asked to come up with recipes using those items of food they tend to waste most. Students are encouraged to try some of these recipes at home (under adult supervision).

*Since it comprises some impromptu food waste surveying, this activity can easily be combined with project P 1 "Save food diary" (under adult supervision).*

**Please note:** *Because it entails students meeting up for cooking sessions in their homes, this exercise may not be appropriate for every class. Please make sure to instruct the students that they will need adult supervision if they are cooking at home.*



# 45 min (+ homework)

### You will need:



- One loose-leaf binder



### Instructions:

1. Explain: "It is sometimes difficult to know what to do with your left-overs. If you or your parents or guardians are out of ideas for left-over dishes, there are some interesting websites that can help you come up with recipes (e.g. [www.lovefoodhatewaste.com/recipes](http://www.lovefoodhatewaste.com/recipes), and [www.bigoven.com/recipes/left-over](http://www.bigoven.com/recipes/left-over)).
2. As homework, ask students to determine what food is left over and in greatest danger of being wasted in their homes during the course of the next week. If no single item stands out, they should ask their parents or guardians what food they think is wasted regularly in their homes. Once they have established one or more food items, ask them to come up with a recipe in which these are used. They could check cook books for inspiration, talk to (grand-)parents or guardians, or check out online recipe generators such as those mentioned above. Ask them to copy out and illustrate their recipe.
3. Collect the homework and bind the various recipes together. Ideally, get your students to scan in their recipe or to take a picture of it and create a file to pass on to the class.
4. Ask students to form groups of no more than four. From your collection of recipes, ask them to choose one for their group and to try it out at home over the course of the next week. Please remind your students that they will have to do so under adult supervision. Ask them to prepare some documentation of their efforts, such as an illustrated poster with photos of their cooking event and a commentary, or a short video clip of their preparations and meal.
5. Invite students to present their documentation in class and discuss: Did you enjoy the cooking? And the meal? Did the fact that you prepared the meal yourself and that you shared it with friends influence your eating experience? Did it affect the way you regard food?

## ■ Spread the word!

Students are asked to design flyers with the key tips and to take them home to share with family and friends. As a follow-up, they lead a guided interview with the people with whom the information was shared to see how it was received.



# 90 min

### You will need:



- (Coloured) paper
- (Coloured) pencils
- Scissors
- Printouts of the guided interview P3 (one per student)



### Instructions:

1. Split students into groups of two and ask them to design flyers with key tips on how to avoid food waste.
2. Set up a few presentation tables on which the students can place their flyers, and ask them to walk around and examine their classmates' work and to provide feedback in a subsequent classroom discussion.
3. If your school has a photocopier, make four copies per student to take home and give to their parents, other family members and friends. If you do not have access to a photocopier, ask students to do one to two copies by hand to take home.
4. Hand out copies of the guided interview (P3, "Spread the word") and read through it together. Explain to the students that for homework, they will be required to hand out their flyers to family and friends and, a few days later, to check up on how the information was received by conducting an interview with one of the people they shared the information with.
5. Over the course of the next week, remind students of their homework and set aside time for them to talk about their experience.
6. After the week is up, split the students up into groups of three to four and ask them to summarise their findings: How was the information received? Were they able to change some people's perception of food waste? Were they able to detect concrete changes in the way people were dealing with food waste? Discuss the groups' findings and experiences in class.

## SPREAD THE WORD!

You have spread the word on food waste – well done! Now, prepare to follow up on your instructions and ask the person to whom you have given your information the following questions. Make sure to take notes of the answers! Ask your friend, parent or family member:

1. Did you understand all the tips? If not, can I help you with any of them?

2. Did you learn something new, or had you already been aware of the various ways to avoid wasting food before?

3. Which tip did you find most helpful? Why?

4. Were there any tips that you found difficult to follow?  
If so, which ones? Why?

5. Has the information changed the way you treat food?

## ■ Letter to parents & informational flyer

Dear Parents and Guardians,

Your child may have already talked to you about a topic that our class/school will be involved in over the coming weeks: food waste.

Food loss and waste are a massive global problem: One-third of all the food produced in the world is either lost or wasted, which means that every year, a staggering 1.3 billion tonnes of perfectly good and edible food does not reach the end-consumer – 100 kg for each of us. Not only does this wastage create immense economic costs, both for ourselves as consumers and for the economy; food loss and waste also come at a high environmental and social price.

In class, your child will learn about the consequences of wasting food, and he or she will also learn about ways to avoid food waste. In order to avoid wasting food, we can:

- serve smaller portions;
- shop carefully;
- re-use left-overs; and
- store our food properly.

In the leaflet accompanying this letter, you will find some simple tips on how we can achieve these changes in the way we treat our food.

During the next few weeks, your child will be asked to consider how you can reduce food waste in your family and thus not only save money but also contribute to environmental conservation and protection and the fight against world hunger. Please join your child in his or her endeavours to reduce food waste at home and discuss and participate in the possibility of improving the way you handle food at home.

The efforts are based on a supplementary package of education materials, developed by educational expert from the United Nation's Food and Agriculture Organization (FAO). If you have any more questions or suggestions about this important topic and the way we approach it in class, please feel free to get in touch with me.

Hoping that you will join the students and me in our efforts to, as our slogan goes,  
*"DO GOOD: SAVE FOOD!"*

Yours sincerely,





■ ANNEX 1

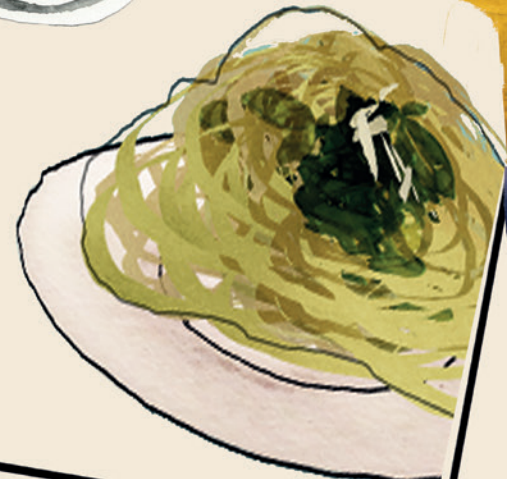
**PRESENTATION 1:  
DO GOOD: SAVE FOOD!**





F O O D S A V E R S

BEWARE!





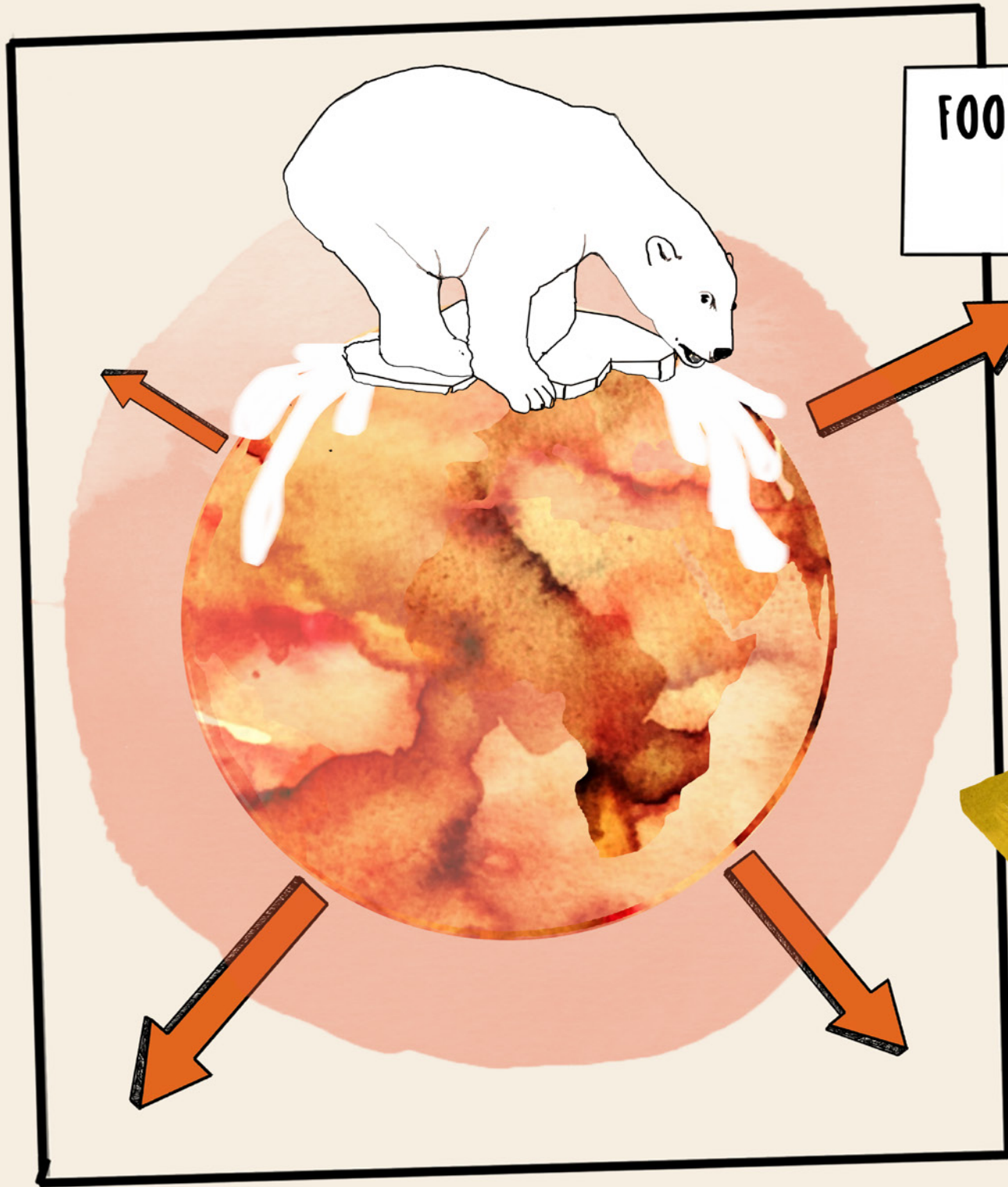
1/3 OF ALL FOOD WORLDWIDE  
IS WASTED.



3.6 GIGATONS OF GREENHOUSE GASES ARE  
EMITTED EACH YEAR IN THE PRODUCTION  
AND TRANSPORTATION OF FOOD WASTE.

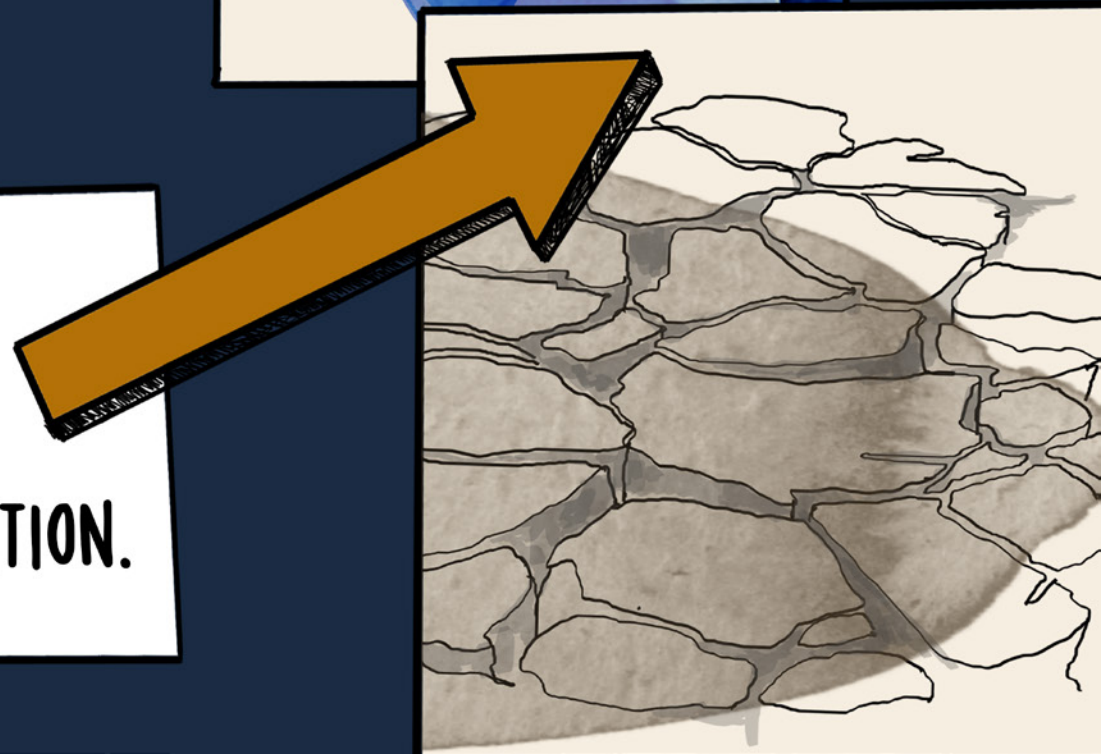


FOOD WASTE CONTRIBUTES TO  
GLOBAL WARMING.





USING TOO MUCH WATER FOR  
AGRICULTURE CAUSES  
WATER SHORTAGES AND DESERTIFICATION.



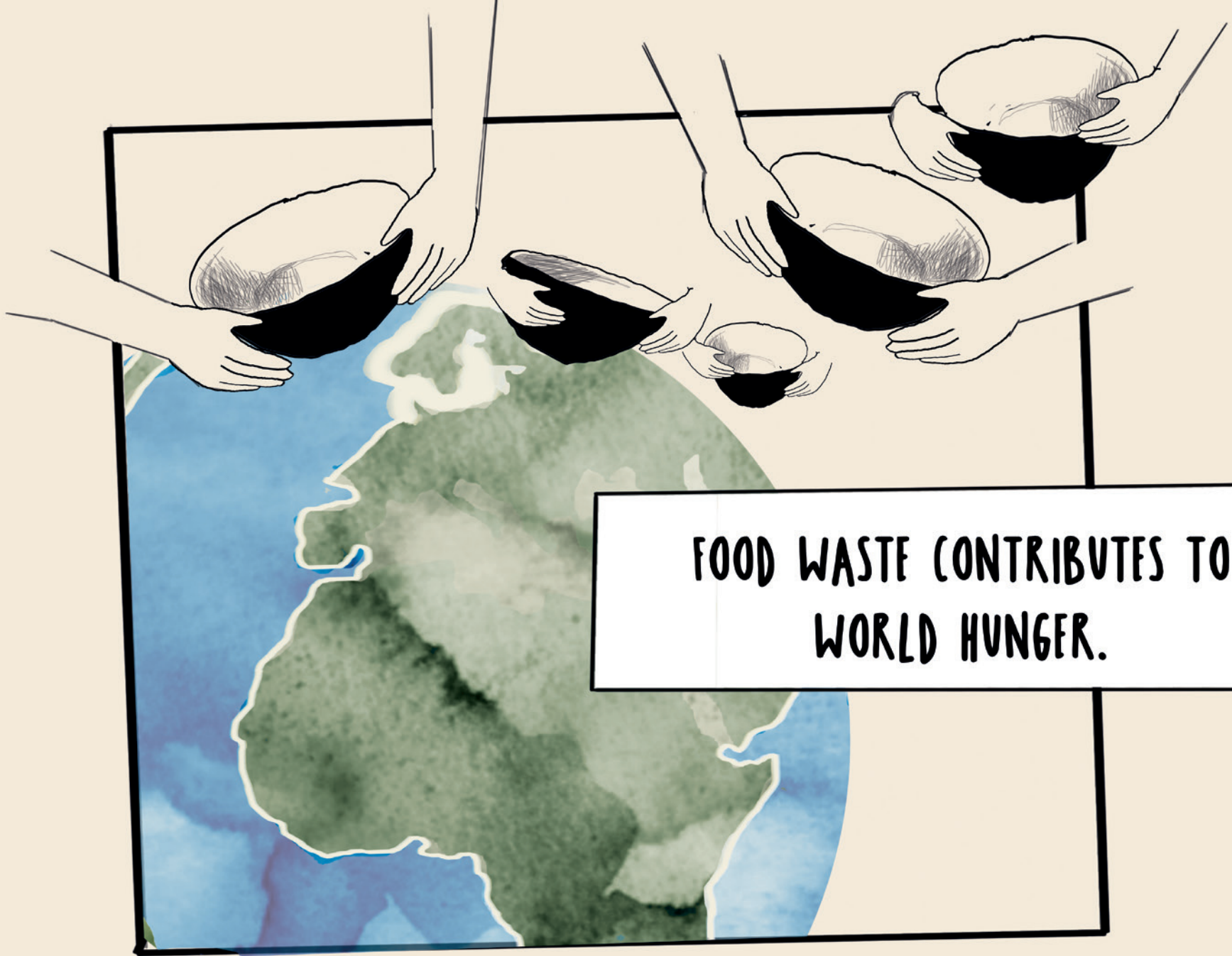
# FARMING IS A THREAT TO BIODIVERSITY



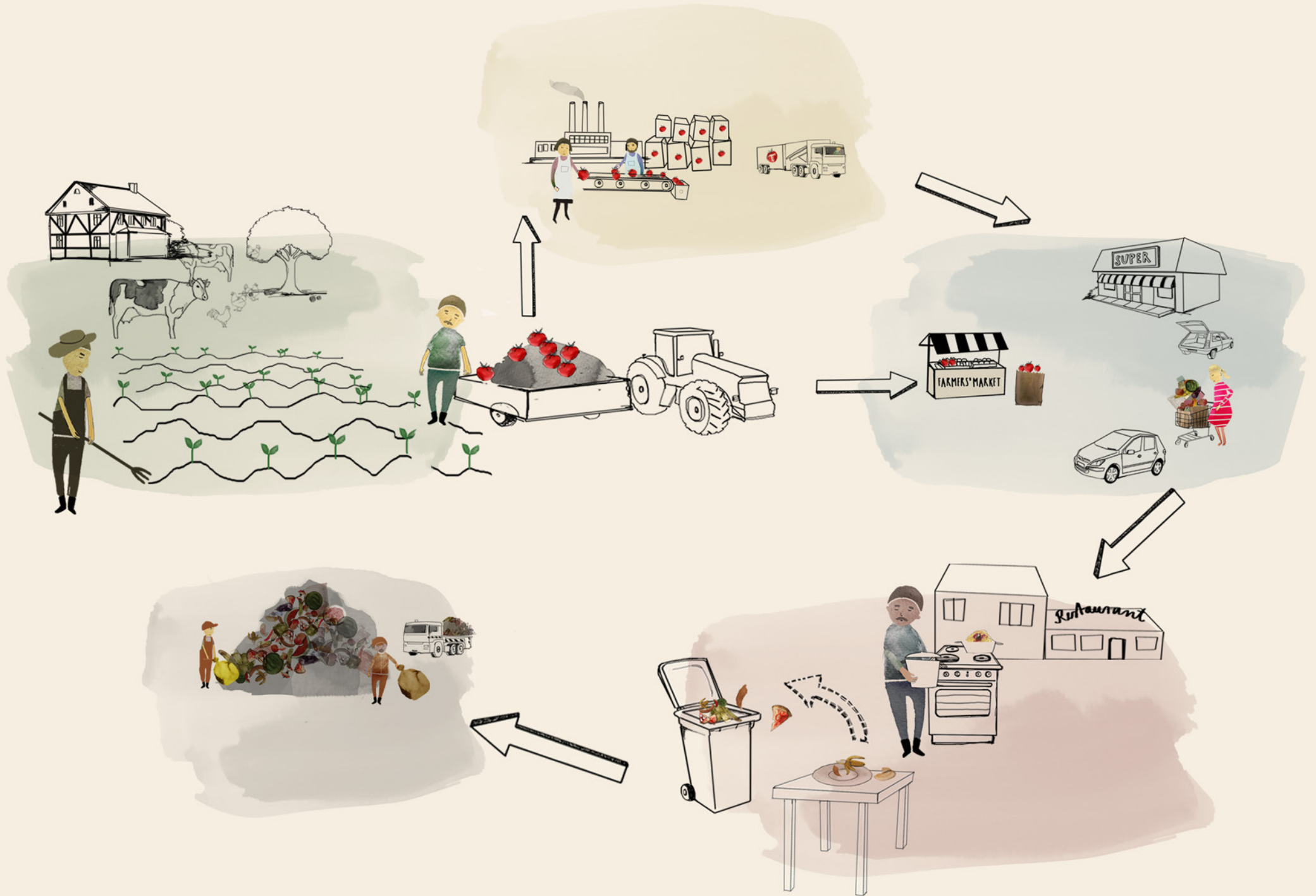
FOOD THAT IS LATER WASTED  
IS GROWN ON AN AREA  
BIGGER THAN CHINA.

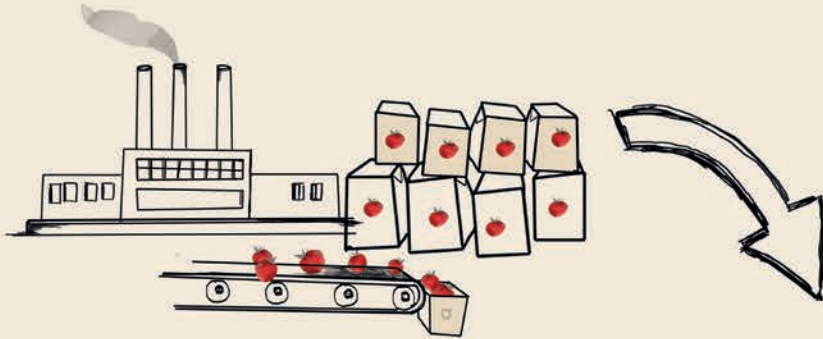






**FOOD WASTE CONTRIBUTES TO  
WORLD HUNGER.**



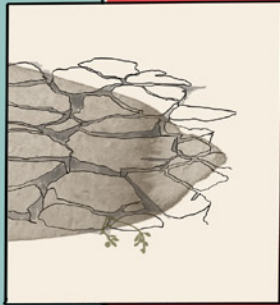


THE FOOD SUPPLY CHAIN:  
FROM THE FARM TO YOUR TABLE



# FOOD LOSS AND WASTE

## FOOD LOSS



=

ANY FOOD THAT IS UNINTENTIONALLY LOST BECAUSE OF MALFUNCTIONING OR INADEQUACIES IN FOOD SUPPLY CHAINS, E.G. LACK OF APPROPRIATE STORAGE OR REFRIGERATION.



## FOOD WASTE

=

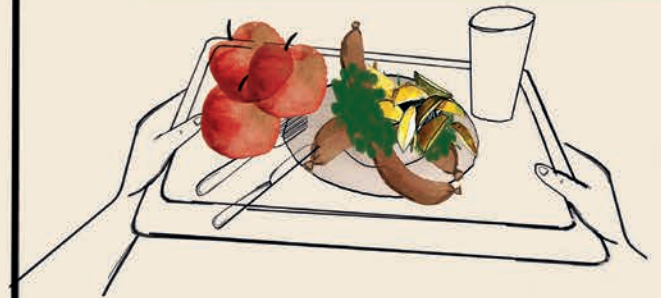
ANY FOOD THAT IS WASTED EVEN THOUGH IT COULD ONCE HAVE BEEN EATEN BECAUSE OF NEGLECT AND OUR BEHAVIOUR, E.G. POOR PLANNING, OVERSHOPPING.



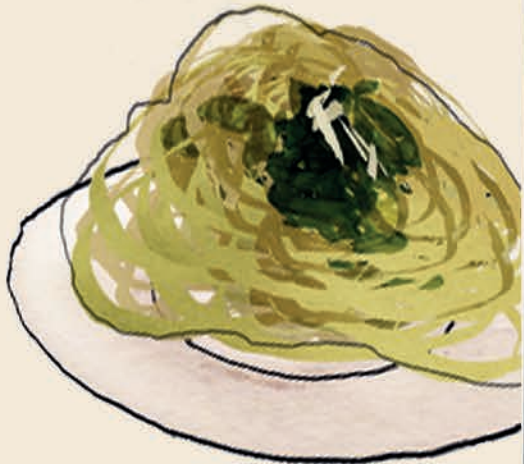
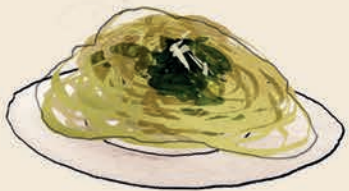
FOOD WE HAVE BOUGHT  
GOES OFF.



PORTIONS IN RESTAURANTS  
& CAFETERIAS ARE TOO BIG.



WE PUT TOO MUCH FOOD  
ON OUR PLATE.



KEEP LEFTOVERS FOR ANOTHER DAY.



TURN VEGETABLES INTO STEWS OR SMOOTHIES.



MAKE FRUIT JAMS OR PICKLES.



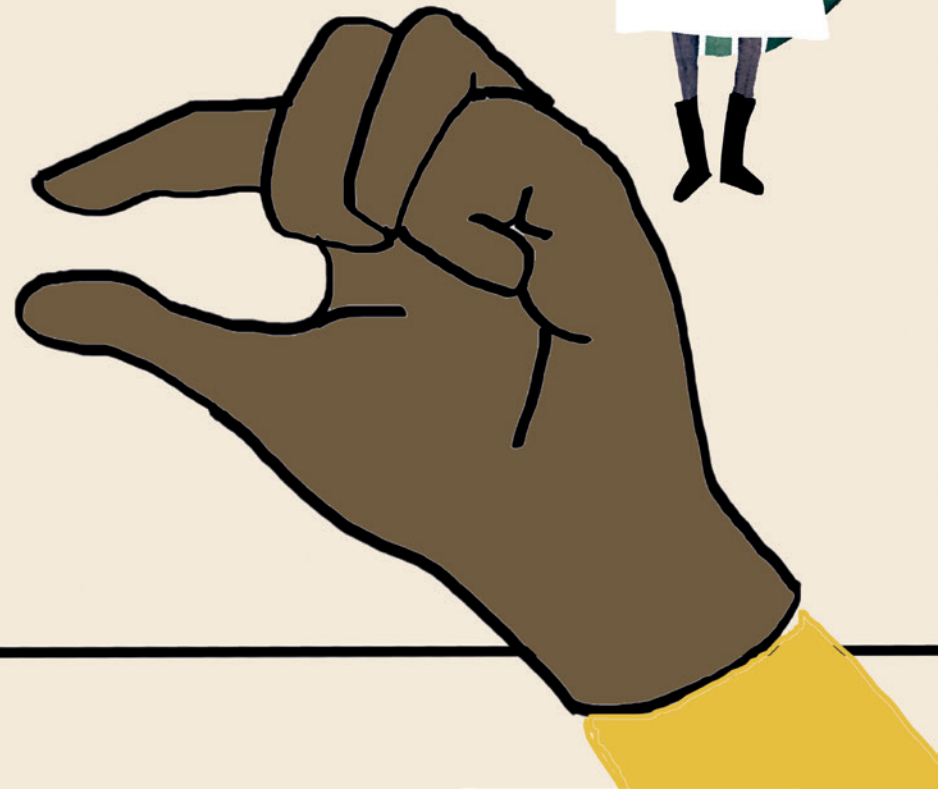
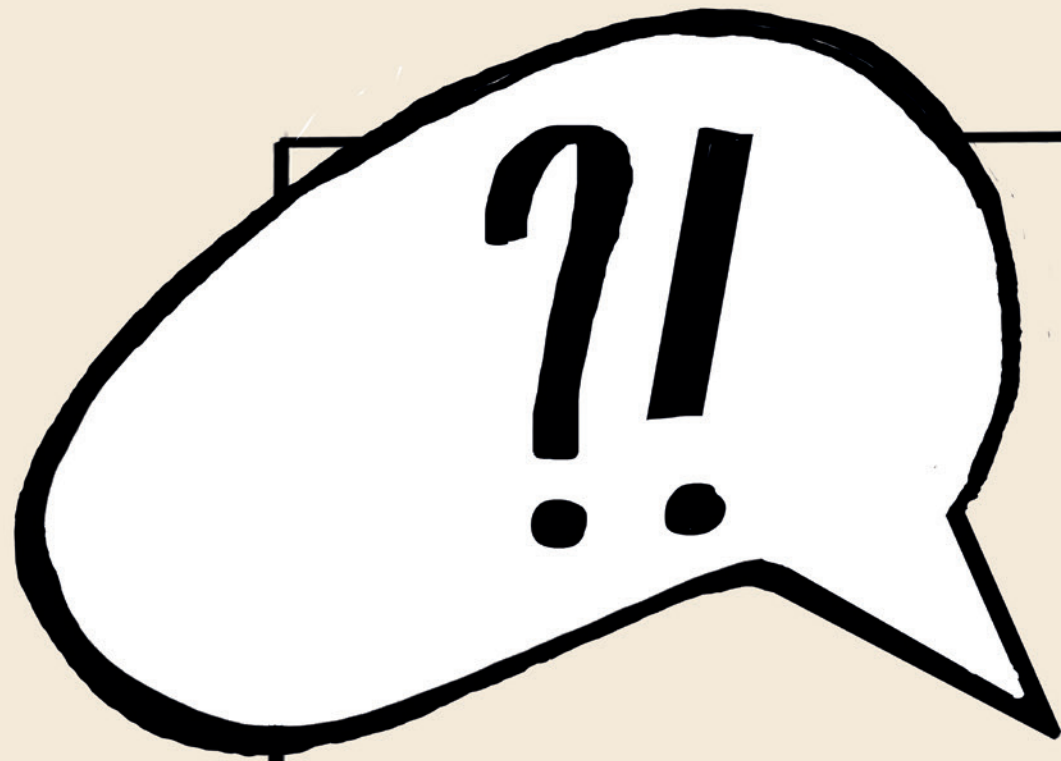


BUY IRREGULARLY SHAPED  
FRUIT AND VEGETABLES.

WRITE A SHOPPING LIST.



ROTATE THE ITEMS  
IN YOUR FRIDGE.





... DO GOOD!



SAVE FOOD



# 9 EASY TIPS

## ■ ANNEX 2

### **PRESENTATION 2: FEED YOURSELF, DON'T FEED THE BIN: NINE EASY TIPS TO REDUCE FOOD WASTE**

FEED YOURSELF, DON'T FEED THE BIN :



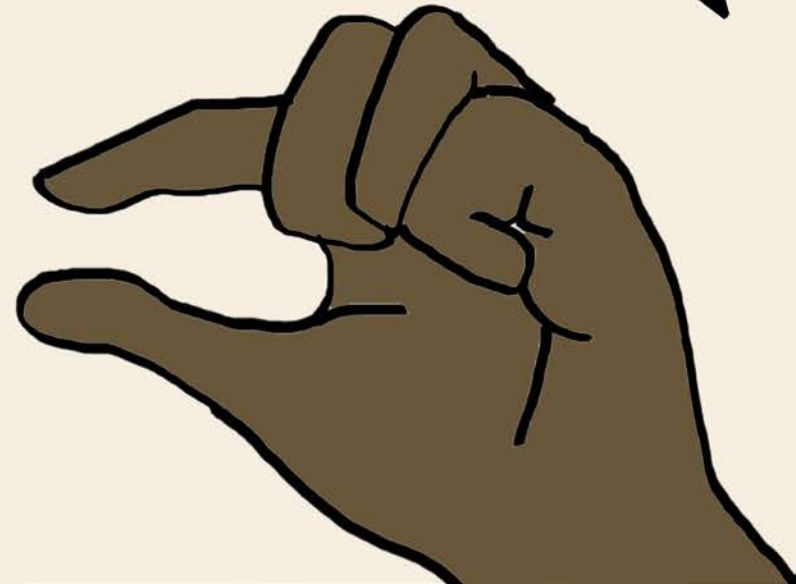
9 EASY TIPS

TO REDUCE FOOD WASTE

1

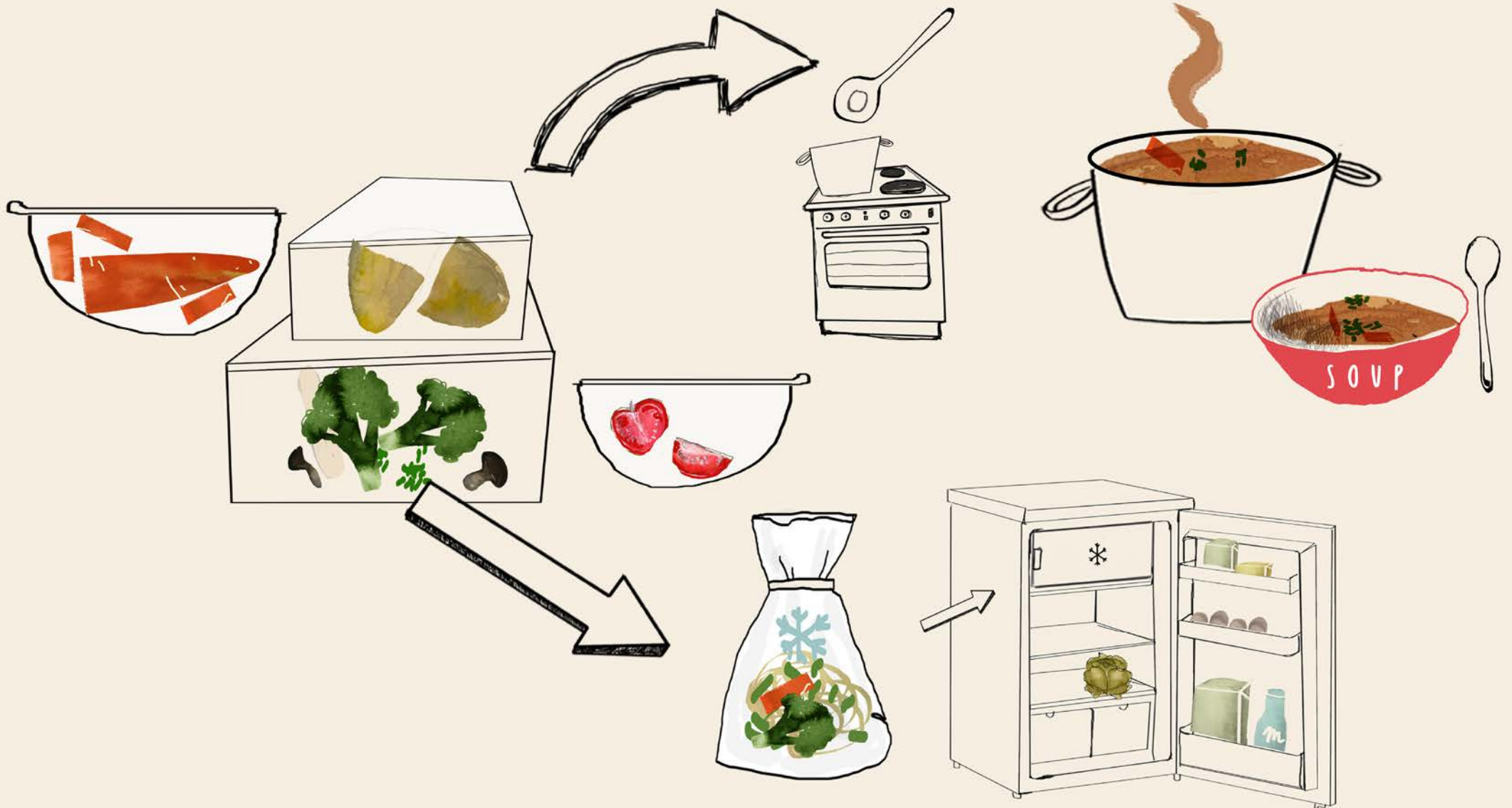
HELP YOURSELF TO

SMALLER PORTIONS



2

# LOVE YOUR LEFTOVERS



# 3 SHOP SMART



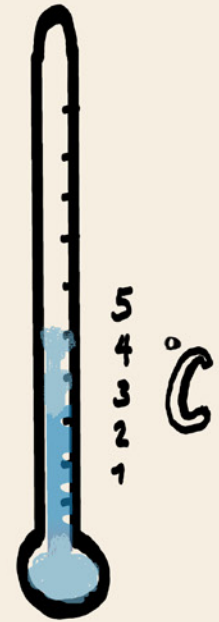
4

# BUY "UGLY" FRUITS AND VEGETABLES



5

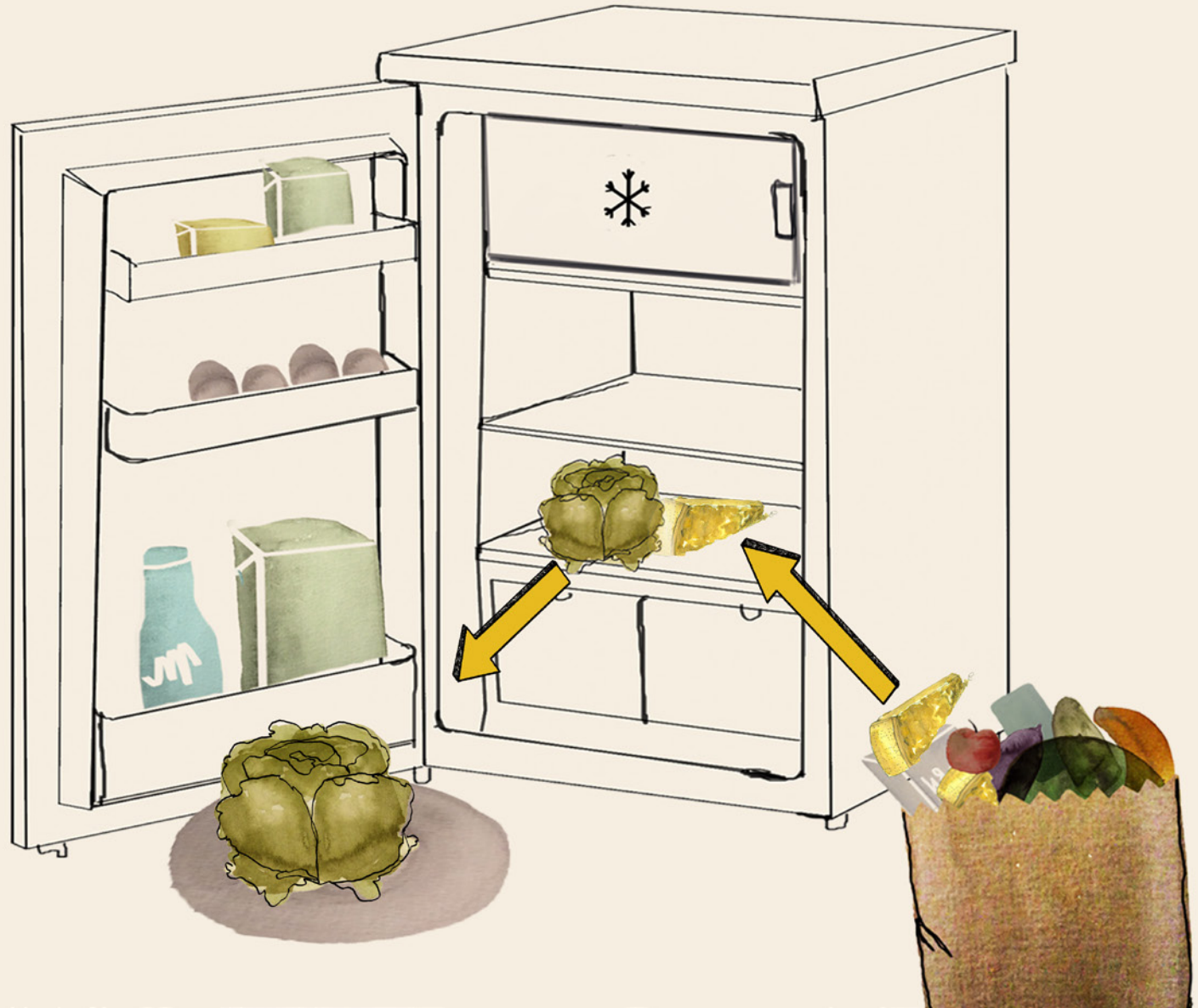
# CHECK YOUR FRIDGE





6

FIFO: FIRST IN, FIRST OUT!



# 7 LEARN TO UNDERSTAND THE DATES ON YOUR FOOD



8

# TURN IT INTO GARDEN FEED



# 9 SHARING IS CARING







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