

1. (a) Give two reasons to justify the use of statistical models.

(2)

It has been suggested that there are 7 stages involved in creating a statistical model. They are summarised below, with stages 3, 4 and 7 missing.

Stage 1. The recognition of a real-world problem.

Stage 2. A statistical model is devised.

Stage 3.

Stage 4.

Stage 5. Comparisons are made against the devised model.

Stage 6. Statistical concepts are used to test how well the model describes the real-world problem.

Stage 7.

- (b) Write down the missing stages.

(3)

(Total 5 marks)

1. (a) Used to simplify or represent a real world problem  
 Cheaper or quicker or easier (than the real situation) or  
 more easily modified any two lines  
 To improve understanding of the real world problem B1  
 Used to predict outcomes from a real world problem  
 (idea of predictions) B1 2
- 1<sup>st</sup> B1 For one line  
 2<sup>nd</sup> B1 For a second line  
 Be generous for 1<sup>st</sup> B1 but stricter for B1B1
- (b) (3 or 4) Model used to make predictions. (Idea of predicted  
 values based on the model) B1  
 (4 or 3) (Experimental) data collected B1  
 (7) Model is refined. B1 3
- 1<sup>st</sup> & 2<sup>nd</sup> B1 These two points can be interchanged.  
 Idea of values from (experimental) data and predicted  
 values based on the model.
- 1<sup>st</sup> B1 for predicted values from model e.g. “model used to  
 gain suitable data”
- 2<sup>nd</sup> B1 for data collected. Idea of experimental data but  
 “experiment” needn’t be explicitly seen
- 3<sup>rd</sup> B1 This should be stage 7.  
 Idea of refinement or revision or adjustment

[5]

1. Despite the unusual nature of this question it was encouraging to see most candidates having a reasonable stab at answering it. Most could come up with a reason or two in part (a) “quicker and cheaper” being the most common answer for 1 mark. In part (b) there were many good answers and a number of candidates realized that experimental data was needed at some stage and that the model may need refinement.