Mathematics

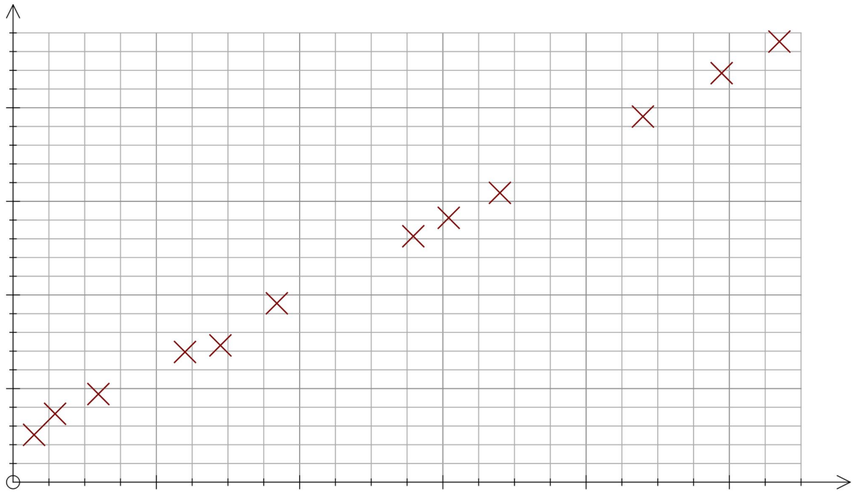
Lines of Best Fit

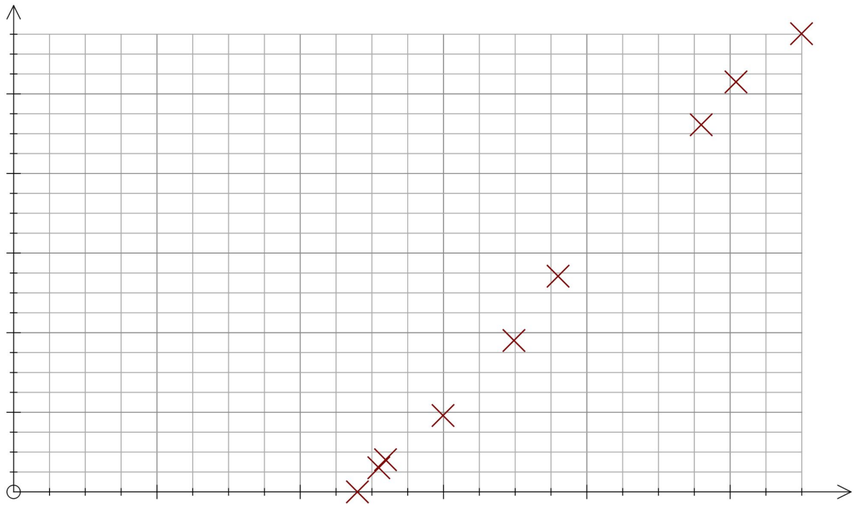
Mr Millar

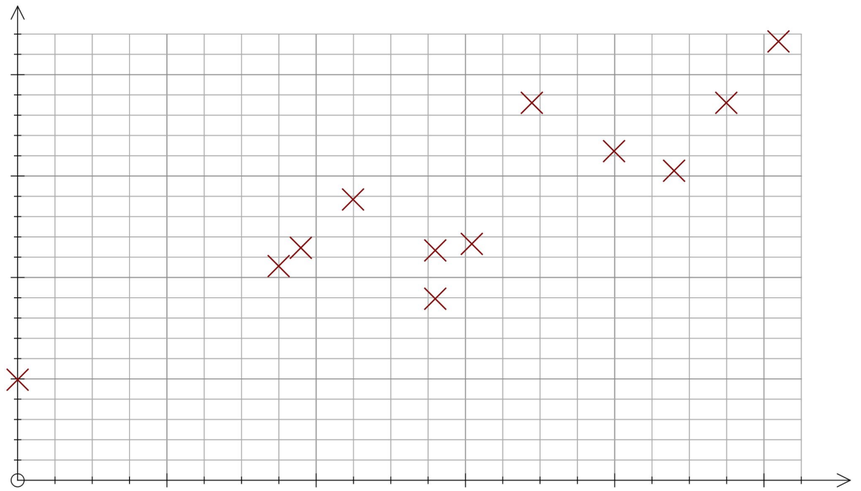
Try this

What’s the same and what’s different?

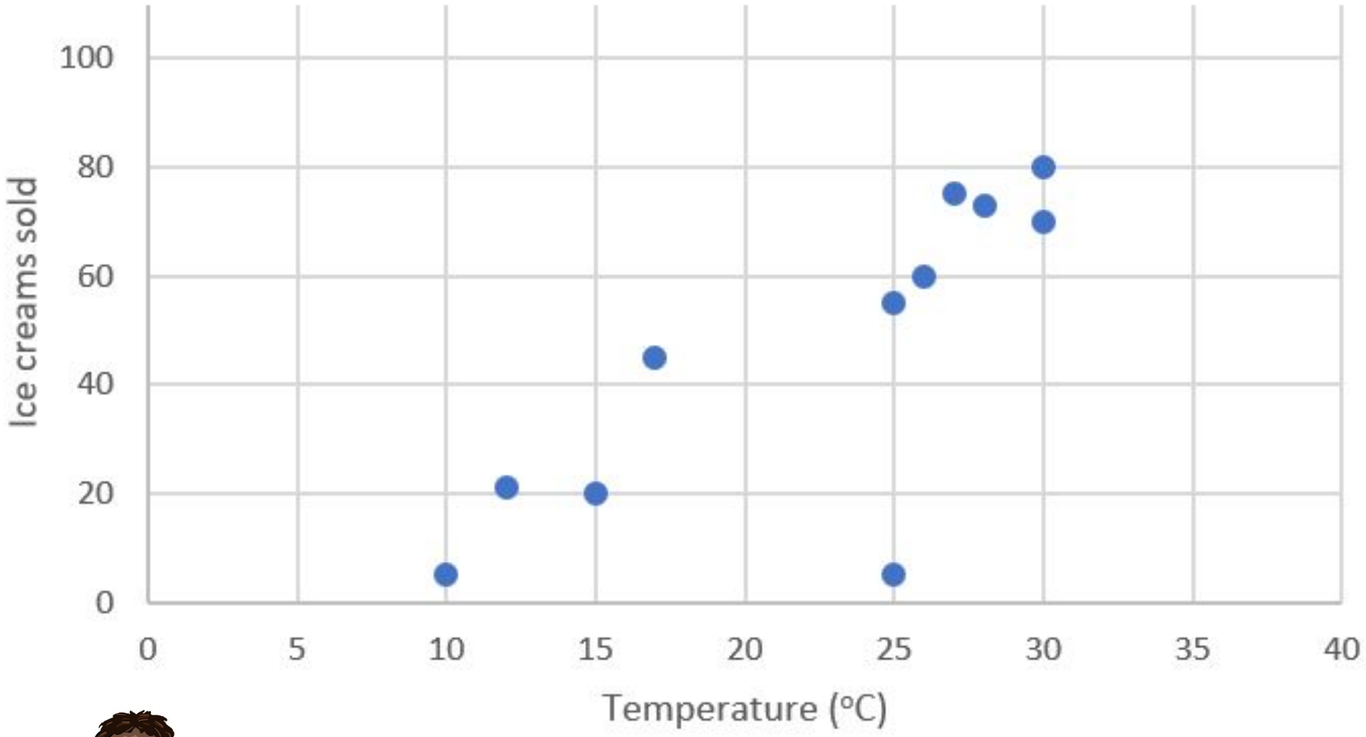
Can you come up with some examples of pairs of variables that fit these graphs?







Connect



Lines of best fit can help us:

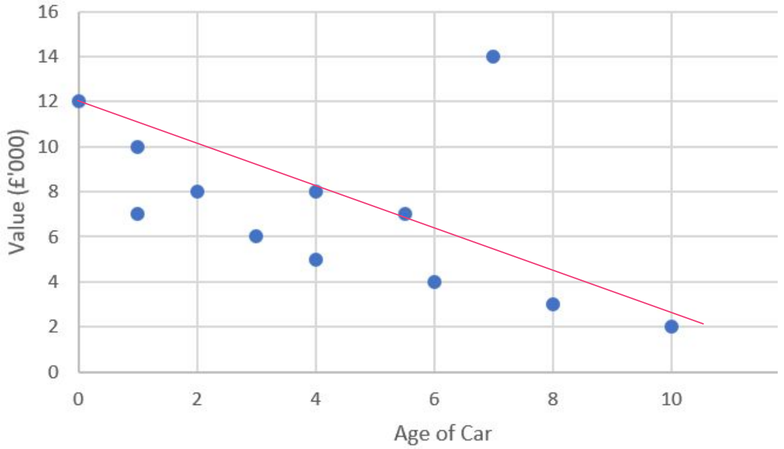
- More easily see what the correlation is / how strong it is
- Identify outliers
- Work out an expected relationship

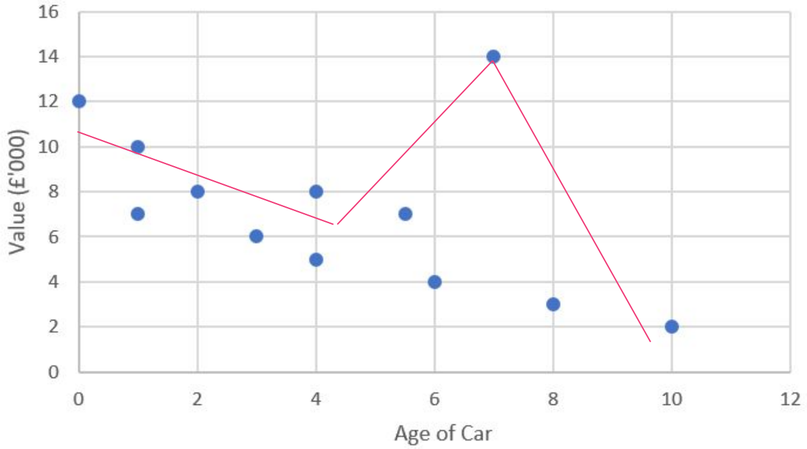
I would expect that if it was 20^{0}C, _____ ice creams would be sold.

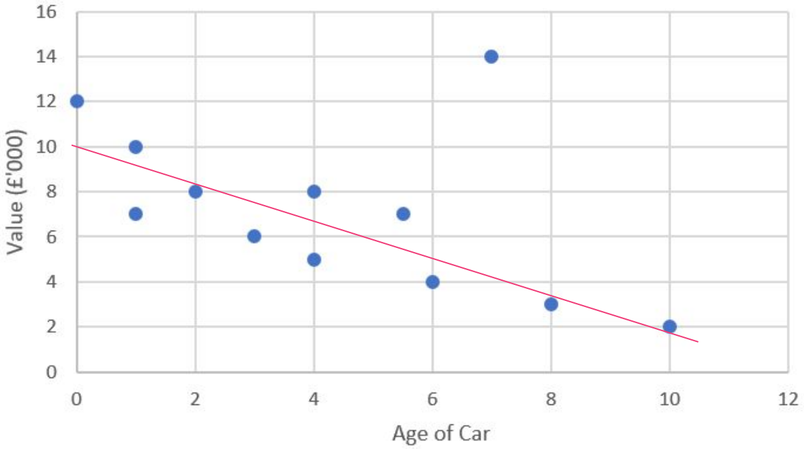
I can see an outlier!

Independent task

1. Which of these lines of fit is the most appropriate to use?







2. Use your line of best fit to predict the value of a car which is 7 years old.

3. State which car is an outlier.

Explore

Zaki collects data about the height and shoe sizes of some of his class.

What do you think of his statements?
Draw a scatter graph and line of best fit to help you decide.

Pupil	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Shoe size	6	7	5	7	8	4	5.5	7	8	7.5	8.5	4	9	6	4.5
Height (cm)	155	160	155	162	165	153	154	159	162	159	168	151	171	154	150

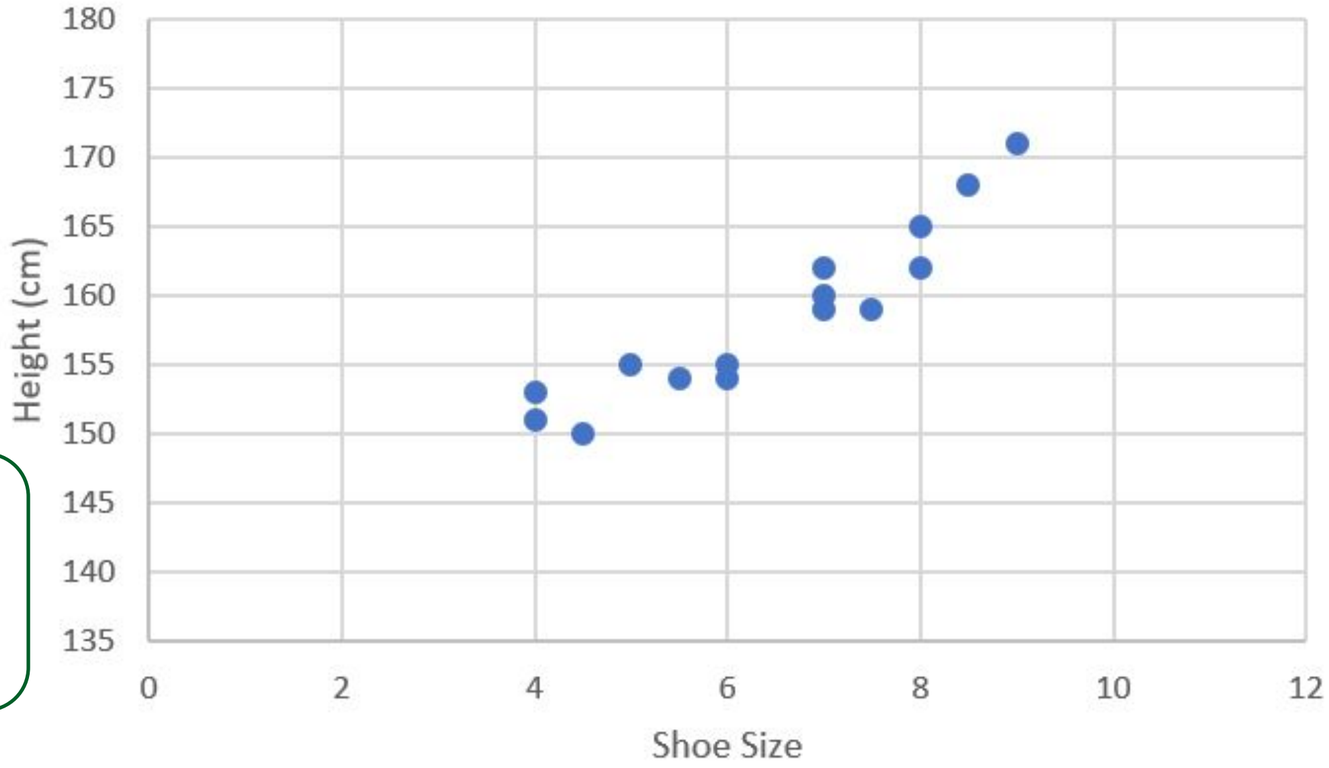
I would expect someone 157cm tall to have size 7 shoes.

I would expect someone 135cm tall to have size 0 shoes.

Explore

Zaki collects data about the height and shoe sizes of some of his class.

What do you think of his statements?

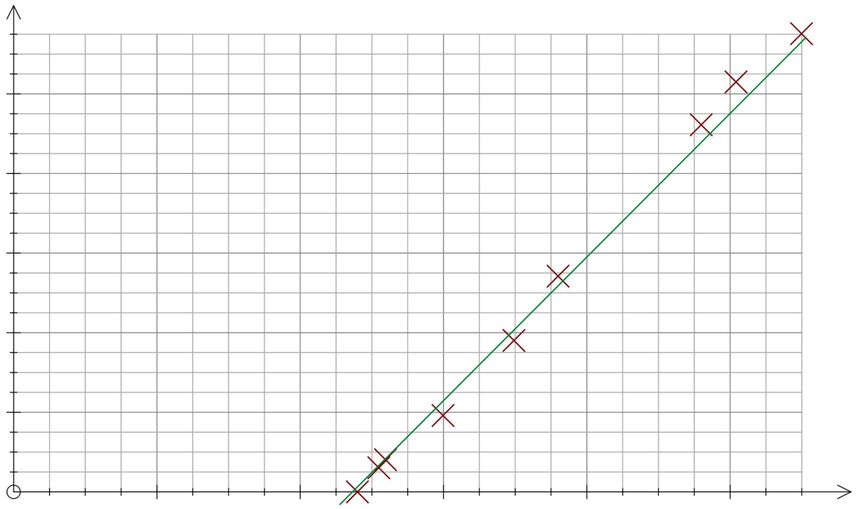


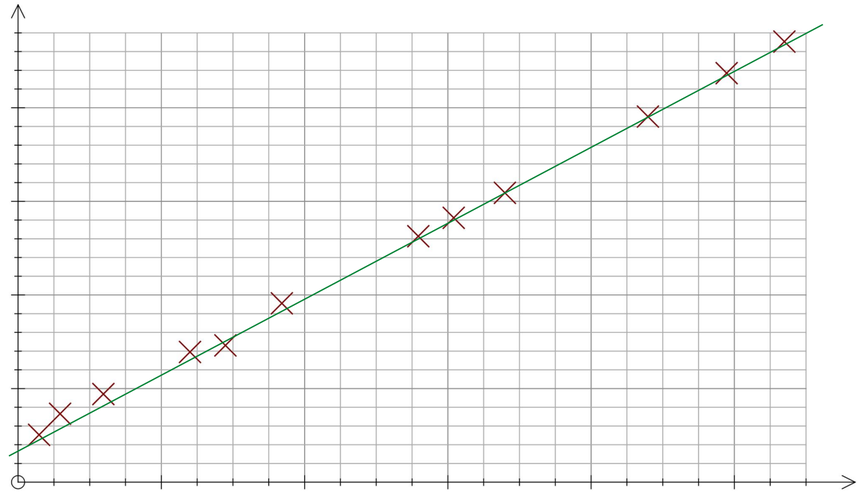
Answers

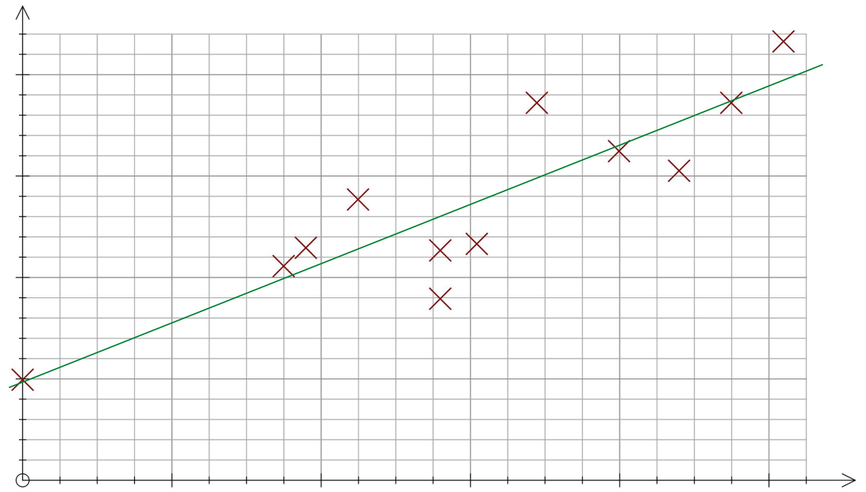
Try this

What's the same and what's different?

Can you come up with some examples of pairs of variables that fit these graphs?



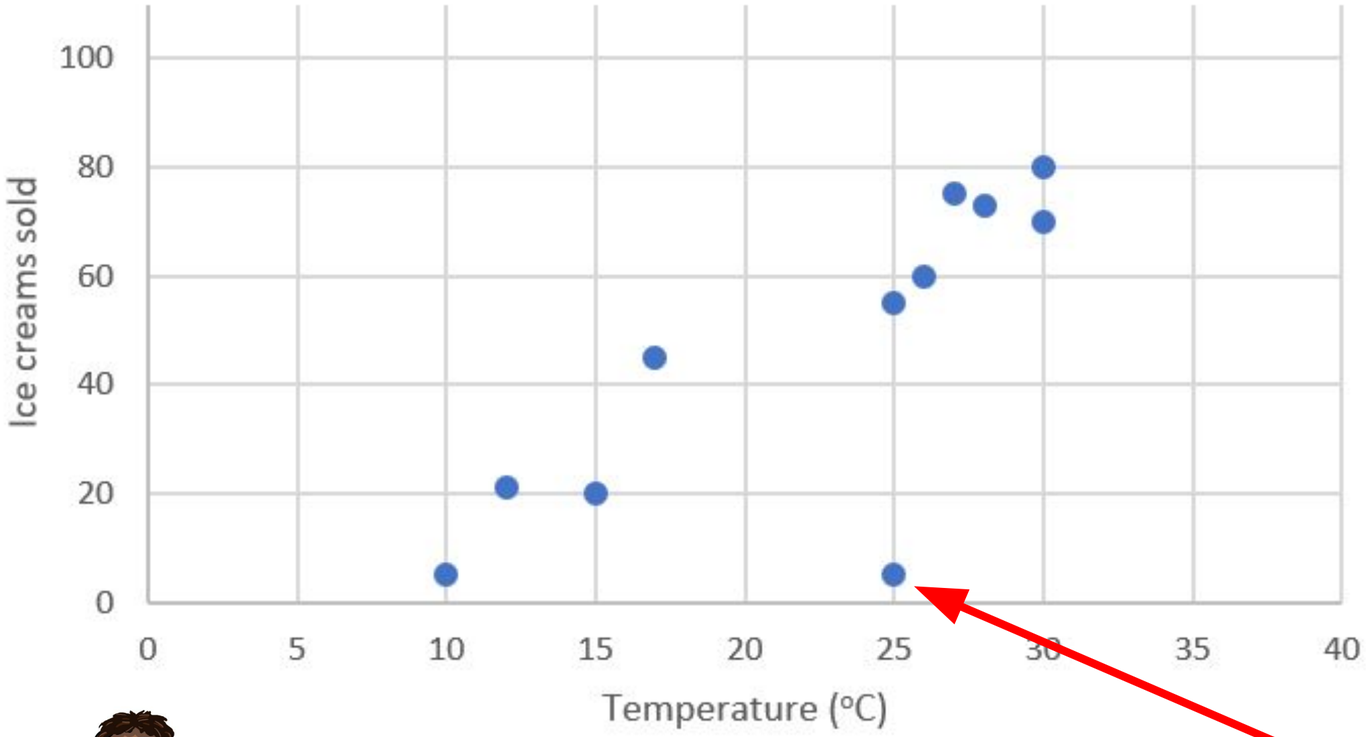




All show positive correlation, but the lower right graph has a weaker correlation.

If you were to plot "lines of best fit", each would intercept the x or y axis at different places

Connect



Lines of best fit can help us:

- More easily see what the correlation is / how strong it is
- Identify outliers
- Work out an expected relationship

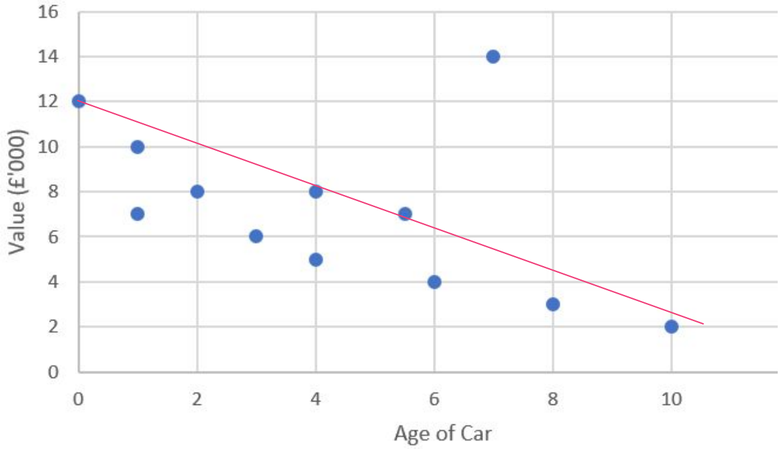
I would expect that if it was 20^{0}C, 40 ice creams would be sold.

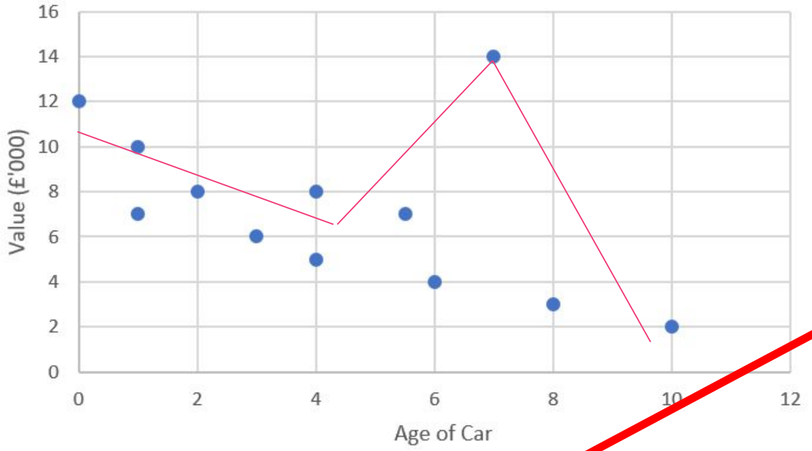
I can see an outlier!

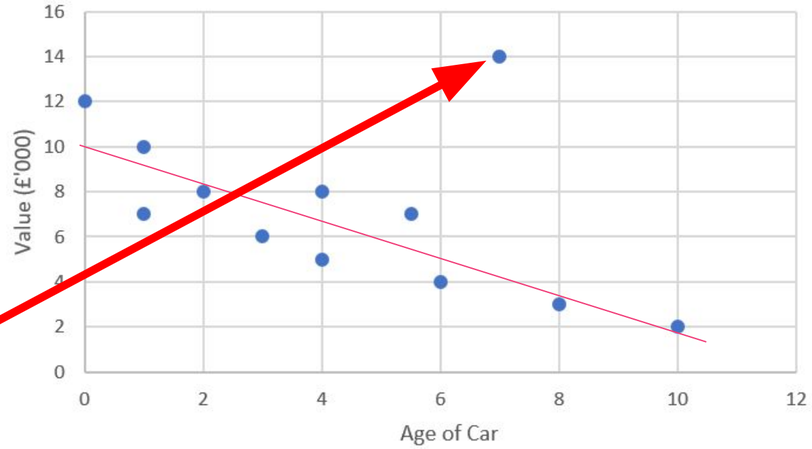
Independent task

1. Which of these lines of fit is the most appropriate to use?

The graph on the right







2. Use your line of best fit to predict the value of a car which is 7 years old.

£4,000

3. State which car is an outlier.

Explore

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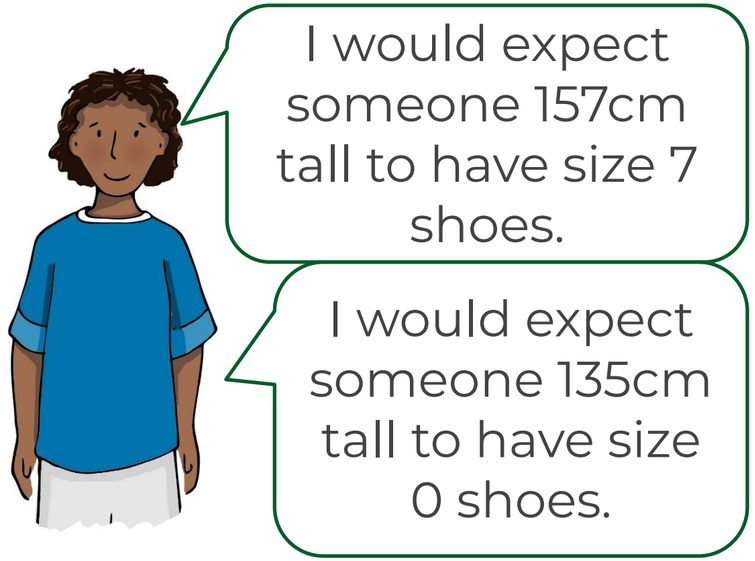
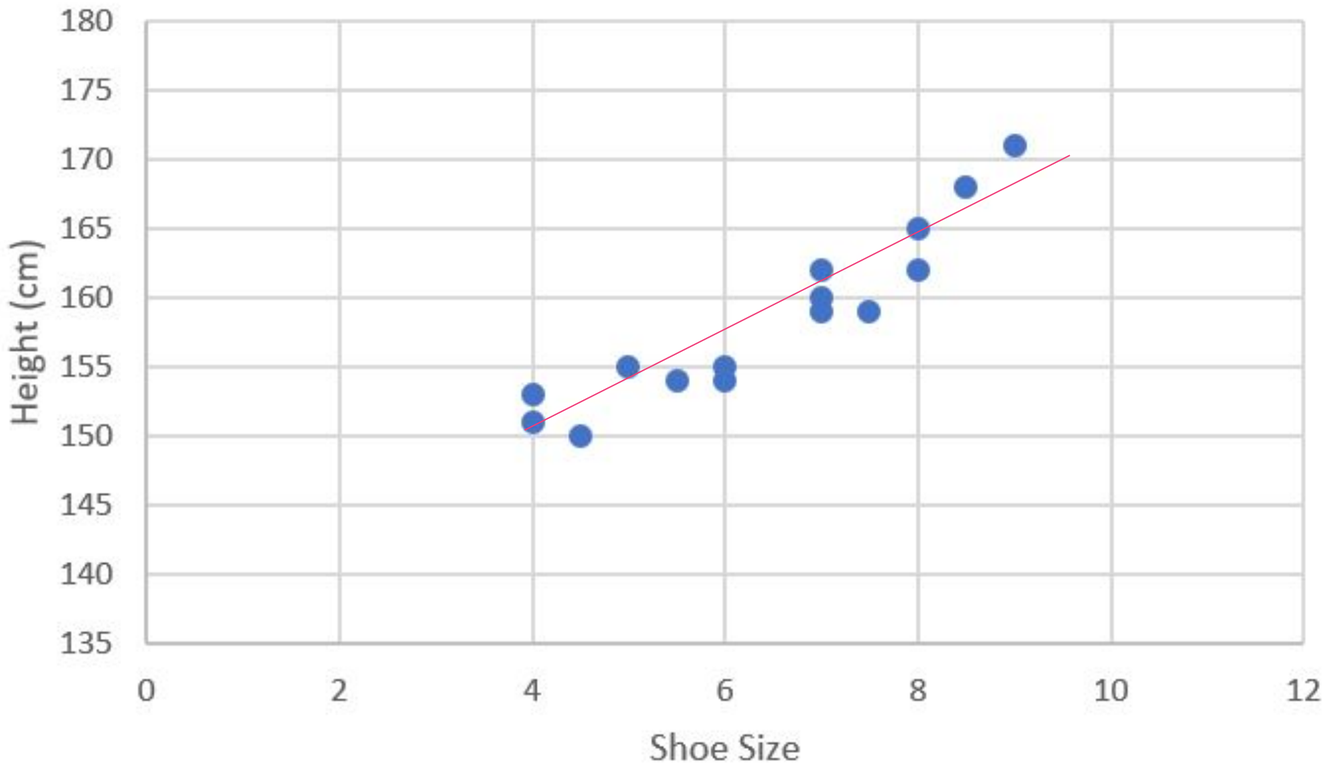
What do you think of his statements?



Yes – 157cm is within the range of data so it is reasonable to use a line of best fit



No – 135cm is NOT within the range of data so it is not reasonable to use a line of best fit