

# Assessment in Mathematics



## Assessment Strategies and Tools: Checklists, Rating Scales and Rubrics

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Checklists, rating scales and rubrics are tools that state specific criteria and allow teachers and students to gather information and to make judgements about what students know and can do in relation to the outcomes. They offer systematic ways of collecting data about specific behaviours, knowledge and skills.

The quality of information acquired through the use of checklists, rating scales and rubrics is highly dependent on the quality of the descriptors chosen for assessment. Their benefit is also dependent on students' direct involvement in the assessment and understanding of the feedback provided.

The purpose of checklists, rating scales and rubrics is to:

- provide tools for systematic recording of observations
- provide tools for self-assessment
- provide samples of criteria for students prior to collecting and evaluating data on their work record the development of specific skills, strategies, attitudes and behaviours necessary for demonstrating learning
- clarify students' instructional needs by presenting a record of current accomplishments.

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### Tips for Developing Checklists, Rating Scales and Rubrics

1. Use checklists, rating scales and rubrics in relation to outcomes and standards.
2. Use simple formats that can be understood by students and that will communicate information about student learning to parents.
3. Ensure that the characteristics and descriptors listed are clear, specific and observable.
4. Encourage students to assist with constructing appropriate criteria. For example, what are the descriptors that demonstrate levels of performance in problem solving?
5. Ensure that checklists, rating scales and rubrics are dated to track progress over time.
6. Leave space to record anecdotal notes or comments.
7. Use generic templates that become familiar to students and to which various descriptors can be added quickly, depending on the outcome(s) being assessed.
8. Provide guidance to students to use and create their own checklists, rating scales and rubrics for self-assessment purposes and as guidelines for goal setting.

**Checklists** usually offer a yes/no format in relation to student demonstration of specific criteria. This is similar to a light switch; the light is either on or off. They may be used to record observations of an individual, a group or a whole class.

**Rating Scales** allow teachers to indicate the degree or frequency of the behaviours, skills and strategies displayed by the learner. To continue the light switch analogy, a rating scale is like a dimmer switch that provides for a range of performance levels. Rating scales state the criteria and provide three or four response selections to describe the quality or frequency of student work.

Teachers can use rating scales to record observations and students can use them as self-assessment tools. Teaching students to use descriptive words, such as **always**, **usually**, **sometimes** and **never** helps them pinpoint specific strengths and needs. Rating scales also give students information for setting goals and

improving performance. In a rating scale, the descriptive word is more important than the related number. The more precise and descriptive the words for each scale point, the more reliable the tool.

Effective rating scales use descriptors with clearly understood measures, such as frequency. Scales that rely on subjective descriptors of quality, such as **fair**, **good** or **excellent**, are less effective because the single adjective does not contain enough information on what criteria are indicated at each of these points on the scale.

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### Added value

Increase the assessment value of a checklist or rating scale by adding two or three additional steps that give students an opportunity to identify skills they would like to improve or the skill they feel is most important. For example:

- put a star beside the skill you think is the most important for encouraging others
- circle the skill you would most like to improve
- underline the skill that is the most challenging for you.

**Rubrics** use a set of criteria to evaluate a student's performance. They consist of a fixed measurement scale and detailed description of the characteristics for each level of performance. These descriptions focus on the **quality** of the product or performance and not the **quantity**; e.g., not number of paragraphs, examples to support an idea, spelling errors. Rubrics are commonly used to evaluate student performance with the intention of including the result in a grade for reporting purposes. Rubrics can increase the consistency and reliability of scoring.

Rubrics use a set of specific criteria to evaluate student performance. They may be used to assess individuals or groups and, as with rating scales, may be compared over time.

### Developing Rubrics and Scoring Criteria

Rubrics are increasingly recognized as a way to both effectively assess student learning and communicate expectations directly, clearly and concisely to students. The inclusion of rubrics in a teaching resource provides opportunities to consider what demonstrations of learning look like, and to describe stages in the development and growth of knowledge, understandings and skills. To be most effective, rubrics should allow students to see the progression of mastery in the development of understandings and skills.

Rubrics should be constructed with input from students whenever possible. A good start is to define what quality work looks like based on the learning outcomes. Exemplars of achievement need to be used to demonstrate to students what an excellent or acceptable performance is. This provides a collection of quality work for students to use as reference points. Once the standard is established, it is easy to define what exemplary levels and less-than-satisfactory levels of performance look like. The best rubrics have three to five descriptive levels to allow for discrimination in the evaluation of the product or task. Rubrics may be used for summative purposes to gauge marks by assigning a score to each of the various levels.

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### When developing a rubric, consider the following:

- What are the specific outcomes in the task?
- Do the students have some experience with this or a similar task?
- What does an excellent performance look like? What are the qualities that distinguish an excellent response from other levels?
- What do other responses along the performance quality continuum look like?
- Is each description qualitatively different from the others? Are there an equal number of descriptors at each level of quality? Are the differences clear and understandable to students and others?

Begin by developing criteria to describe the Acceptable level. Then use Bloom's taxonomy to identify differentiating criteria as you move up the scale. The criteria should not go beyond the original performance task, but reflect higher order thinking skills that students could demonstrate within the parameters of the initial task.

When developing the scoring criteria and quality levels of a rubric, consider the following guidelines.

- Level 4 is the **Standard of excellence** level. Descriptions should indicate that all aspects of work exceed grade level expectations and show exemplary performance or understanding. This is a "Wow!"
- Level 3 is the **Approaching standard of excellence** level. Descriptions should indicate some aspects of work that exceed grade level expectations and demonstrate solid performance or understanding. This is a "Yes!"
- Level 2 is the **Meets acceptable standard**. This level should indicate minimal competencies acceptable to meet grade level expectations. Performance and understanding are emerging or developing but there are some errors and mastery is not thorough. This is a "On the right track, but ...".
- Level 1 **Does not yet meet acceptable standard**. This level indicates what is not adequate for grade level expectations and indicates that the student has serious errors, omissions or misconceptions. This is a "No, but ...". The teacher needs to make decisions about appropriate intervention to help the student improve.

### Creating Rubrics with Students

Learning increases when students are actively involved in the assessment process. Students do better when they know the goal, see models and know how their performance compares to learning outcomes.

Learning outcomes are clarified when students assist in describing the criteria used to evaluate performance. Use brainstorming and discussion to help students analyze what each level looks like. Use student-friendly language and encourage students to identify descriptors that are meaningful to them. For example, a Grade 3 class might describe levels of quality with phrases such as the following.

- Super!
- Going beyond
- Meets the mark
- Needs more work.

Use work samples to help students practise and analyze specific criteria for developing a critical elements list. They can also use samples to practise assigning performance levels and compare criteria from level to level.

Although rubrics are often used as assessment of learning tools, they can also be used as assessment for learning tools. Students can benefit from using rubrics as they become more competent at judging the quality of their work and examining their own progress.

Example:

- Involve students in the assessment process by having them participate in the creation of a rubric. This process facilitates a deeper understanding of the intended outcomes and the associated assessment criteria.
- After a rubric has been created, students can use it to guide their learning. Criteria described in a rubric serve to focus student reflection on their work and facilitate the setting of learning goals for a particular performance assessment. Through self-assessment or peer-assessment, students can use a rubric to assess work completed to date and use it to guide their planning for the "next steps" in learning.

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