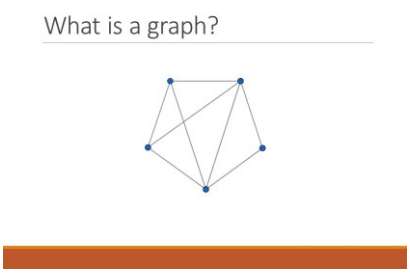
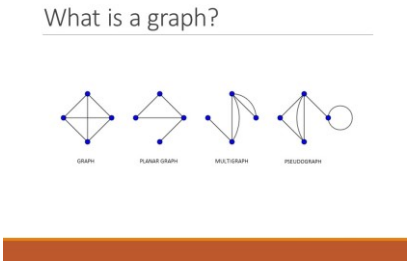
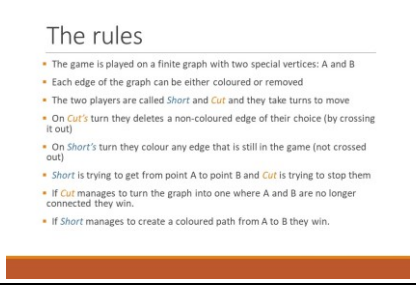
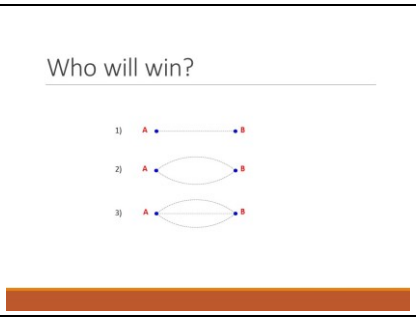
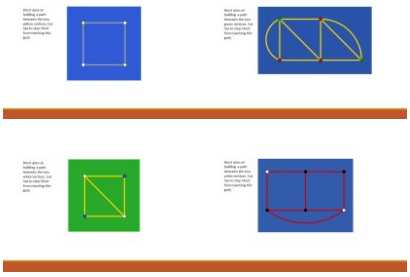
Presentation Guide

Graph Theory Workshop

Slide		Content
1		
2		• Despite the name, the graphs which we talk about in the branch of mathematics called graph theory are unrelated to the pictures of equations or data drawn on x and y axes. • Graphs consist of **vertices** and **edges** which connect the vertices. • They can be represented by drawings called graph diagrams where a vertex is shown by a point *(shown on slide)* and an edge by a line connecting two points *(progress slide to show edges)*. • Representing graphs by such diagrams makes them easier to understand but you mustn't read too much into the diagram, they can have properties (like the length or angles of the edges) that are irrelevant to the graphs they represent.
3		• A graph that can be drawn without any of its edges crossing is called a planar. • A graph with several edges joining the same two vertices is called a multigraph. • A graph including loops joining a vertex to itself is called a pseudograph. • In the Shannon switching game, colouring problems and bridge problems we will sometimes technically be looking at multigraphs but will call them graphs for short.
4		Present the rules of the Shannon Switching Game

5		What can you say about which player is going to win on these three very simple graphs? Is it always going to go to either Cut or Short or does it depend on which player goes first?
6 to 9	 	We have some simple examples of Shannon Switching games. Either split the group into two and have one half be *Short* and the other half play as *Cut* or ask for two volunteers to try out each game. Make sure everyone understands the rules of the game as well as the terminology (edges, vertices) so they can do the activities independently.