SCIB 265L History of Science  
FA19 Week 4: Spanish Empire Mapmaking

NAME: ___________________________
Section: __________________________

PURPOSE: Using the tools of the Spanish Empire, determine the latitude of Dean College and create a map of the area.  
Increase understanding of accuracy and precision and the experimental concept of repeatability.

VOCABULARY:
Accuracy: how true a measurement is to the actual value
Precision: how close multiple measures are to each other
Gnomon: the projecting piece on a sundial that shows the time by the position of its shadow.

ACTIVITIES:
Part 1: Calculating latitude
Each group will be given a gnomon and shadow length.
1. Use a protractor to measure the angle A
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2. Go to http://www.reuk.co.uk/wordpress/solar/solar-declination/ and look up the solar declination for today.
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3. Calculate latitude using the formula
   \[ \text{latitude} = (90^\circ - \text{angle A}) + \text{sun’s declination} \]

4. Go to the World Atlas and find out where you are!
Part 2: Drawing a map

Step One: Draw a map of Dean College in the downtown Franklin area on the overhead projector sheet provided.

Include:

- Major streets
- Horne Hall
- Campus Center
- Davis Thayer Elementary
- Union St Cemetery
- The Library Learning Commons
- Science Building
- Ray Building
- Dean Hall
- Grant Field
- the Triads
- the Franklin Library
- Post Office
- Town Common
- North-South-East-West
- relative distances
- any additional features which you noted from walking around town

Step Two: Maps will be overlaid on the document camera using the Science Building as our common feature.