

# Numeracy Performance Standards Revision

## Instructions for Field-Testing

### Context

Over the past year, the Ministry has been working with math educators to update the BC Numeracy Performance Standards to ensure that they are aligned with the current curriculum, while continuing to build on the extensive work that many BC districts, schools, teachers, and inquiry groups have already done.

The revised standards will feature:

- One scale for each of grades 1-3; 4-6; 7-9; 10-12, with space to indicate the specific **strands** and **key concepts** that are being assessed in specific cases.
- Tasks/sample sets at each grade (we plan to have a minimum of two tasks/student sample sets – and at least one of these will feature **number**)

In the first phase of the revision, prototypes for Grades 1 to 9 have been field-tested. These prototypes mainly feature number. Currently, we have developed more tasks featuring other strands and they need to be field-tested.

### Field-testing Procedures

Tasks for Grades 1 to 9 have been developed for field-testing. This task package includes a task description and the quick scale.

- We need you and your students to try the task and send the students' work to the Ministry.
- We need you to evaluate the task and use the quick scale to score students' work.
- Provide specific, concrete feedback. Use the attached *Feedback Questions* to provide focused feedback.
- Send your comments and students' work from your field testing to the Ministry. We'd like to hear from you by **December 23, 2011**.
- If you have developed any 'student-friendly' materials/tasks, please send them along.
- These tasks are being circulated as widely as possible, so please feel free to share them with others.

If you want to discuss the field testing process, please contact Nancy Walt at [Nancy.Walt@gov.bc.ca](mailto:Nancy.Walt@gov.bc.ca) or Jiemei Li at [Jiemei.Li@gov.bc.ca](mailto:Jiemei.Li@gov.bc.ca)

Please send your comments, student samples and any new materials or tasks by **December 23, 2011** to Jiemei Li

- by email at [Jiemei.Li@gov.bc.ca](mailto:Jiemei.Li@gov.bc.ca)
- by mail at: Curriculum and Assessment, PO Box 9183 Stn Prov Govt  
Victoria, BC V8W 9H1

or post them on the Moodle at <http://www.learnnowbc.ca/educators/default.aspx>

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### Feedback Questions

1. What suggestions do you have about the use of the numeracy performance standards? Are these materials easy for teachers to use?
2. Is the task grade/age-appropriate? Provide your comments and suggestions for improvement.
3. Are the rating scales easy to apply to student work? What improvements are needed?
4. Do you have student samples to demonstrate the various performance levels? Please send all or a selection of your students' work to the Ministry.
5. Have you developed any 'student-friendly' materials or tasks? Please send them to the Ministry.

Please send your comments and student samples by **December 23, 2011** to Jiemei Li

- by email at [Jiemei.Li@gov.bc.ca](mailto:Jiemei.Li@gov.bc.ca)
- by mail at: Curriculum and Assessment, PO Box 9183 Stn Prov Govt  
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Thank you!

**Quick Scale: Numeracy Performance Standards (Grades 4-6)**

Task: \_\_\_\_\_

Grade \_\_\_\_\_

Strand	Key concepts required by this task (see IRP p. 16)

	<b>Not Yet Within Expectations</b>	<b>Meets Minimal Expectations</b>	<b>Fully Meets Expectations</b>	<b>Exceeds Expectations</b>
<b>Snapshot</b>	<i>Does not meet basic requirements of the task(s) without close, ongoing assistance. Usually unable to explain result.</i>	<ul style="list-style-type: none"> <li>Satisfies basic requirements for most parts of the task, but some important aspect is flawed or incomplete. Partial explanation.</li> </ul>	<ul style="list-style-type: none"> <li>Satisfies basic requirements for all parts of the task(s); reaches and explains reasonable solution(s). (may be minor flaws)</li> </ul>	<ul style="list-style-type: none"> <li>Thoroughly satisfies requirements of all parts of the task; solution is well-developed and justified; often insightful or innovative..</li> </ul>
<b>Concepts and Connections</b> - recognizes the math; applies appropriate concepts [R] [V] [CN] - explains/demonstrates relevant concepts; makes connections [R]	<ul style="list-style-type: none"> <li>Does not recognize or apply basic concepts needed for the task(s)</li> <li>Shows little understanding of relevant concepts; explanations are incomplete or illogical</li> </ul>	<ul style="list-style-type: none"> <li>Recognizes/applies concepts needed for most parts of the task(s) (may not be best choice)</li> <li>Shows partial understanding of relevant concepts; explanations may be vague; partially incomplete</li> </ul>	<ul style="list-style-type: none"> <li>Recognizes/applies concepts needed for all parts of the task(s)</li> <li>Shows understanding of relevant concepts; explanations are logical and complete</li> </ul>	<ul style="list-style-type: none"> <li>Recognizes/applies a wide range of concepts including those that have not been recently taught; may offer alternatives</li> <li>Shows thorough understanding; explanations are insightful;</li> </ul>
<b>Problem-solving and reasoning</b> -selects and uses appropriate strategies to analyze, solve and create problems [PS] [V] [T] - flexible; perseveres - uses estimation strategies [ME] - verifies and justifies that results are reasonable [R]	<ul style="list-style-type: none"> <li>Does not use appropriate strategies; requires extensive support</li> <li>No flexibility; does not persevere to a solution</li> <li>Does not verify or justify</li> <li>Unable to use estimation strategies (answers are often highly improbable)</li> </ul>	<ul style="list-style-type: none"> <li>Uses some appropriate strategies if problem appears familiar; may need some help</li> <li>Limited flexibility and perseverance</li> <li>Needs help to verify or justify; inconsistent</li> <li>Some evidence of estimation; (some answers reasonable)</li> </ul>	<ul style="list-style-type: none"> <li>Uses appropriate strategies</li> <li>Shows some flexibility; in most cases, perseveres to find a solution</li> <li>With prompting, verifies and justifies</li> <li>Uses estimation strategies appropriately; most answers are reasonable</li> </ul>	<ul style="list-style-type: none"> <li>Uses appropriate strategies; often innovative; may add some complexity</li> <li>Shows flexibility; perseverance to find a solution</li> <li>Verifies; justifies</li> <li>Uses effective estimation strategies; answers are reasonable (relatively precise)</li> </ul>
<b>Procedures</b> - accurate and precise in recording, substitutions, calculations, units, and symbols [C] - fluent; efficient in applying procedures including mental math [ME]	<ul style="list-style-type: none"> <li>Follows procedures with limited accuracy; major errors or omissions</li> <li>Inefficient; struggles (e.g., false starts; repeats; little evidence of mental math strategies)</li> </ul>	<ul style="list-style-type: none"> <li>Follows procedures with partial accuracy; some errors or omissions</li> <li>Inconsistent; may be fluent with some procedures but inefficient or not demonstrated in others</li> </ul>	<ul style="list-style-type: none"> <li>Follows procedures accurately with some minor errors or omissions</li> <li>Uses most procedures and mental math strategies fluently; may be inefficient</li> </ul>	<ul style="list-style-type: none"> <li>Follows procedures with accuracy and precision; very few if any minor errors/omissions</li> <li>Uses procedures and mental math strategies fluently and efficiently; may find own 'shortcuts'</li> </ul>
<b>Representation and Communication</b> -communicates mathematically including mathematical language [C] -includes appropriate graphics; representations (e.g., charts, tables, graphs, diagrams; sketches) [V]	<ul style="list-style-type: none"> <li>Does not explain procedures and results clearly</li> <li>Omits required graphics or representations and/or does not construct them appropriately; many omissions; serious flaws</li> </ul>	<ul style="list-style-type: none"> <li>Partially explains procedures; results; parts are confusing, vague, incomplete</li> <li>Constructs most required graphics; representations; parts are seriously flawed/incomplete (e.g., scale inappropriate)</li> </ul>	<ul style="list-style-type: none"> <li>Explains results and procedures clearly using some math language</li> <li>Constructs required graphics and/or representations appropriately; may have minor errors or flaws (e.g., missing labels)</li> </ul>	<ul style="list-style-type: none"> <li>Explains procedures and results precisely; uses mathematical language</li> <li>Constructs required graphics and/or representations effectively and accurately</li> </ul>

Used for major tasks, projects, or ongoing observations.

## Numeracy Performance Standards, Grade 4 Task

### **Camp Schedule – Measurement (Time)**

#### **Context**

The students are asked to set up a 2-day camp schedule for their class. They need to understand the concept of time duration in order to choose and combine activities to fit into the schedule. The schedule is recorded on a 24-hour clock. This task should be administered after the students have learned about time and understand the 24 hour clock.

#### **Prescribed Learning Outcome:**

C1 read and record time using digital and analog clocks, including 24-hour clocks

#### **Process**

Every student should be able to show their understanding of mathematical skills and concepts, and be allowed to represent their understanding through concrete materials, pictures, numbers or words. Providing the opportunities for students to show what they know in a way that makes sense to them is a critical component of assessment.

Assessing student thinking requires posing questions that prompt and extend their thinking. Students may struggle to solve the problem.

The teacher's role is to ask questions that prompt and extend the student's thinking by:

- providing support and guidance
- helping students build on prior knowledge
- scaffolding the student's thinking

#### **Before**

Discuss the idea of planning for a class camping trip. Brainstorm possible activities involved with the camping trip.

Distribute copies of the task, Grade 4-Camp Schedule, which is attached. Clarify the time blocks and criteria that exist for scheduling, and emphasize that they are making one schedule for the whole class. Stress that times are set for the meals and bedtime. Note to the students that a 24-hour clock is required for the schedule.

You may choose to provide copies of the blank schedule planner for students to fill in, or have them make their own.

**NOTE:**

If possible, reproduce the task on 11 x 17 paper so it is easy for students to refer to the information while working on the task.

**During**

- Provide analog clocks to students to allow them to manipulate the times and possibly figure out the durations of time.
- Consider that different students will have different entry points. Some may start by picking their own favourite activities, or those that they think their classmates will enjoy the most. Others may start by focusing on the amount of time each activity takes.
- If students are encountering difficulties, work with them to design one two hour period.
- For students who continue to have trouble getting started, suggest focusing first on the block of time between dinner and bedtime.
- Ensure that students explain the strategy they use to configure the amount of time allotted in their schedule.
- Encourage the students to record their different ideas and choices as they draft a schedule. The students will want to refer to them as they make their final decisions.
- As the students finish, have them explain their thinking to you

**If necessary**, conference with the student and scribe what the student says.

You may need to ask the students prompting questions/statements to help uncover their strategies and thinking processes:

1. How do you know?
2. How did you start solving this problem?
3. Tell me what you are thinking.
4. Show me what you know.
5. What do you see in your head?
6. What questions did you ask yourself?
7. Why do you think that?
8. Could there be a different answer?

9. What strategies did you use to ...?
10. How does your strategy make sense to you?
11. What tools help you?

## After

**Conduct a 'SHOW AND SHARE' sessions, encouraging the students to share their strategies/thinking and to explain their reasoning to complete the task.**

Refer to the 'Performance Standards' to guide your inquiries.

Consider the following questions before recording information:

1. How well did the student understand the question?
2. What strategies did the student use to solve the problem?
3. How much support did the student require?
4. How did the student represent and communicate their thinking?
5. How well did the students reason or justify the solution?
6. In what way/s did the student make connections to other mathematical concepts or real life situations?

Name \_\_\_\_\_

Date \_\_\_\_\_

### Grade 4 – Camp Schedule

You have been asked to plan a daily schedule for your class for a 2-day camp. There are different activities available that take up different amounts of time. You may only repeat an activity once – no activity can be on the schedule more than twice.

To make the schedule you need to:

- remember the meal times and bedtime
- figure out the schedule of activities between the meals and bedtime
- use the 24-hour clock
- explain how you figured out the times of the activities and how they fit in the schedule.

## CAMP FIREWOOD SCHEDULE PLANNER

### DAY 1

Arrival 11:00

Lunch 12:00 - 12:45

#### *Afternoon Activities*

Quiet Time 16:30 - 17:30

Dinner 17:30 - 18:30

#### *Evening Activities*

Bed Time 21:00

Lights Out 21:30

### DAY 2

Breakfast 8:15 - 9:00

#### *Morning Activities*

#### Day Activities

swimming	60 min.
soccer	45 min.
archery	35 min.
arts & crafts	1 ½ hr.
rock climbing	75 min.
canoeing	1 hr.
orienteering	50 min.
horseback riding	2 hr.
hiking	1 hr. 10 min.
personal time	10-25 min.

#### Evening Activities 6:30 - 9:00

campfire	60 min
arts & crafts	1 1/2 hr.
skits	45 min.
board games & cards	45 min.

## CAMP FIREWOOD SCHEDULE PLANNER

Day/time	Activity
<b>DAY 1</b>	
11:00	<i>Arrival</i>
12:00 - 12:45	Lunch
<b>12:45-16:30</b> <i>Record the time for each activity</i>	<b><i>List your afternoon activities in the spaces below. You do not have to use all of the spaces.</i></b>
16:30 - 17:30	Quiet Time
17:30 - 18:30	Dinner
<b>18:30-21:00</b> <i>Record the time for each activity</i>	<b><i>List your evening activities below. You do not have to use all of the spaces.</i></b>
21:00	Bed time
21:30	Lights out
<b>DAY 2</b>	
8:15 - 9:00	Breakfast
<b>9:00-12:00</b> <i>Record the time for each activity</i>	<b><i>List your morning activities below. You do not have to use all of the spaces.</i></b>
12:00 - 12:45	Lunch
13:00	Departure