

NUMERACY 9: SD6 District Numeracy Assessment

Summary of Learning Opportunity

A team of math leaders from the Rocky Mountain School District (SD6) in BC sought to understand the required instruction and learning that would lead to improved district results in the Grade 10 Numeracy Assessment, by helping students to practice thinking and communication competencies. They also wanted to increase students' mathematical knowledge, skills, engagement, and confidence in math. Through a collaborative process, the math leaders created a competency-based district numeracy assessment and a marking rubric with task specific considerations. Proficient students demonstrated in-depth thinking and collaboration and were able to apply their mathematical knowledge and skills to an authentic situation. Students in classes which fully participated in the knowledge and competency building process showed growth in numerate thinking and communication.

Competencies

Developed, Practiced, and/or Assessed

Instruction and Assessment

NUMERACY: Interprets—Understands the real-world problem; Interprets—Extracts relevant information; Interprets—Identifies parameters and limitations



The first part of the District Numeracy Assessment is collaborative and focused on building students' contextual literacy as well as competencies in defining parameters and limitations and extracting relevant information.

The Spring Grade 9 assessment centred around choosing the best employer for a summer job as a tree planter. Students learned about the context of the situation by watching videos recommended by the assessment development team, followed by a facilitated class discussion.

During the individual portion of the assessment, students were given flyers from fictitious tree planting companies and answered a series of multiple-choice questions about the employers' job offers.

NUMERACY: Applies—Translates a scenario into a mathematical problem (Mathematizes); Solves—Solves the mathematical problem



Students answered a series of questions about their job earnings based on the number of trees planted and the length of time spent working, as well as other factors such as their pack weight.

The assessment rubric focused on students' application of math strategies in a real-world context.

NUMERACY: Communicates—Represents processes and solution; Communicates—Defends decisions and assumptions



Students articulated their reasons for choosing one employer over the other possibilities. They needed to show their work (process) and solution in a logical manner.

The assessment development team focused on the Communication aspect in their task and rubric development. In order to earn Proficient as an overall score, students must have achieved Proficient in a majority of the aspects, of which Communicate must be one.

Assessment Excerpts

Tree Planting Company Info

WE ARE HIRING
Join Our Summer 2026 Team

Tree Planters
 • 5 days per week
 • 8 hours/day
 • Minimum 950 trees/day
 • \$0.14 per tree
Real accommodations in the industry at a wilderness resort!

Guaran-tree-d Groves
APPLY NOW

UNBE-LEAF-ABLE FOREST MANAGEMENT COMPANY
WE ARE HIRING
Tree Planters
Summer 2026
 • 4 days/week
 • 10 hours per day
 • Minimum 1000 trees/day
 • \$0.18 per tree
 • Live in either a bush camp or a logging camp - you choose!

ROOT-ING FOR REFORESTATION

WE ARE HIRING!

LET'S JOIN OUR TEAM FOR SUMMER 2026!

TREE PLANTERS
 ✓ 4 OR 5 DAYS/WEEK ALTERNATING
 ✓ 9 HOURS PER DAY
 ✓ MINIMUM 1200 TREES/DAY
 ✓ \$0.17 PER TREE
 ✓ STAY IN EITHER A LOGGING CAMP OR A BUSH CAMP

Bush Camp
 • \$175/week, includes food.
 • Private tent.
 • Shared tent for meals and showers.
 • Transportation into town on a day off provided for laundry, etc.
 • No wi-fi

Wilderness Resort
 • \$100/week, does NOT include food.
 • Shared cabin with up to three other people.
 • Wi-fi available in common area in a separate building.

Logging Camp
 • \$155/week, includes food.
 • Shared room in a trailer.
 • Hot running water, television, internet, and laundry facilities provided.

Fast forward to May 2027 – you’re looking for a summer job, and you’ve heard that tree planting is a good way to make a lot of money in a short period of time, and an excellent opportunity to see parts of the province you might not otherwise ever visit.

Based on your availability, you have narrowed your choices down to three employers:

- Unbe-leaf-able Forest Management Company
- Guarantree-d Groves
- Root-ing for Reforestation

Look at the flyers for each of the three companies, then proceed to the warm-up questions below.

Warm-Up Questions:

Circle the letter of your answer.

- With which employer would you work the most hours over the summer?
 - Unbe-leaf-able Forest Management Company
 - Guaran-tree-d Groves
 - Root-ing for Reforestation
 - They are all the same.
- Which employer has variable food costs?
 - Unbe-leaf-able Forest Management Company
 - Guaran-tree-d Groves
 - Root-ing for Reforestation
 - They are all the same.
- Which of the following is most likely true?
 - As the slope of terrain increases, the rate at which you plant trees also increases
 - As the slope of terrain increases, the rate at which you plant trees decreases
 - The slope of the terrain has no impact on how fast you can plant trees
 - None of these are likely true
- What is the minimum amount of money you could make with the Unbe-leaf-able Forest Management Company in one week, before you pay for your accommodations?
 - \$990
 - \$7920
 - \$1020
 - \$792

Aspect	Proficiency Descriptor	Task Specific Considerations
Interpret	Makes relevant connections to fully understand the real-world problem in context; Extracts relevant information from the presented problem and other external resources as required to solve the problem; and Identifies relevant explicit parameters and limitations needed to solve the problem.	At least 3 of 4 Multiple Choice questions are correct. At least 2 logical pros and two logical cons are identified for each company. May identify missing piece of information relating to take home pay after 8 weeks of work or may assume 100 more than the minimum number of trees as per previous question or may assume minimum.
Apply	Applies the mathematical understanding needed to translate an unfamiliar scenario into a mathematical problem; Clearly represents the mathematical problem by choosing an appropriate model(s); and Uses mathematical reasoning to develop a logical and organized plan that applies appropriate mathematical tools and/or strategies (e.g. using a calculator, picture, graph, equation).	Uses correct information to perform calculations. Considers the potential change in rate of planting over the course of a day in estimating the number of trees left halfway through the day (Divided by 2 is not a proficient response).

For the remaining two, identify pros and cons for each. Some of this information will likely come from the job flyers, but your own interests, priorities, and preferences may influence how you respond.

	Company Name	Company Name
Pros		
Cons		

Educators’ Reflections

We have seen good results in the two years since we have introduced this assessment. We had expected that uptake may initially feel uncomfortable for our students and teachers because many students hadn’t yet experienced open-ended assessments like this before. Using collaboration to introduce the assessment supported student engagement and confidence, as well as ensuring each student had a baseline of literacy relative to the context.

The school with the greatest growth in student performance over the two years saw 25-30% of students demonstrating Proficient or Extending in the Fall baseline assessment increasing to 60% of students earning Proficient or Extending in the Spring assessment. In this school, teachers emphasized key numeracy aspects in their everyday teaching and learning. Teachers practiced strategies such as discussing the rubric with students, breaking down key words such as *justify*, and holding class discussions to help students identify and extract parameters and limitations in practice problems.

In the next school year, we will focus on establishing high expectations of student numerate thinking based on the Learning Progressions and sharing good practices in classroom teaching to help further build a culture of high-level numerate thinking across our district.