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Prospective elementary teachers have often forgotten the procedure for how to divide fractions, and those who do remember typically have no understanding of why it makes sense to "invert and multiply." Many educators argue that the mathematical knowledge required to teach topics like this goes beyond knowing what the procedures are and why they are mathematically valid, and includes what Ball, Hill and Bass (2005) call specialized mathematics knowledge for teaching. Examples of such knowledge include interpreting and evaluating students' solutions and reasoning, and choosing representations that will facilitate connections among models, symbols and operations. In this session, we utilize tasks and sample student work from our course for prospective elementary teachers to engage participants in considering the mathematical knowledge for teaching for fraction division and ways of fostering the development of that knowledge in prospective teachers. (Received August 20, 2008)