A relation is a fact about a number of things. Thus the fact that a locomotive blows off steam constitutes a relation, or more accurately a relationship (the Century Dictionary, under relation, 3, gives the terminology. See also relativity, etc.) between the locomotive and the steam. In reality, every fact is a relation. Thus, that an object is blue consists of the peculiar regular action of that object on human eyes. This is what should be understood by the “relativity of knowledge.”

A relation is precisely defined as a fact about several subjects. A fact is an element of truth expressible as a proposition.

We might define a relation as a fact about an ordered set of things.

A relative [...] may be defined as the equivalent of a word or phrase which, either as it is (when I term it a complete relative), or else when the verb “is” is attached to it (and if it wants such attachment, I term it a nominal relative), becomes a sentence with some number of proper names left blank. A relationship, or fundamentum relationis, is a fact relative to a number of objects, considered apart from those objects, as if, after the statement of the fact, the designations of those objects had been erased. A relation is a relationship considered as something that may be said to be true of one of the objects, the others being separated from the relationship yet kept in view. Thus, for each relationship there are as many relations as there are blanks.

A fact true of several subjects is called a “relation” between them.
A relation is a character of an object consisting in its forming with others an ordered set of objects belonging to a general class of such sets.

Relation [L. relatio, a report. from refero, to carry back.] A fact concerning a set of objects, called the relates, or a generalization of a class of such facts. A relation is dyadic, triadic, etc. according to the number of relates. When the set is a pair, the relates are commonly distinguished as relate and correlate, and the fact is stated as something being true of the former, with a subordinate regard for the latter. This is, of course, due to the fact that in most languages the noun denoting relate is put in the nominative case, while the correlate is put in an oblique case, usually the accusative. Many languages do this even with such a verb as “is”. There are languages which do not give so much prominence to one relate over the other or others; and put the subject in an oblique case. The Gaelic commonly does so. Still, there must be some syntactical provision to distinguish in what order of arrangement the set of subjects has the predicate asserted of it.

Relation is the relative character, conceived as belonging in different ways to the different relates, and (owing to the somewhat undue prominence given by familiar languages to one of these) especially to the relate which is denoted by the noun which is the subject nominative.

Relations are qualities of sets of subjects. They are dyadic if the sets are pairs, triadic if the sets are triads.

I have, since 1870, written much about the logic of relations. In those writings, I have usually restricted the terms “relations” and “relationships” to existential relations and relationships. By a relationship I understand the conception of a fact about a set of things abstracted from the representation of the things themselves or, in other words, a predicate which requires more than one subject to complete a proposition, or conception of a fact. A “relation” only differs from a “relationship” in that one of the subjects is regarded as being taken account of first, and is usually called the subject nominative, while the others are called the direct and indirect objects. In other words a relation is a predicate requiring one subject nominative and one or more objects in a definite sequence. In my earlier papers I use the conception of relation chiefly; in my later ones that of relationship. The difference is little more than trifling.