

Where is the maths in this!?

You have two lists to remember; a personal address book

- Charlie David lives on George Avenue.
- Charlie George lives Albert Zoe Avenue.
- George Ernie lives on Albert Bruno Avenue.

and a professional address book

- Charlie David works on Albert Bruno Avenue.
- Charlie George works on Bruno Albert Avenue.
- George Ernie works on Charlie Ernie Avenue

(Dehaene, 2011)

Triangles

A triangle has its lengths in an arithmetic progression with difference d . The area of the triangle is t . Find the lengths and angles of the triangle.

Advertising

Pepsi, Coke and Eldora Cola ran large advertising campaigns over a 6 month period to try and increase their share of the Californian Coke market. Prior to the campaign Pepsi had 30% of the market, Coke 50% and Eldora 20%.

At the end of the 6 months a telephone survey is conducted, and the following results determined.

- Of the original Pepsi drinkers, 10% switched to Coke and 15% switched to Eldora Coke.
- Of the original Coke drinkers, 12% switched to Pepsi and 20% now prefer Eldora Coke.
- Of the original Eldora Cola drinkers, 8% switched to Pepsi and 5% switched to Coke.

Determine the effect of the ad campaign on the market share of Pepsi, Coke and Eldora Coke. Use matrices to do this.

Series

Prove the following for all positive integers, when $x \neq 1, -1$

$$\sum_{i=1}^n \frac{x^{2^{i-1}}}{1-x^{2^i}} = \frac{1}{1-x} - \frac{1}{1-x^{2^n}}$$