Task analysis tool

Relevance to learning progression

(Check the level that applies. Try to write the task to be as relevant as possible)

	Relevant: All parts of task and rubric are relevant to LP, and the relevance of each part of the task and rubric to the LP can be explicitly articulated.
	Partially relevant: Some parts of the task and rubric are relevant to the LP, but others are not relevant to the LP.
	Not relevant: No part of the task or rubric is relevant to the LP

Cognitive demand[1]

(Check the level that applies. Try to write the task at the top two levels of cognitive demand)

	Doing mathematics: No predictable way to solve, may involve some level of anxiety for the student due to the unpredictable nature of the solution process.
	Procedures with connections: involves some use suggested pathways or algorithmic thinking (perhaps implicitly), but requires students to engage with underlying concepts, for example, using procedures to **deepen connections** to underlying concepts. Explanations involve "why" rather than "what."
	Procedures without connections: Either algorithmic, with little ambiguity about what has to be done or how to do it, OR **little connection** to underlying concepts. Explanations, if present, involve "what" rather than "why."
	Memorization: Explicitly calls for an exact reproduction of previously-seen facts, rules, formulae, or definitions with **no connection** to underlying concepts or meaning

Options for expressing understanding

(Check the level that applies. In a complete assessment, some tasks should have multiple ways to express understanding, and others should have one way to express understanding)

	More than one way to express understanding: Multiple strategies can be used to solve the problem, and the scoring rubric takes student reasoning into account.
	One way to express understanding: The scoring for the problem is dichotomous (right or wrong), student reasoning is either not solicited or not taken into account in the scoring

Rubric quality

(Check all that apply. Try to write the rubric so that both can be checked.)

☐ *Reliable:* Either:
- There is some evidence that the rubric can be used reliably by others (e.g., the rubric has been tested and modified in a student focus session) OR
- There is a high probability that the task could be scored reliably by a math teacher at this level.

☐ *Valid:* The rubric is aligned to the task. This means that: (a) the rubric covers everything that students are asked to do (e.g., if the task asks students to "show work" the rubric gives guidance as to how to score the work), and (b) the rubric comprehensively covers the outcome space. If there are multiple outcomes, the rubric gives guidance as to how to score all possible outcomes (within reason)

☐ *Specific:* All adjectives and general statements (e.g., "shows understanding" or "solves problem correctly") in the rubric are accompanied by specific descriptors related to the problem. For example, if the rubric says "solves problem correctly" the correct answer(s) for the problem is given in the rubric.

CADRE

Task analysis tool

Fair and unbiased[2]

(Check all that apply. Try to write the task so that all of these can be checked.)

- ☐ Material is familiar to students from identifiable cultural, gender, linguistic, and other groups
- ☐ The task (context/texts used) is free of stereotypes
- ☐ All students have access to resources (e.g. Internet, calculators, spellcheck, etc.)
- ☐ The task can be reasonably completed under the specified conditions

Grammar[2]

(Check level that applies. Try to write the task so that the highest level applies.)

	The wording in the task and instructions is clear and grammatically correct. The task and instructions are free of wordiness, irrelevant information, unusual words, and ambiguous words.
	The task and instructions are generally clear, but contain slight grammatical or wordiness problems.
	The task and instructions are barely comprehensible due to grammatical errors and wordiness.

Sources:

1. Adapted from Stein, M. K., Smith, M. S., Henningsen, M., & Silver, E. A. (2009). *Implementing standards-based mathematics instruction* (2nd ed.). New York: Teachers College Press.
2. Adapted from Diaz-Bilello, E., Thompson, J., & Hess, K. K. (2013). *SLO Assessment Quality Check Tool*. Denver, CO: National Center for the Improvement of Educational Assessment.

CADRE

Assessment analysis tool

Alignment to learning progression

(Try to construct the assessment so that the bulk of the items cover the range of the LP where you expect most students to be, with some items below this range and some items above this range)

Write the range of levels in the LP where you expect most students to be:

☐ — ☐

Write the range of levels in the LP that this assessment covers:

☐ — ☐

Distribution of items:

	Number of items
Below expected range of students	
In expected range of students	
Above expected range of students	

Options for expressing understanding

(Write the number of items on the assessment in each category. Try to construct the assessment so that there are both types of items)

	Number of items
More than one way to express understanding	
One way to express understanding	

Fair and unbiased[3]

(Check all that apply. Try to write the task so that all of these can be checked.)

- ☐ Material is familiar to students from identifiable cultural, gender, linguistic, and other groups
- ☐ All tasks (context/texts used) are free of stereotypes
- ☐ All students have access to resources (e.g. Internet, calculators, spellcheck, etc.)
- ☐ Assessment conditions are the same for all students or flexible enough not to change what's being assessed (e.g., reading a passage aloud may be fine for interpreting, but not for decoding words)
- ☐ The assessment can be reasonably completed under the specified conditions
- ☐ The rubric or scoring guide is clear for different response modes (oral, written, etc.)
- ☐ Instructions are free of wordiness or irrelevant information
- ☐ Instructions are free of unusual words (unusual spellings or uses) that the student may not understand
- ☐ Instructions are free of ambiguous words
- ☐ There are no proper names that students may not understand (e.g., because they have never seen them before in instruction)
- ☐ Questions/prompts are marked with graphic or visual cues (bullets, numbers, in a text box, etc.)
- ☐ The assessment format is consistent
- ☐ Formatting and layout is visually clear and uncluttered

Sources:

3. Adapted from Diaz-Bilello, E., Thompson, J., & Hess, K. K. (2013). *SLO Assessment Quality Check Tool*. Denver, CO: National Center for the Improvement of Educational Assessment.

CADRE