

The divine drink, which builds up resistance and fights fatigue. A cup of this precious drink permits a man to walk for a whole day without food.

-- Montezuma II



The Mayan artwork on this container shows a tree that produces something we are all familiar with -- chocolate.

The painting of this cacao (pronounced kuh-KAO) tree shows the large pods that grow along the sides of the trunk and branches in Central and South America. The pods are quite large. They have an average of 40 cacao beans inside that are ground up to make cacao powder, the key ingredient for chocolate.

In Central America, the Mayan and Aztec civilizations valued chocolate so much they used cacao beans as currency for bartering and trading. As the saying goes, they grew money on trees.

During the time of the Aztecs, Zyanya's family grew avocados on a farm. They would often trade avocados for cacao beans, so they could purchase food and animals.

One day, Zyanya brought a basket of 36 avocados to the local village and was able to trade them for 4 1/2 cacao pods.

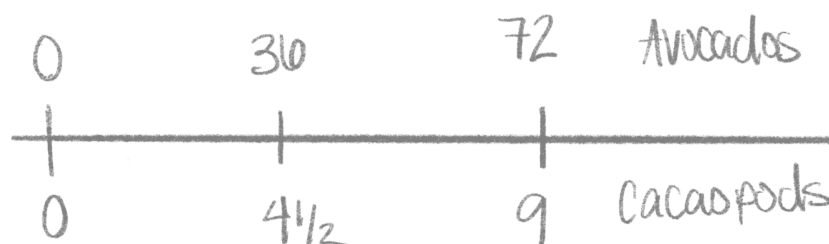


Kayla wanted to know how many avocados Zyanya would need to bring to the market to trade for 10 pods.

To figure this out Kayla made a line. She made a mark on the line and wrote number of avocados on top and the number of cacao pods below:

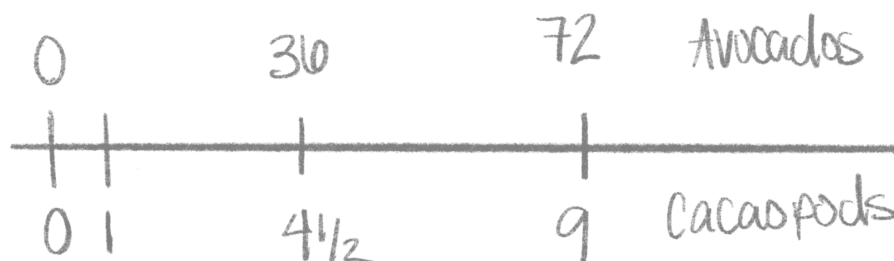


Kayla then made one more mark and wrote another ratio:



1. How did Kayla figure out the number of avocados Zyanya would need for nine pods?

Kayla placed one more mark on the line to find how many avocados Zyanya needed for one cacao pod:



- How did Kayla use this information to find the number of avocados Zyanya needed to trade for one cacao pod?



- Describe how Kayla could use the above information to calculate how many avocados Zyanya needed for 10 cacao pods.

The tool that Kayla used is called a **double number line**. Kayla used pairs of numbers that were ratios on the double number line to compute new ratios. She placed the ratios in the correct order, from least to greatest.

The artwork below is from the Mayan town of Calakmul, which is close to the modern day border of Belize and Mexico. It shows Mayans mixing and drinking cacao, a drink the Aztecs would later call Xocóatl.

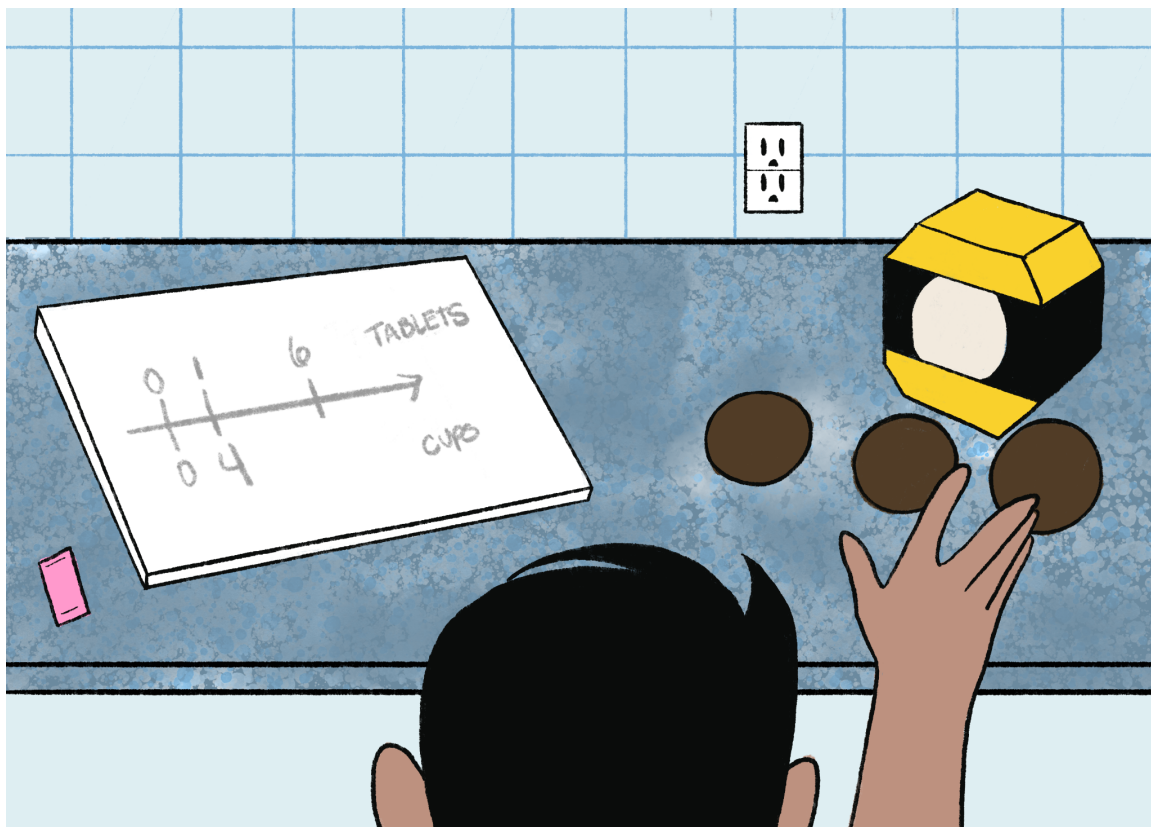


Cacao beans would be crushed into a powder that was used in Xocóatl, which translates to “bitter water.” It was bitter because sugar was not used by Mayans or Aztecs, so Xocóatl was pure cacao powder and water. The word chocolate comes from the Mayan word Chocol’ha, which literally means to drink cacao. The chocolate drinks we are used to drinking use sugar, vanilla, and other ingredients to make it more sweet and less bitter.

One day, Sam found a container of chocolate tablets in the kitchen cupboard. The instructions on the package suggest heating one chocolate tablet with four cups of milk.

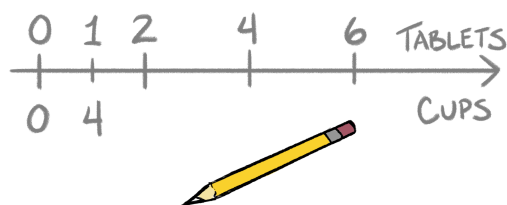


One package has six chocolate tablets. Sam starts writing the following number line to figure out if the entire package could be used to make hot chocolate for the entire class.



4. If the package has six tablets, how many cups of hot chocolate can Sam make?

Sam made two more marks for 2 and 4 tablets.



5. Find the number of cups for each of these marks.

6. In Sam's class there are 28 students, an aide, and the teacher. Sketch your own double number line. Show how Sam can use your double number line to calculate the number of tablets needed for 30 cups of hot chocolate.
7. Use your double number line to show the amount of chocolate tablets needed for one cup of hot chocolate.
8. How many chocolate tablets are needed for 6 cups?

Why Use a Double Number Line?



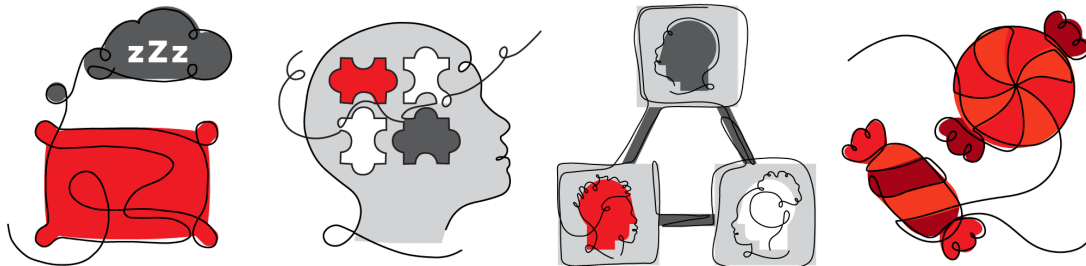
Some days your executive functions may feel like these plants, drooping. You may find it hard to juggle things in mind, or stop from doing the impulsive thing, or pivot to see things differently. This is totally understandable and happens to everyone!

Our executive functions go up and down day to day. The core skills are still there, they haven't disappeared.



9. Have you ever felt like the drooping sunflowers? What kinds of things do you think lead to ups and downs in EF? Discuss this in groups and be prepared to share some of your ideas with the rest of the class.

These ups and downs in executive function depend on things like how much sleep you've gotten, whether you've been able to move around, what your friends are doing around you, and whether you're getting rewards like candy, praise, or an internal sense of satisfaction.



When you feel rested, energized, motivated, and supported by friends around you, it can feel easier to use your executive functions. When you are tired, bored, and everyone around you is doing something else, using your executive functions can feel harder. You may make mistakes, because executive functions are demanding. **Everyone makes mistakes -- this is an important part of the learning process. Our brains learn every time we use our executive functions, whether we succeed or fail.**

Summary

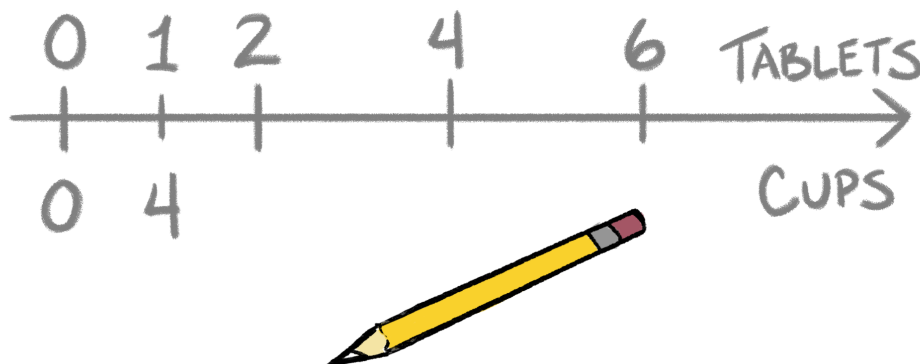
- It's important to recognize how executive functions can go up and down each day. You can take steps with sleep, activity, friends, and rewards to help your executive functions be more like these flowers. And no matter what, making mistakes is totally understandable and important for learning.
- You can develop and use good strategies and workarounds, when you recognize you need to juggle, or go off autopilot, or pivot to see things differently.
- You are using and growing your executive functions every day! And you can continue to grow your executive functions with practice in school and throughout the rest of your lives.



A double number line can be used to support executive functions by marking key ideas and showing your thinking. A double number line can

also help you see one or more ways to solve a problem.

Exit Ticket



10. Use this double number line to find how many tablets of chocolate Sam needs to make five cups of hot chocolate? Show your work on the double number line and explain your steps below.
11. Describe a second way to use the information on this double number line to find the amount of chocolate tablets needed to make 5 cups of hot chocolate.

Challenge Problem

According to an Aztec document from 1545, a turkey could be exchanged for 200 cacao beans, and five rabbits could be purchased with 150 beans.

12. If there are an average of 40 cacao beans in a pod, how many avocados does Zyanya need to trade for a turkey? (Hint: You will need to use information from the beginning of this lesson to solve this.)