



Figure 15.3
A map for selected science items

Code	Item name	Item difficulty on PISA scale	Item demands	Competency			Knowledge						Focus		
				Identifying scientific issues	Explaining phenomena scientifically	Using scientific evidence	of			about			Personal	Social	Global
							Physical systems	Living systems	Earth and space systems	Technology systems	Scientific enquiry	Scientific explanations			
S485Q05(2)	ACID RAIN	717	The reason for a control in an investigation is understood and explicitly recognised. An ability to understand the modelling in the investigation is a pre-requisite.	•								•	•		
S114Q05	GREENHOUSE	709	There is a pre-requisite to understand the need to control variables. Knowledge of factors contributing to the greenhouse effect is then applied in determining a variable to be controlled.		•			•						•	
S114Q04(2)	GREENHOUSE	659	Given a conclusion can compare two graphs and locate corresponding areas that are at odds with that conclusion and accurately describe that difference.			•						•		•	
S447Q05	SUNSCREENS	616	Correctly interprets a dataset expressed diagrammatically and provides an explanation that summarises the data.			•						•	•		
S447Q02	SUNSCREENS	588	The control 'aspects' of an investigation are recognised.	•								•	•		
S493Q05	PHYSICAL EXERCISE	583	Recognition that increased exercise results in increased respiration and thus the need for more oxygen and/or removal of more carbon dioxide.		•		•						•		
S114Q04(1)	GREENHOUSE	568	Recognises differences in two graphs relating to a phenomenon but cannot provide a clear explanation as to why the differences are at odds with a given conclusion.			•						•		•	
S213Q01	CLOTHES	567	Can apply knowledge of the features of a scientific investigation to decisions about whether specific issues are scientifically investigatable.	•								•	•		
S493Q01	PHYSICAL EXERCISE	545	Can identify some features of physical exercise that are advantageous to health – cardiovascular system, bodyweight.		•		•						•		
S114Q03	GREENHOUSE	529	Shows an understanding of what two graphs relating to a phenomenon are depicting and can compare them for similarities.			•						•		•	
S485Q05(1)	ACID RAIN	513	Recognises that a comparison is being made between two tests but is unable to articulate the purpose of the control.	•								•	•		
S477Q04	MARY MONTAGU	507	Recognises that the immune systems of young and old people are less resistant to viruses than those of the general population.		•		•							•	
S447Q03	SUNSCREENS	499	Can recognise the change and measured variables from a description of an investigation and as a consequence identify the question motivating the investigation.	•								•	•		
S426Q07	GRAND CANYON	485	Can recognise issues in which scientific measurement can be applied to answering a question.	•								•	•		
S485Q03	ACID RAIN	460	Recognises that the loss of gas in a chemical reaction results in a reduction of mass for the products left behind.			•	•						•		
S426Q03	GRAND CANYON	451	Applies knowledge that water increases in volume as it changes from liquid to solid.		•			•						•	
S477Q03	MARY MONTAGU	431	Recalls knowledge of the role of antibodies in immunity.		•		•							•	
S508Q03	GENETICALLY MODIFIED CROPS	421	Understands that a fair test involves finding out if an outcome is affected by a range of extraneous conditions.	•								•		•	
S213Q02	CLOTHES	399	Can select the correct apparatus to measure an electric current.		•				•				•		
S493Q03	PHYSICAL EXERCISE	386	Rejects the notion that fats are formed in the muscles and knows that the rate of flow of blood increases during exercise.		•		•						•		