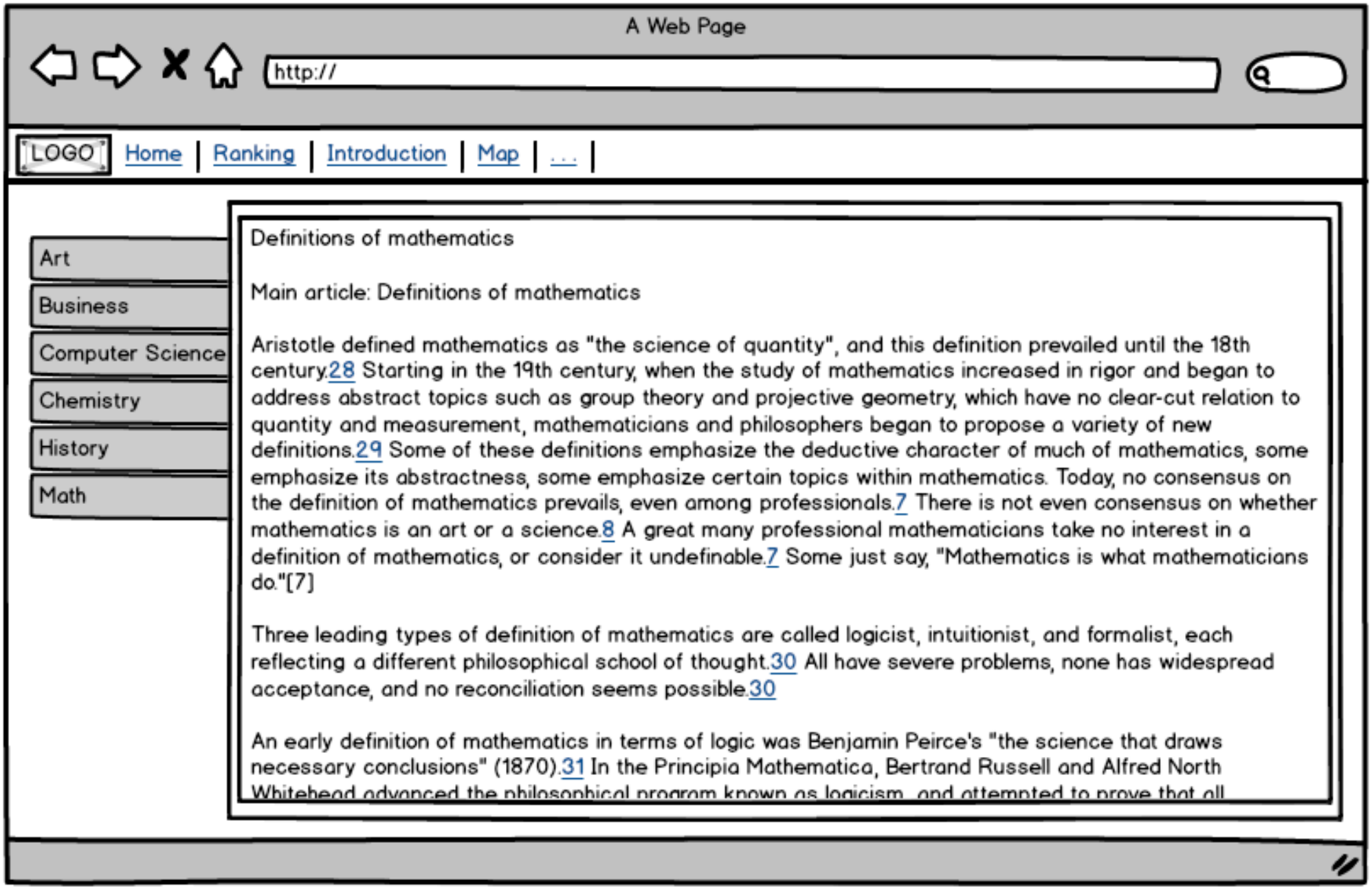
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Definitions of mathematics
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Aristotle defined mathematics as "the science of quantity", and this definition prevailed until the 18th century.28 Starting in the 19th century, when the study of mathematics increased in rigor and began to address abstract topics such as group theory and projective geometry, which have no clear-cut relation to quantity and measurement, mathematicians and philosophers began to propose a variety of new definitions.29 Some of these definitions emphasize the deductive character of much of mathematics, some emphasize its abstractness, some emphasize certain topics within mathematics. Today, no consensus on the definition of mathematics prevails, even among professionals.7 There is not even consensus on whether mathematics is an art or a science.8 A great many professional mathematicians take no interest in a definition of mathematics, or consider it undefinable.7 Some just say, "Mathematics is what mathematicians do."[7]
Three leading types of definition of mathematics are called logicist, intuitionist, and formalist, each reflecting a different philosophical school of thought.30 All have severe problems, none has widespread acceptance, and no reconciliation seems possible.30
An early definition of mathematics in terms of logic was Benjamin Peirce's "the science that draws necessary conclusions" (1870).31 In the Principia Mathematica, Bertrand Russell and Alfred North Whitehead advanced the philosophical program known as logicism, and attempted to prove that all