Part 4.11: Residuals

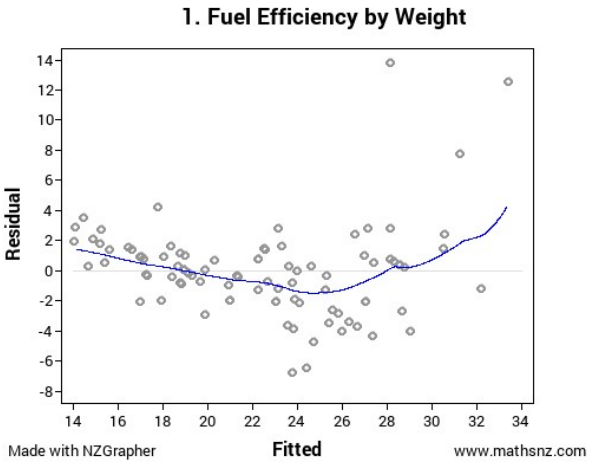
Teachers note: this is not a requirement of the standard, but it does round out the discussion nicely.

One of the ways that we can analyse how well our model fits the data and therefore how reliable our predictions are is by looking at the residuals. We can create a plot of the residuals using NZGrapher.

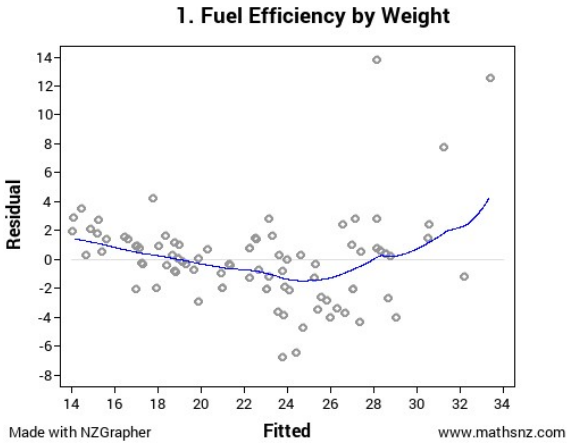
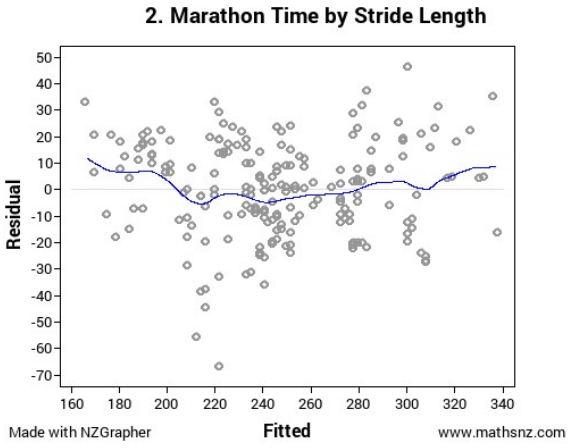
This part is really easy… all you need to do is change the graph type from the graph that we did earlier to 'residuals'.

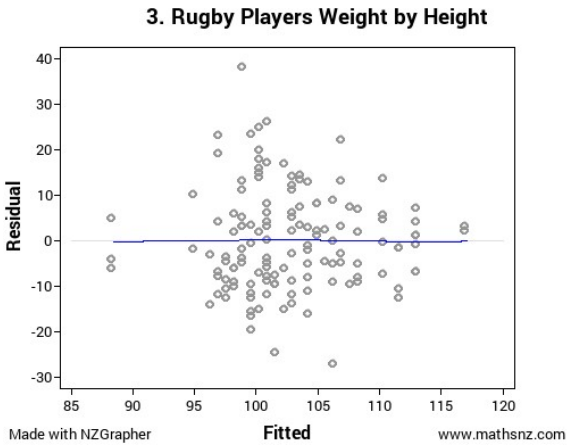
This gives the output shown to the right, which shows the expected (or fitted) values on the x-axis and the difference between the fitted and the actual (the residual) on the y-axis.

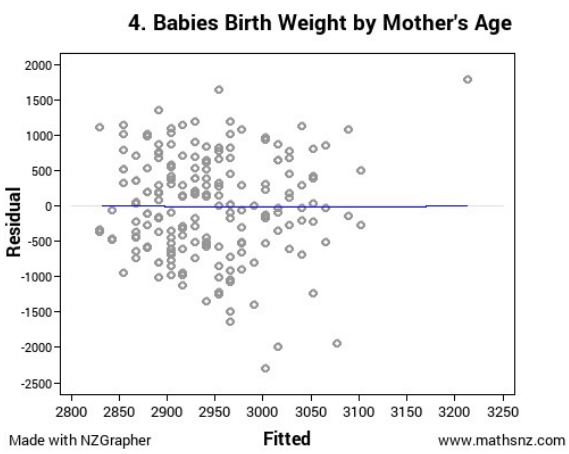
The line that is put in is a weighted average curve that shows the overall trend of the data.

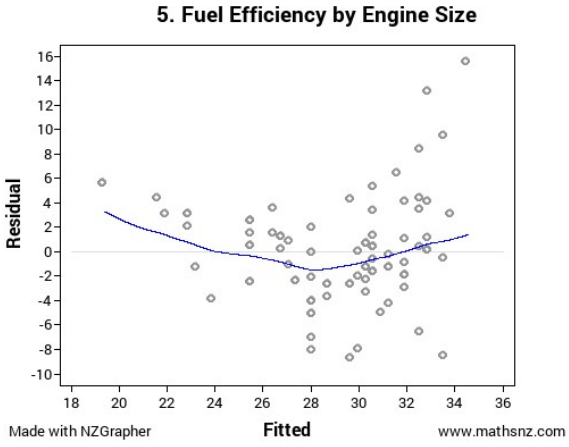


For each of the sets of data, generate the residuals plot and use this to justify how accurate you think your predictions are, the first one has been done for you.

	Looking at my residuals plot I think that the first car I predicted to have a fuel efficiency of 27 km/l might actually be slightly less than this due to most of the values being below the predicted line in the middle of the range. Based on looking at the residuals the car that I predicted to have a fuel efficiency of 19 km/l probably will be very close to this as all of the points round 19 km/l are very close to the predicted line.
	


3. Rugby Players Weight by Height
Residual
Fitted
Made with NZGrapher
www.mathsnz.com


4. Babies Birth Weight by Mother's Age
Residual
Fitted
Made with NZGrapher
www.mathsnz.com


5. Fuel Efficiency by Engine Size
Residual
Fitted
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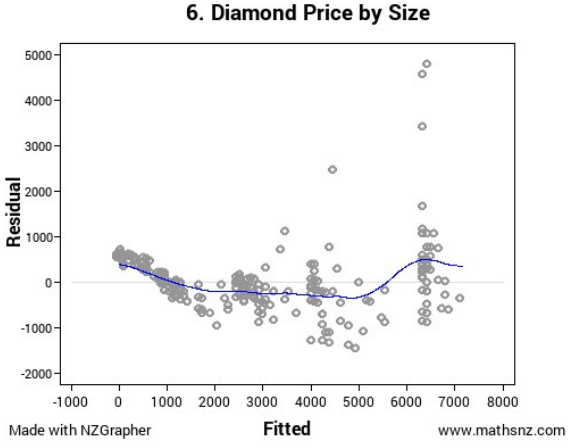
6. Diamond Price by Size
Residual
Fitted
Made with NZGrapher
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