

# OSEM

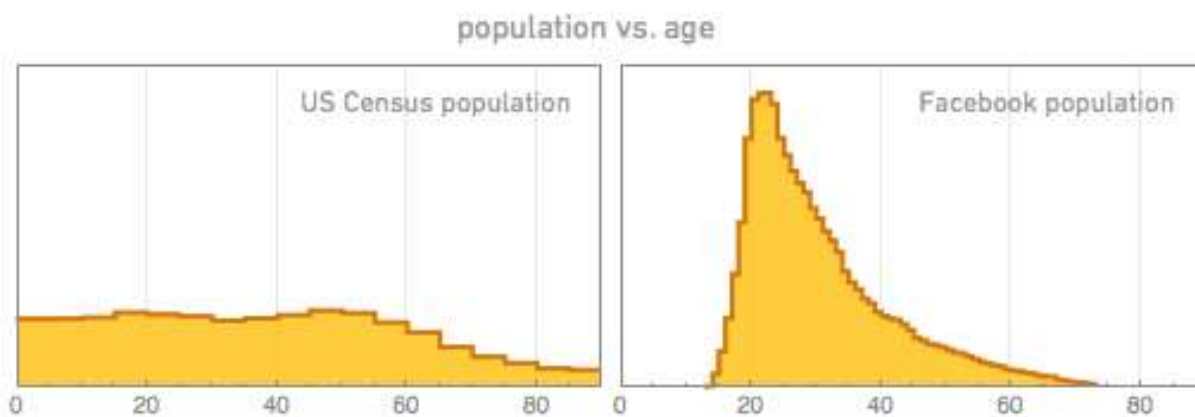
A writing rubric for “describe” or “explain” questions in Maths and Stats.

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**When given an “explain”, “describe” or “compare and contrast” task, what are common difficulties that students have?**

## Have a go at one:

The following graphs are distributions of ages in two populations. The United States of America (based on US census data) and Facebook users:



Describe features of the distributions comparatively. Aim to make at least three statements. Support your statements with statistical evidence.

## The OSEM writing frame means:

**O** stands for **O**bvious observations:

Write down one thing you notice, then leave a gap, and write down something else you notice. Try to get 3 obvious things.



Example of an observation a student might make:

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**S** is for **S**pecific: Under each obvious observation, explain what you mean so that another person would get it.



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**E** is for **E**vidence: Support each observation with numbers or calculations.



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**M** is for **M**eaning: Write down what each of your points tells you about the problem/situation. This is all about the context.



1. Make sense of it. *Explanations.*

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2. So what? *Implications.*

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# 1.10 Multivariate – Conclusion

O.O.Sem

Original question  
Obvious  
Specific  
Conclusion: Evidence  
Meaning

5. Write a conclusion summarising your findings (i.e. answer the question you posed and chose to investigate) and referring to sampling variability.  
The conclusion should include an informal inference in response to the question you posed and be supported with relevant evidence.

My Original question was: I wonder if boys in years 6-13 from the 2010 South African census at school database tend to be taller than girls in years 6-13 from the 2010 South African census at school database

No, it is too close to call whether boys in years 6-13 from the 2010 South African census at school database tend to be taller than girls in years 6-13 from the 2010 South African census at school database.

This is because the shift between the girls median and the boys median (Sum) divided by the overall visual spread (18cm) was ~~0.13 (24p)~~ 0.13 (24p) which is less than a third.

This means that if I got ~~another~~ another sample the results may ~~be~~ be different. To know for sure whether boys in years 6-13 from the 2010 South African census at school database tend to be taller than girls in years 6-13 from the 2010 South African census at school I would need a much larger sample or data from the whole of both countries because the size of the sample is important.

**Obvious**  
(Make call: Yes/No)

**Specific** (about what?)  
- popns / variable

**Evidence** (justify, support with stats)

**Meaning** (so what?)  
- Context (does it make sense etc.?)  
- Sampling variability

# And even in Level 2 Coordinate Geometry

O  
S  
I  
F  
M

Name: \_\_\_\_\_ Teacher: \_\_\_\_\_

**Obvious observations**

**Specific (labelling)**

**Evidence (calculations)**

**Meaning (so what?)**  
(Relate back to problem)

Distance between D and A =  $\sqrt{(-10-28)^2 + (0-(-8))^2} = 44.721$  units  
 Distance between A and B =  $\sqrt{(28-16)^2 + (-8-(-48))^2} = 44.721$  units  
 Distance between C and B =  $\sqrt{(-4-16)^2 + (-40-(-48))^2} = 44.721$  units  
 Distance between D and C =  $\sqrt{(-10-(-4))^2 + (0-(-40))^2} = 44.721$  units

Therefore all sides are equal, therefore ~~no~~  
 Gradient of DA =  $\frac{\text{Rise}}{\text{run}} = \frac{-8}{44} = \frac{-2}{11}$  or  
 Gradient of CB =  $\frac{\text{Rise}}{\text{run}} = \frac{-8}{44} = \frac{-2}{11}$  or  
 therefore DA and CB are parallel ✓

O:

S:

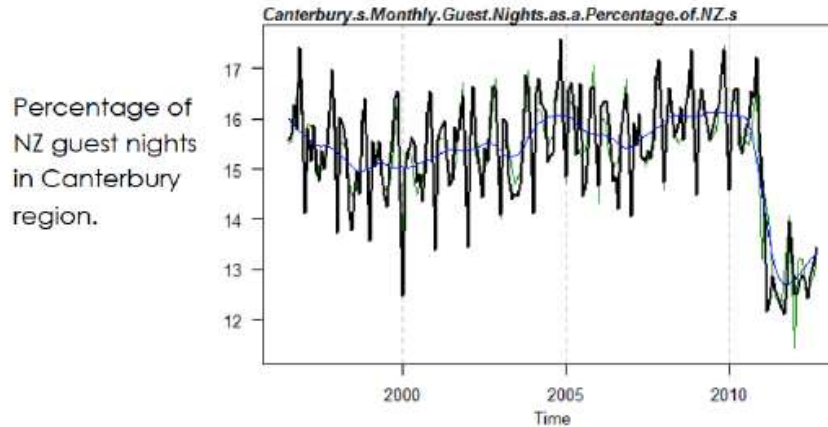
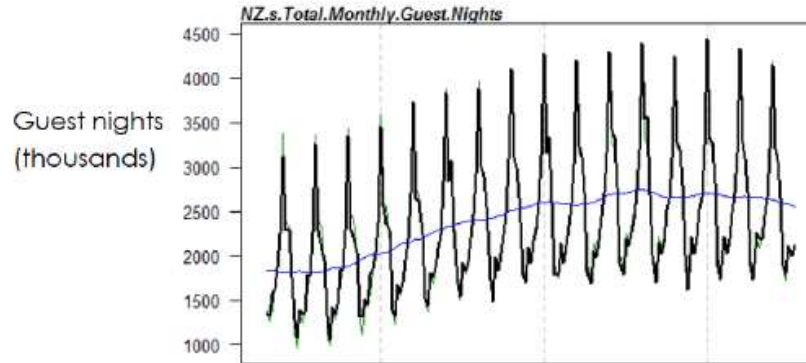
E:

M:

## New Zealand guest nights (monthly)

**Guest night:** equivalent to one guest spending one night at an establishment. For example, a motel with 15 guests spending two nights would report that they had provided 30 guest nights

— Trend    — Raw data    — Trend + seasonal



**So what?** *Link to original question & purpose. Research—what else is known? How might these features effect guest nights in the future and how could we take this into account when we forecast?*

O:

S:

E:

M:

O:

S:

E:

M:

References:

- Pam Hook: <http://hooked-on-thinking.com>
- Statistics New Zealand: <http://www.stats.govt.nz/>

