

# Number Systems

[Topic Tree](#) | [Home](#)

---

Following are some of the different number systems discussed in the history of mathematics.

## Contents of this Page

[The Number Sense](#)

[Quipu - An Inca Counting System](#)

[Fractions of Ancient Egypt](#)

[The Mayan Number System](#)

[The Egyptian Number System](#)

[The Greek Number System](#)

[The Number System](#)

[Where Did Numbers Originate?](#)

---

## The Number Sense

The number sense is not the ability to count, but the ability to recognize that something has changes in a small collection. Some animal species are capable of this.

The number of young that the mother animal has, if changed, will be noticed by all mammals and most birds. Mammals have more developed brains and raise fewer young than other species, but take better care of their young for a much longer period of time.

Many birds have a good number sense. If a nest contains four eggs, one can safely be taken, but when two are removed the bird generally deserts. The bird can distinguish two from three.<sup>1</sup>

An experiment done with a goldfinch showed the ability to distinguish piles of seed: three from one, three from two, four from two, four from three, and six from three. The goldfinch almost always confused five and four, seven and five, eight and six, and ten and six.

Another experiment involved a squire who was trying to shoot a crow which made its nest in the watchtower of his estate. The squire tried to surprise the crow, but at his approach, the crow would leave, watch from a distance, and not come back until the man left the tower. The squire

then took another man with him to the tower. One man left and the other stayed to get the crow when it returned to the nest, but the crow was not deceived. The crow stayed away until the other man came out. The experiment was repeated the next day with three men, but the crow would not return to the nest. The following day, four men tried, but it was not until that next day with five men that the crow returned to the nest with one man still in the tower.<sup>2</sup>

In the insect world, the solitary wasp seemed to have the best number sense. The mother wasp lays her eggs in individual cells and provides each egg with a number of live caterpillars on which the young feed when hatched. Some species of wasp always provide five, others twelve, and others as high as twenty-four caterpillars per cell. The solitary wasp in the genus *Eumenus*, will put five caterpillars in the cell if it is going to be a male (the male is smaller) and ten caterpillars in a female's cell. This ability seems to be instinctive and not learned since the wasp's behavior is connected with a basic life function.<sup>3</sup>

One might think people would have a very good number sense, but as it turns out, people do not. Experiments have shown that the average person has a number sense that is around four.<sup>4</sup>

People groups in the world today that have not developed finger counting have a hard time discerning the quantity four. They tend to use the quantities one, two and many-which would include four.

Small children around fourteen months of age will almost always notice something that is missing from a group that he or she is familiar with. The same age child can usually reassemble objects that have been separated into one group again. But the child's ability to perceive numerical differences in the people or objects around him or her are very limited when the number goes beyond three or four.<sup>5</sup>

So what separates people from the rest of the animal kingdom? It may include many things, but the ability to count is very much one of them. Counting, which usually begins at the end of our own hands or fingers, is usually taught by another person or possibly by circumstance. It is something that we should never take lightly for it has helped advance the human race in countless ways.

The number sense is something many creatures in this world have as well as well as we do. Although, as we can see, our human ability is not much better than the common crow's ability. We are born with the number sense, but we get to learn how to count.

---

<sup>1</sup> Dantzig, p. 1.

<sup>2</sup> Dantzig, p. 3.

<sup>3</sup> Infrah, p. 4.

<sup>4</sup> Dantzig, p. 5.

<sup>5</sup> Infrah, p. 6.

Contributed by Bruce White

---

## References:

1. Dantzig, Tobias. *Number: The Language of Science*. New York: Macmillan Company,