

## Math Matchup


TO UNDERSTAND WHY Asian students often outperform their American peers in math, education researchers have studied many factors, such as classroom instruction, teacher training, and textbooks. A recent report, *Measuring Up: How the Highest Performing State (Massachusetts) Compares to the Highest Performing Country (Hong Kong) in Grade 3 Mathematics*, adds test questions to that list.

On the most recent fourth-grade math assessment of the Trends in International Mathematics and Science Study, Hong Kong ranked first, while Massachusetts (the highest achieving state in the United States according to the National Assessment of Educational Progress) ranked fourth. *Measuring Up*, published by the American Institutes for Research, compares the content and rigor of Massachusetts's and Hong Kong's third-grade mathematics assessments.

As the report's 36 exhibits (including the one shown here) demonstrate, on average, questions on Massachusetts's assessment are not as computationally challenging as those on Hong Kong's assessment. Also, Hong Kong's assessment often asks students to construct a response, not choose the correct answer from a list. According to the report, these differences reveal that math problems in Hong Kong "often require students to demonstrate deep conceptual under-

### Excerpt from Exhibit 10: Fractions Hong Kong items involve understanding concepts from multiple perspectives

As shown in Exhibit 10, a Hong Kong item assesses the understanding of fractions from multiple perspectives. Specifically, students face four different pairs of fractions and must identify the correct order relationship between the two members within each pair. Together, the four items assess students' understanding of fractions with the same denominators, the same numerators, and equal numerators and denominators. The items also require students to apply their understanding of "less than," "equal to," or "greater than." By contrast, the Massachusetts item requires only that students understand the basic representation of the fraction as part of a set.

Massachusetts	Hong Kong
<p>The coats shown below are hanging on coat hooks.</p>  <p>What fraction of the coats are white? Write your answer in the Answer Box below.</p> <div style="border: 1px solid black; width: 100px; height: 20px; margin-left: 40px;"></div>	<p>Fill in the boxes with "&gt;," "&lt;" or "=".</p> <p>(a) 1 <input type="checkbox"/> <math>\frac{10}{10}</math></p> <p>(b) <math>\frac{1}{5}</math> <input type="checkbox"/> <math>\frac{1}{8}</math></p> <p>(c) <math>\frac{3}{11}</math> <input type="checkbox"/> <math>\frac{9}{11}</math></p> <p>(d) <math>\frac{2}{2}</math> <input type="checkbox"/> 2</p>

standing and the capacity to apply foundational mathematical concepts in multistep, real-world situations."

The report is available at [www.air.org/news/documents/AIR%20Measuring%20Up%20Report%20042709.pdf](http://www.air.org/news/documents/AIR%20Measuring%20Up%20Report%20042709.pdf).



## "Ask the Cognitive Scientist" Headed for Hollywood?

TEACHERS WHO WISH TO LEARN more from the researcher behind *American Educator's* "Ask the Cognitive Scientist" column take note: Daniel T. Willingham has posted links to several short, thought-provoking videos on his Web site: [www.danielwillingham.com](http://www.danielwillingham.com). The videos—*Merit Pay*, *Teacher Pay*, and *Value Added Measures*; *Teaching Content Is Teaching Reading*; *Learning Styles Don't Exist*; and *Brain-Based Education: Fad or Breakthrough?*—tackle some of the most controversial topics in education. As in his articles, Willingham delivers the relevant research in an engaging, jargon-free way. Two thumbs up!