CLASSROOM ACTIVITIES

STAGE 3 LESSON two

The farm to fork process

Students learn about the journey of fruits and vegetables as they travel from 'farm to fork'. They investigate the process of harvesting, transporting and storage of different fruits and vegetables. They learn about supply chains and they create their own banana supply chain flowchart.

Learning Outcomes

- **ST2-3DP-T -** defines problems, describes and follows algorithms to develop solutions
- **MA2-AR-01** selects and uses mental and written strategies for addition and subtraction involving 2- and 3-digit numbers
- **MA2-MR-02** completes number sentences involving multiplication and division by finding missing values
- **MA2-GM-01** uses grid maps and directional language to locate positions and follow routes

Resources and Preparation

Resources

Worksheets (WS) and PowerPoints (PTT)

- Worksheet 14 - Banana supply chain
- Teacher Information Document (TID)
- PowerPoint 2 - From farm to fork

Materials

- Computers/laptops/tablets with an internet connection
- Classroom poster
- Flowchart documents

Preparation

Prior to lesson

- Print 1x WS14 per student

Introduction (10 mins)

Review the previous lesson and query the students about how they think their fruits and vegetables made it from 'the farm to their fork'. Use PPT2 (slides 1-9) to introduce students to the concepts of 'supply chains' and 'food safety'.

Activity (45 mins)

1. In pairs, students discuss what the 'farm to fork' process might be for the fruit/vegetable chosen for the poster. Do they think all the harvested produce makes it to 'their fork' (i.e. the shops/canteen/restaurants)? Which ones make it and which ones don't? What happens to those that don't? They can research online and complete week 2 on the classroom poster.
2. Use PPT2 (slides 10-11) to explain to the students what a flowchart is, and what it is used for. Explain how they will make their own flowchart for bananas.If looking for more challenging work, go over slides 13-15 as well and have students use the different shapes in their flow chart in step 3.
3. Using an online flowchart builder and WS14, students create a flowchart for the supply chain of bananas. If needed, a pre-made file can be used to make it easier, You can find all needed documents here. Use the TID to show students how to work in the online flowchart builder.

Conclusion (10 mins)

Every flowchart might look different at the end, but they will (should) still all be correct. Students can show their flowchart to the class and explain how to read it. Use slide 12 of PPT2 to start a class discussion.

Assessment

For: Students understood new concepts such as 'supply chain' 'flowchart' and 'food safety'

As: Students use an example and information sheet to correctly make or finish a banana flowchart

Of: Students successfully complete the flowchart

Differentiation

Extend: Students can have further discussions about the supply chain and its impact on the environment. Consider questions such as: why would a shorter supply chain be better for the environment?

Simplify: If needed, an already pre-made file (see TID) can be used, where students need to complete the order and numbers.

School/Home Link

At home the students can check where the food in their house has come from check how far and how it 'travelled to their fork'.

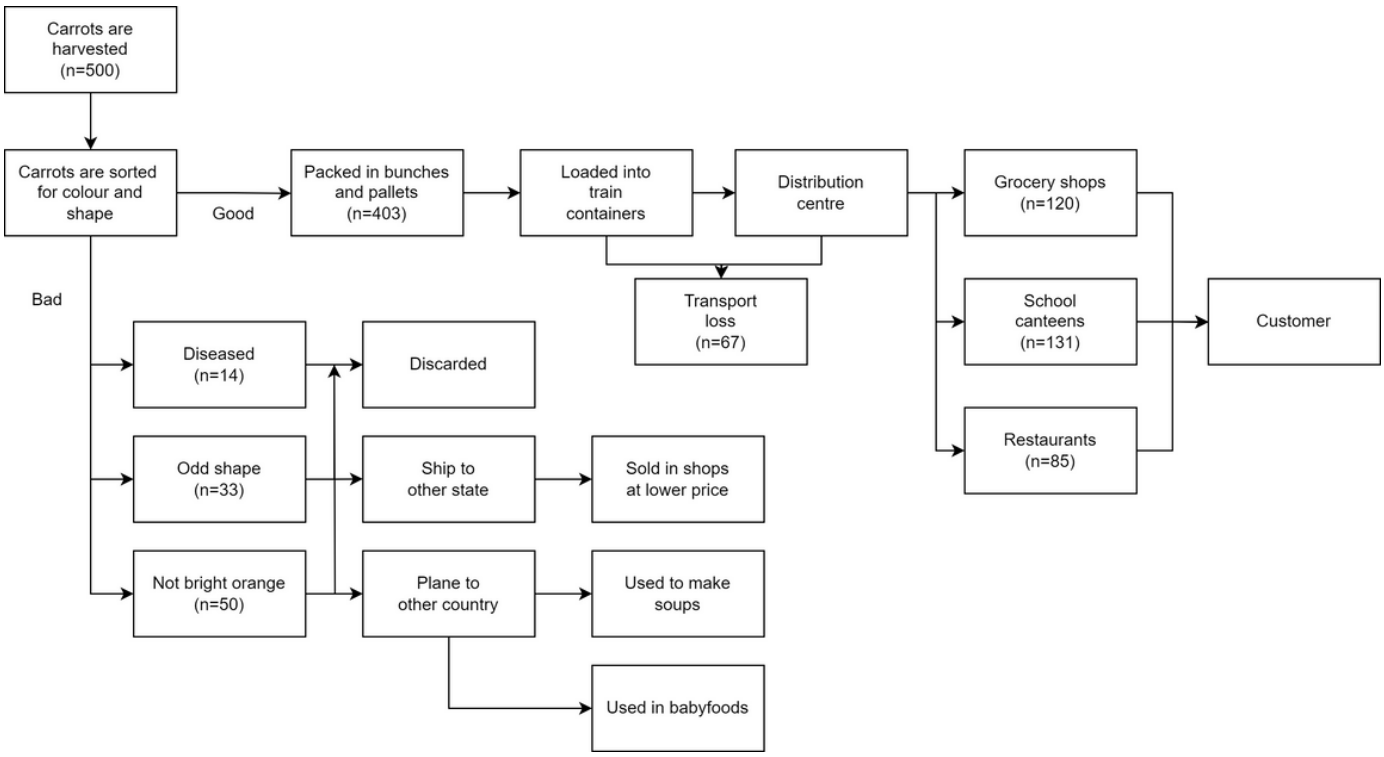
Duration | 65 minutes

Banana flowchart

In this lesson you will make a flowchart for the transport of bananas going from 'farm to fork'. A flowchart shows you, in one picture, the process of this. It shows for example:

- harvesting the fruit or vegetable: when/how/where
- decisions made about the fruit or vegetable (for example: where will it be shipped to? Is it good enough to go to the grocery store?)
- how it will be processed and packaged
- how it will be transported (different for each destination)
- what the different destinations are

This is an example of a flowchart for carrots:



You can make a flowchart on the website draw.io

In the left hand menu, click on the square. If you click in the square you can write. If you hover your cursor over the sides of the square, you'll see a green circle. Click, hold down and drag: you'll see an arrow coming from the square. You can connect the arrow by holding it near another square and releasing when you see the green circle on the other square.

The following decisions and steps should be in the flowchart:

Follow the number of bananas as well and write the numbers in the flowchart. The numbers in the steps below are written as n=.... So if there are 40 bananas in that step, it will be written as n=40. If you have to calculate the number, it says 'n=?'

The bananas are harvested. A total of n=1000 bananas are harvested.

The bananas are inspected and sorted three ways: 1) signs of disease, 2) yellow colour and 3) green colour. Those with signs of disease are thrown out (n=95). Those that are green are treated with a gas to ripen it a bit further (n=420). Once ripe, they can go to next step. The yellow ones are already ripe and will go to the next step (n=?).

Next, the bananas are sorted for size and shape. There are two options:
1) bananas are good size and shape, or
2) bananas are not a good size and shape.
The good bananas will go onto the next step (n=?).
The bad bananas (n=?) follow the steps below:

The bad bananas go one of 4 ways:

1) 45 will be transported by truck to a local facility that makes baby food
2) 86 bananas will be transported by train to another state to be dried and made into banana chips
3) 34 bananas will be transported by ship to a factory abroad that uses bananas and banana peels to make hydrating body creams
4) 88 bananas will be transported by a plane to shops across the country that will sell oddly shaped bananas. Before they are transported, a sticker will be placed

The good bananas go on to receive a sticker and are packaged up in bunches and pallets.

The bananas are loaded into the containers, and the containers onto a ship. Unfortunately, there was a storm at sea and one of the containers dropped into the ocean. 62 bananas were lost.

More steps on the next page -->

The ship brings the bananas to a distribution center. There, the banana orders are fulfilled:
1) 30% of the bananas left are going to a grocery shop (n=?)
2) 20% of the bananas left are going to restaurants (n=?)
3) The rest of the bananas go to school canteens (n=?)

The flowchart ends with the customers buying the bananas.

Answer the following questions:
How many total bananas have been sold? .....

How many total bananas had to be thrown out or were lost? .....

A banana in the shop cost $0.85, in the canteen $0.55 and in a restaurant $0.75.
How much money was made? .....

If 35% of the customers at the end of the flowchart throw out their banana without eating it, how many people is that? .....

If there is time, add to following to your flowchart:

- Some bananas are also sold straight from the farm on a farmer's market
- Some bananas which are not the right colour or shape will also be discarded
- There is some loss of bananas during the transport from the distribution centre to the shops, canteens and restaurants. On top of that, those sellers (plus also the consumers) waste some bananas (they turn brown or get thrown out)
- The process of growing the bananas can also be added to the flowchart:
  - The growth and quality of the banana is monitored
  - Banana plants are watered and kept safe from pests
  - While growing seveal sample tests are done
  - When bananas are grown a certain size, they are cut from trees
  - Bananas are cut into bunches of 5-6 bananas
  - They are washed and inspected