

TIMSS 2011 Pilot of Reasoning Items

Because TIMSS 2011 aims to measure the cognitive domain of reasoning, items were written to elicit students' abilities to solve problems, develop explanations, and extend their knowledge to new situations. However, due to the complexity of these skills, reasoning items can be a challenge to write clearly and score reliably. To help ensure that the reasoning field test items were accessible to students of mid-range mathematics and science ability, Australia conducted a small pilot test in Australia in October 2009. Based on the number of students who attempted to answer each question in the pilot and the types of responses they wrote, the staff, in consultation with the mathematics and science coordinators, determined the difficulty of the task. These results were used to refine these complex items and scoring guides, including clarifying item wording and providing scaffolding steps.

Table 1. TIMSS 2011 Reasoning Items

	Fourth Grade	Eighth Grade
1. A number is multiplied by 3, and the result is 18. What is the number?	18	22
2. A number is multiplied by 3, and the result is 24. What is the number?		24
3. A number is multiplied by 3, and the result is 51. What is the number?	51	62
4. A number is multiplied by 3, and the result is 10. What is the number?		10
5. A number is multiplied by 3, and the result is 50. What is the number?	50	25
6. A number is multiplied by 3, and the result is 2. What is the number?	2	2
7. A number is multiplied by 3, and the result is 100. What is the number?	100	50