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Student understanding of entropy and the second law of thermodynamics in an introductory physics course[1] WARREN M. CHRISTENSEN, DAVID E. MELTZER, Iowa State University — We are investigating students' thinking regarding entropy and the second law of thermodynamics in a calculus-based general physics course. Most students enrolled in the class have had previous exposure to thermodynamics in chemistry courses or in high-school physics, and so many of them have specific ideas about these concepts even before instruction begins. To explore these ideas we administered a series of free-response pretest questions during the first week of class, before any instruction on thermodynamics had taken place. The questions probed student conceptions about entropy and its relationship with other thermodynamic properties. We will present an analysis of these data, as well as follow-up interview data that shed additional light on students' thinking.

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