

## Math Reform through the Ages

The following time-stamped problems are a light-hearted peek into mathematics reform from 1950 to the present day. Enjoy.

### **1950 (The base problem: Meaningful arithmetic era)**

A logger sells a truckload of lumber for \$100. His cost of production is  $\frac{4}{5}$  of the price. What is his profit?

### **1960 (Reality check: Darn those fractions, kids just don't get them)**

A logger sells a truckload of lumber for \$100. His cost of production is  $\frac{4}{5}$  of the price, or \$80. What is his profit?

### **1970 (New math)**

A logger exchanges a set "L" of lumber for a set "M" of money. The cardinality of set "M" is 100. Each element is worth \$1. Make 100 dots representing the elements of the set "M". The set "C", the cost of production, contains 20 fewer points than set "M". Represent the set "C" as a subset of set "M" and answer the following question: What is the cardinality of the set "P" of profits?

### **1980 (Back to the basics)**

A logger sells a truckload of lumber for \$100. His cost of production is \$80 and his profit is \$20. Your assignment: Underline the number 20.

### **1990 (Integrated sensitivity)**

By cutting down beautiful forest trees, the logger makes \$20. What do you think of this way of making a living? Topic for class participation after answering the question: How did the forest birds and squirrels feel as the logger cut down the trees?

### **1996 (Down-sizing)**

By laying off 402 of its loggers, a company improves its stock price from \$80 to \$100. How much capital gain per share does the chief executive officer make by exercising his stock options at \$80? Assume that capital gains are no longer taxed because this encourages investment.

### **1997 (Extreme down-sizing)**

A company uses only contract loggers. It saves on benefits, and when demand is down, the logging workforce can easily be cut back. Previously, the average logger employed by the company earned \$50,000, had three weeks holidays, received a good retirement plan and medical insurance. The contracted logger charges \$50 per hour. Was contracting out a good move?

### **1998 (Globalization)**

A logging company exports its wood-finishing jobs to its Indonesian subsidiary and lays off the corresponding half of its U.S. workers (the higher-paid half). It clear cuts 95% of the forest, leaving the rest for the spotted owl, and lays off all of its remaining workers. It tells the workers that the spotted owl is responsible for the absence of felleable trees and lobbies the U.S. Congress for an exemption from the Endangered Species Act. Congress instead exempts the company from all federal regulation. What is the return on investment for the lobbying costs?

### **2001 (NCTM math)**

A logging company wants to cut at least 200 trees that are 100 metres from the edge of a river. The profit from each tree depends on a pattern. Describe - using words, Venn and tree diagrams, numbers, pictorial and concrete representations - what you think the company's profit potential might be. Incorporate your own invented methods of arithmetic or explain which buttons you are using on the calculator and why you are using them. Share your solution with a friend. Do not assess the solution with respect to efficiency or elegance. Include your solution in your art and science portfolios.

### **2002 (A frantic return to the basics)**

A logger sells a truckload of lumber for \$100. His cost of production is \$80 and his profit is twenty dollars. Your assignment: Print the profit as a number exactly between the given lines, using a blue crayon.