Presentations05 Italian Renaissance

	Topic/Exercise	Presenter	
1	Your textbook should have some exercises on the Fibonacci numbers. Select some to do.		
2	If $\{F_n\}_{n=1}^{\infty}$ denotes the Fibonacci sequence, show how to calculate $\lim_{n\to\infty} \frac{F_{n+1}}{F_n}$. Hint (if you want to do it without looking up a proof): replace F_{n+1} with $F_n + F_{n-1}$ and look at that equality; then multiply top and bottom with $\frac{1}{F_n}$.		
3	Consider the general quartic equation: $x^4 + a\,x^3 + bx^2 + cx + d = 0$ substitute $x = t + k$ and determine the value of k that makes the t^3 term vanish.		
4	Derive the cubic equation. (Use your textbook or my notes.)		
5	Derive the quartic equation. (Use your textbook or my notes.)		
6	Explain the Ptolemaic system of the solar system. Explain retrograde motion and how Ptolemy addressed it.		
7	Use Newton's laws to prove Galileo's claim that objects fall at the same rate from the same height regardless of their weights (neglecting air resistance.) Hint: use his law of Gravity plus his laws of motion.		
8	[If you've had differential equations and want a challenge.] Use the laws of Newton to prove one of more of Kepler's laws.		
9	What is the "problem of points"? Give an example and solve it.		
10	Explain how logarithms were invented and why.		