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# F1: Recycled Racers



Electronic Arts





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# Session 1: Building your recycled racer



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# The Challenge.

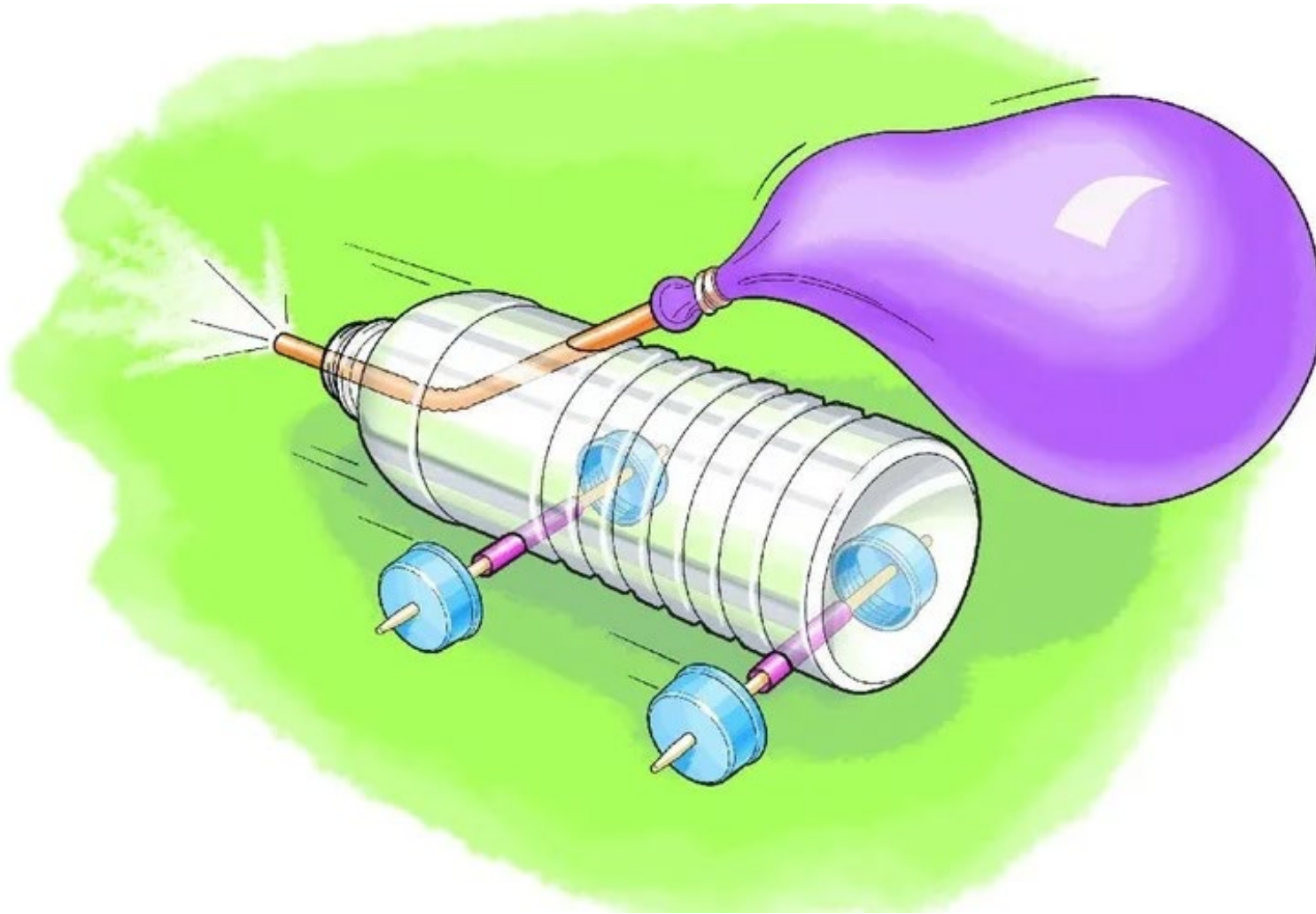
In this workshop session you will learn how to:

- ✓ Follow an algorithm written in sequence

An **algorithm** is a set of instructions to be followed in sequence to achieve a result such as teaching someone how to use a balloon powered car.



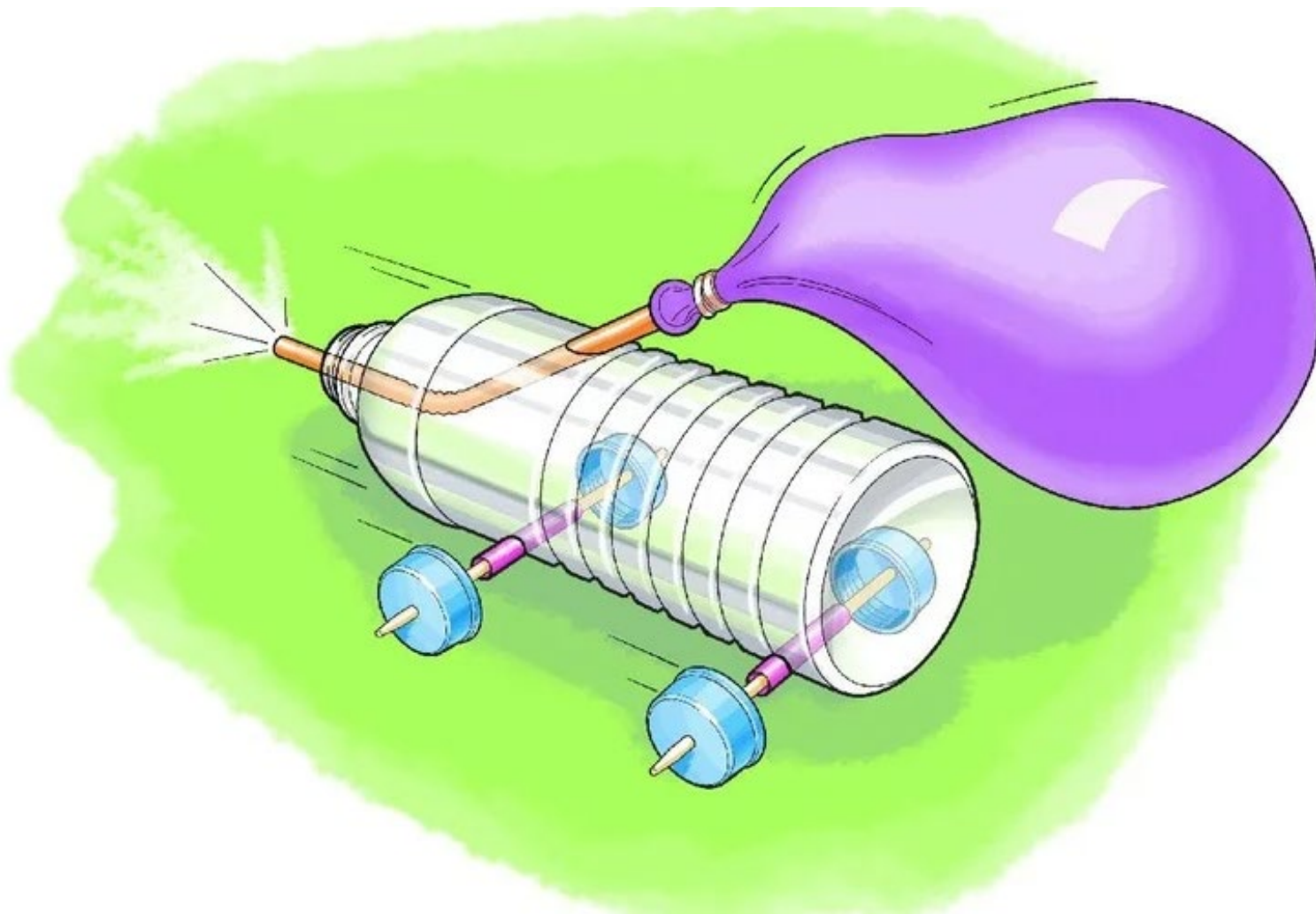
# About Recycled Racers.



In this workshop, you will learn how to create your own F1 car out of recycled materials and race them against your friends



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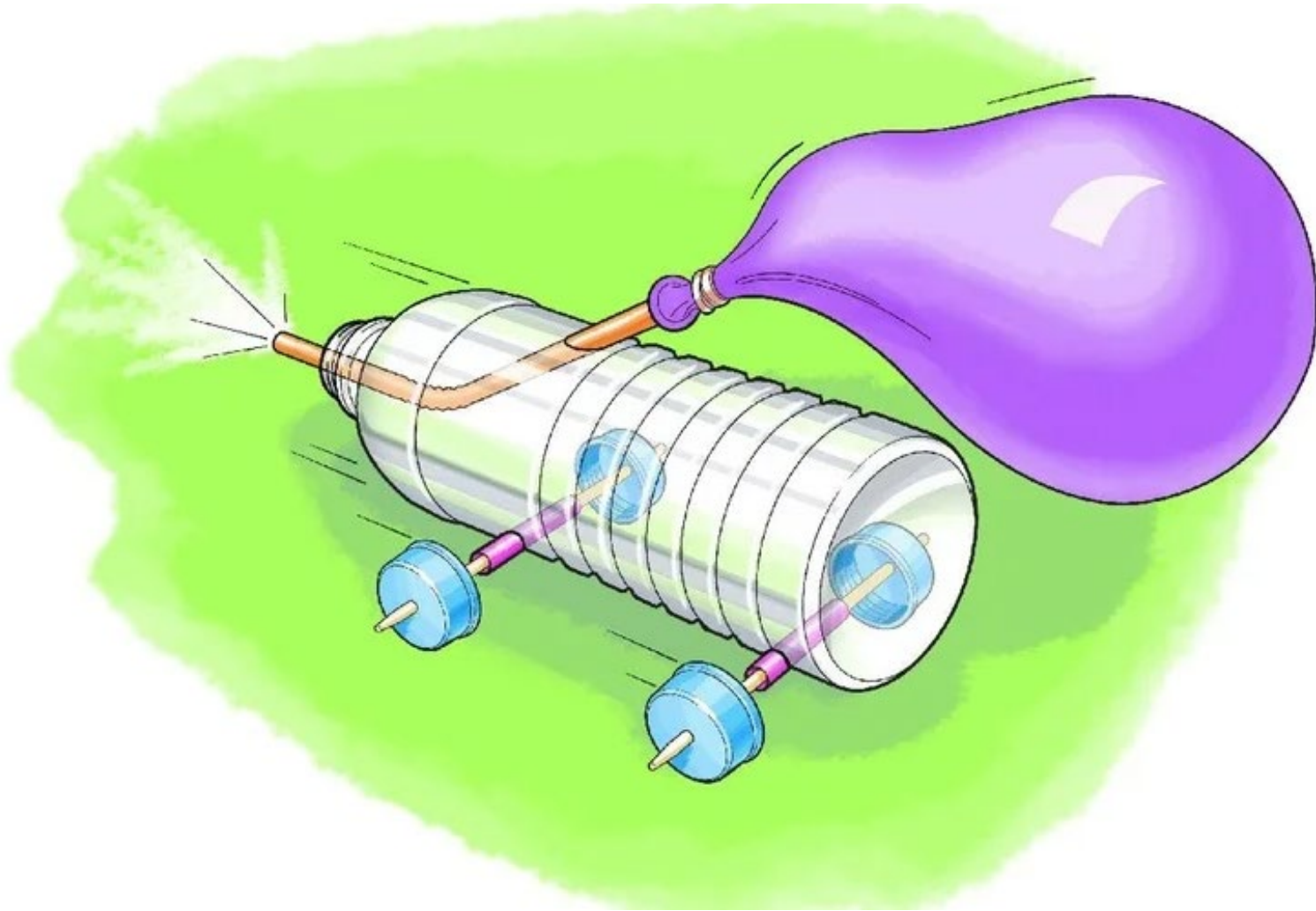


# About Recycled Racers.

To help you keep track of the winners of your races, you will learn about different types of data and how to use a table to store it. You will also learn how to use a piece of software called a spreadsheet.



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# About Recycled Racers.

Recycling is taking something that would be thrown away and using it for something else. It is important because when things are thrown away, they take a long time to break down and can cause air and water pollution.

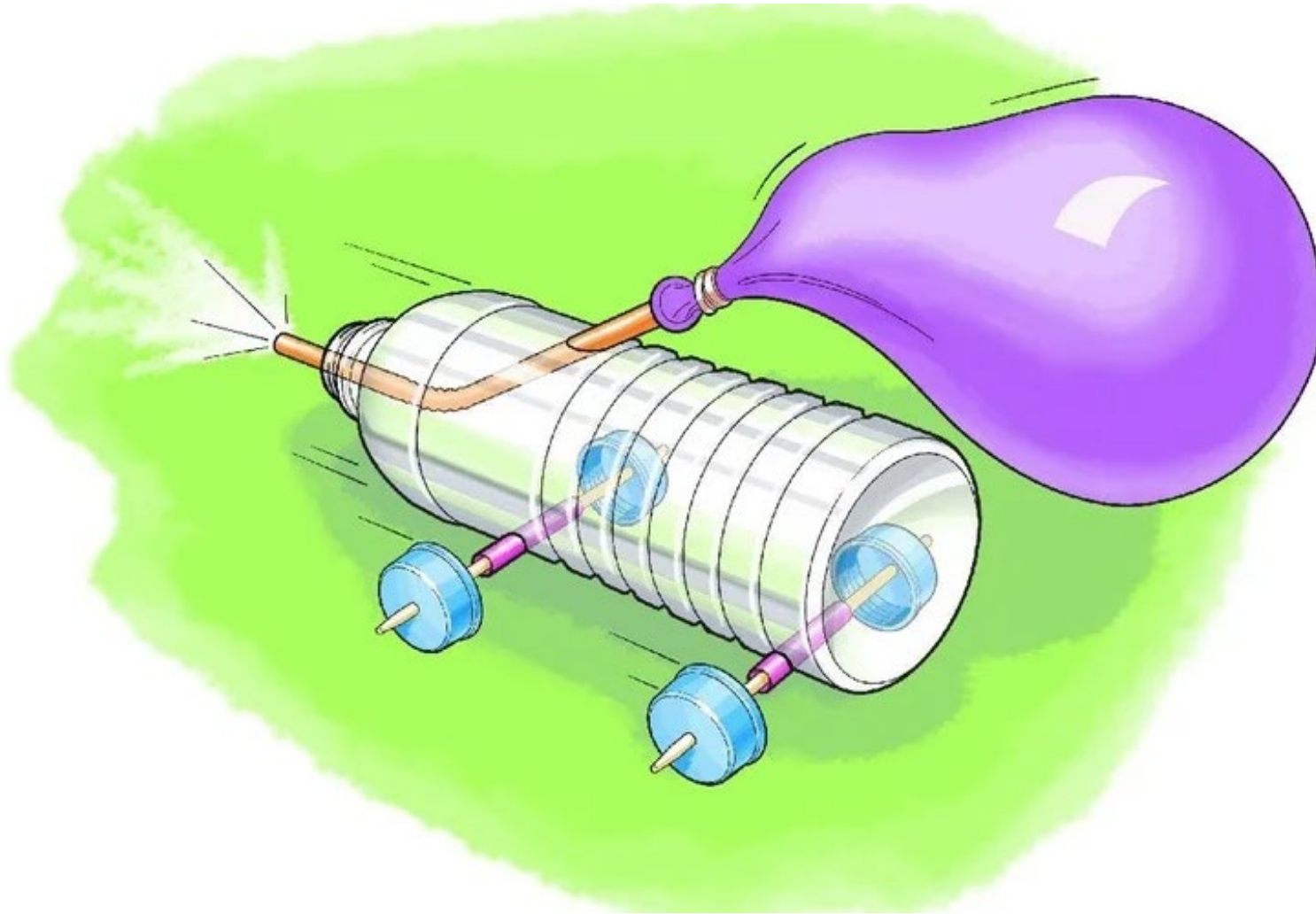


# Real-life recycled racers.



An Italian car maker called Bertone has created a car that can run on fuel made from recycled plastic!

# Activity 1.



If you are going to have a race you will need a car. Beau has built a car out of recycled materials. He has used a balloon to provide the energy needed to make the car move. You blow up the balloon and when you let go of it the car moves forward.

Follow Beau's instructions to build a balloon powered car from recycled materials.





- #002a64 Chrome
- #ff0099 Chrome
- #00a8ff Gloss
- #000000 matte

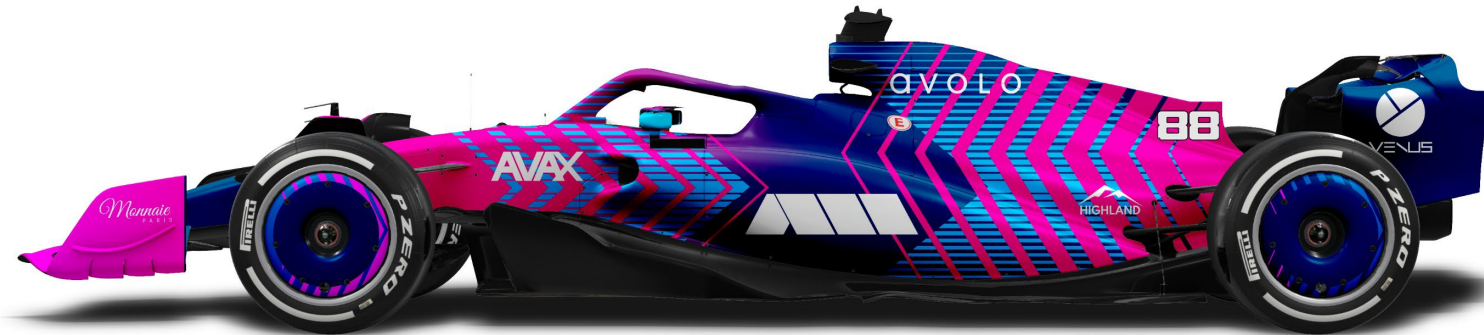
DC\_22\_Legendary\_DEC02

Text notes here for info on paint finishes or any special info.

# Activity 2.



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At the moment, everyone's car is going to look the same. In F1, cars are customised so you can tell them apart. Decorate your car using the resources provided to make it look different to everyone else's.





# Check-point.

James is reading the instructions to make his balloon powered car move, but the steps for doing this have been put in the wrong order. Use the letters to choose what order the steps should go in.

- A. Let go of the straw and watch your car go!
- B. Put the car onto the table while still holding the straw.
- C. Using the end of the straw that is sticking out of the bottle blow up your balloon. Pinch the end of the straw to stop the air coming out.



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# Session 2: Awesome algorithms



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# The Challenge.

In this workshop session you will learn how to:

- ✓ Identify how energy is transferred to a car
- ✓ Choose the correct order of instructions to solve a problem
- ✓ Use logic to predict what will happen when air is blown into a balloon powered car
- ✓ Draw a sequence of graphical instructions to solve a problem
- ✓ Evaluate what will happen when air is blown into a balloon powered car



# Activity 3.

Draw a picture of the car you have built.

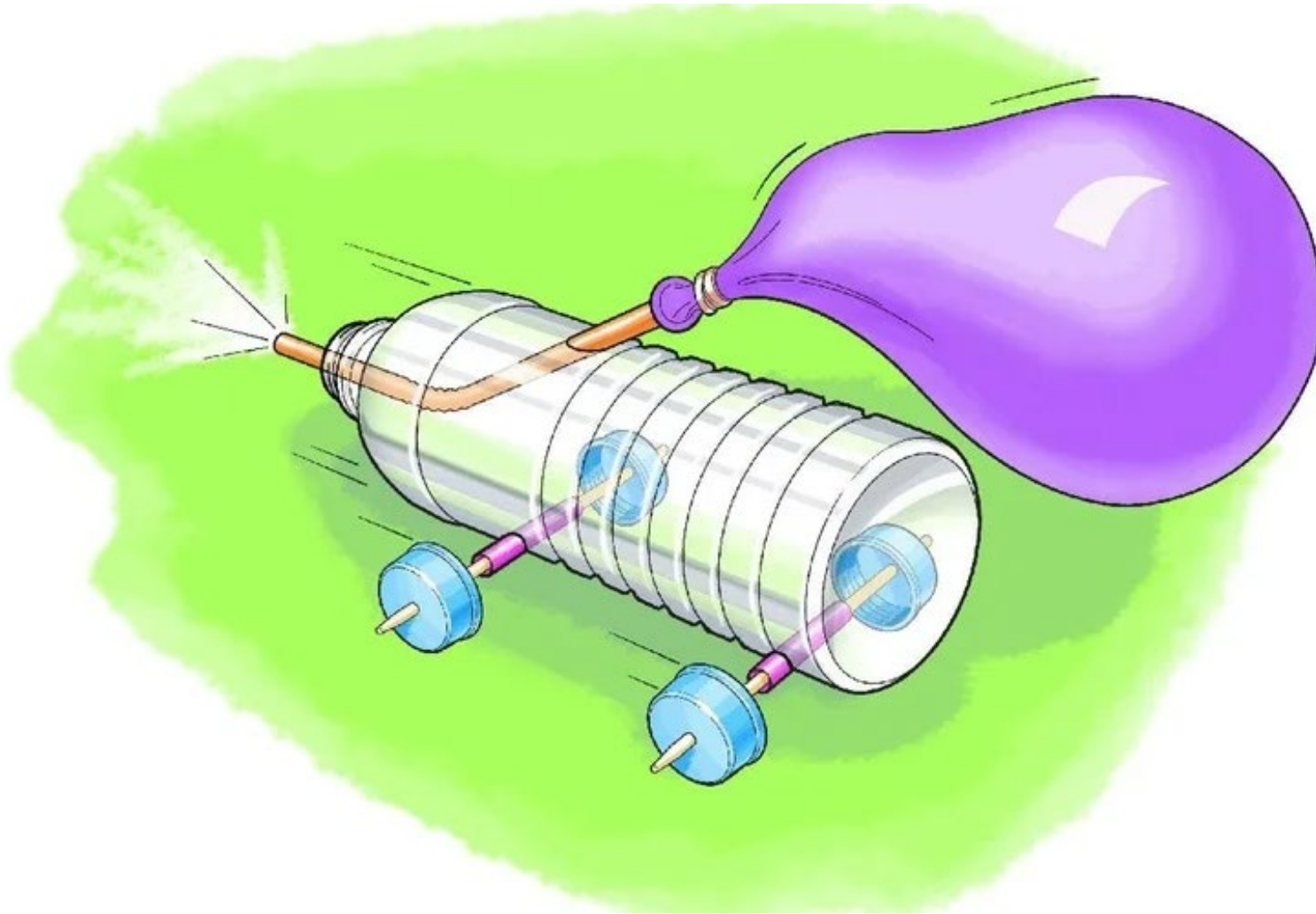
Now use these words to label your car:

Wheels

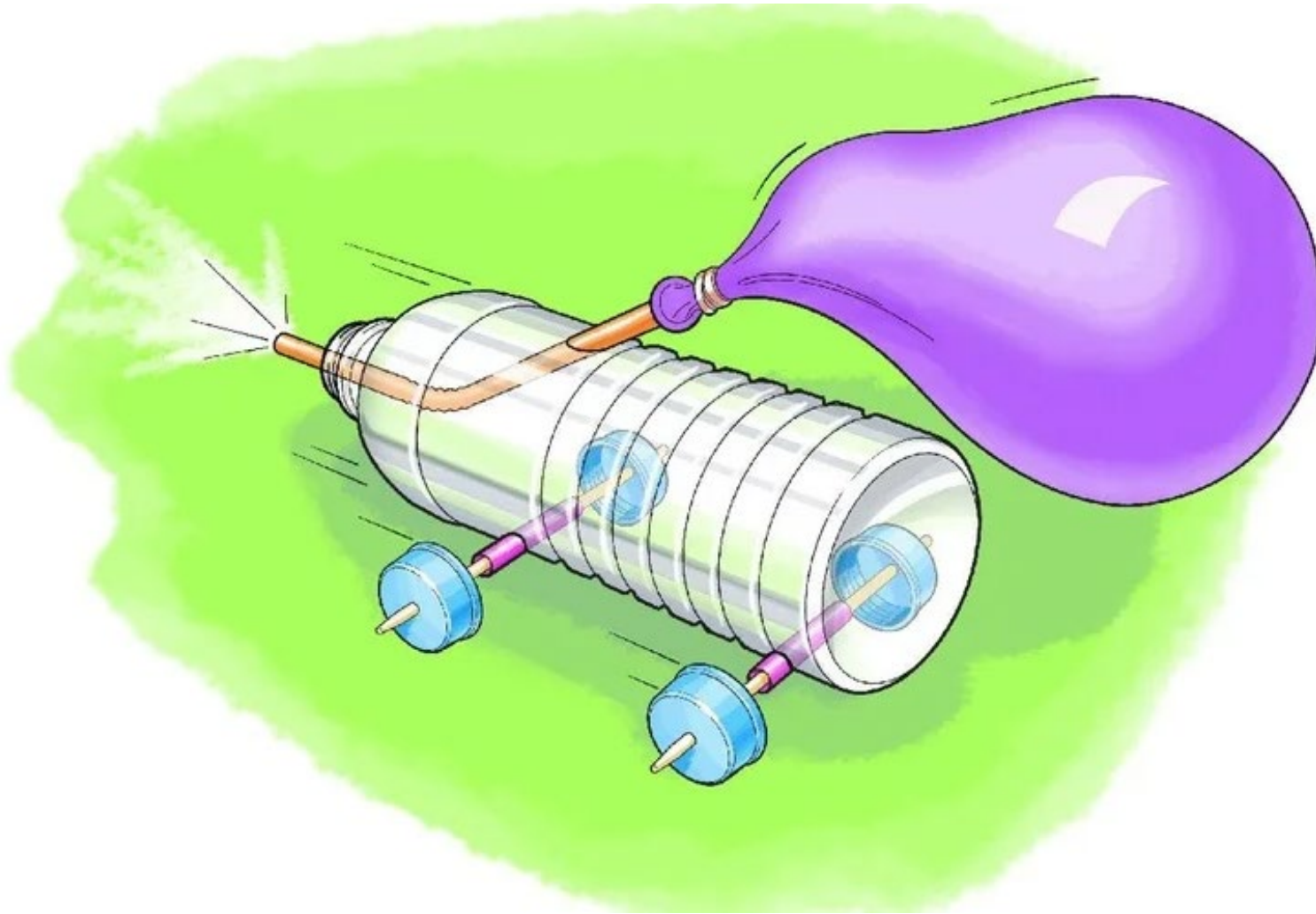
Elastic band

Chassis

Axle



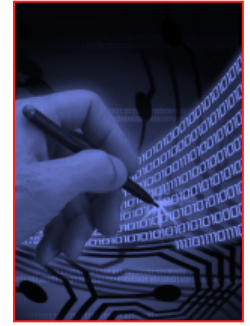
# Activity 4.



The instructions needed to teach people how to make the car move do not have any pictures. Having pictures for these instructions would make it easier for people to understand how to make the car move.

Draw your own instructions to tell people how to make their car move.

# Computing definition.



An **algorithm** is a set of instructions to be followed in sequence to achieve a result such as teaching someone how to use a balloon powered car.



# Check-point.

Noah and his friend Obi have both made balloon powered cars. Noah blows up his balloon, so it is bigger than Obi's.

Whose car will go furthest Noah or Obi?

Mae is using her balloon powered car. She puts less air into the balloon. Say what you think will happen when Mae lets go of the end of her straw.







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# Session 3: Terrific tables



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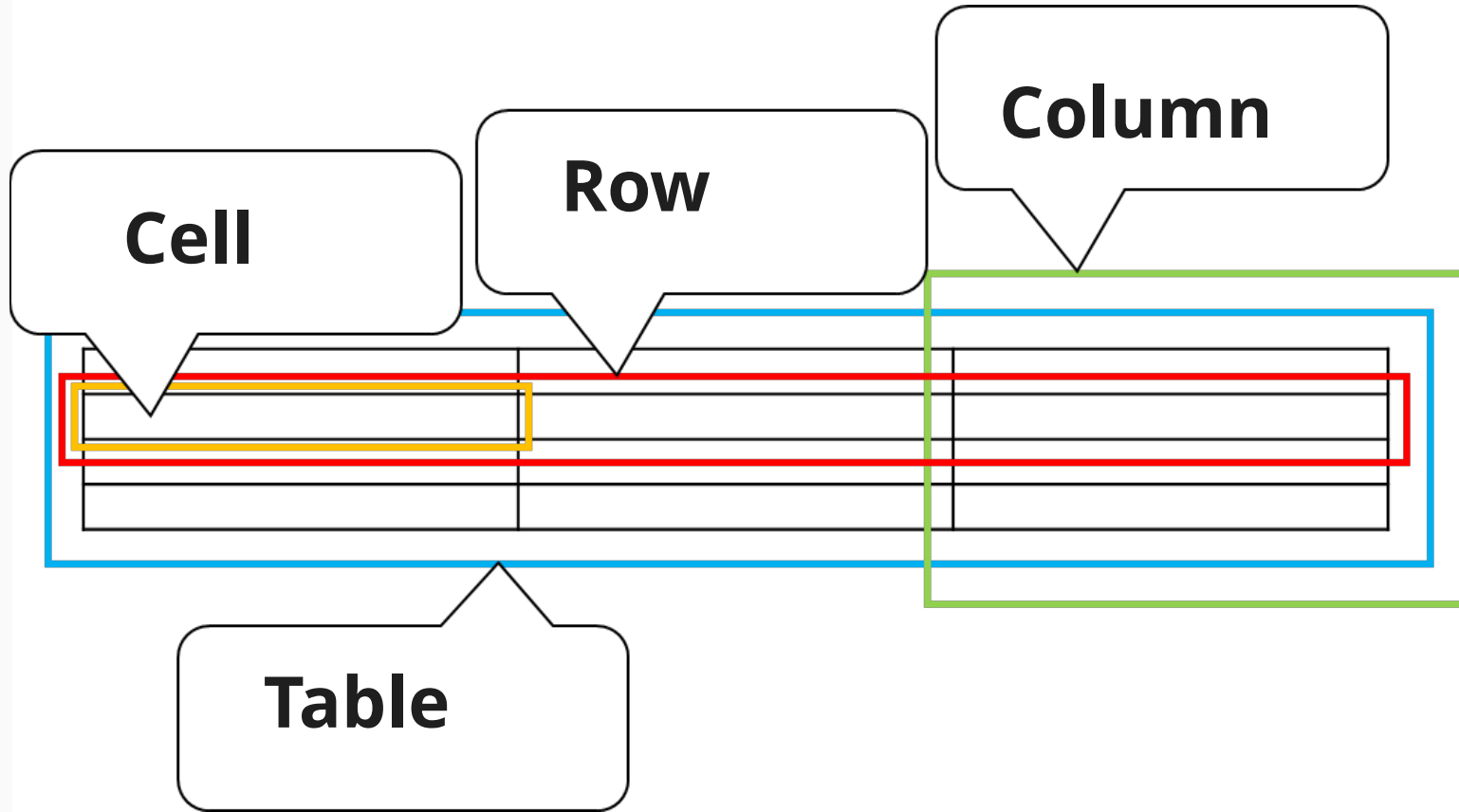


# The Challenge.

In this workshop session you will learn how to:

- ✓ Use a table to present information
- ✓ Label the parts of a table

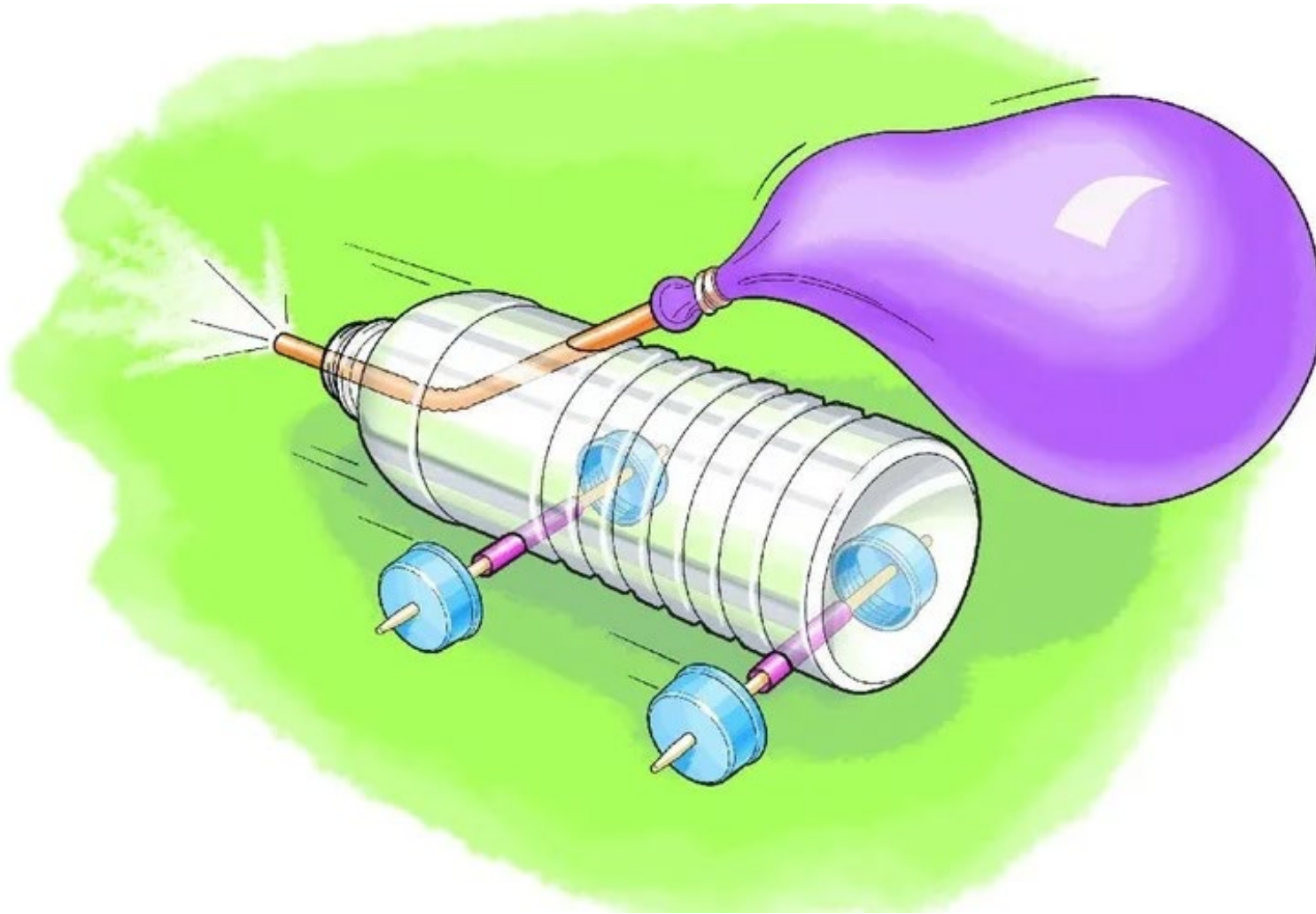




# Parts of a table.

A table is used to show information in a way that makes it easier for people to read and understand. A table is a grid of columns and rows that looks like this.

# Activity 5.



Mia would like some help to find out how many of each part she needs to build Beau's race car too.

Fill in Mia's table to show how many of each part she will need.

# Activity 6.

Car colour

Number of cars



3



1



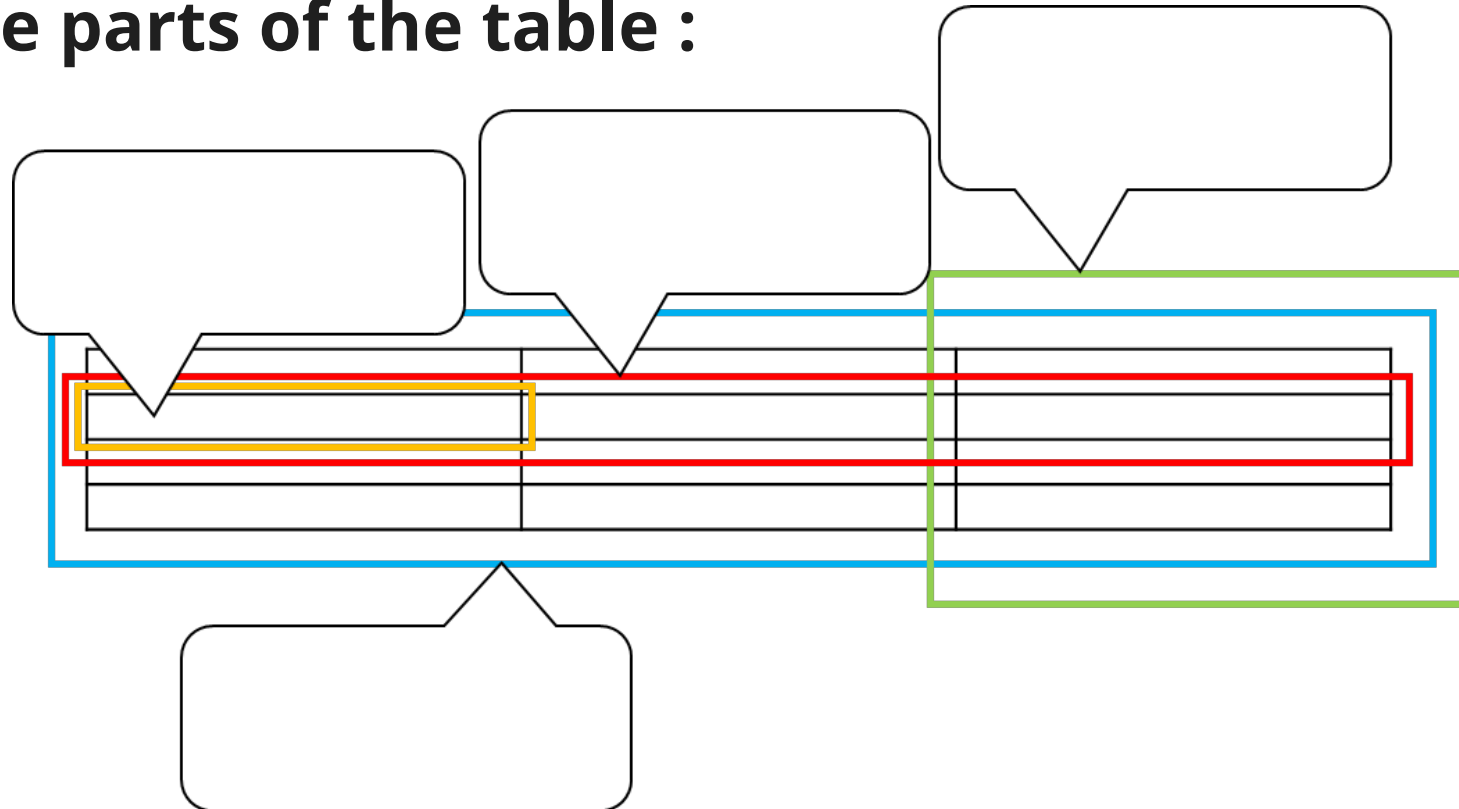
2

Ciara has been using a table to count the number of different colour cars that she can see in the school carpark, but she forgot to draw the rows and columns on her table. Draw the missing rows and columns on Ciara's table.



# Check-point.

Label the parts of the table :





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# Session 4: Starting with spreadsheets



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# The Challenge.

In this workshop session you will learn how to:

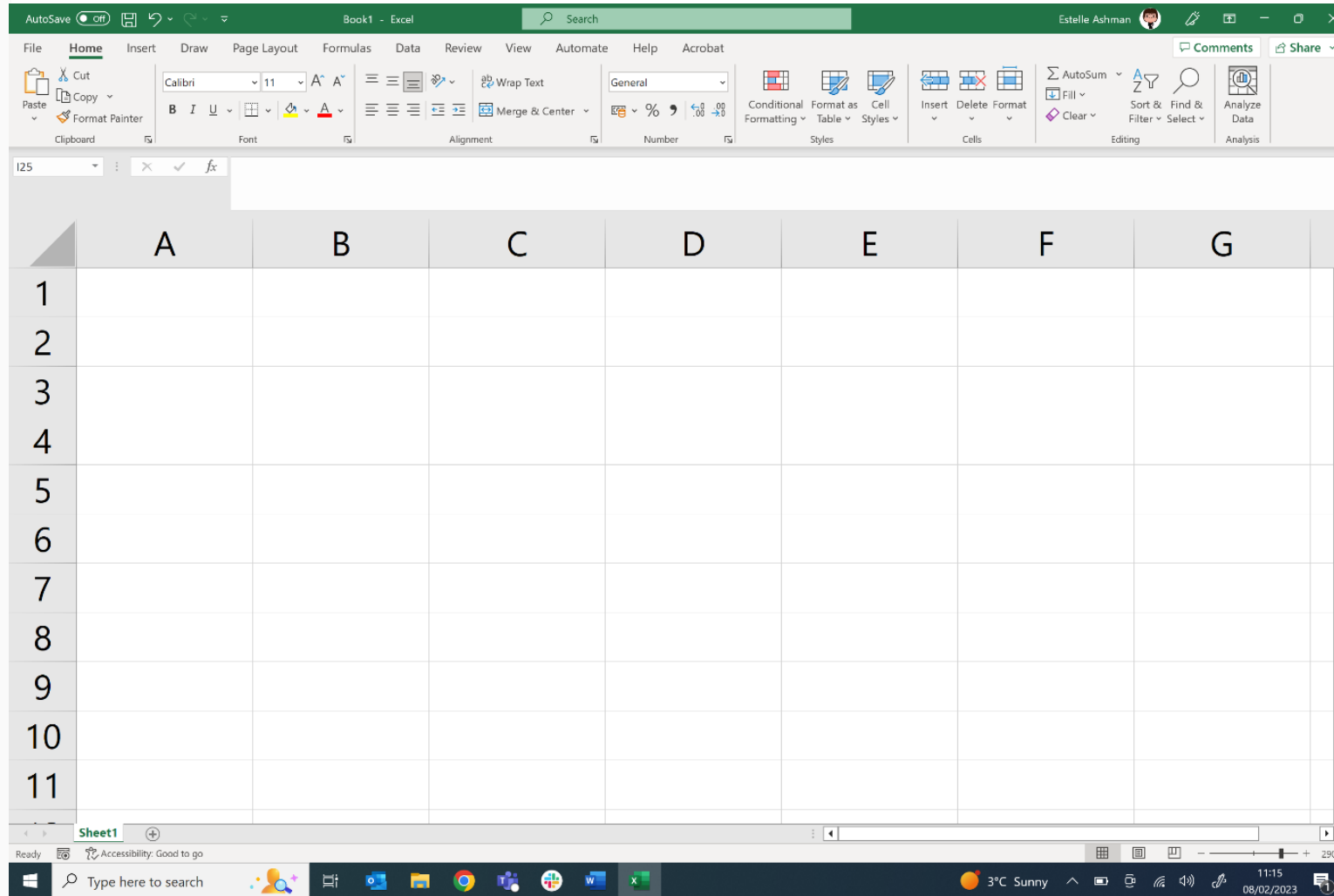
- ✓ Use a table to present information
- ✓ Label the parts of a spreadsheet
- ✓ Use a cell reference to identify a cell
- ✓ Identify examples of text and number data types
- ✓ Define the meaning of text and number data types
- ✓ Identify examples of text and number data types from a range of examples





# Introducing spreadsheets.

In this session you will learn how to use a “spreadsheet”. This is software which helps you to put information into tables. Two popular pieces of spreadsheet software are Microsoft Excel and Google Sheets.

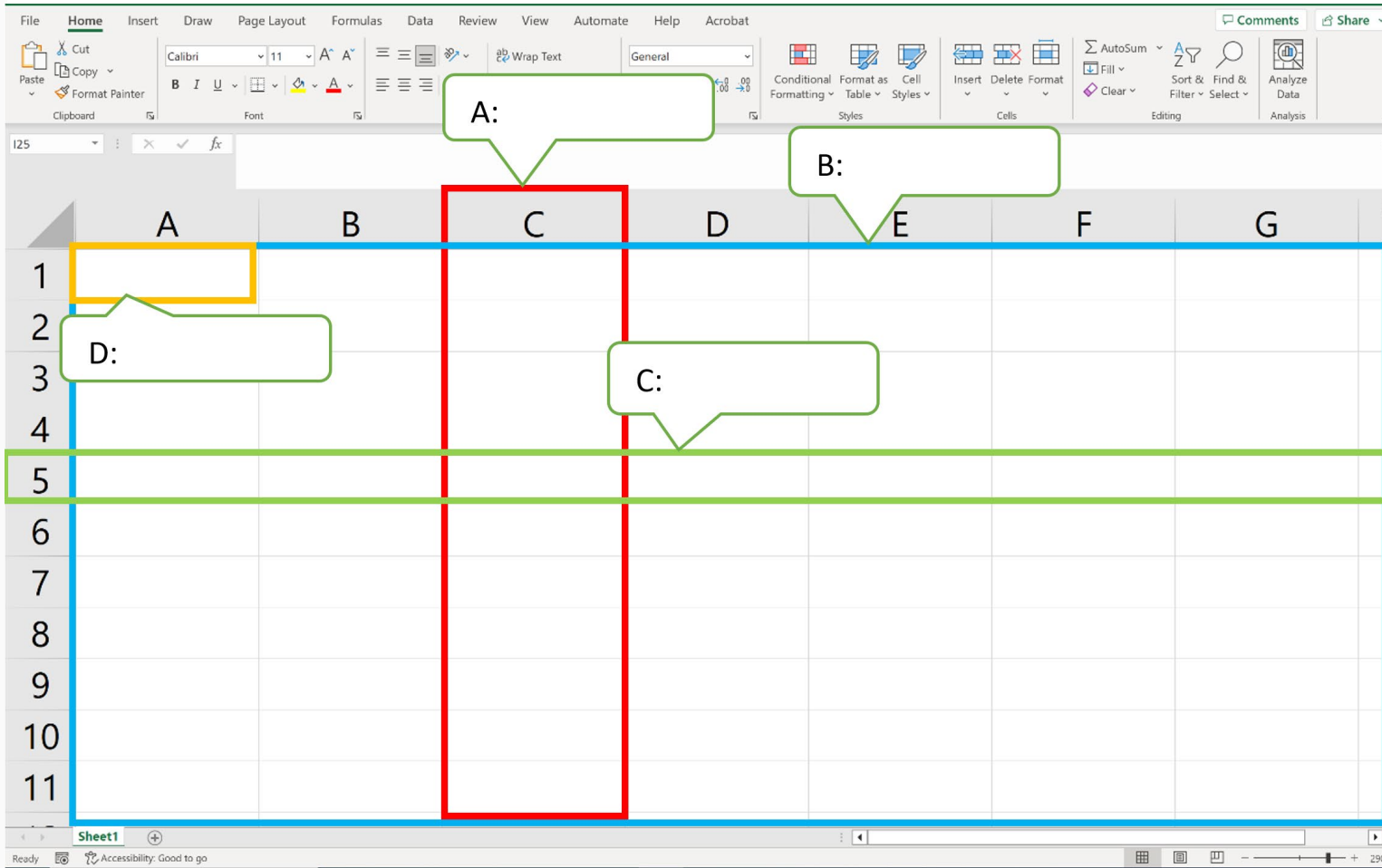


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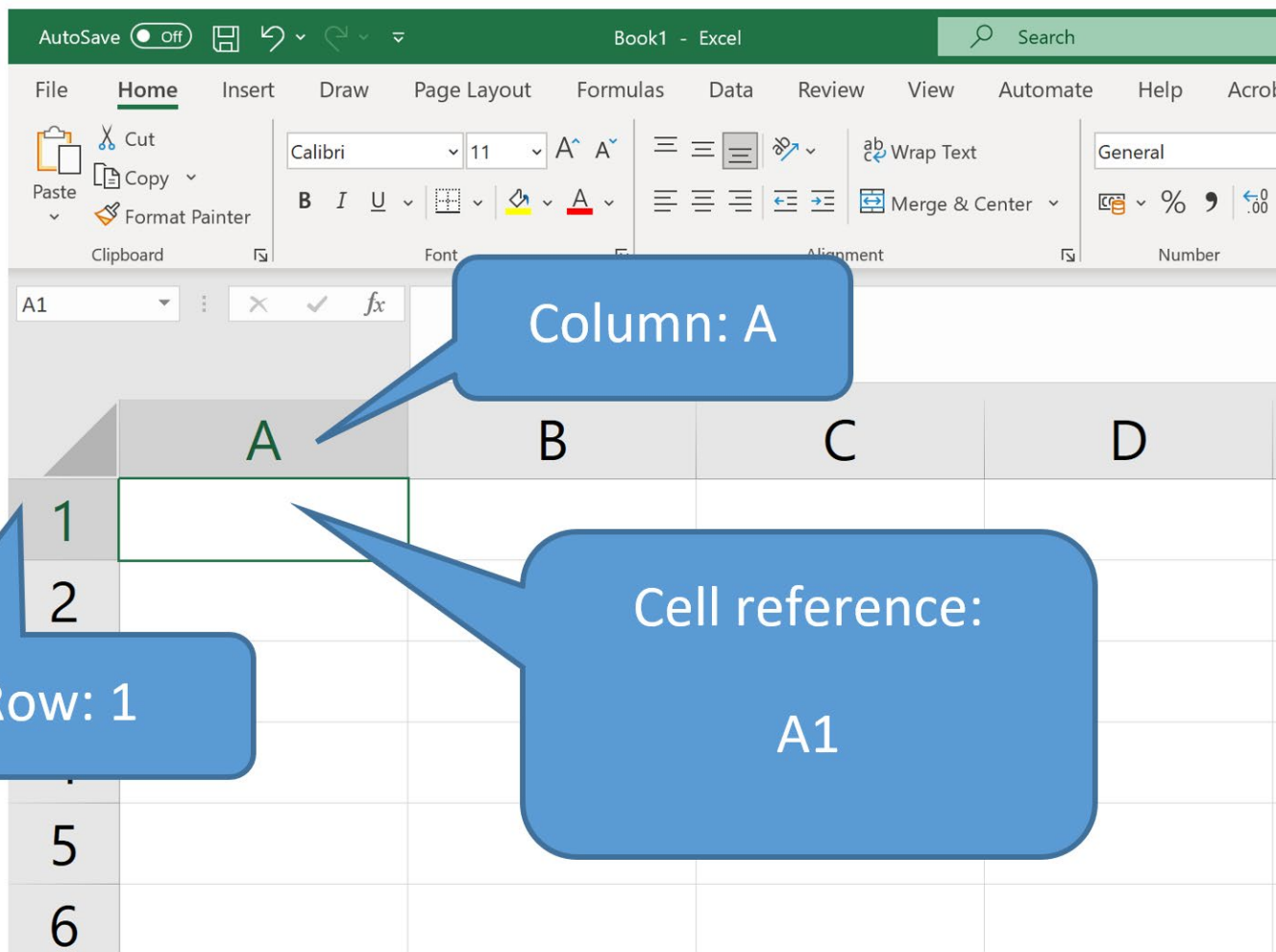
# Activity 7.

Look at this picture of a spreadsheet. As a class, talk about how it is similar to the table you used in the Terrific tables lesson. Then, name the parts of the spreadsheet on your worksheet.



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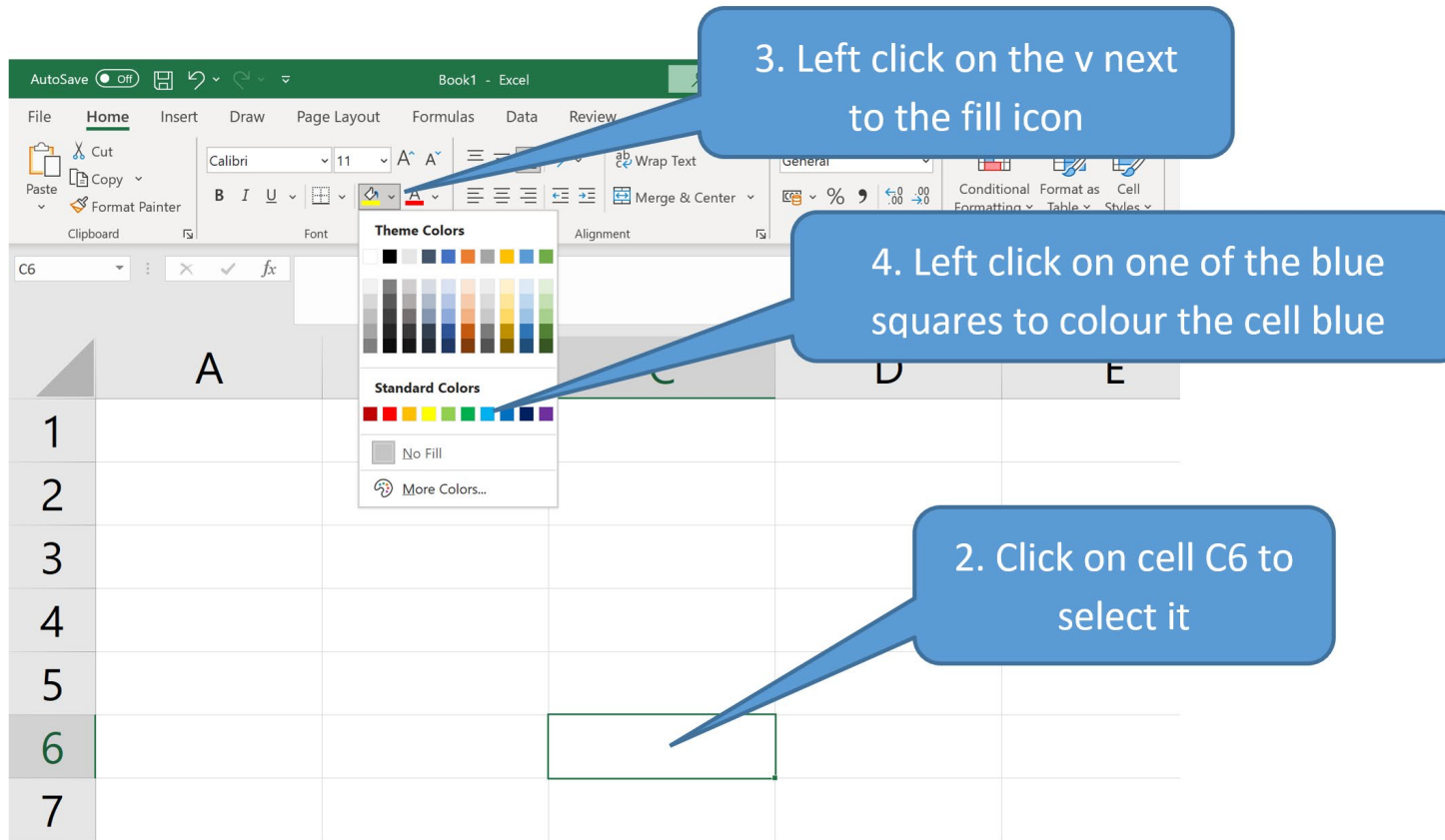
# More about spreadsheets.

A spreadsheet has a lot more rows and columns than the table you used previously. To help you find your way around, each row has a number and each column has a letter. You can use the column letter and the row number to point to one cell. We call this a cell reference.

# Activity 8.

Amen is learning how to use cell references and the fill tool to colour in cells in his spreadsheet. Follow Amen's instructions to colour in a cell. He is going to teach you how to colour cell C6 blue.

1. Your teacher will tell you how to open the spreadsheet software



**Red – C4**

**Green – G11**

**Purple – E6**

**Orange – A7**

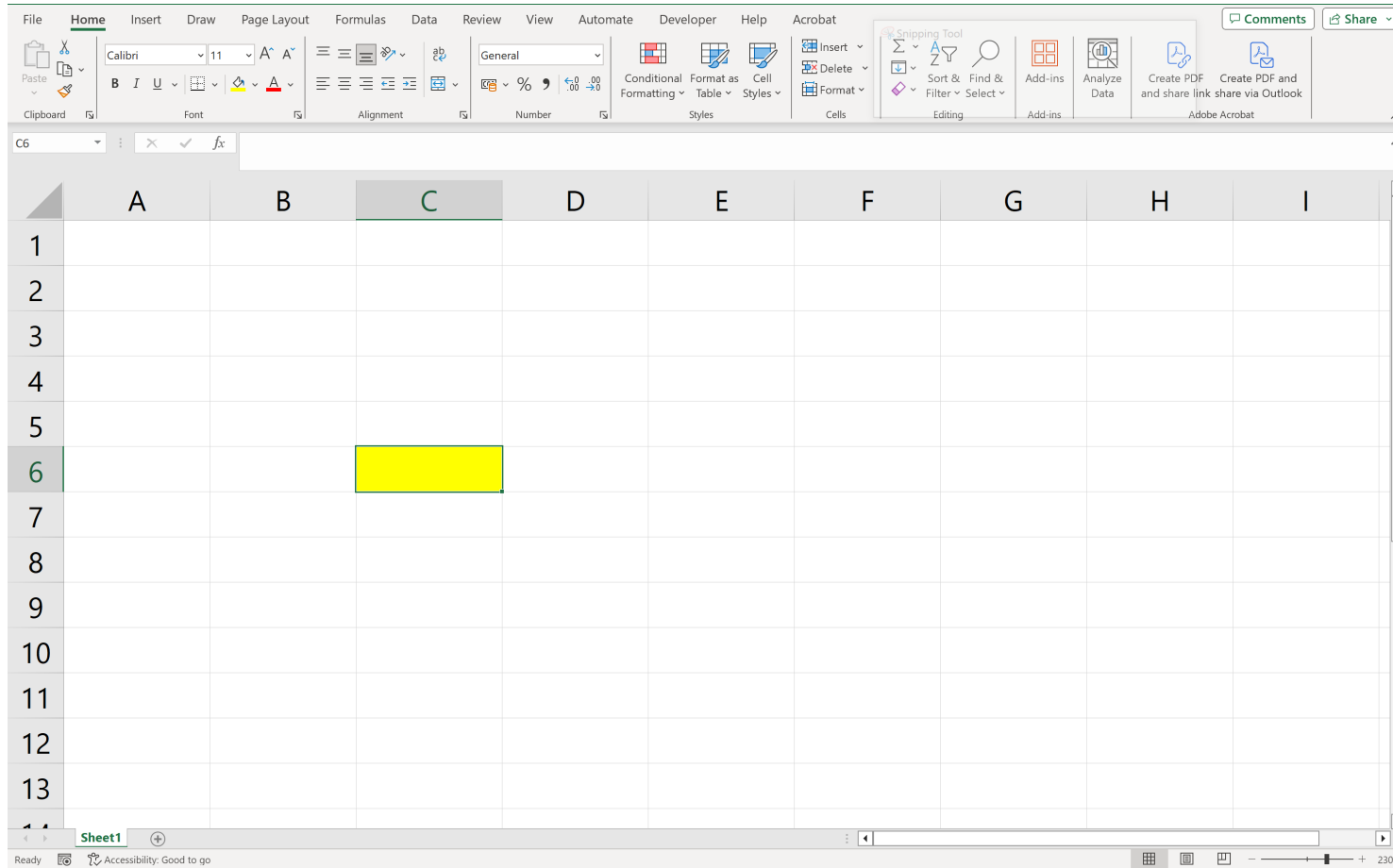
**Black – C10**

## **Activity 9.**

Find each of the cell references in your spreadsheet and colour in the cells as instructed.



# Activity 10.



Play a game of treasure hunt! Hide the treasure chest somewhere on your spreadsheet by colouring one of the cells yellow. Get into pairs and take it in turns to give your partner a cell reference. If the cell reference is far away from the treasure chest you can say that they are cold, if they are closer then you say warmer and when they are right next to it you say that they are hot! Take it in turns to say a cell reference until you find each other's treasure chest!



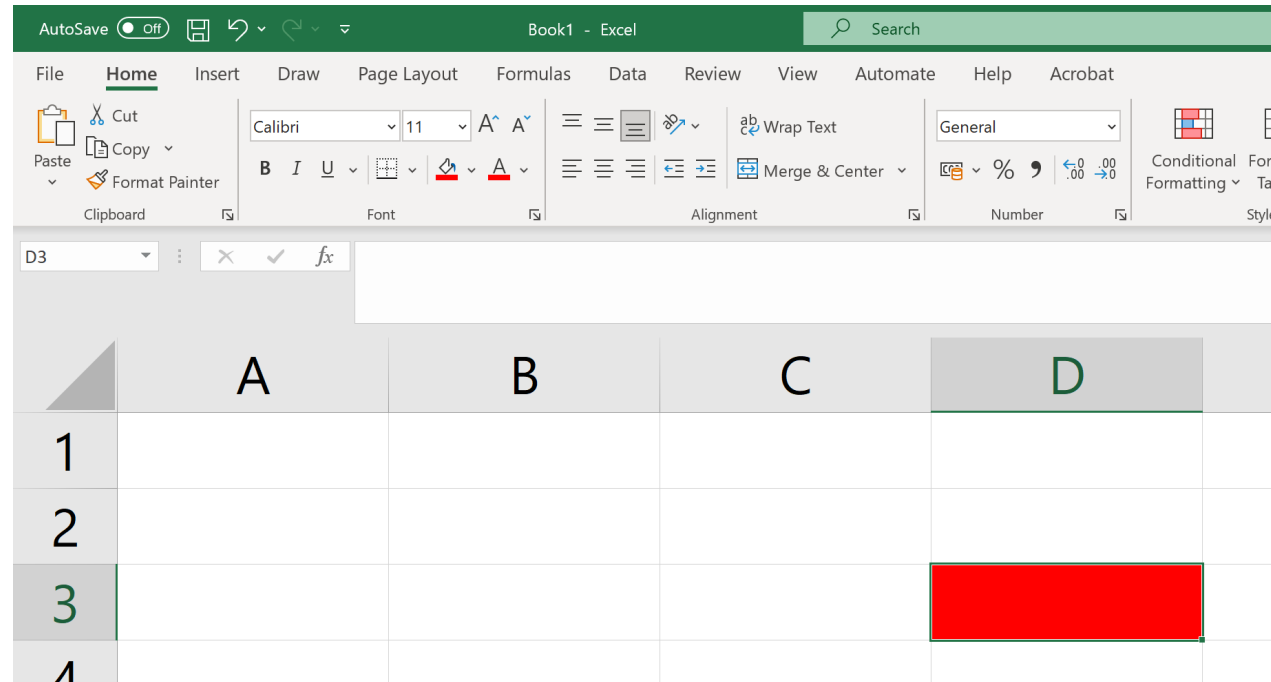
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# Check-point.

Look at the picture of the spreadsheet. What is the cell reference of the cell that is coloured in red.





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# Session 4: Race day



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# The Challenge.

In this workshop session you will learn how to:

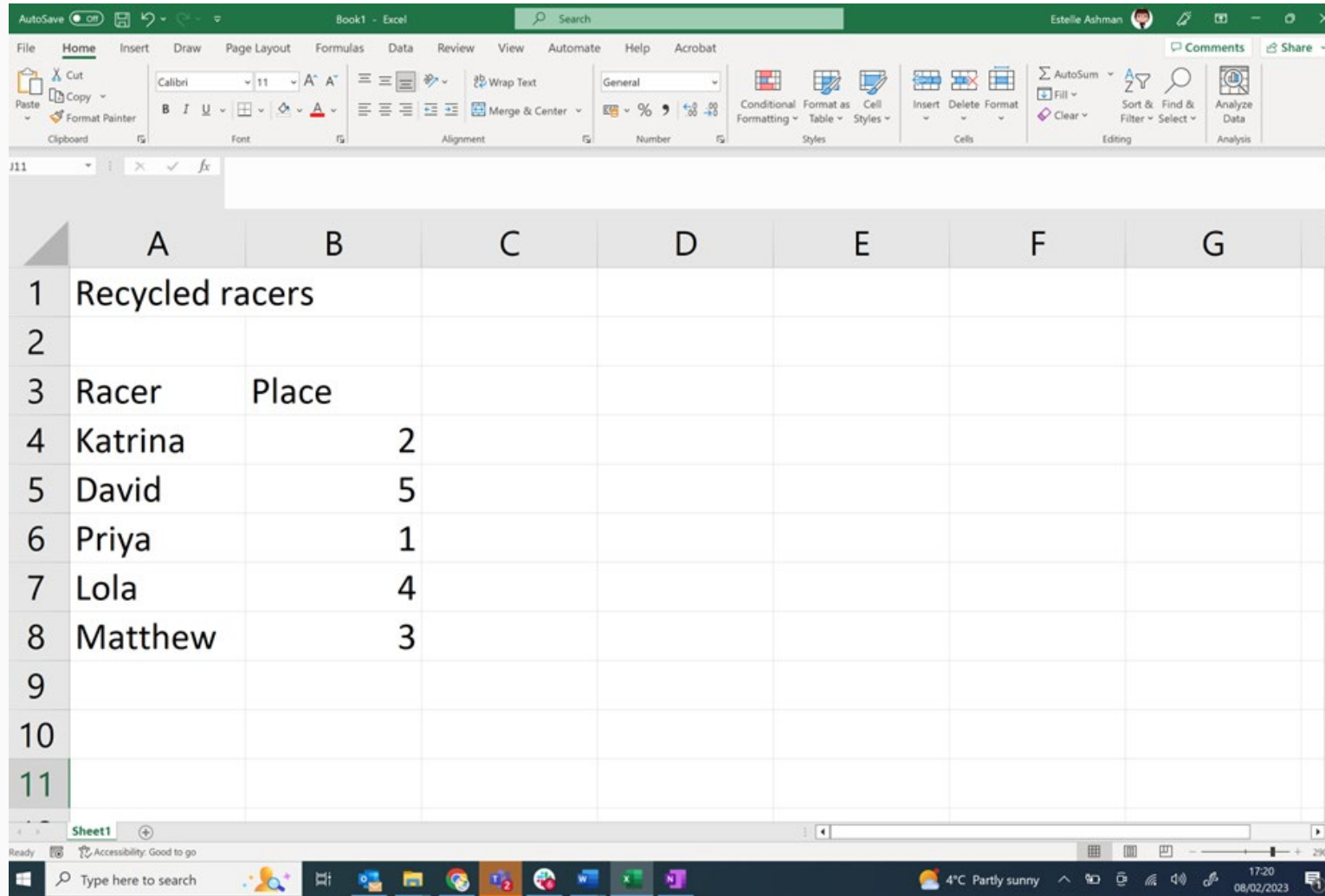
- ✓ Use a table to present information
- ✓ Use a cell reference to identify a cell
- ✓ Collect data and display it in a table
- ✓ Write their own examples of text and number data types



# Introducing data types.

Today is race day! You are going to use your spreadsheet to write down the winners of your recycled racers race.

Information that is typed into a computer is called data. When you make your recycled racers spreadsheet you will use two different types of data: text and numbers.



The screenshot shows a Microsoft Excel spreadsheet with the following data:

	A	B	C	D	E	F	G
1	Recycled racers						
2							
3	Racer	Place					
4	Katrina		2				
5	David		5				
6	Priya		1				
7	Lola		4				
8	Matthew		3				
9							
10							
11							



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# Activity 11.

Type your group's names into your spreadsheet.

The screenshot shows a Microsoft Excel spreadsheet with the following content:

	A	B	C	D	E	F	G
1	Recycled racers						
2							
3	Racer	Place					
4	Katrina						
5	David						
6	Priya						
7	Lola						
8	Matthew						
9							
10							
11							

Two blue callout boxes provide instructions:

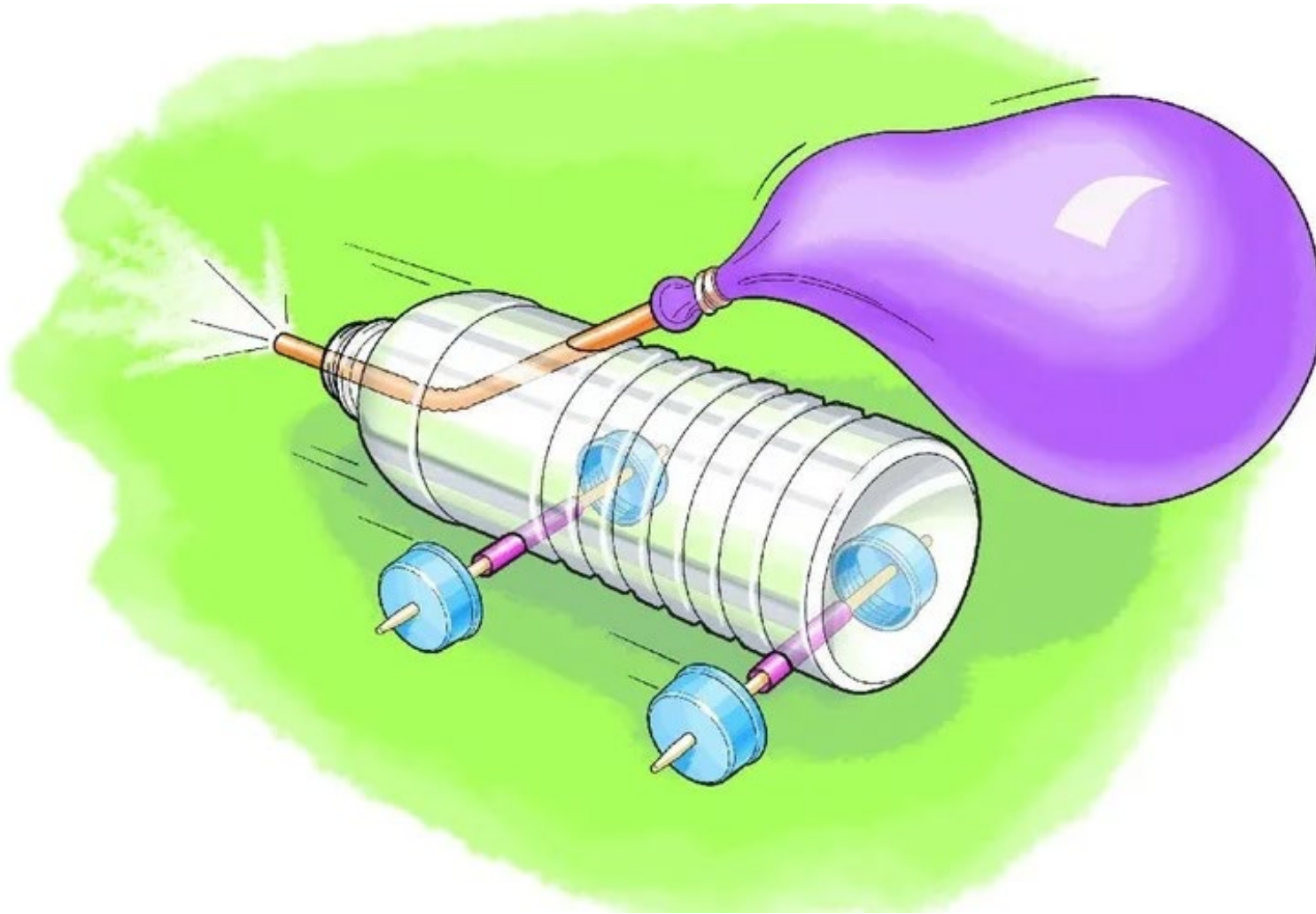
- One callout box points to cell A4 and contains the text: "Left click on cell A4 and type your own name".
- Another callout box points to cell A6 and contains the text: "Type the names of the other people in your group".



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# Activity 12.



Now it is time to run your recycled racers race! Use a mini whiteboard to write down the order that everyone finishes the race. You will need to put this information into your spreadsheet. Put your group's cars onto the start line and get them ready to go. When your teacher tells you, let your car go. The winner is the first person to cross the finish line.

# Activity 13.

Now use the numbers on your keyboard to type the order that each racer finished.

The screenshot shows a Microsoft Excel spreadsheet with the following data:

	A	B	C	D	E	F	G
1	Recycled racers						
2							
3	Racer	Place					
4	Katrina	2					
5	David	5					
6	Priya	1					
7	Lola	4					
8	Matthew	3					
9							
10							
11							



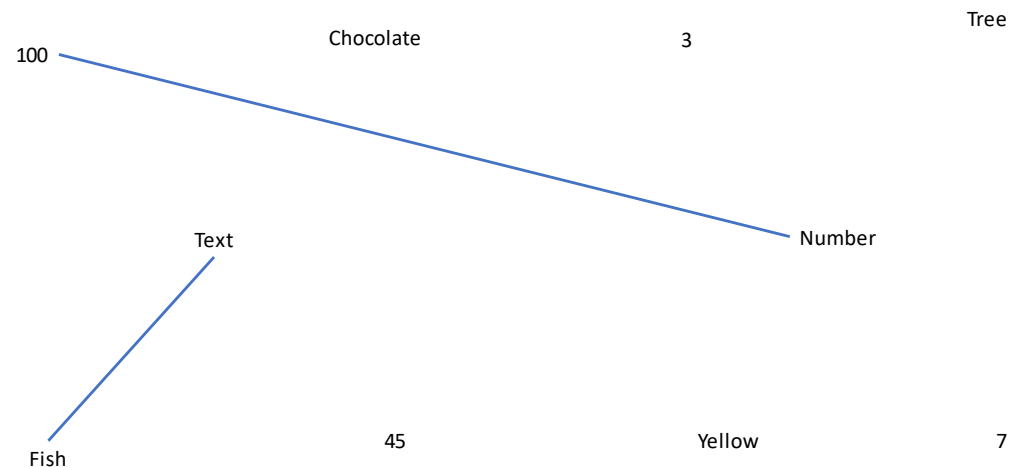
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# Check-point.

Now try this. Look at the picture below, match the examples to the data types. Two have been done for you.





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