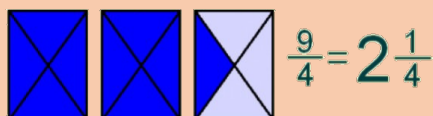# UNIT 1. RATIONAL NUMBERS

HISTORY

The name of **fraction** is due to **Juan de Luna** who translated Al – Kwharizmi arithmetic book's. He use the word "fractio" in order to translate the Arabic word "al – Kasr" whose mean is break.

The **Egyptians** were the first using fractions, although they only used fractions whose numerator was 1, so the general form was 1/n. However, the **Babylonians** used fractions whose denominator was 60 and they established good approximations with decimals.

The **Hindus** established the rules of operations with fractions and, also, the wrote fractions like us but they didn't use the line between the numerator and the denominator. This line was used for the first time by the **Arabians**. After, **Fibonacci** was the first **European** using the line.

CURIOUS FACT

In other countries, improper fractions are replaced by **mixed numbers**. A mixed number is a whole number and a proper fraction represented together.

$$\frac{9}{4} = 2\frac{1}{4}$$

CONVERTING IMPROPER FRACTIONS INTO MIXED NUMBERS

Would you be able to convert these fractions into a mixed numbers?

$$\frac{77}{6} \; ; \quad \frac{46}{5} \; ; \quad \frac{28}{6}$$

$$\begin{array}{c|c} D & \underline{d} \\ r & q \end{array} \longrightarrow \frac{D}{d} = q\frac{r}{d}$$

Explication

$$\begin{array}{c|c} 7 & \underline{3} \\ 1 & 2 \end{array} \longrightarrow \frac{7}{3} = 2\frac{1}{3}$$

VOCABULARY & EXPRESSIONS

⇒ **Fraction**: Fracción
⇒ **Numerator**: Numerador
⇒ **Denominator**: Denominador
⇒ **Proper fraction**: Fracción propia
⇒ **Improper fraction**: Fracción impropia
⇒ **Equivalent fractions**: Fracciones equivalentes
⇒ **1/2**: One half; **1/3**: One third
⇒ **a/b**: a over b
⇒ **Irreducible fraction**: Fracción irreducible
⇒ **Lowest common multiple**: mínimo común múltiplo
⇒ **Decimal number**: Número decimal
⇒ **Integer part**: Parte entera
⇒ **Decimal part**: Parte decimal
⇒ **Exact decimal**: Decimal exacto
⇒ **Recurring decimal**: Decimal periódico
⇒ **Pure recurring decimal**: Decimal periódico puro
⇒ **Mixed recurring decimal**: Decimal periódico mixto
⇒ **Repetend**: periodo
⇒ **Non-repeating part**: anteperiodo
⇒ **Rational numbers**: Números racionales
⇒ **Irrational numbers**: Números irracionales

ACTIVITY
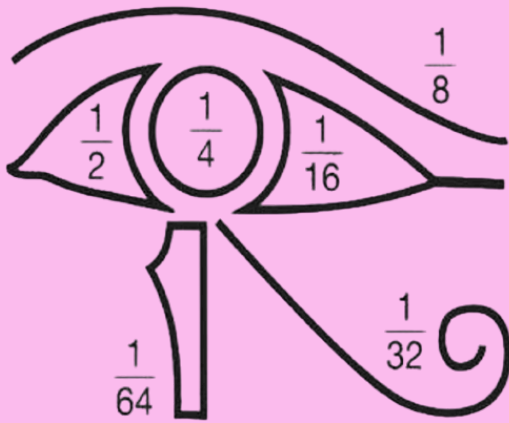
The "Eye of Horus" is one of the most popular amulet in Egypt due to it protects you.

The "Eye of Horus" was considered by the Egyptians as the whole. They used it as a fractional numeral system and each part represented a fraction.

Did the eye of hours represent the unit?

The eye image shows parts labeled: $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{16}$, $\frac{1}{32}$, $\frac{1}{64}$

WRITE FRACTIONS LIKE EGYPCIANS

The ancient Egyptians used the following symbols in order to write numbers.

1	10	100	1000	10000	100000	1000000
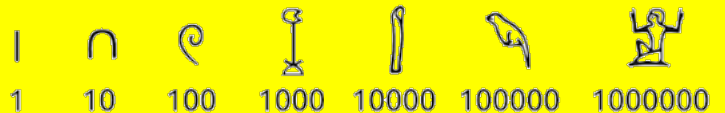
When they started to write fractions, they also used these symbols. Their fractions always have 1 as numerator, so these are some examples of fractions:

$$\frac{1}{5} \qquad \frac{1}{3} \qquad \frac{1}{102} \qquad \frac{1}{21}$$
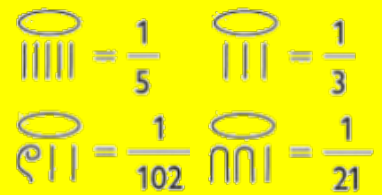
Can you write these fractions like Egypcias?

$$\frac{1}{18} \;;\quad -\frac{1}{123}\;;\quad \frac{1}{22436}$$

PUZZLE

Move a number and you will get two equivalent fractions.

$$\frac{2\;1}{3} = \frac{2\;1}{9}$$