RICH MATHEMATICAL TASK BOOKLET

STATISTICS

YEAR 7-8 ODD YEARS

Task Copy Masters

Level 4/Year 7-8: Statistics Odd Years

Task 1

Census at School collects data from students across New Zealand. This is some of the information they have collected about Year 8 students

Gender:	boy
Q7 Height (cm):	166
Q8 Right foot (cm):	28
Q9 Arm span (cm):	163
Q10 Wrist circ (cm):	18
Q11 Neck circ (cm):	34
Q12 Popliteal length (cm):	45
Q13 Index finger (mm):	100
Q14 Ring finger (mm):	110
Q15 Mode of transport:	motor
Q16 Time to school (mins):	40
Q17 Weight of school bag	2
Q18 How carry school bag:	one
Q24 Cell phone (mths):	4
Q27 Fitness level:	quitefit
Q28 Pulse rate (per min):	60
Q35 Super power:	time

(from https://new.censusatschool.org.nz/wp-content/uploads/2010/09/year8posing1.pdf)

Liam thinks that most Year Eights who walk to school will be quite fit.

Use the data cards to investigate Liam's prediction and sort these into sets.

Make your own predictions about how students get to school, their fitness levels and what superpower they have select.

Use a table of data to show your results.

Now use a graph to record your results to present to the class.

Can you represent this in different ways?

What statements can you make about how students get to school, their fitness levels and what superpower they have select?

Task 1 (independent)

Census at School collects data from students across New Zealand. This is some of the information they have collected about Year 8 students.

What questions could you ask about this data set?

Record your results in a table.

Can you represent this in different ways using a bar graph or column graph?

Make statements about what you have found out.

Task 2

Census at School collects data from students across New Zealand. This is some of the information they have collected about Year 8 students. Use the data cards to investigate the questions below.

How long does it take for Year 8 students to get to school?

Use a stem and leaf graph to show your results.

Make “I wonder” and “I notice” statements about the data.

What do you notice about the spread of data? What story is it telling?

Task 2 (independent)

Below is the amount of screen time in minutes that a group of 12-year-olds has each week.

Represent the dataset using a stem and leaf graph.

150 160 100 140 125 155 142 128 148 135 121

157 110 155 150 125 145 150 126 138 134 155

115 154 150

Use the stem and leaf graph to find the range, median, mode, and mean.

What statements can you make about the amount of screen time that 12-year-olds have each week?

What other questions could you ask about this data-set?

Task 3

Farmers is looking at stocking a new brand of school bags for children. They would like to ensure that the bags will be suitable and durable for students in Year 8.

Make “I wonder” statements related to this topic.

Use the data card sets to help you give advice to Farmers.

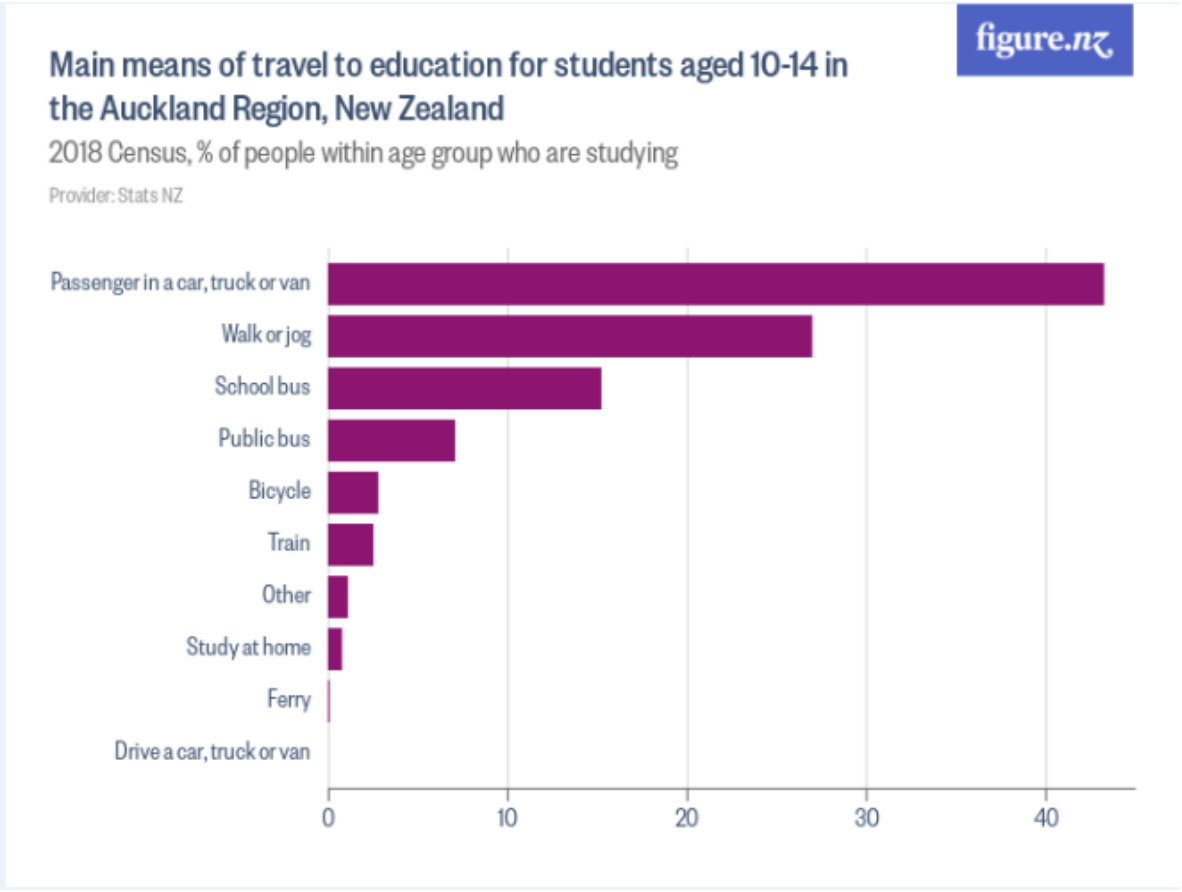
Represent your findings in a table of data and as graphs.

Make statements about your findings using the data and draw conclusions that will provide advice to Farmers and the characteristics of the bags that they should stock.

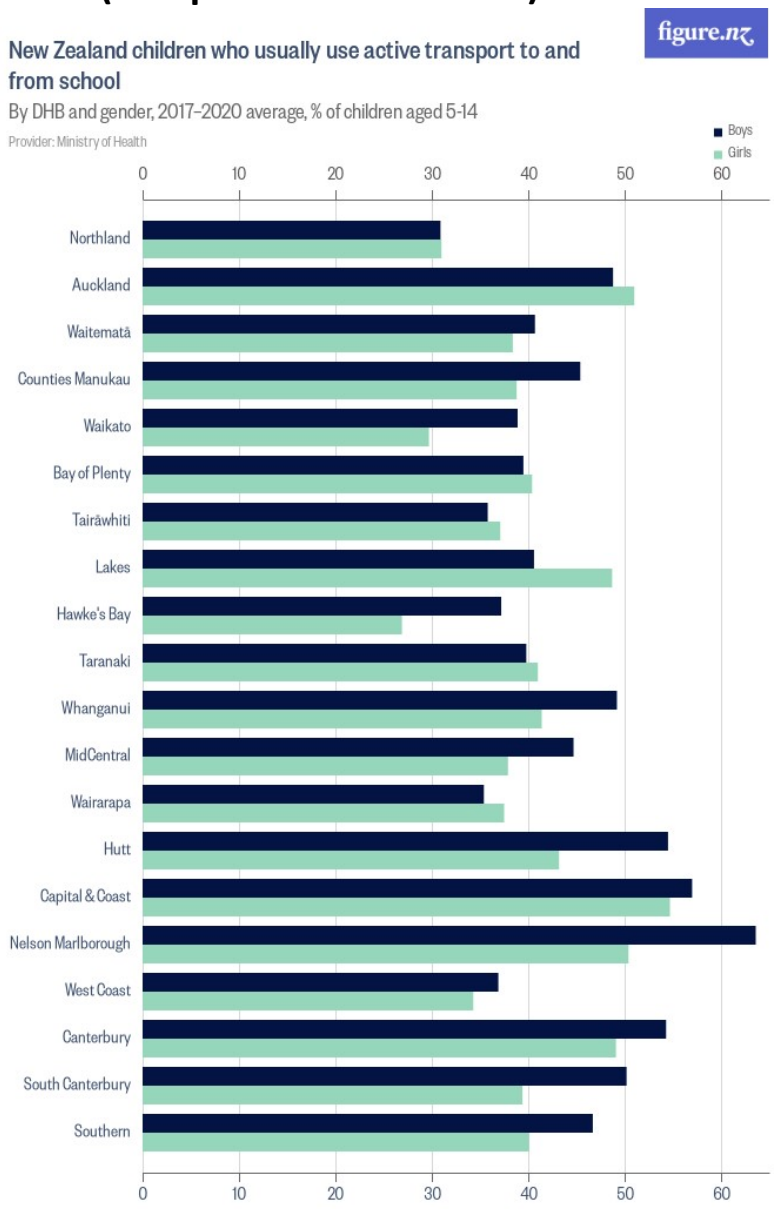
Task 3 (independent)

Use the set of data cards to find out information about how Year 8 students in New Zealand get to school and how long it takes. Organise the information into tables and graphs.

The graphs below provide information related to how children across New Zealand travel to school.



Task 3 (independent continued)



Reflect on the similarities and differences in your data set and graphs and these graphs.

Look at the graphs including your own and make “I wonder” statements about the data that is shown.

Then make “I notice” statements about the data. Make sure that you justify your statements by using data shown on the graphs.

Task 4

Census at School collects data from students across New Zealand. This is some of the information they have collected.

What do you wonder about the data? Make “I wonder…” statements.

What questions could you ask about this data set?

Choose some questions and sort the data cards to answer the question.

Now record your results as a representation.

Make “I notice” statements about the data in relation to your question.

What connections can you make between the different sets of data?

Task 4 (independent)

These data cards have different information about Year 8 students.

What questions could you ask about this data set?

Sort the data cards to answer your question.

Record your results in a table.

Represent your results using at least two different graphs.

Make statements about the data.

Task 5

The local board is looking at re-developing the green space and parks in the area to best meet the needs of the local community. Using green space and parks in positive ways supports well-being. The local board would like to know the ways in which green space and parks could be used to benefit students in Year 7 and 8.

Read the questions that you wrote for your survey and re-visit the predictions that you made.

Begin by sorting the data that you have collected and developing recording systems or tables of data to organise the data.

Reflect on the type of data that you have collected and which graphs will be appropriate to represent the data. Select a graph and write a justification of why it would be appropriate to display the data.

Use the following tools to make your graphs:
https://nces.ed.gov/nceskids/createagraph/Default.aspx OR

https://www.geogebra.org/m/BxqJ4Vag

Trial using different graphs to represent the data and reflect upon which tells the story of the data most clearly.

Develop other graphs and representations that will help you answer your overall question. Record your results to present to the class.

What statements can you make about the data?

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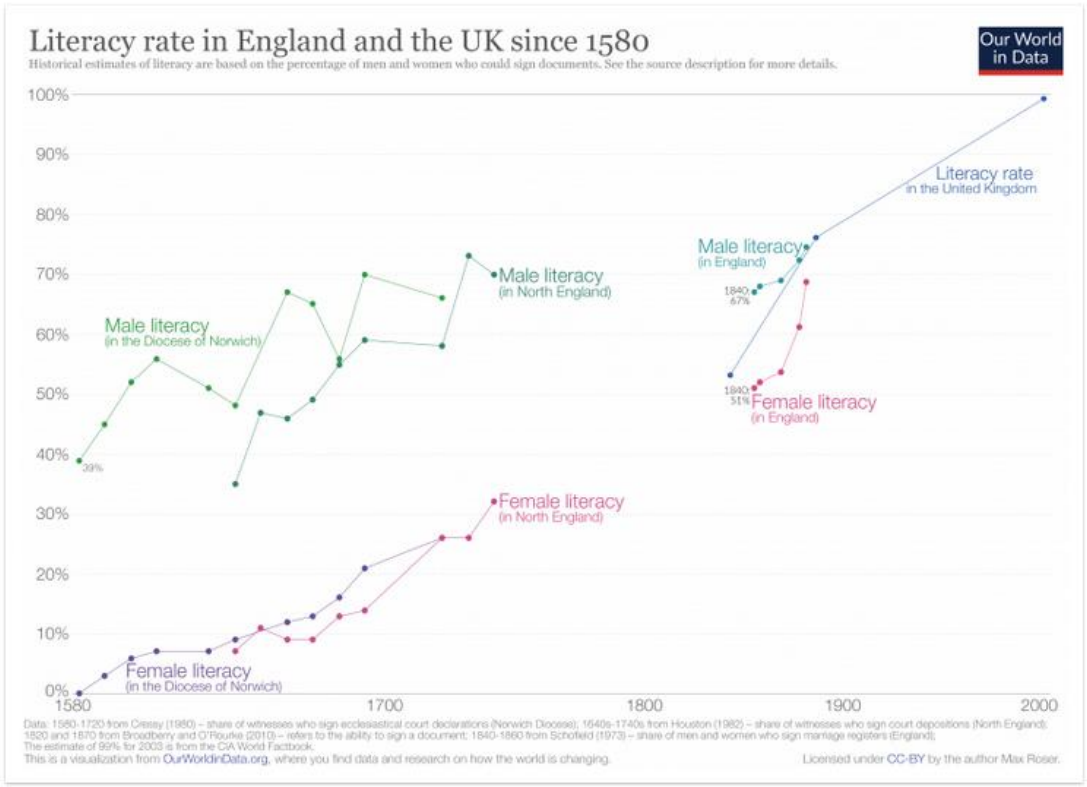
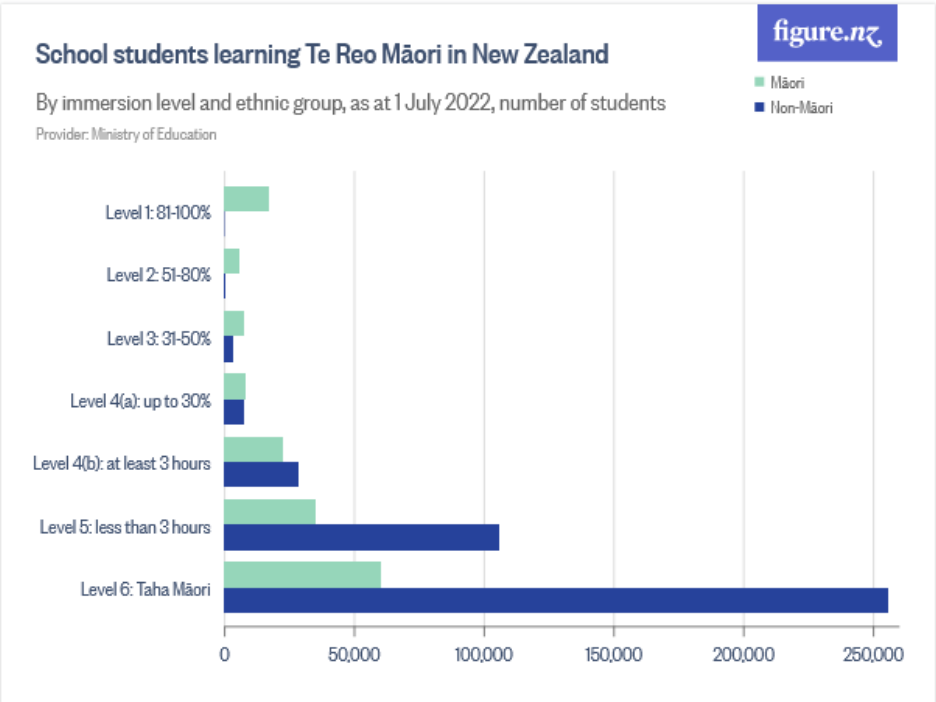
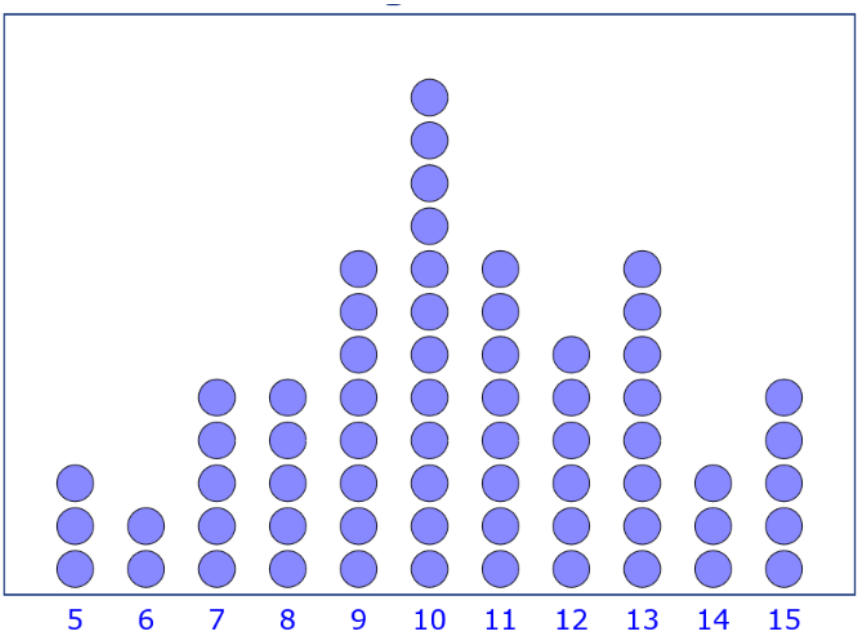
Task 5 (connect)

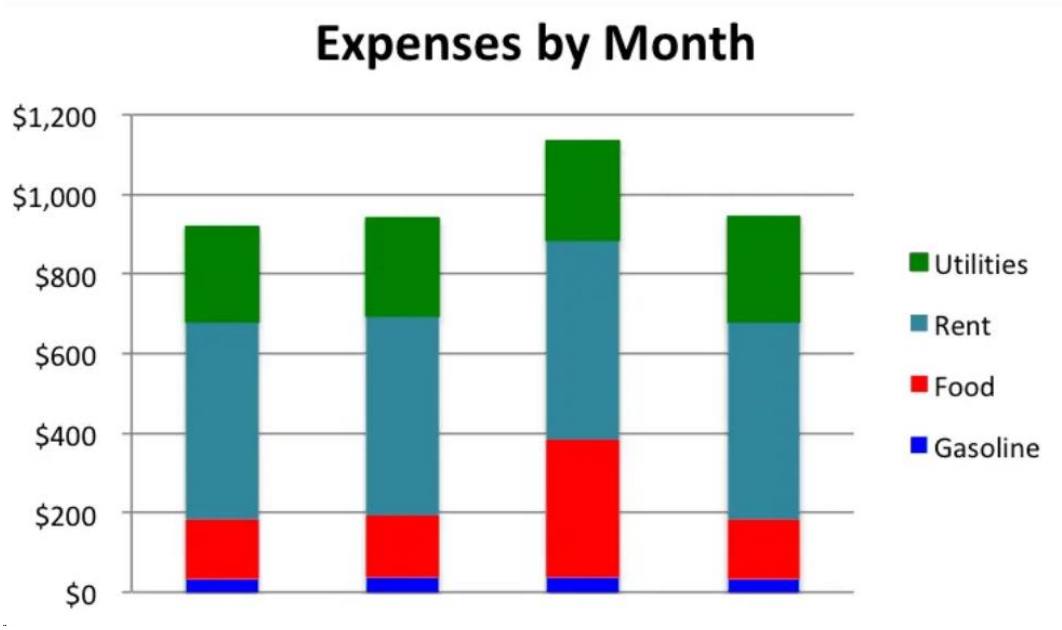




Task 5 (connect)

Time in hours spent reading over a week for Year 7 & 8 students





Task 5 (independent)

The local board is looking at re-developing the green space and parks in the area to best meet the needs of the local community. Using green space and parks in positive ways supports well-being. The local board would like to know the ways in which green space and parks could be used to benefit students in Year 7 and 8.

Continue sorting the data that you have collected and developing recording systems or tables of data to organise the data.

Reflect on the type of data that you have collected and which graphs will be appropriate to represent the data. Select a graph and write a justification of why it would be appropriate to display the data.

Use the following tools to make your graphs:
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Trial using different graphs to represent the data and reflect upon which tells the story of the data most clearly.

Develop other graphs and representations that will help you answer your overall question. Record your results to present to the class.

What statements can you make about the data?

Task 6

The local board is looking at re-developing the green space and parks in the area to best meet the needs of the local community. Using green space and parks in positive ways supports well-being and they would like to know the ways in which green space and parks could be used to benefit students in Year 7 and 8.

Develop a presentation for the class that includes your investigation question, sampling methods, survey questions and the graphs and data displays that answer your question.

Look at the shape of your data and consider statistical aspects such as the mean, range, mode, and median and what story this tells about the data. Write statements and a conclusion about what you have found out to present to the local board.

Task 6 (independent)

Look at the investigative question, data display, and conclusion that matches this.

Think critically about the conclusion and whether it aligns with the data display. Write an explanation of why you agree or disagree with the conclusion.

Write statements using “I wonder” and “I notice” from the data displays.

Task 7

Is New Zealand a clean and green country?

Think about different aspects of living in New Zealand that might help us answer whether New Zealand is a clean and green country.

Develop a series of "I wonder" statements about living in New Zealand and looking after the environment and nature. Use these statements to develop a question that you would like to investigate.

What predictions and statements can you make about your chosen question?

Use data sources and data displays that will help you answer your question. This could include resources from the following websites:

Figure NZ (https://figure.nz/)

Stats NZ (https://www.stats.govt.nz/)

Our World in Data (https://ourworldindata.org/)

Reflect on the data sources that you have found and the story that they are telling.

Develop your story and explanation of the data and what it shows. Write a series of statements that you can share with the class and a conclusion to answer your question.

Task 7 (independent)

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Task 8

Is New Zealand a clean and green country?

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Reflect on the data sources that you have found and the story that they are telling.

Develop your story and explanation of the data and what it shows. Write a series of statements that you can share with the class and a conclusion to answer your question.

Finish by developing your presentation into a PowerPoint or power presentation to share with the class.

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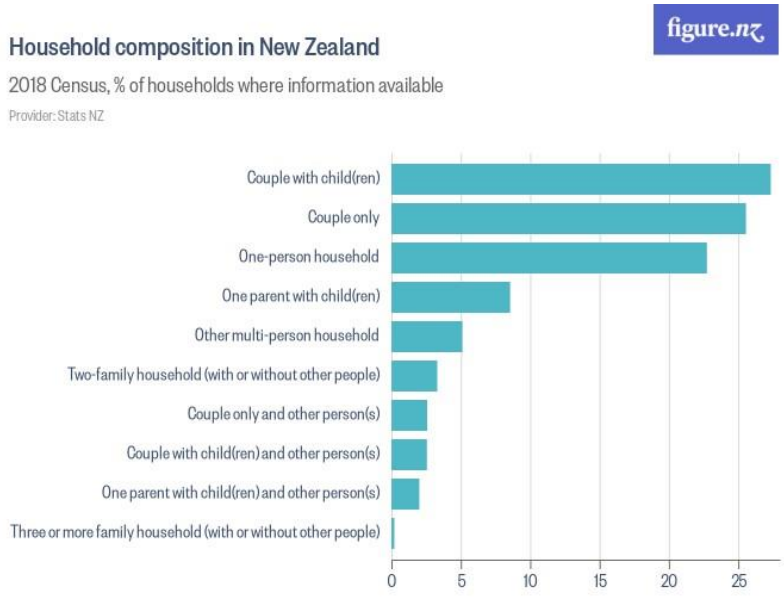
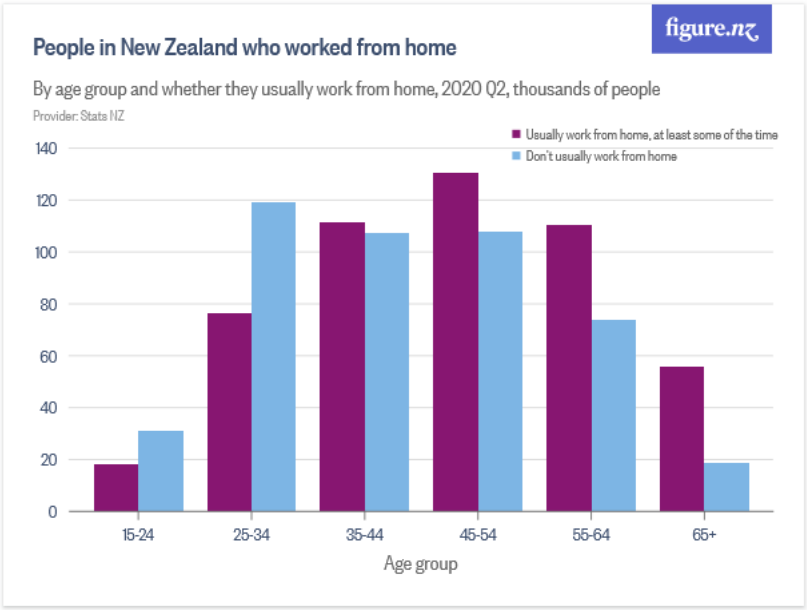
Task 8 (independent)

Aotearoa Building company are planning a new housing development. They are thinking about the types of houses and apartments to build and the amount of different sized dwellings. The graphs below show information about current households.





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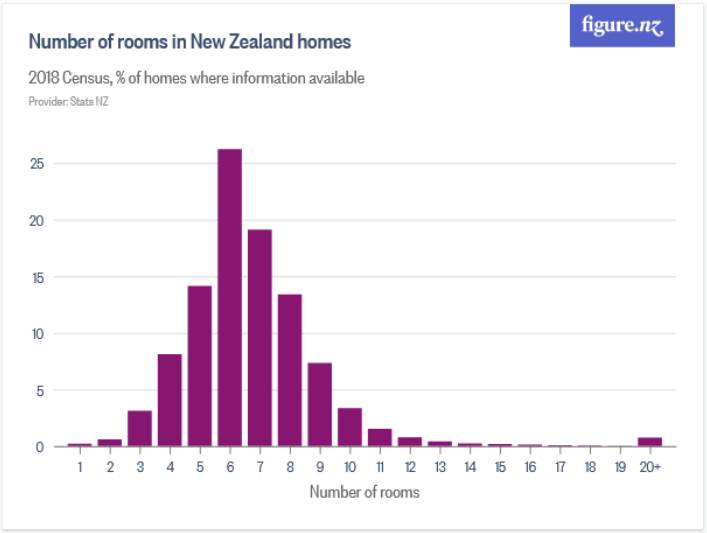
Task 8 (independent continued)



Can you use the graphs and datasets to give Aotearoa Building Company advice on the types and proportions of dwellings they should build?

What factors do you think they should take into account?

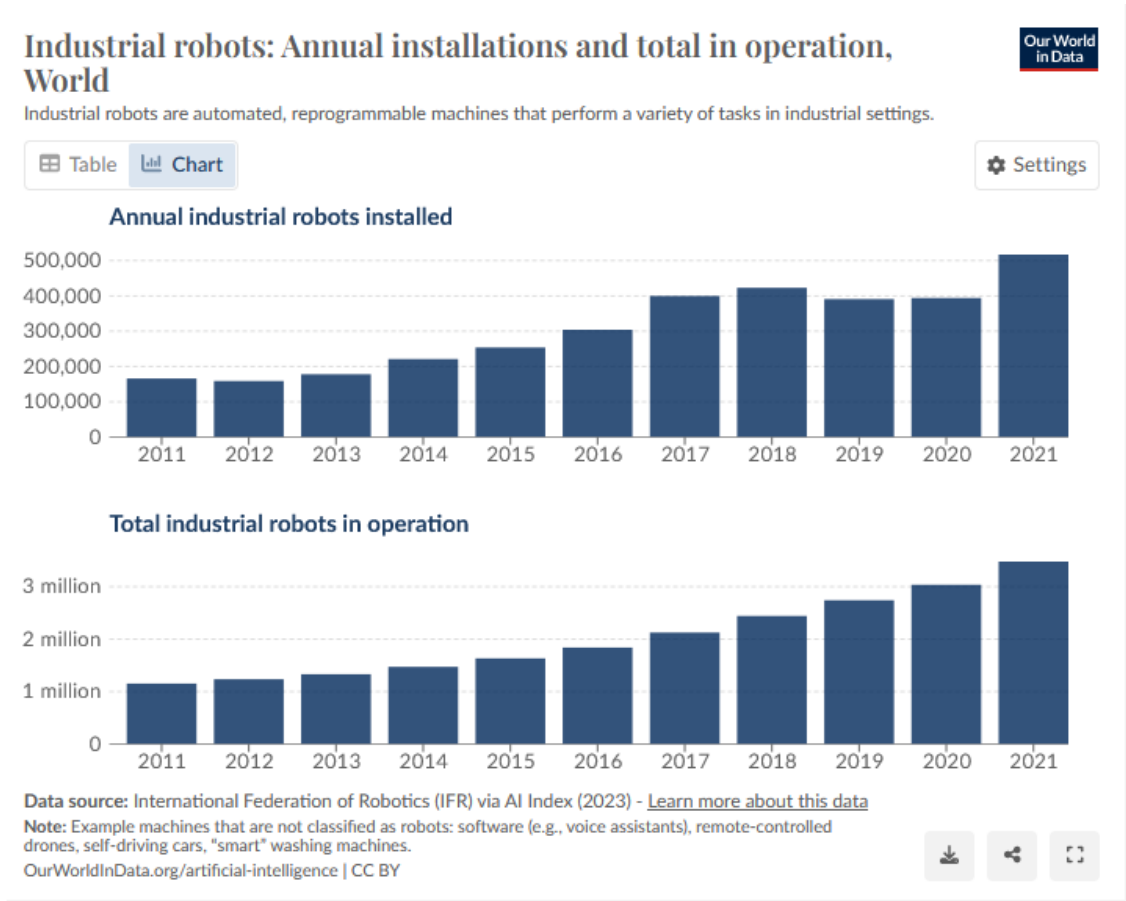
Task 9

The use of artificial intelligence (AI) has been growing and this has both been celebrated by some and a cause for concern from others. Have a look at the graphs below and think of the stories that they are telling us.

Begin by writing “I wonder” statements for each of the graphs.

Discuss what you notice in each graph and write “I notice” statements.

What stories and conclusions can you write about the data shown in the graphs?



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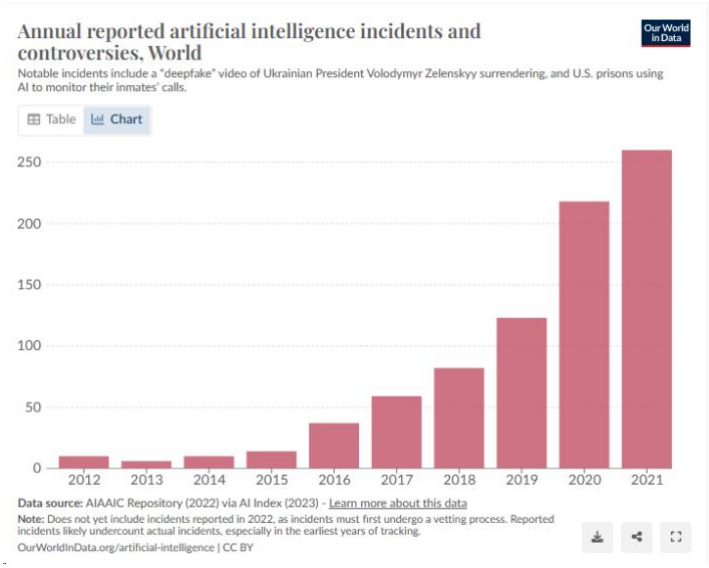
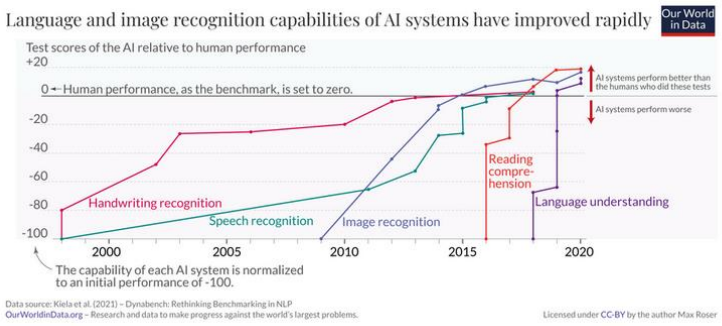
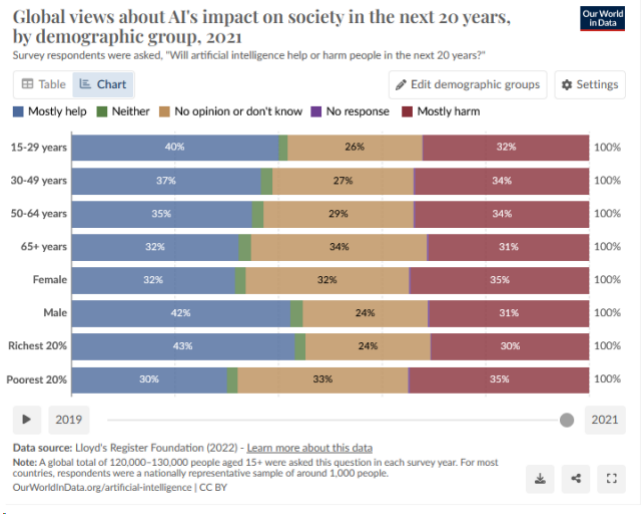
Task 9 (continued)







Make predictions about the use of AI in the future.

Using the data from the graphs, develop an argument as to whether AI is something which we should be concerned about or celebrating.

Task 9 (independent)

The mean is 10. The median is 9. The data-set has 20 numbers. What might the numbers be?

Develop a story about the data-set and the question that it might be answering.

Represent your data-set and write statements about it.

Task 10

Silver Ferns (NZ)	Stem	Vitality Roses (England)
4 4 4 2	**17**	4 4 5 6 6 9
8 8 7 6 6 4 3 1 1	**18**	0 1 3 3 3 5 6
3 2	**19**	1 1

This stem and leaf graph shows the heights of the players in the Silver Ferns and Vitality Roses squads. The Silver Ferns heights range from 172 cm to 193 cm and the Vitality Roses heights range from 174 cm to 191 cm.

What statements can you make to compare players' heights shown on this stem and leaf graph? Use mode, median, mean, range and distribution to describe some statements.