National Certificate of Educational Achievement
TAUMATA MĀTAURANGA Ā-MOTU KUA TAEA

MINISTRY OF EDUCATION
Te Tāhuhu o te Mātauranga

2006

Internal Assessment Resource

Subject Reference: **Statistics and Modelling 3.5**

Resource Title: **"Animal Antics"**

Achievement standard: **90645 version 2**

Standard title: *Select and analyse continuous bi-variate data*

Credit: 3

This resource has been trialled in a school and includes annotated examples of assessed student work. There are eight documents in this resource:

Task and schedule	☐	Student 1 EXCELLENCE	☐
Assessment guidelines	☐	Student 2 MERIT	☐
Teaching notes	☐	Student 3 ACHIEVED	☐
		Student 4 ACHIEVED	☐
		Student 5 NOT ACHIEVED	☑

Internal assessment resource reference number:
Statistics and Modelling/3/5 X version 1

Date version published: **July 2006**
Ministry of Education **For use in internal assessment**
Quality assurance status **from 2006**

EXAMPLE OF ASSESSED STUDENT WORK

ASSESSMENT COVER SHEET FOR STUDENT 5 NOT ACHIEVED

	Achievement Criteria	**Code**	**Evidence**	**Judgement** (refer to Assessment Schedule for judgement statements)	**Sufficiency**
Achievement	Select and analyse bi-variate continuous data	A	Purpose stated.	✓	All four of code A
		A	Scatterplot drawn.	✓	
		A	Regression line obtained.	✓	
		A	Relationship explained in context.		
Achievement with Merit	Carry out an in-depth analysis of bi-variate data	M	Relationship between two pairs compared with explanation.		Achievement plus THREE of code M
		M	Regression equations used to obtain predictions.		
		M	Appropriateness of regression model(s) discussed.		
		M	R^2 values interpreted correctly.		
		M	Difference between correlation and causality explained.		
Achievement with Excellence	Report on the validity of the analysis	E	Assumptions about the data stated.		Merit plus THREE of code E
		E	Limitations of the model given.		
		E	Piecewise or other models proposed and justified, and/or outliers identified and an approach to dealing with them suggested.		
		E	Relevance and usefulness of the evidence explained.		
		E	Applicability of findings stated.		

Final Grade Awarded

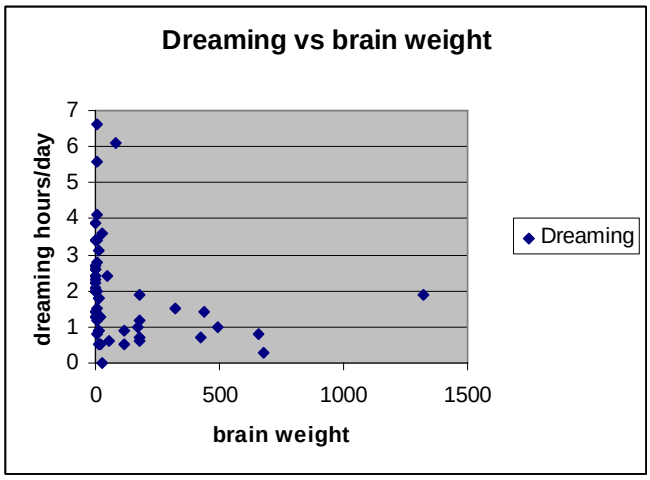
N	✓	**A**		**M**		**E**	

EXAMPLE OF ASSESSED STUDENT WORK

STUDENT 5 **NOT ACHIEVED**

PURPOSE

The purpose of this investigation is to use regression to investigate the relationship between brain weight and dreaming sleep in animals.



This pair of variables is not suitable for investigation, and illustrates the care needed when selecting real data for tasks.

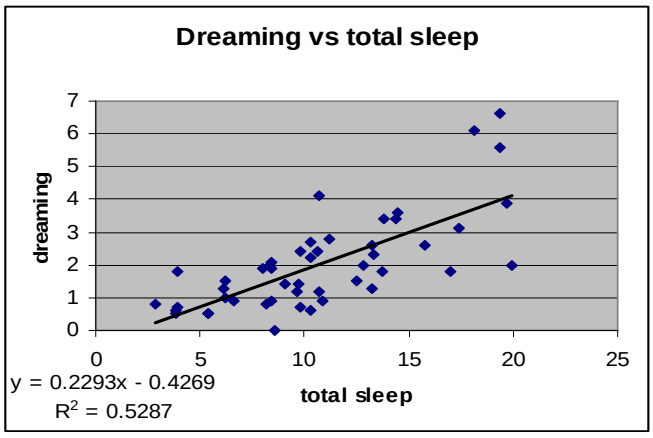
There is little relationship between these two variables so I will investigate another relationship.

The purpose of this investigation is to use regression to investigate the relationship between the total sleep time and dreaming time and a relationship between total sleep and non dreaming time in mammals. I have deleted some of the data which was not useful in my investigation and have deleted some of the animal as they had no data recorded for my particular investigation

Appripriate decision to restart the investigation (because the variables originally chosen were not suitable). Purpose stated, predictor variable implicit in graph. **A**

1a) The purpose of this investigation is to use regression to investigate the relationship between the total sleep time and dreaming time in mammals

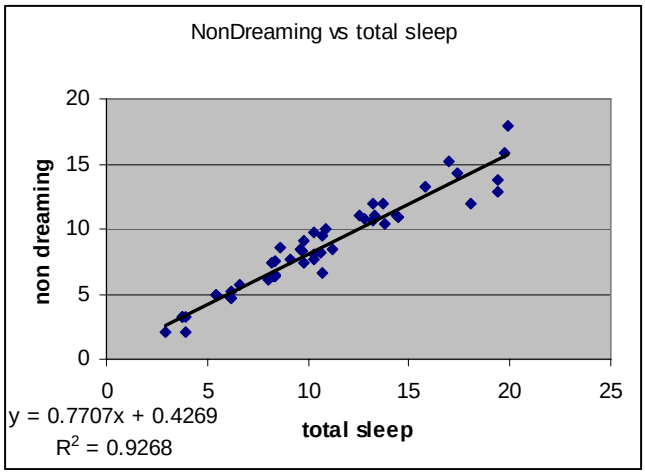
b)



Scatter graph drawn and regression line found. **A**

The R2 value shows us how strong a linear relationship is, the R2 value in this graph is 0.5287 so the relationship between total sleep and dreaming is strong. You can also see this by how far the points are away from the regression line, these points are fairly close to this regression line.

The purpose of this investigation is to use regression to investigate the relationship between the total sleep time and non dreaming time in mammals



This is insufficient for an interpretation of the relationship. The statement needs to describe fully, in context, what the gradient of the regression line shows and/or describe the meaning, in context, of the value of r. Any statement made must be supported.

This graph shows that the longer a mammal sleeps the longer the non dreaming time is.