



Assignment 1
Math 105 History of Mathematics
Prof. D. Joyce, Spring 2017

General instructions. Do all your homework assignments on paper, either hand written or with the help of a word processor or \TeX . Make sure they're all very readable, with plenty of space between problems. If you use more than one sheet, staple them together.

When there's a computation, put in all the steps.

When there's an explanation, be sure to write it using complete sentences.

Your portfolio. Collect all your homework, quizzes, tests, handouts, notes, and your term paper in a folder.

Nowadays, that's called a portfolio. "A student portfolio contains work that shows the student's progression through the course of the school year." You'll actually find it useful to look back at the end of the semester and see how much you've learned.

First homework. Due Friday, Jan 27. On ancient Egyptian mathematics. Solve these problems using Egyptian methods.

1. Page 28, ex. 2: Use Egyptian techniques to multiply 34 by 18 and to divide 93 by 5.
2. Page 28, ex. 3: Use Egyptian techniques to multiply $\bar{2} \bar{14}$ by $1 \bar{2} \bar{4}$.
3. Page 28, ex. 5: Show that the solution to the problem of dividing 7 loaves among 10 men is that each man gets $\bar{3} \bar{30}$.
4. Page 28, ex. 7. Multiply the Egyptian fractions $7 \bar{2} \bar{4} \bar{8}$ by $12 \bar{3}$ using the Egyptian multiplication technique. Note that it is necessary to multiply each term of the multiplicand by $\bar{3}$ separately.
5. Page 28, ex. 8. Calculate 2 divided by 11 and 2 divided by 23 in the style of the Egyptians.
6. Page 28, ex. 11. Solve problem 32 of the *Rhind mathematical papyrus*: A quantity, its $1/3$, and its $1/4$, added together become 2. What is the quantity? Of course, the answer in modern terms is $24/19$, but try to come up with the answer in the style of the Egyptians, and express the answer in unit fractions.
7. Page 28, ex. 14: Solve problem 11 of the *Moscow Mathematical Papyrus*: The work of a man in logs; the amount of his work is 100 logs of 5 handbreadths diameter; but he has brought them in logs of 4 handbreadths diameter. How many logs of 4 handbreadths diameter are there?