Maths Week/ Wiki Pāngarau 2025

Survivor Series/Kia Mōrehurehu

Day 2 Set D

For students

WHAT TO DO FOR STUDENTS

1 **You can work with one or two others. Teams can be different each day.**

2 **Do the tasks and write any working you did, along with your answers, in your maths book.**

3 **Your teacher will tell you how you can get the answers to the questions and/or have your work checked.**

4 **When you have finished each day, your teacher will give you a word or words from a proverb.**

5 **At the end of the week, put the words together in the right order and you will be able to find the complete proverb! Your teacher may ask you to explain what the proverb means.**

6 **Good luck.**

THE SIZE OF IT!

In this Survivor Series task, you will work with a partner to update the US Roller Coasters dataset so that the variables are in metric units and then to explore some of the variables in the dataset.

https://pixabay.com/photos/roller-coaster-theme-park-263929/

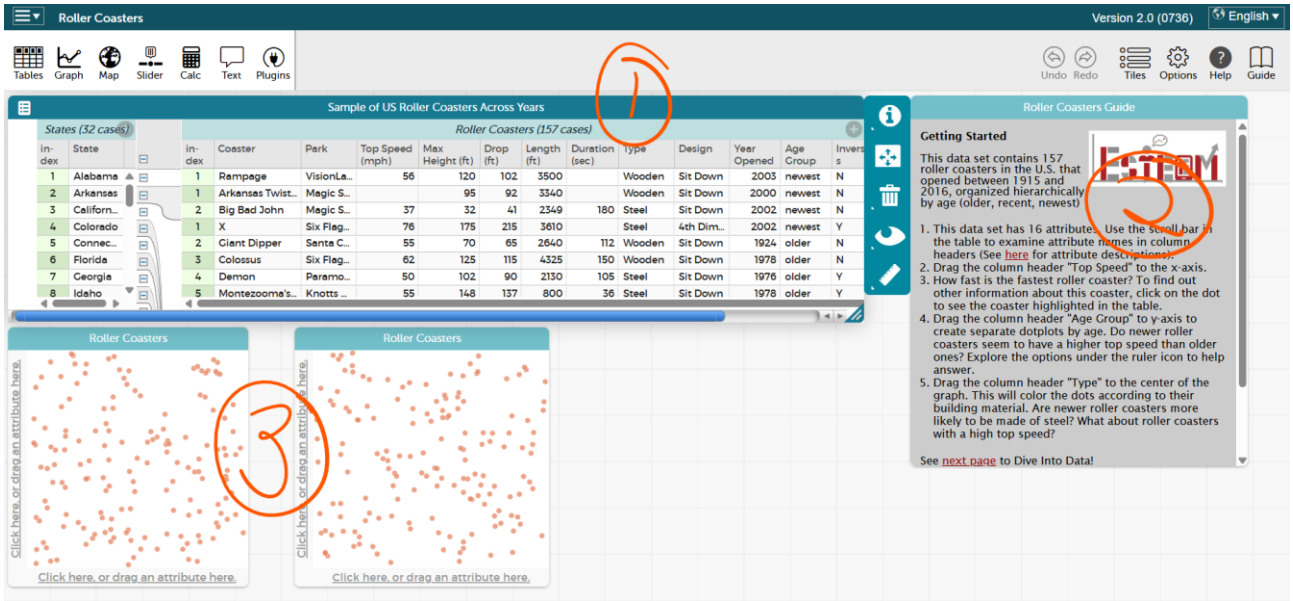
Activity 1 – conversions from imperial to metric

Imperial measurements are a system of units that originated in the British Empire and are still used primarily in the United States and a few other countries. In New Zealand we use the metric system of units for measuring.

A. Discuss in your group what you know about imperial measurements and any that friends and family still use.

Open the roller coasters dataset in CODAP. Use this link: US Roller Coasters dataset.

B. Discuss in your group if anyone has ever been on a roller coaster and where that was. Fun fact, did you know there are only four working roller coasters in New Zealand?



Notice the following things in the CODAP document

1. There is a table with data
2. There is a Roller Coasters Guide
3. There are two graphs.

Look more closely at the table and notice that five of the variables have a unit given.

1. Top Speed (mph)
2. Max Height (ft)
3. Drop (ft)
4. Length (ft)
5. Duration (sec)

Sample of US Roller Coasters Across Years

Roller Coasters (157 cases)

index	Coaster	Park	Top Speed (mph)	Max Height (ft)	Drop (ft)	Length (ft)	Duration (sec)	Type
1	Rampage	VisionLa...	56	120	102	3500		Wooden
1	Arkansas Twist...	Magic S...		95	92	3340		Wooden
2	Big Bad John	Magic S...	37	32	41	2349	180	Steel
1	X	Six Flag...	76	175	215	3610		Steel
2	Giant Dipper	Santa C...	55	70	65	2640	112	Wooden
3	Colossus	Six Flag...	62	125	115	4325	150	Wooden

Identifying the units of measurement.

C. What do you think **mph**, **ft** and **sec** stand for?

D. Which of **mph**, **ft** and **sec** are imperial?

In this activity you will convert the imperial measurements to metric measurements.

E. You will convert **mph to kph** and **ft to m**. What does **kph** and **m** stand for?

The conversions to use are.

What it measures	Imperial	Metric
Length	Feet	Metre
	1	0.3048
	To convert to metres, you multiply the number of feet by 0.3048	
Speed	Miles per hour	Kilometres per hour
	1	1.6093
	To convert to kilometres per hour, you multiply the number of miles per hour by 1.6093	

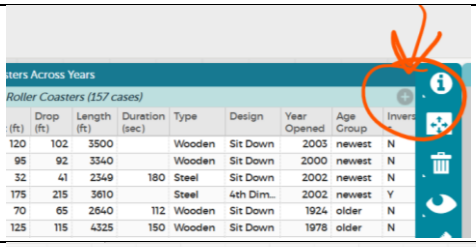
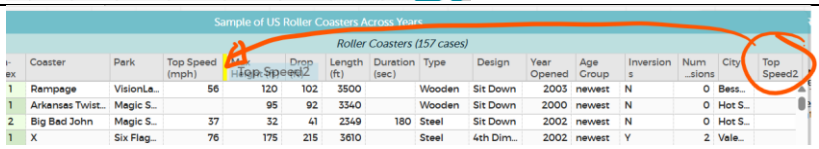
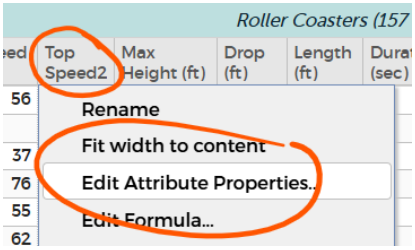
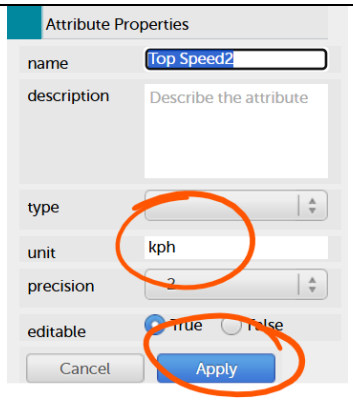
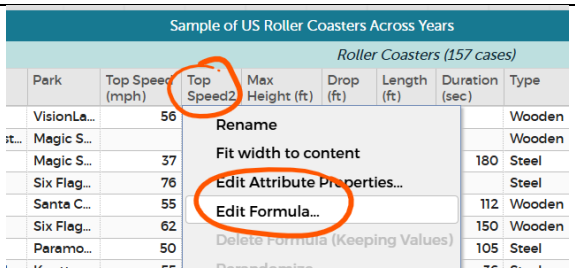
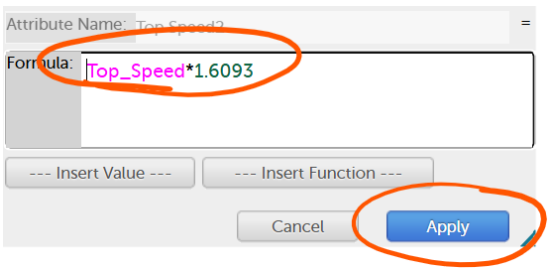
Convert

F. Convert Top speed to kilometres per hour (kph) in the rollercoasters document, see instructions below.

G. Convert Max (maximum) height, drop and length to metres (m) in the rollercoasters document, see instructions below.

To do this you need to add a new variable and then using a formulae you can convert all the measurements in one column at one time.

Instructions:

Insert a new variable • Click on the grey plus symbol	
Name the new variable • e.g., Top Speed2 (needs to be different to the existing variable) Click and drag the new variable to put it beside the existing variable.	
Edit the attribute properties • Click on variable name • Select Edit Attribute Properties • Type in the unit e.g., kph • Click apply	 
Edit Formula to make the conversion • Click on variable name • Select Edit Formula • Type in the conversion e.g., Top_Speed*1.6093 • Click apply	 

Note all the top speeds have been converted to kph in the column headed Top Speed2

Top Speed (mph)	Top Speed2 (kph)
56	90.12
37	59.54
76	122.31
55	88.51
62	99.78
50	80.47
55	88.51

Repeat the process for Max_Height, Drop, Length – converting these from feet (ft) to metres (m), ending up with a table that looks something like this.

Top Speed (mph)	Top Speed2 (kph)	Max Height (ft)	Max ...ht2 (m)	Drop ...p (ft)	Drop2 (m)	Length (ft)	Length2 (m)	D (s
56	90.12	120	36.58	102	31.09	3500	1066.8	
		95	28.96	92	28.04	3340	1018.03	
37	59.54	32	9.75	41	12.5	2349	715.98	
76	122.31	175	53.34	215	65.53	3610	1100.33	
55	88.51	70	21.34	65	19.81	2640	804.67	

Activity 2 – conversions within the metric system

Using the ideas in Activity 1, insert two new variables and make the conversions for these two variables.

A. Add a third length - convert from metres (m) to kilometres (km)
B. Add another time duration - convert from seconds (sec) to minutes (min)

Activity 3 – exploring the roller coasters dataset

Think about two measurement variables that you would like to explore from the US Roller Coasters dataset.

Make a graph to display the variable using the metric data and describe what the graph shows. Repeat for the second variable.