

Abstract Submitted  
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**Introductory student interpretation of validity checks of expressions**<sup>1</sup> JOHN THOMPSON, ABOLAJI AKINYEMI, University of Maine — In addition to gaining conceptual understanding and procedural or computational facility, physics students are expected to acquire skills related to evaluating solutions to problems, whether expressions or numerical results. We provided introductory physics students with figure and an expression for the speed of a block on a ramp with friction. Students were asked how they would check whether the expression obtained was reasonable. We obtained 214 written responses and 12 interview responses. Interviews both shed light on some written responses and provided some additional approaches. Our results suggest that most introductory students misinterpreted the task, proposing either to rederive the expression from the initial conditions or to compare the expression with other sources, e.g., peers or an authority. Data analysis using epistemic framing, in particular frames from Bing and Redish, shows that students are using novice-like framing, namely calculation and invoking authority, rather than expert-like framing such as physical mapping.

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