

1117-01-113

Danielle Mihram, U.S.C. LVL-113, 650 W. 35th Street, Los Angeles, CA 90089-2571, and **G. Arthur Mihram*** (dmihram@usc.edu), P.O. Box No. 1188, Princeton, NJ 08542-1188. *The Role(s) of Mathematics in Science: Four Questions for the Active Learner*. Preliminary report.

Science is that human activity devoted to the search for the very explanation for (i.e., for the truth about) any particular naturally occurring phenomenon [OED 4.a, 5.b]. Modern Science's 'Method' [TEOREMA 28(2) 35 2009], a six-stage model-building process: 0.Extant Knowledge; I.Observation + Reflexion Thereon; II.Artwork; III.Perscrutation; IV.Confirmation w/Nature; V.Knowledge Augmentation. Quinn [NOTICES 2012:31] notes: Mathematics is not Science, their validity criteria differ: internal v. external. A. Math not necessary for Science?: cf. Darwin, ORIGIN, 1865; B. Math not sufficient for Science?: [LT More, 1915, LIMITATIONS OF SCIENCE,p151: (Pure) mathematics deals only with abstractions (lines, numbers), not real-world phenomena]; C. Whither Applied Mathematics?: Though math provides statements which are irrefutably true, our three-step theorem-proving [1.Postulates; 2.Logical deductions; 3.Conclusion] falls short for Science. Yet, even if using, as one Postulate, a well-established scientific model, and adding Step 4.Nature's affirmation, the result if not new science, but only further Confirmation for the initiating Postulate. D. Curricula requiring mathematics?: Math education prepares adolescents to reach logical, hopefully nearly irrefutable, adult conclusions. (Received January 06, 2016)