



# Candy Bar Activity

Exploring Computer Science

Unit 2 – Day 3

# Candy Bar Activity – Journal #9

Your task is to determine how many cuts it will take to cut a candy bar into 12 equal pieces.

One break of one piece of the candy bar will result in that one piece being divided into two pieces.

In your journal, write how many breaks it will take and then illustrate it. Write the steps you will use to do the cutting.



# Groups

- Each group needs to work together to solve the problem.
- Come up with the number of cuts it takes to cut the candy bar into 12 equal pieces.
- Prepare a short presentation for the class on the number you came up with and how you did it.
- You should draw a quick illustration of how you did it. This will be loaded into your ePortfolio.
- Present to the class

# Class Presentations

Each group will make a short presentation to the class.

One Possible Solution

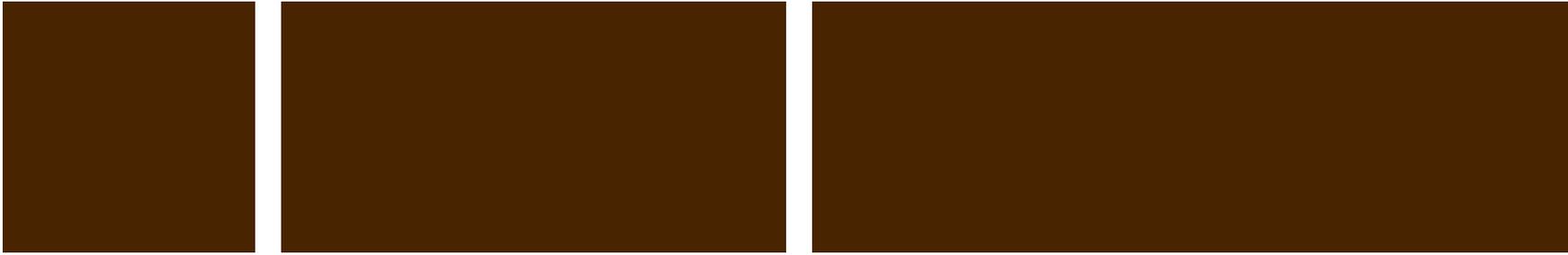
# Start



Cut #1



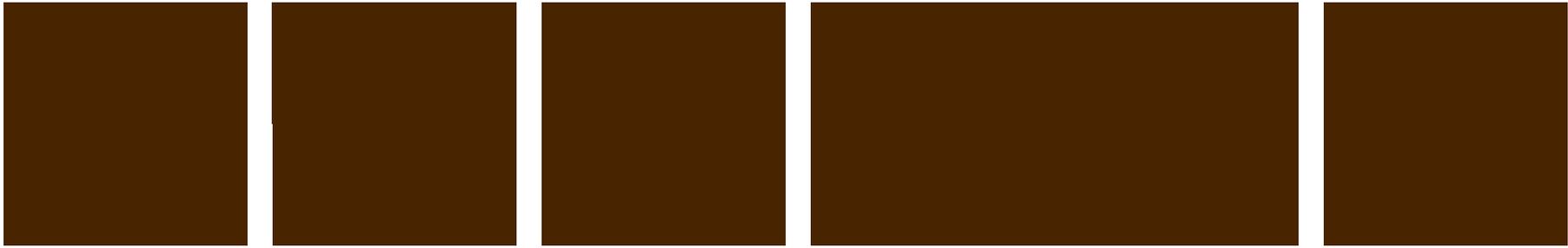
# Cut #2



# Cut #3



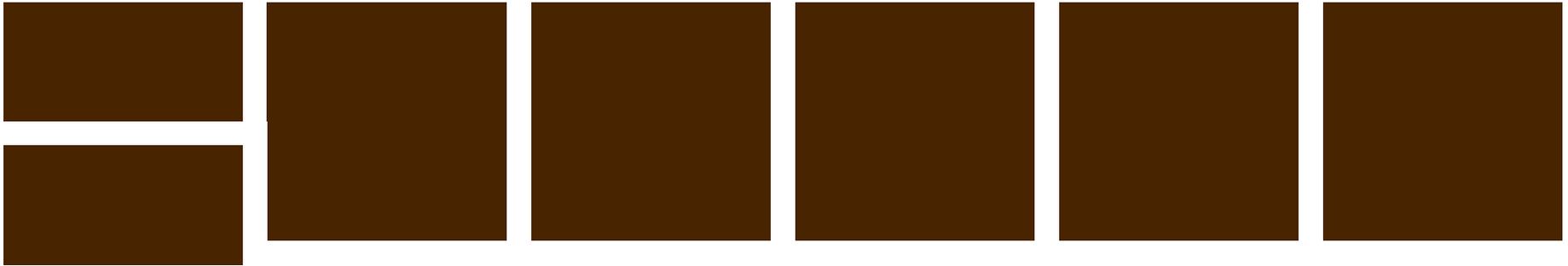
# Cut #4



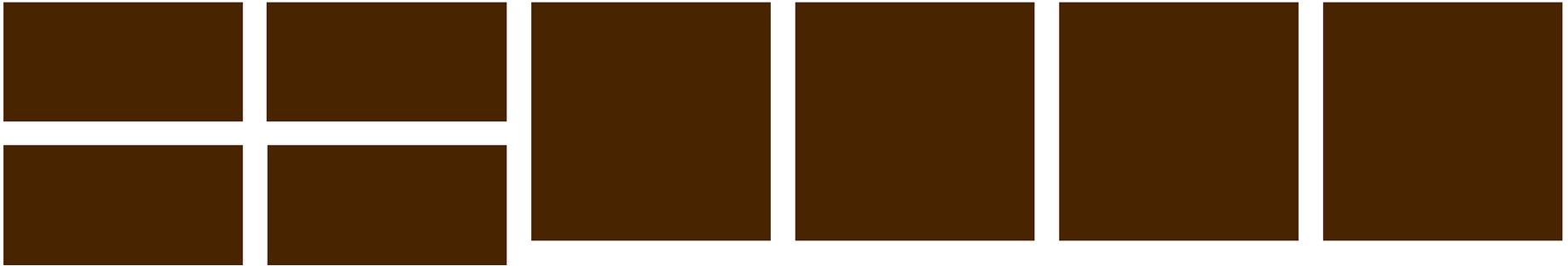
Cut #5



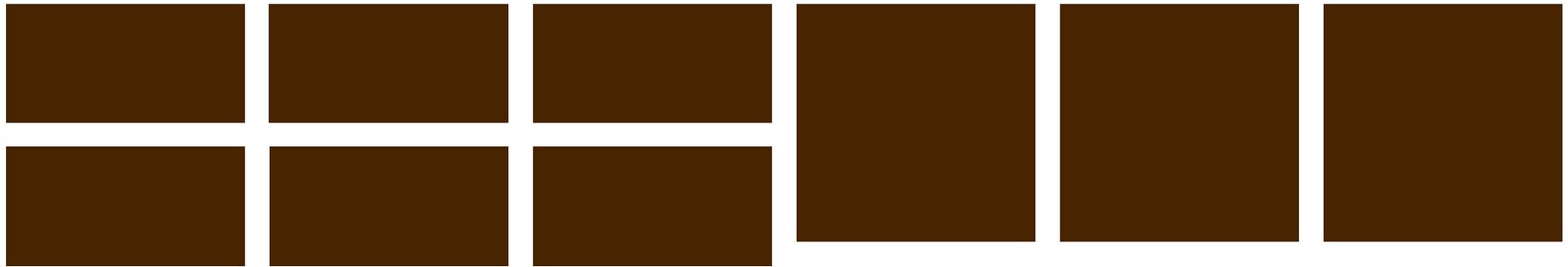
# Cut #6



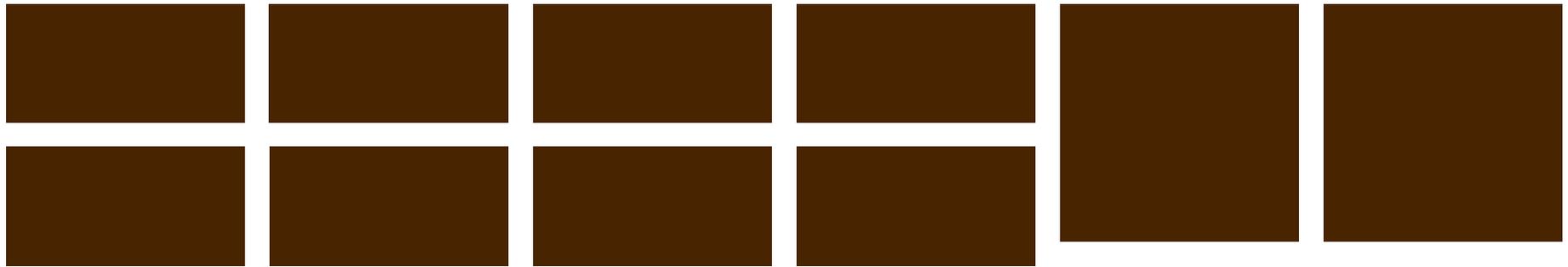
# Cut #7



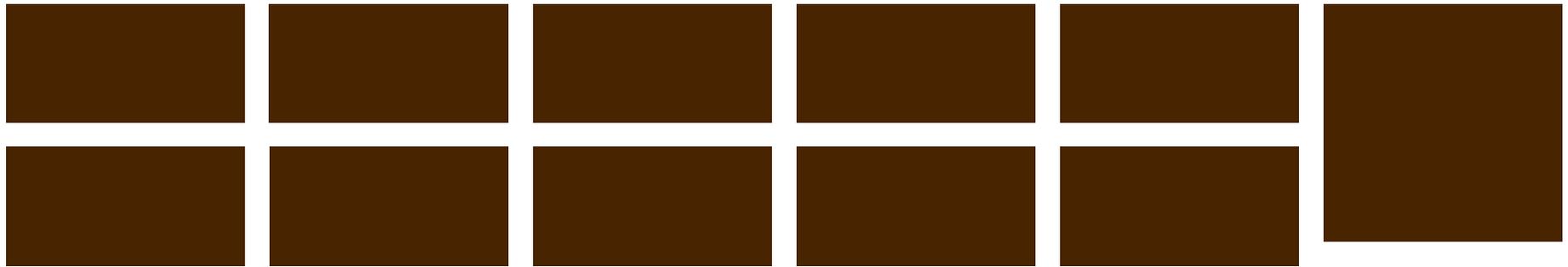
# Cut #8



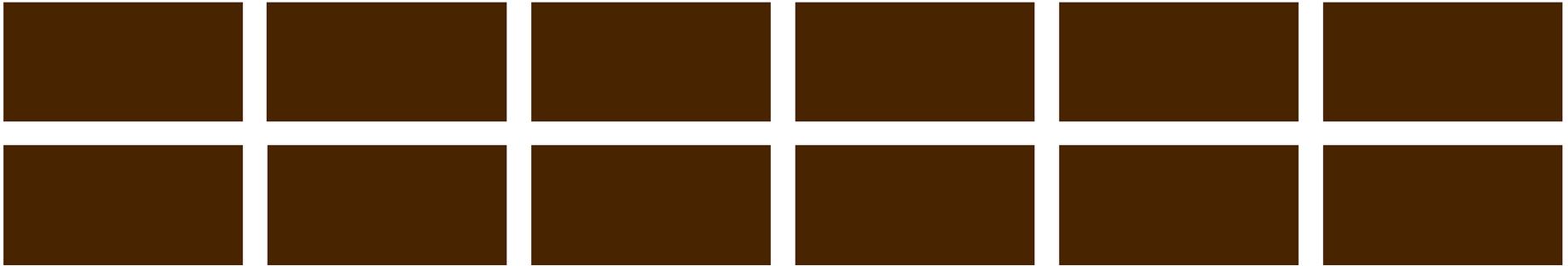
# Cut #9



# Cut #10



# Cut #11



# Question?

How did the steps you used match what you wrote in your journal?

# The Problem-Solving Process

## 1. Understand the problem

- a) Read or listen to the problem statement

## 2. Make a plan to solve the problem

- a) Use pictures, charts, graphs, systematic lists, objects, or act out the solution to help you devise a plan to solve the problem. In Computer Science we call this plan an **algorithm**.

## 3. Carry out the plan

- a) Once the plan is conceived and understood, follow the plan. If you have planned well, this is the easy part.

## 4. Review and reflect on how the problem was solved

- a) Once the problem is solved, reflect on the plan that was used.

Number of Pieces	Number of Cuts
1	0
2	1
3	2
4	3
5	4
6	5
7	6
8	7
9	8
10	9
11	10
12	11
$N$	$N-1$

# Journal #9 – Follow-up

How is solving this kind of a problem the same/different from how you solve a problem in “real life”?

# Problem Solving

What makes a problem solvable by computer?

Being able to provide a step-by-step algorithm is important

Think back to the peanut butter and jelly sandwich. Even if we refined the algorithm, would a computer be able to make one?

No, but a robot could.

# Credits

- Exploring Computer Science 5.0 – Unit 2, Day 3, Pages 78-80
- [http://en.wikipedia.org/wiki/Milky\\_Way\\_\(chocolate\\_bar\)](http://en.wikipedia.org/wiki/Milky_Way_(chocolate_bar))

PowerPoint created by Jeff Hinton (2014)