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## Numbers and Insect Identification

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A number is defined as an arithmetical value representing a particular quantity. No one knows for sure when humans first started using numbers. The idea of a number probably originated with the use of tally marks. Tally marks are vertical lines used to create a visual record of things. One can imagine that the earliest use of tally marks might have been to record such things such as sunrises, the animals captured during the hunt or the number of sheep in the flock.



[Twelve-spotted lady beetle](#)

Words and symbols for numbers can be found in several ancient cultures. Most of us are familiar with the Roman numerals used in ancient Rome. These old symbols still show up today in various places including the preface of books, the face of some clocks and watches, and football's Super Bowl - the 2014 matchup is XLVIII, or the 48th.

The symbols used for numbers in most Western cultures are based on the Hindu-Arabic decimal place-value system that originated in the eighth and ninth centuries. These symbols are known as the European Hindu-Arabic system.

Modern societies are certainly dependent on numbers. We have social security numbers, banking account numbers, driver's license numbers and passport numbers, just to name a few. These personal ID numbers allow us to run our lives, and if they fall into the wrong hands, the

numbers can be used for criminal purposes. That is the reason that we all have a number of numbers that are used to protect our numbers and access to things like bank accounts and computer files.

Numbers even come into play for entomologists who try to identify insects. Insect identification is not an easy task. There are some 900,000 species of named insects in the world. In the U.S., there are 91,000 species of insects. So in order to distinguish between these numerous species, entomologists sometimes resort to counting things on insects.



[One-spotted stink bug](#)

Insects are segmented creatures. Their bodies and their appendages consist of articulated pieces and parts. These pieces and parts aren't exactly the same in shape or number on each species of insect. So counting segments on appendages, such as legs or antennae, can sometimes be used as method to identify an insect.

One such method employs the so-called tarsal formula. What is a tarsal formula, you ask? Think of it this way. The insect tarsus is an insect foot and functions in similar fashion to the human foot. The human foot even includes bones called tarsi. Each insect tarsus consists of up to five articulated segments. The actual number of segments depends on the insect species and on which pair of legs they are located. So a tarsal formula of 5-5-5 translates into five segments on the front legs, five segments on the middle legs and five segments on the hind legs. A tarsal formula of 4-4-4 means that the insect has four, not five, tarsal segments on each set of legs. In similar fashion, a tarsal formula of 5-5-4 means that only the last pair of legs has four, not five, segments.

Some insect scientific and common names reflect that more than segments on insects can be counted to help identify the creatures. Numbers of spots, bands, marks and lines have all been used to identify insects.



[Two-lined chestnut borer](#)

Based on common names, there are at least 29 insects and three mites with a number in their name. First on the list is the one-spotted stink bug. There are 11 insects with two in their names. That list includes the two-banded fungus beetle, the two-lined chestnut borer, the two-spotted lady beetle and the two-striped grasshopper. My favorite in the two category is the twice-stabbed lady

beetle. As you might imagine, this black lady beetle has two red marks - one on each wing cover.

There are seven insects that claim the number three. Among them are a three-banded leafhopper, a three-lined potato beetle, and a three-striped blister beetle. Four arthropods have four in their name, including a four-lined plant bug, a four-spotted tree cricket and a four-spotted spider mite.

There are no insects with five in their name. Three creatures have six in their name, one of which is the six-spotted thrips. There is a seven-spotted lady beetle and an eight-spotted forester moth.

Insects jump into double-digit numbers with a couple of lady beetles: the 10-spotted and the 13-spotted. I don't know about you, but I find it easier to count spots, lines, bands and pseudo-stabs on insects than it is to count the number of segments in their itty-bitty feet!

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