

Chapter 1 Problems:

History:

1. Give two uses of zero in Egyptian mathematics. Extra: How was zero written?
2. What approximation did the Babylonians give for pi? Explain.
3. Did the Egyptians know how to calculate the volume of a pyramid? Did the Babylonians?
4. Give two approximations (in sexagesimal) used for the square root of two by the Babylonians. Give their values in decimal.
5. Give two applications of the Pythagorean theorem found in Babylonian sources.
6. Was Egyptian and Babylonian mathematics mainly pure or applied? Explain.
7. Did the Egyptians consider quadratic equations?
8. What value did the Egyptians use for pi?

Math:

1. Compute $67+55$ entirely within the Egyptian hieroglyphic system.
2. Compute $400+400$ entirely within the Babylonian cuneiform system.
3. Compute 14×17 using Egyptian methods.
4. Divide 221 by 17 using Egyptian methods.
5. Express $\frac{4}{5}$ as a sum of unit fractions.
6. What is the actual area of the shaded part of Figure 1.12. How close is the Babylonian computation?
7. Use the Babylonian method (you may use decimal numbers) to approximate the square root of 10. Get your answer correct to two decimal places.
8. Write $\frac{4}{5}$ in Babylonian cuneiform.
9. Start with 13 for the value $v+u$, and use the Babylonian algorithm to find a Pythagorean triple. Do you know it?
10. Convert $\frac{11}{24}$ to Babylonian cuneiform.
11. (p. 28, #5) Verify, using Egyptian multiplication, that if seven loaves of bread are divided among ten men, each gets $\frac{2}{3}$ plus $\frac{1}{30}$ of a loaf.
12. Convert $0;22,30$ from Babylonian sexagesimal to a decimal fraction.
13. Multiply 25 by 1,21 in sexagesimal without leaving the sexagesimal system.
14. Divide 50 by 20 in sexagesimal by thinking of it as $50 \times (\frac{1}{20})$.
15. Which initial value for $v+u$ in the Babylonian algorithm could lead to the Pythagorean triple (319,360,481)?
16. Find the side lengths of a rectangle of area 360 and perimeter 76 using the Babylonian method.