H. N. Gupta (1925–2016)

Haragauri Narayan Gupta died on 26 September 2016 in Waterloo, Ontario, at age 91. He earned the doctorate from Alfred Tarski in 1965: Tarski's only doctoral student in foundations of geometry. Gupta's dissertation was devoted to a weakening of Tarski's 1957 axiom system to incorporate geometries of all finite dimensions over arbitrary ordered coordinate fields. It was also the only source of proofs for Tarski's 1957 results until the 1983 book by Schwabhäuser, Szmielew, and Tarski.

Gupta was born in Bhagalpur, Bihar, four hundred miles north of Calcutta, India. His father was a teacher of English and History. Haragauri entered the University of Calcutta in 1942. There he was strongly influenced by the mathematics chair, Friedrich W. Levi (1999–1966), a German refugee who specialized in the interplay between geometry and algebra. Haragauri earned a master's degree in pure mathematics in 1945, began teaching at various locations, and earned a second master's in statistics in 1949. In 1952 he married Manjula Roy (1932–2012), also a teacher. In 1957 Haragauri became principal of Calcutta's Dum Dum Motijheel College.

Humboldt and Fulbright grants brought Haragauri to West Germany in 1959 to study logic, and a year later to Berkeley, a world center of logic research developed in the late 1940s by the renowned Polish emigre scholar Alfred Tarski. At Berkeley Haragauri was particularly influenced and aided by Tarski's former student Wanda Szmielew, with whom he maintained close ties until her death in 1976. Benjamin Wells, a contemporary student of Tarski, wrote in 2014 that Haragauri may have been

> … one of the strongest examples of Tarski's tendency to overwork students. Wanda Szmielew's student Zenon Piesyk was also researching geometry based on Tarski's axioms. Tarski and Szmielew drove their two students crazy by repeatedly telling them that one had surpassed the other's results. The consequence was that Gupta's thesis approached a ream in length, well over 400 pages.

Haragauri finished after five years, at age forty.

The next year, Gupta joined the mathematics department at the Regina campus of the University of Saskatchewan, now the University of Regina, where he remained for the rest of his career. Gupta published a number of papers on foundations of geometry, pure logic, and teaching. His guiding principle was "to work constantly to extend the limits of our knowledge, if only one little step at a time." He was an effective, inspiring, and scrupulously fair teacher. He supervised several master's students. The present writer, his only PhD student, also in foundations of geometry, graduated in 1970.

Gupta was a polymath, an articulate discussant in history, linguistics, religion, and politics as well as logic and mathematics. He was fluent in five languages and capable in six others. He served his university in numerous ways, including as department chair. He became an elder statesman of the vibrant Regina Hindu community.

Haragauri is survived by his daughter Neena, born in Palo Alto in 1965, now an attorney in Waterloo, Ontario, and by one grandchild. Neena's wonderfully vivid and personal remembrance of her father has been published in the Regina *Leader–Post*: click here. A memorial service will be held in Regina at a later date. Haragauri often called from airports around the world, communicating only his excitement as a traveler. I still expect to hear him, when the phone rings at an odd hour!

James T. Smith
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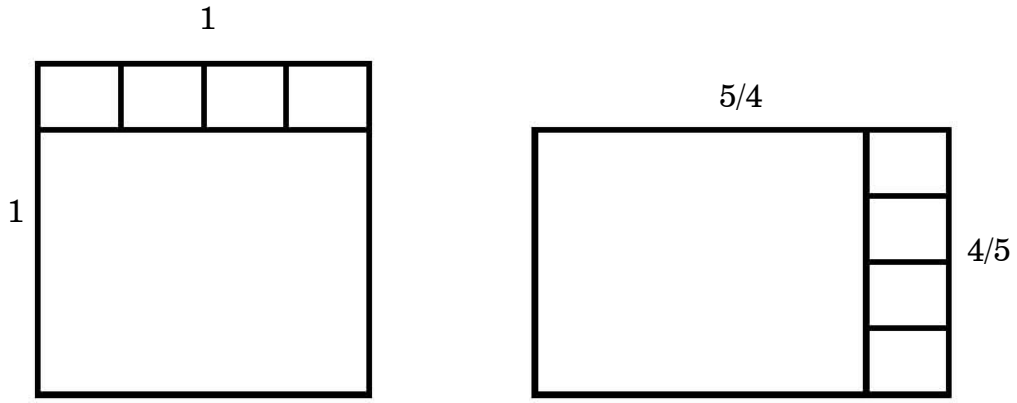
5 Subpolygons:



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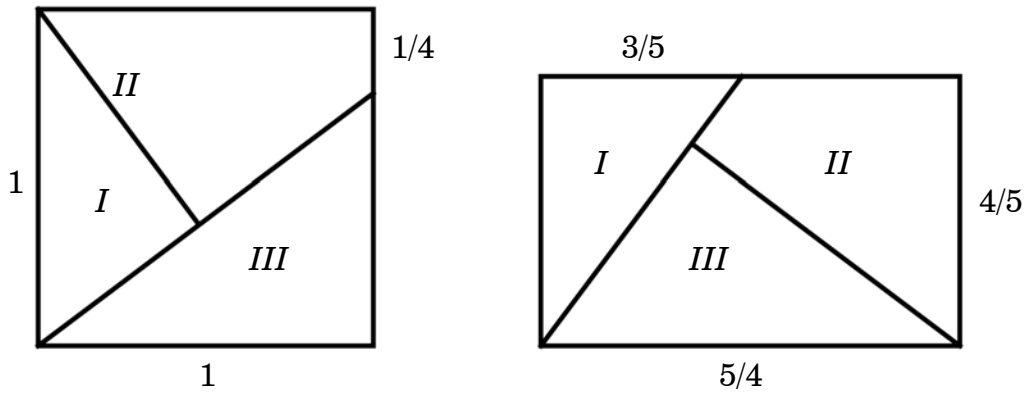

Can you do it with 2?