

Mathematics 3810H – Ancient and classical mathematics

TRENT UNIVERSITY, Winter 2020

Assignment #2

Due on Thursday, 30 January.

Plimpton 322 is a cuneiform tablet with a table of numbers written on it. (Figure 2-1 on page 48 of the textbook is a picture of this tablet; there is a bit of discussion of it on page 63.) There are several theories as to what it really means, a couple of which are discussed in *Words and Pictures: New Light on Plimpton 322* by Eleanor Robson (*American Mathematical Monthly* **109** (2002), pp. 105–120). You can find this article in the JSTOR archive (which should be accessible via Bata Library) at: www.jstor.org/stable/2695324 (For more detail, you can also try *Neither Sherlock Holmes nor Babylon: a reassessment of Plimpton 322* by Eleanor Robson (*Historia Mathematica* **28** (2001), pp. 167–206).) Bata Library has copies of this journal on paper through 2001 and it is available electronically through the Library's e-journal services.

A new theory as to what the tablet is about was proposed a couple of years ago in *Plimpton 322 is Babylonian exact sexagesimal trigonometry* by Daniel F. Mansfield and N.J. Wildberger. A draft of this paper can be found at :

www.sciencedirect.com/science/article/pii/S0315086017300691

1. Describe the major interpretations of Plimpton 322, as described in the papers whose links are given above. [4]
2. Summarize the arguments for and against each interpretation. [4]
3. In your opinion, which interpretation, if any, is correct? Why or why not? [2]

Ode to a ϕ ?

A thing as lovely as a ϕ

I think that I shall never $\left\{ \begin{array}{l} \text{see} \\ \text{spy} \end{array} \right\}$. [Choose one.]

If you want to make ϕ rhyme with “see”,

But you're really determined to be

Consistent, admit

Though it doesn't quite fit,

That a disk measures r^2 times “pea”.

Each of ξ , π , ϕ , χ , ψ will claim

An identical rhyme for its name.

Before you get hot,

Check Liddell and Scott*;

Give them, not the author, the blame.

By Barry W. Brunson, *American Mathematical Monthly* **92** (1985).

* A *Greek-English Lexicon*, compiled by H.G. Liddell & R. Scott, Oxford at the Clarendon Press, 1968 (1st edition 1843); widely recognized as authoritative. In the United States, most mathematicians seem to pronounce ϕ as “fee”.