

Lesson: Are you Golden			Year 8 ratio		
Learning Objectives:					
<input type="checkbox"/> Solve problems involving ratio and proportion. <input type="checkbox"/> Solve a problem by gathering, analysing and interpreting information <input type="checkbox"/> Calculate simple ratios <input type="checkbox"/> Present and interpret a solution in a real life context					
Starter:		Pupils		Teacher	
Choosing Windows or Picture Connections		Concentrate on a choice of the 5 window shapes and choose their favourite. Compare results for the class by using a tally table. Discuss		Draw out the idea of Golden ratio being the most appealing to the human eye. Give examples to illustrate - Acropolis, Mona Lisa, Nautilus etc	
Resource sheets available					
Main:		Pupils		Teacher	
Are you Golden?: use either data collected from the class or CensusAtSchool data to discover that the ratio of Height to Tummy Button height is Phi, the golden ratio		Investigate either your classes data or use the dataset PHIDATA.xls to discover Phi		Either follow the worksheet ideas or get the pupils to discover the Golden ratio by investigation. A possible extension about trimmed means is given on the worksheet.	
Worksheet available					
Plenary:		Pupils		Teacher	
Giant Ratios		Link the parts of this lesson together and realise that other parts of the body may well be in ratios		Read extract from Gulliver's Travels and set the scene for a follow up 'How Golden are you?' lesson on body measurements.	
Resource sheet available					
Outcomes:					
All Pupils Will: Work out simple ratios and realise that most people are in similar proportions					
Most Pupils Will: Understand the concept of Golden Ratio, calculate ratios and understand the link to the natural world.					
Some Pupils Will: Research further into the Golden Ratio concept. Use ICT effectively to explain ideas.					
Resources: Sheets for all parts of the lesson and the dataset available from <i>CensusAtSchool</i> website.					
Keywords:		KS3 Strategy Links:		Cross-Curricular Links:	
Ratio Proportion Division Phi Average		Ma2 1i, 2f		Art, ICT	
Prior Knowledge:					
Number sequences, simple ratios, division					
Extension Activity: Either use the worksheet suggestion on trimmed means or encourage children to investigate another possible ratio of body measurements					
Homework Ideas:					
Investigate the link between the Fibonacci sequence and the Golden ratio Phi.					

Question Ideas:

Your Own Notes/Questions:

The Golden ratio or Phi = 1.618033989

Starter: Using a whiteboard for the starter and only flashing up the shapes for a short while may well be the best way to approach the starter. This way children will be more likely to choose the shape that most appeals to the human eye.

You could view the extract from the video 'Donald in mathmagic land' about the golden ratio.

A website all about the Golden Ratio can be found at <http://goldennumber.net>

If pupils draw a scatter plot you might want to ask students to ring the points that they feel are outliers. These can be discussed, maybe visualised or pupils asked to try to draw a sketch of what these people would look like!

Notes on Lesson/Evaluation

