Guide to Using the Ten Dimensions Continuum
(See pages 48 and 49 in Section 3 for details.)

**Dimension 1: Program Scope and Planning**
See Section 2, page 17 for more information on Dimension 1.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strands and Key Ideas</td>
<td><em>The teacher identifies some of the curriculum expectations/outcomes in each strand</em></td>
<td><em>The teacher identifies most of the expectations/outcomes but always treats each strand separately</em></td>
<td><em>The teacher identifies all of the expectations/outcomes in each strand, integrating strands and building on key ideas on occasion</em></td>
<td><em>The teacher identifies all of the curriculum expectations/outcomes in each strand, integrating strands where appropriate and building on key ideas where possible</em></td>
</tr>
<tr>
<td>Processes</td>
<td>integrates few of the math process standards or integrates them occasionally</td>
<td>integrates some of the math process standards</td>
<td>integrates most of the math process standards</td>
<td>integrates all of the math process standards and articulates the processes to students</td>
</tr>
<tr>
<td>Resources for teaching</td>
<td>relies on a single resource and follows it indiscriminately without checking for curriculum appropriateness</td>
<td>relies on a single curriculum appropriate resource</td>
<td>uses several curriculum appropriate resources</td>
<td>uses a variety of curriculum appropriate resources as required</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Guiding Questions</th>
<th>Possible Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strands and Key Ideas</td>
<td>For discussion: • Why did you decide to focus on [fractions] in Term 2? • How did you decide which expectations/outcomes to focus on in your lesson for tomorrow? • I noticed this lesson focuses on [Number]. Are there potential links to other strands you’ve already covered or to ones that you’ve yet to teach? • Which key ideas are you focusing on in this unit and why?</td>
<td>• The teacher can describe what thinking processes she or he engaged in to decide where and when to teach a particular topic. • The teacher shows familiarity with the expectations/outcomes and can articulate a rationale for deciding which to focus on and when. • The teacher’s unit plans show how learning opportunities in several strands have been considered, and all relevant expectations/outcomes are covered. • The teacher shows familiarity with the use of key ideas.</td>
</tr>
<tr>
<td>Processes</td>
<td>For discussion: • How will you highlight the mathematical processes appropriate for this lesson? • If I asked your students what [communication] in math is, what would they tell me?</td>
<td>• The teacher is familiar with the processes and is able to articulate why a particular process made sense in the lesson. • The teacher indicates that she or he is explicit about drawing attention to the processes.</td>
</tr>
<tr>
<td>Resources for Teaching</td>
<td>For discussion: • Where did you get the ideas for the activities in this lesson/unit? • Why do you think this resource is particularly suited to this topic for our curriculum?</td>
<td>• The teacher indicates that she or he considered some alternative sources. • The teacher shows that she or he realizes the importance of a resource being consistent with the curriculum.</td>
</tr>
</tbody>
</table>
**DIMENSION 2: MEETING INDIVIDUAL NEEDS**

See Section 2, page 20 for more information on Dimension 2.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lesson Styles</td>
<td>The teacher relies on one lesson style that he or she is most comfortable with (usually direct instruction)</td>
<td>The teacher uses two lesson styles that he or she is most comfortable with (usually direct instruction and guided) with some regard for student needs or math content</td>
<td>The teacher uses all three lesson styles (direct instruction, guided, and exploration) chosen according to student needs or math content</td>
<td>The teacher uses a balance of three lesson styles (direct instruction, guided, and exploration) chosen according to student needs and math content</td>
</tr>
<tr>
<td>Differentiated Instruction</td>
<td>never or rarely differentiates instruction</td>
<td>sometimes differentiates instruction using some of these techniques</td>
<td>regularly differentiates instruction using some of these techniques</td>
<td>regularly differentiates instruction using all of these techniques</td>
</tr>
<tr>
<td></td>
<td><strong>Techniques:</strong></td>
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</tr>
<tr>
<td></td>
<td>• scaffolding</td>
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<tr>
<td></td>
<td>• open-ended tasks</td>
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<td></td>
<td>• varying tools</td>
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<td></td>
<td>• varying time</td>
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<tr>
<td></td>
<td>• varying physical arrangements</td>
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<td></td>
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<tr>
<td></td>
<td>• varying group arrangements</td>
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</tbody>
</table>

**Guiding Questions**

**While observing:**
- Do the students seem to expect a particular lesson structure? Do they show surprise at a lesson's direction?
- Do the elements of the observed lesson seem “authentic” or “forced”? “natural”? “appropriate”?

**For discussion:**
- Why did you choose this lesson style to develop this concept?
- How do you determine your lesson style?

**Possible Evidence**

- Students should seem excited, and not nervous, about unexpected elements in the lesson.
- The teacher's lesson plan book should not always show the same headings for every single lesson.
- If observing a number (or series) of lessons, different lesson styles should be observable.
- The teacher can comfortably talk about different lesson styles with respect to addressing student needs and teaching different math content.

**Differentiated Instruction**

**While observing:**
- Are manipulatives and technology available to students?
- Does the teacher provide additional support or scaffolding for some students?
- Is the teacher flexible about how long students take to complete a task?

**For discussion:**
- What accommodations, adaptations, and modifications did you try to use to reach all students?
- How do you help your struggling students and challenge your most able students?

**Possible Evidence**

- Struggling students are provided with tools to involve them in the same interesting tasks as their peers.
- Students are grouped in ways that would facilitate growth for all.
- The teacher assigns rich open-ended mathematical tasks to allow students of all levels to respond accordingly.
- The teacher is able to explain how she or he modifies a mathematical goal for a group of students, rather than setting a completely different goal.
## Dimension 3: Learning Environment

See Section 2, page 23 for more information on Dimension 3.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Guiding Questions</th>
<th>Possible Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom Organization and Grouping</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The teacher presents a disorganized and inaccessible classroom; rarely uses grouping strategies</td>
<td>While observing: • Are materials easily accessed and stored in an organized way? • Are useful mathematical references posted in the room, for example, math terms? • Do groups have sufficient space in which to work and face each other? • Do students have personal and shared space or do students always work in groups? • Does the group size fit the task? • Does each group member have a role? For discussion: • How do you manage for efficient and fair distribution of materials? • What cooperative learning strategies have you taught your students? • How do you decide how to group students?</td>
<td>• Students seem familiar with a “system” for accessing required manipulatives. • Manipulatives are easy to access and sorted by type. • Relevant references for a particular unit of study are posted in the room. • Passages are clear for easy movement. • Students have clearly marked personal spaces. • Desks are arranged in groups so that students can interact effectively. • Group sizes are not so big that some students are left out. • Cooperative learning strategies are taught and posted. • Groups vary; students are not working with the same students all year.</td>
</tr>
<tr>
<td>The teacher presents a reasonably organized and accessible classroom; occasionally uses grouping strategies</td>
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<td></td>
</tr>
<tr>
<td>The teacher presents an organized and accessible classroom; regularly uses grouping strategies; encourages groups to respect input from their members</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The teacher presents a very organized and accessible classroom; regularly uses a wide range of grouping strategies; encourages groups to solicit and respect input from their members</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher Feedback and Student Input/Choice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>rarely provides constructive feedback to students; rarely allows for student input</td>
<td>While observing: • Does the teacher show respect for incomplete or incorrect answers? • Are items representing a student’s best effort posted, even if they are not perfect? • Does the teacher encourage many responses to his/her questions? ask for suggestions about activities from students? • Does the teacher redirect the discussion based on student responses? For discussion: • Why did you post [those pieces of work]? • What do you do to encourage quieter students to participate? • How have you encouraged all group members to participate?</td>
<td>• When a student responds incorrectly, the teacher finds a way to restore dignity to the student. • Student work is posted. Different approaches are highlighted. • Teacher feedback is honest, but positive.</td>
</tr>
<tr>
<td>sometimes provides constructive feedback to students; sometimes allows student input but may dismiss input that appears irrelevant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>usually provides constructive feedback to students; usually allows student input and shows interest in students’ ideas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>always provides constructive feedback to students; actively encourages student input, allowing for new directions proposed by the students</td>
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<td></td>
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</tbody>
</table>
**DIMENSION 4: STUDENT TASKS**
See Section 2, page 25 for more information on Dimension 4.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rich Tasks</td>
<td><em>The teacher</em> rarely, if ever, assigns rich tasks or only assigns them to selected students when “regular” work is completed</td>
<td><em>The teacher</em> sometimes assigns rich tasks but only to selected students and/or when “regular” work is completed</td>
<td><em>The teacher</em> regularly assigns rich tasks to all students</td>
<td><em>The teacher</em> uses rich tasks as the foundation of the math program for all students</td>
</tr>
<tr>
<td>Engaging Skill-Based and Procedural Tasks</td>
<td>assigns a significant amount of skill and procedural practice with no attempt to make it engaging</td>
<td>assigns some engaging tasks for skill and procedural practice</td>
<td>often provides engaging tasks for skill and procedural practice</td>
<td>routinely provides engaging tasks for all skill and procedural practice</td>
</tr>
<tr>
<td>Representation/Modelling</td>
<td>assigns tasks that allow for mostly one form of representation (usually symbolic) to complete tasks and communicate solutions</td>
<td>assigns tasks that allow for two forms of representation selected by the teacher (usually pictorial and symbolic), to complete tasks and communicate solutions</td>
<td>assigns tasks that allow for opportunities to use multiple forms of representations to complete tasks and communicate solutions</td>
<td>assigns tasks that allow for opportunities to construct, use, and choose from multiple forms of representations to complete tasks and communicate solutions</td>
</tr>
</tbody>
</table>

**Guiding Questions**

**Rich Tasks**

*While observing:*
- Does the task focus on solving a problem and allow for personalized approaches?
*For discussion:*
- Can you show me a task that would be considered rich and explain why its rich?
- Do you regularly assign rich tasks?

**Engaging Skill-Based and Procedural Tasks**

*While observing:*
- Is practice and application embedded in context or a game/puzzle?
- Does the context chosen appear to be of interest to students?
*For discussion:*
- How do you select contexts for tasks?
- What do you do to make skill practice more interesting for students?

**Representation/Modelling**

*While observing:*
- Does the teacher expect only one representation thus demanding more structure than required for communicating a response or modelling a problem?
- Does the teacher suggest the potential for multiple representations or models?
*For discussion:*
- Do you normally tell students what model to use or do you leave it to them?
- How do you choose or design tasks that encourage more than one possible model?

**Possible Evidence**

- The teacher can demonstrate and justify a range of tasks in a given unit of study.
- The teacher can provide samples of rich tasks and explain why they are rich and why that approach is taken.
- The teacher relates the solution of the task to other mathematical ideas previously encountered.
- Relevant contexts are used that are appropriate and of interest to the particular group of students.
- The teacher recognizes that even straightforward tasks can and should be made engaging.
- The teacher uses games and puzzles as a regular part of his or her program.
- The teacher allows for, encourages, and welcomes multiple representations: graphic, numerical, written, verbal, and physical.
- Posted student work shows that the teacher values multiple representations to a problem or task.
- There is easy access to manipulatives, grid paper, calculators, and other representational tools.
### Dimension 5: Constructing Knowledge
See Section 2, page 28 for more information on Dimension 5.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructional Approach</td>
<td>The teacher takes a predominantly skills approach to teaching mathematics</td>
<td>The teacher takes a combination of a skills approach and a conceptual approach to teaching mathematics</td>
<td>The teacher takes a predominantly conceptual approach to teaching mathematics, occasionally using a constructivist approach</td>
<td>The teacher takes a predominantly constructivist approach to teaching mathematics</td>
</tr>
<tr>
<td>Questioning</td>
<td>rarely uses questioning techniques that elicit mathematical thinking</td>
<td>occasionally uses questioning techniques that elicit mathematical thinking</td>
<td>often uses questioning techniques that elicit mathematical thinking</td>
<td>regularly uses questioning techniques that elicit mathematical thinking</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Guiding Questions</th>
<th>Possible Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructional Approach</td>
<td>While observing: • How is prior knowledge determined and acknowledged? • Does the teacher focus on the students’ approaches or his or her own approach? • Does the teacher focus on building understanding? For discussion: • How do you try to acknowledge the different prior knowledge that students have? • How do you decide when to guide rather than deliberately focus on students’ approaches? • What background do you have with respect to a constructivist approach to teaching mathematics?</td>
<td>• The teacher makes deliberate connections to prior knowledge. • Student questions drive the lessons and tasks. • The teacher provides significant blocks of time for student exploration of concepts and a variety of materials. • The teacher listens to student answers and encourages exploration of errors and misconceptions. • The teacher appears reasonably knowledgeable about constructivism and what it looks like in a mathematics classroom.</td>
</tr>
<tr>
<td>Questioning</td>
<td>While observing: • Do the teacher’s questions elicit prior knowledge in a deliberate way? • How many questions are asked? • How does the teacher treat wrong answers? • Are the teacher’s tone and body language appropriate? For discussion: • How do you encourage more students to respond to questions? • How do you decide how long to wait for an answer? • Are you aware of your tone and body language when you respond to student answers?</td>
<td>• The teacher asks probing questions to start the lesson and deepen thinking and understanding. • Students are regularly asked to clarify their understanding so the teacher can support their learning. • The teacher asks fewer, but deeper, questions that require student thinking and provides sufficient wait time after asking those questions. • The teacher does not judge answers to questions too quickly. • The teacher’s tone and body language do not influence student responses negatively.</td>
</tr>
</tbody>
</table>
### Dimension 6: Communicating with Parents

See Section 2, page 31 for more information on Dimension 6.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message</strong></td>
<td><em>The teacher</em> communicates about student performance at the end of a reporting period and when students are struggling</td>
<td><em>The teacher</em> communicates about student performance at the end of a reporting period and when students are struggling; occasionally communicates with parents about the math program</td>
<td><em>The teacher</em> regularly communicates about student performance and the math program; works with staff to inform parents about math education</td>
<td><em>The teacher</em> regularly communicates about student performance and the math program; works with staff to inform parents about math education; invites parents to communicate information about their children to help with student programming</td>
</tr>
<tr>
<td><strong>Media</strong></td>
<td>communicates mainly through report cards</td>
<td>communicates through report cards and occasionally through other media</td>
<td>communicates through report cards and regularly through other media</td>
<td>communicates through report cards and regularly through a variety of other media</td>
</tr>
<tr>
<td><em>Media:</em></td>
<td>• report cards</td>
<td>• phone calls</td>
<td>• e-mail</td>
<td>• comments on student work</td>
</tr>
<tr>
<td></td>
<td>• agendas</td>
<td>• homework</td>
<td>• newsletters</td>
<td>• monthly calendars</td>
</tr>
<tr>
<td></td>
<td>• Web pages</td>
<td>• school displays</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Guiding Questions</th>
<th>Possible Evidence</th>
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</thead>
</table>
| **Message and Media** | *For discussion:*  
• What forms of communication do you use to inform parents about what is happening in your classroom with respect to the mathematics program?  
• How do you deal with parents who are skeptical of some of the changes occurring in mathematics education?  
• How do you communicate with parents about a student’s progress?  
• Do you actively solicit information about your students from their parents that would help in programming for the students? What sort of information do you ask for? | • The teacher demonstrates contact with parents of students who are performing exceptionally well, performing at an acceptable level, and performing below expectations.  
• Communication with parents is up-beat and inviting, rather than only expressing concerns or feeling overly formal. Educational jargon is avoided.  
• When parents are alerted about problems, a plan of action is proposed that involves action by all relevant parties: administrator, teacher, student, and parents.  
• The teacher acknowledges that parents can offer important information about their child that is helpful in planning for that child. |
## Dimension 7: Manipulatives and Technology
See Section 2, page 32 for more information on Dimension 7.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manipulatives</td>
<td>The teacher rarely, if ever, uses manipulatives</td>
<td>The teacher uses manipulatives on occasion and/or for only selected students and often in a procedural way</td>
<td>The teacher regularly uses manipulatives for all students to develop conceptual understanding</td>
<td>The teacher regularly uses a variety of manipulatives for all students to develop conceptual understanding; encourages students to explore mathematics through use of the manipulatives</td>
</tr>
<tr>
<td>Technology (calculators and computers)</td>
<td>The teacher rarely, if ever, integrates technology, even when required by the curriculum</td>
<td>The teacher sometimes integrates technology as required by the curriculum; does not ensure students use technology correctly and for most of its potential</td>
<td>The teacher integrates technology as required by the curriculum; ensures students use technology correctly and for most of its potential</td>
<td>The teacher integrates technology as required by the curriculum; enhances instruction using technology in additional ways; ensures students use technology correctly and efficiently and for maximum potential and student benefit</td>
</tr>
</tbody>
</table>

### Guiding Questions

**Manipulatives**
- While observing:
  - Are students familiar with manipulatives?
  - Is the focus mainly on how to use the physical materials or on how the materials represent mathematical ideas?
  - Is exploration of mathematical ideas with materials encouraged?
- For discussion:
  - How do manipulatives assist your students in their learning?
  - Do you regularly use manipulatives? Are any manipulatives always available and to all students?

**Technology**
- While observing:
  - Do students use calculators as a regular tool in problem-solving situations?
  - Do many students misuse calculators, for example, to add single-digit numbers?
  - Does the software used reflect the spirit and intentions of the curriculum?
- For discussion:
  - Have you managed to address all technology expectations/outcomes?
  - Have you been able to use technology to enhance the curriculum?
  - What professional development have you undertaken to integrate manipulatives and/or technology?

### Possible Evidence

- Students are not distracted by manipulatives but use them as meaningful learning tools.
- Students use language that clearly connects mathematical vocabulary to physical actions with the manipulatives.
- Students refer to the manipulative materials by name.
- Manipulatives are used by all students, not just struggling students.
- Manipulatives are easily accessed and in sufficient quantity for all students to use them effectively.

- Students access technology in problem-solving contexts.
- The teacher focuses on the value of technology in learning ideas rather than as an end in itself.
- Software used is curriculum appropriate.
- A schedule for regular access to computers is posted.
- Students show good judgment about when technology is used.
- Students show a level of comfort with technology.
- Students appear to know procedures for using technology correctly and efficiently.
**DIMENSION 8: STUDENT’S MATHEMATICAL COMMUNICATION**

See Section 2, page 34 for more information on Dimension 8.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
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</thead>
<tbody>
<tr>
<td><strong>Oral Communication</strong></td>
<td>The teacher rarely assigns group tasks or asks questions that require students to communicate orally using mathematical language</td>
<td>The teacher occasionally assigns tasks and asks questions that require students to communicate orally using mathematical language</td>
<td>The teacher often assigns group tasks and asks questions that require students to communicate orally using mathematical language</td>
<td>The teacher regularly assigns group tasks and asks questions that require students to communicate orally using mathematical language</td>
</tr>
<tr>
<td><strong>Written Communication</strong></td>
<td>rarely assigns tasks that require students to express their mathematical thinking in writing; provides little, if any, instruction or feedback in writing for mathematics</td>
<td>occasionally assigns tasks that require students to express their mathematical thinking in writing, in a variety of forms/types; provides limited instruction and feedback in writing for mathematics</td>
<td>often assigns tasks that require students to express their mathematical thinking in writing, in a variety of forms/types; provides some instruction and feedback in writing for mathematics</td>
<td>regularly assigns tasks that require students to express their mathematical thinking in writing, in a variety of forms/types; provides regular instruction and feedback in writing for mathematics</td>
</tr>
</tbody>
</table>

**Guiding Questions**

**Oral Communication**

While observing:
- Are students given frequent opportunities to speak during mathematics classes?
- Are correct math language and clarity of expression encouraged?
- Are students consistently required to explain their thinking, for other students as well as for the teacher?
- Do students clarify their mathematical thinking by communicating with each other?

For discussion:
- How do you ensure that all your students have sufficient opportunities to converse mathematically?
- What are your goals for mathematical communication?
- How do you balance oral and written communication in your program?

**Written Communication**

While observing:
- Does the teacher model criteria for the quality of writing expected?
- Do students express themselves using mathematical terminology?
- Is the writing coherent and clear?

For discussion:
- How do you decide what level of writing is acceptable?
- Is your assigned written communication mostly about how concepts are related, what a concept is about, or how procedures are to be applied?
- Do you explicitly teach students how to write about mathematics?

**Possible Evidence**

- Students build on one another’s ideas through communicating, without continuous teacher intervention.
- The teacher consistently uses and models appropriate mathematical language.
- The teacher acknowledges good oral communication and highlights inappropriate communication, including incorrect math language without embarrassing the student.
- Students frequently ask questions, offer conjectures, and express their ideas.
- The teacher encourages students to explain another student’s point of view and to agree or disagree with an opinion, providing reasons.
- Criteria or samples of work are discussed and posted to show expected quality of writing.
- Students usually write more than a single sentence or two.
- Student writing reflects appropriate mathematical language.
- Student writing clearly shows understanding (or lack) of mathematical ideas.
- Students write to a variety of formats and for a variety of purposes.
- The teacher specifically teaches communication skills.
### DIMENSION 9: ASSESSMENT

See Section 2, page 38 for more information on Dimension 9.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
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</thead>
<tbody>
<tr>
<td>Purpose</td>
<td>The teacher uses summative assessment to report on student achievement of content only</td>
<td>The teacher uses summative assessment to report on student achievement; assesses mainly content but some processes; occasionally uses diagnostic and formative assessment to inform instruction</td>
<td>The teacher regularly uses diagnostic, formative, and summative assessment to inform instruction and to report on student achievement; usually assesses both content and processes</td>
<td>The teacher always uses diagnostic, formative, and summative assessment to inform instruction and to report on student achievement; always assesses both content and processes</td>
</tr>
<tr>
<td>Assessment Strategies</td>
<td>relies on one type of assessment strategy, usually written quizzes and tests</td>
<td>predominantly relies on written quizzes and tests but occasionally other assessment strategies</td>
<td>uses a variety of assessment strategies related to student needs and what is being assessed; encourages self-assessment</td>
<td>routinely uses a variety of assessment strategies related to student needs and what is being assessed; is responsive to student needs and interests by being flexible about assessment strategies; teaches students how to self-assess</td>
</tr>
<tr>
<td>Transparency and Feedback</td>
<td>defines criteria for evaluation during marking; provides feedback to students using a mark or a score</td>
<td>defines criteria for evaluation prior to assessment but does not disclose the criteria to students; sometimes provides feedback to students using specific anecdotal comments</td>
<td>usually defines criteria for evaluation and discloses the criteria to students prior to assessment; usually provides feedback to students using specific anecdotal comments</td>
<td>always defines criteria for evaluation and discloses the criteria to students prior to assessment; always provides feedback to students using specific anecdotal comments</td>
</tr>
</tbody>
</table>

#### Guiding Questions

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Guiding Questions</th>
<th>Possible Evidence</th>
</tr>
</thead>
</table>
| Purpose           | *For discussion:*  
  - How do you incorporate diagnostic, formative, and summative assessment?  
  - How does the information you gather in formative assessment affect your practice?  
  - How do you ensure that process as well as content is assessed? | *Pretests or other forms of diagnostic assessment are used to inform instruction.*  
  *Unit plans specifically indicate a variety of assessments to be used.*  
  *Assessment plans show attention to processes as well as content strands.* |
| Assessment Strategies | *For discussion:*  
  - How do you ensure that you are gathering valid data?  
  *The teacher is able to explain why she or he uses a particular form of assessment in a particular situation.* |
| Transparency and Feedback | *For discussion:*  
  - Do your students practise self- and peer-assessment?  
  - Are students aware of how they are being assessed? Are they involved in setting criteria? | *Students are provided with frameworks for self- and peer-assessment.*  
  *Students participate in negotiating evaluation schemes with the teacher.*  
  *When asked to describe criteria for good work, the teacher can do so in a way that is understandable.* |
## Dimension 10: Teacher’s Attitude and Comfort with Mathematics

See Section 2, page 41 for more information on Dimension 10.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Attitude</strong></td>
<td>The teacher exhibits a negative or neutral attitude toward the subject</td>
<td>The teacher shows very little enthusiasm for the subject</td>
<td>The teacher generally shows enthusiasm for the subject and its importance and value</td>
<td>The teacher often shows passion for the subject and its importance and value</td>
</tr>
<tr>
<td><strong>Comfort With Mathematics</strong></td>
<td>is not comfortable with the subject and, as a result, focuses on rules</td>
<td>is not very comfortable with the subject; rarely, if ever, draws connections between different mathematical ideas; is uncomfortable with alternative approaches to the one taught or expected</td>
<td>is somewhat comfortable with the subject; occasionally draws connections between different mathematical ideas; is willing to accept alternative approaches and solutions</td>
<td>is very comfortable with the subject; regularly draws connections between different mathematical ideas; is open to and encourages alternative approaches and solutions</td>
</tr>
</tbody>
</table>

### Guiding Questions

**Attitude**
- While observing:
  - Does the teacher show enthusiasm for the subject?
  - Does the teacher regularly connect mathematics with positive real-world experiences?
  - Does the teacher try to make the math as engaging and meaningful as possible?
- For discussion:
  - How do you feel about teaching math?
  - How do you respond to students who talk about math as being difficult?
  - What message about mathematics do you think you convey to your students?

**Comfort With Mathematics**
- While observing:
  - Is the teacher able to effectively address most of the questions posed by students?
  - Does the teacher help students make connections from what is learned in one situation to what was learned in another?
  - Is the teacher open to any different approaches that may be suggested by students?
- For discussion:
  - How comfortable are you with your math background so that you can plan and teach the curriculum?
  - How do you maintain or enhance your mathematical expertise?
  - What strategies do you have for dealing with situations when students have questions about mathematics that you cannot answer?

### Possible Evidence

- The teacher shows obvious enthusiasm for the subject, for example, by getting excited, talking about how “neat” or how much fun a particular task is.
- The teacher openly states that she believes that each individual student can do math successfully.
- The teacher welcomes a variety of approaches to mathematical situations and responds with understanding to unexpected responses.
- The teacher goes beyond rules and helps students make sense of the math in a meaningful way.
- The teacher seeks and participates in opportunities to increase his or her mathematical expertise.
- The teacher is aware of Internet and print resources such as math dictionaries, methodology books and Web sites where he or she can find answers to questions that might arise about mathematics and math education.