

Ancient Egyptian numbers challenge: part 1

Introduction

In this two-part challenge learners will compare our base 10 system using Hindu-Arabic numbers to ancient Egyptian base 10 system which used hieroglyphics for numerals but did not have 0 as a place holder.

Possible prior experiences

Discuss with the learners how our number system is constructed.

Explain origins of base 10 systems: developed because we have 10 fingers to count with.

Explain the origin of Arabic numbers or more correctly Hindu-Arabic numbers as they originated in India and then spread to Arab countries.

Demonstrate the role of zero as a place holder.

Ask the learners if they have ever wondered what numbers would look like if we didn't have zero as a place holder.

Support notes

Investigate ancient Egyptian numbers, by drawing the symbols on the board using [the key provided](#) or by using the [Ancient Egyptian numbers website](#).

Learners could be given the opportunity to work in pairs to discuss the similarities and differences between the two number systems, and the advantages and disadvantages of both. Some points that may be raised after feedback from partner discussion include:

- In Ancient Egypt they developed a base 10 counting system using hieroglyphics as numerals. Base 10 makes it similar to our counting system.
- This is a unary system where there is one symbol for units another for tens, then hundreds and so on. The advantage is that it doesn't matter in what order you write a number, it will still have the same value. Whereas with our system a digit's value is dependent on where it is placed in a number.
- The disadvantage is that it takes a long time to write numbers e.g. 99 compared to nnnnnnnn |||||

Learners can become familiar with numerals by translating numbers between decimal and hieroglyphics. You can draw numerals on the board or use the [Ancient Egyptian numbers website](#) to display the hieroglyphics. Learners may use individual whiteboards or paper for this task.

It is easier to begin with Ancient Egyptian numbers which the learners write in decimal form until they become familiar with the symbols then change the direction of translation: from decimal to ancient Egyptian. Highlight that this is also the case when learning a new language; it is always easier to translate something into your own language. You can add a new dimension to the translating of numbers task by counting in French. The practitioner can also mention how different cultures in the modern world have different ways of expressing numbers. For example, it is interesting that in France there are not independent names for 70, 80 and 90 but rather two names added together: soixante-dix, quatre-vingt and quatre-vingt-dix. However, in Francophone countries like Canada and Belgium this is not the case: septante, quatre-vingt and nonante.

Learners, with a partner can draw a hieroglyphic number on their whiteboard and their partner responds by giving the name of the number in French. It would be useful to have [French number words](#) displayed in the classroom.

As a group, the learners contribute what they have learned during the lesson. Ask them to think about different ways of counting. Could there be different ways of counting? For example using a system not based on 10. Can they invent their own hieroglyphic counting system? The learners could then test their own version of hieroglyphics with their peers.

Ancient Egyptian numbers challenge: Part 2

This lesson builds on the previous and introduces addition, subtraction, multiplication and division using Ancient Egyptian number system and French.

Support notes

The learners may begin by working in pairs to review what they learned in the previous lesson. They compare number systems and discuss advantages and disadvantages. Ask them to describe the purpose of zero. You can use the [Ancient Egyptian numbers website](#) to display hieroglyphic numbers but hide the decimal number. The learners write the decimal number on a whiteboard, paper or use a number fan. You can ask individual children to say the number in French.

Investigate calculations using hieroglyphics and using French numbers. Using the [Children's University website](#) you can explore algorithms written with ancient Egyptian hieroglyphic numbers. You can briefly, demonstrate, to the class, addition, subtraction, multiplication and division using this website or they can write the calculations on the board. The learners can respond to questions by writing their answers on individual whiteboards.

Introduce mathematical language in French: + plus, - moins, x fois, : divisé, = égal Display this vocabulary on the board. Repeat the demonstration above, in French. Once the learners become comfortable with this process, the practitioner can ask individuals to translate the calculations on the board, into French.

Set up a carousel system for three groups:

Group 1: Working on computers use the [Children's University website](#). The learners work through the different stages of calculations and if they finish quickly they can complete the Quiz at the end.

Group 2: Individual task: complete worksheet of calculations written in hieroglyphics. Learners write their answers in the French written form of the numbers. You may provide them with a copy of the [vocabulary sheet](#) for the written form of numbers.

Group 3: Partner challenge: the learners create calculations for their partner to solve. They write the calculations in hieroglyphics, using white boards, and answers are given in French. Ask that they also write the answer in French written form.

Discuss what the learners what have learned. Ask the children to assess their own learning. Did they find the tasks easy/sufficiently challenging/difficult? What would they like to improve on?