Name: _____

Linear Algebra
Correlation Coefficient

See Keynote!!! this is only the first version of the script

Let's study correlation…

First a few questions:

How late is late for bed? (0 = 8pm)
How old do you want to live?
If you could choose your age and fix it forever, what would it be?
What's the furthest distance you ever ran?
What's the lowest test grade you ever received?
How many countries have you visited in your life?
If you had a time machine, which century would you visit?
How many children do you want to have?

My answers: 3, 90, 26, 42, 15%, 70, 2100, 0

In linear algebra, we are soooo not afraid of n-dimensional spaces! 2D, 3D. Kid's play. 4D, 10D, anything!

So what about viewing our responses as a vector in 8 dimensions.

What idea would you have to compare the degree of correlation between two given students if you think of their answers as an 8-dimension vector?

The angle between the vectors!!! So let's try!
The angle between two vectors can be found using the MV theorem: $\cos\theta = \dfrac{\vec{u} \bullet \vec{v}}{\|\vec{u}\| \cdot \|\vec{v}\|}$

Now try to find the correlation coefficient in the usual way that statistics teach, and compare with our result.

Additional work wonder: what would be a good technique to figure out which 2 students have the best correlation coefficient without having everybody check with everybody. Where would you go next after your first trial?