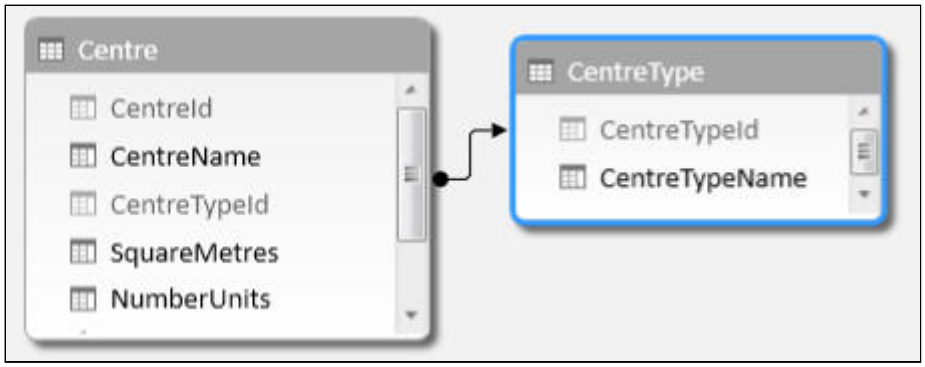
If you haven't already done so, run the SQL script in the above folder (copying and commercial use prohibited) to generate a database called **MAM**.

Create a new workbook, and in this create the following PowerPivot data model:



Import two tables: centres and centre types.

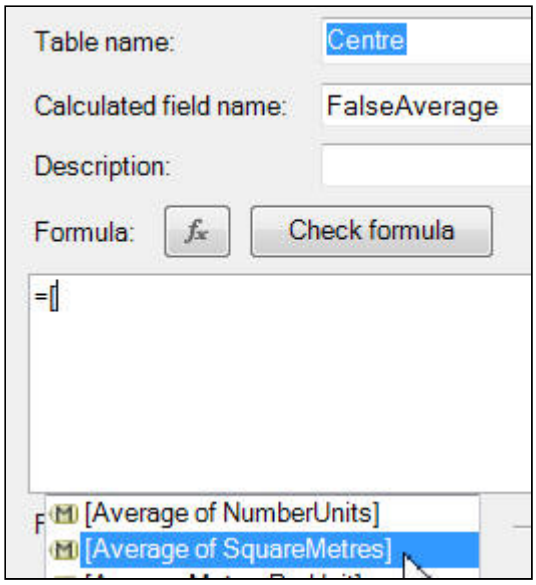
Create a pivot table showing the average square metre area for centre types, and also the average number of units:

Row Labels	Average of SquareMetres	Average of NumberUnits
Factory Outlet	23,484.55	94.82
Retail Park	21,625.75	12.55
Shopping Centre	35,055.36	72.30
Shopping Park	29,176.46	22.46
Grand Total	**30,839.70**	**54.85**

The figures by type of centre.

> *No need to create any calculated fields for this: you can just include the relevant fields in the **VALUES** section of the pivot table and change the **Value Field Settings** so that Excel averages, not sums, the data.*

Now create a calculated field called **FalseAverage** which divides one of these implicit measures by the other:



The implicit measures will appear in autocompletion.

This gives you the average ratio of floor area to number of units, but it's wrong:

Row Labels	Average of SquareMetres	Average of NumberUnits	FalseAverage
Factory Outlet	23,484.55	94.82	247.68
Retail Park	21,625.75	12.55	1,723.56
Shopping Centre	35,055.36	72.30	484.88
Shopping Park	29,176.46	22.46	1,298.95
Grand Total	**30,839.70**	**54.85**	**562.23**

The true average for any cell should be the average of the total square metres for that cell's query context divided by the total number of units for that cell's query context.

Create a calculated field called **TrueAverage** which uses the **AVERAGEX** function to calculate the average of the metres-to-units ratio:

Row Labels	Average of SquareMetre:	Average of NumberUnit:	FalseAverage	TrueAverage
Factory Outlet	23,484.55	94.82	247.68	257.55
Retail Park	21,625.75	12.55	1,723.56	2,062.14
Shopping Centre	35,055.36	72.30	484.88	#NUM!
Shopping Park	29,176.46	22.46	1,298.95	1,918.25
Grand Total	**30,839.70**	**54.85**	**562.23**	**#NUM!**

The figures are different.

The shopping centre figures are returning an error because one of the centres (**Market Quay**, as it happens) has 0 units in the database. To get round this, amend your true average so that it omits any figures where the number of units is 0.

> *You can do this by wrapping your **AVERAGEX** function in a **CALCULATE** one.*

The final figures should look like this:

Row Labels	Average of SquareI	Average of NumberL	FalseAverage	RevisedTrueAverage
Factory Outlet	23,484.55	94.82	247.68	257.55
Retail Park	21,625.75	12.55	1,723.56	2,062.14
Shopping Centre	35,055.36	72.30	484.88	595.31
Shopping Park	29,176.46	22.46	1,298.95	1,918.25
Grand Total	**30,839.70**	**54.85**	**562.23**	**1,034.19**

The figures are the same for the 3 centre types which didn't have an error - as indeed they should be, as nothing has changed for these.

Save this workbook as **Very average**, then close it down.