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time that you'd like to draw from.) If you go back, say, to Pythagoras--who was kind of a legendary figure, who I kind of take as the start of this whole tradition, and the start of a lot of traditions in science and music as well, and mathematics even. Pythagoras' discovery that was important as far as this goes was the intervals of a musical scale--the harmonic, consonant intervals. The legend goes that he was walking down the road and he heard a blacksmith banging on some metal on the anvil. And he heard the hammers ringing. And they played these nice consonant intervals, playing like notes of the scale. And he went and examined this and found that the hammers that the blacksmith was pounding

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Literacy- its all relative Many modern educators consider the term "literate" to mean the ability to read, write and do the mathematics which our jobs and daily lives require. That means that with a job change or promotion, employees may find the need to upgrade their skills in order to perform new tasks. In the Department of Advanced Education and Job Training we are developing and delivering programs with workplace groups to promote and develop literacy. These programs concentrate on practical JOB-RELATED reading, writing, speaking, mathematics and problem solving skills. It's an important issue - not just because 1990 is designated as International Literacy Year - but because Nova Scotian workers and businesses must compete today and tomorrow in an increasingly sophisticated local, national and world marketplace. We're here to assist business, industry and unions that want to increase the skills that their employees need to do their jobs with competence and confidence. Department of Advanced Education and Job Training

on weighed 6, 8, 9, and 12 pounds--or whatever, you know--they were in that ratio (to one another), the proportion. And he took it from there, that there were these numerical, mathematical ratios involved in producing these musical sounds. We hear these consonant intervals and these notes, this harmony that we immediately take to. We know that it's harmony, that there's something about it, where these sounds fit together. And he discovered this mathematical structure behind it. The ratios--what he was hearing--were very basic to the nature of number in mathematics. He found later, experimenting with a length of string under constant tension--by changing the lengths of the string, the notes that were produced--he could get all the consonant intervals of the scale. And they were expressive of very simple mathematical ratios. (For example:) One-to-two. If one string was twice as long as another, it played an octave. (Thus in the scale of C--CDEFGABC --the interval CG, eight notes including both Cs, is an octave.) If the ratio was two-to-three--one string was two units long, another was three--that would give you a fifth, a musical fifth--doh to soh. (C to G is a fifth.) And so on. Three-to-four would give you a fourth. (C to F.) To keep going, four-to-five gives you a major third. But basically, on a scale from consonance to dissonance in music, what we perceive intuitively as harmony or disharmony flows from the very simplest ratio



tios .... And on a scale from consonance to dissonance, the more dissonant the note becomes, the more complex the ratios become. So in a sense, this flowing of harmony is identical with the flow of numbers from unity to complexity.

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