

Publisher Questions to Western and Northern Canadian Protocol (WNCP) Mathematics Team

Grade 2

1. Though the curriculum doesn't specify the use of the terms "face" and "vertex" until Grade 3, is it Ok for the Gr. 2 materials and for teachers to use them as long as we don't expect the students to use them or be assessed on using them. While we believe it's important for students to hear the correct vocabulary, we also recognize that you might prefer that the terminology not be quite so formal at this time. Would you have concerns if we did use those terms?

WNCP Response: Students should start using the correct terms right from the beginning. You can use the terms "face" and "vertex" as long as students are not assessed on these terms or are expected to define or know them.

Grade 5

1. Many of the achievement indicators for Outcome 11 from the Number strand emphasize estimation. However, ME isn't listed as a mathematical process associated with this outcome. Should it be?

N11. Demonstrate an understanding of addition and subtraction of decimals (limited to thousandths). [C, CN, PS, R, V]

1. Place the decimal point in a sum or difference using front-end estimation, e.g., for $6.3 + 0.25 + 306.158$, think: $6 + 306$, so the sum is greater than 312.
2. Correct errors of decimal point placements in sums and differences without using paper and pencil.
3. Explain why keeping track of place value positions is important when adding and subtracting decimals.
4. Predict sums and differences of decimals using estimation strategies.
5. Solve a given problem that involves addition and subtraction of decimals, limited to thousandths.

WNCP Response: Yes, it is an oversight. This outcome does involve mental mathematics and estimation.

2. Also related to Outcome N11 in Grade 5, there's no mention of using personal strategies for adding and subtracting decimals, as there was for adding and subtracting whole numbers in Grade 4. Is this inferred for the Grade 5 outcome?

WNCP Response: Yes, the process of personal strategies is pervasive and expected throughout all grades. The use of personal strategies is part of developing conceptual understanding and constructivism that underpin the CCF. Therefore, publishers are encouraged to include this within all possible outcomes.

- 3. Outcome N1 in Grade 5 is “Represent and describe whole numbers to 1 000 000.” The Grade 4 outcome that corresponds to this is “Represent and describe whole numbers to 10 000 ...” There was also a separate but related outcome in Grade 4 on comparing and ordering. Is comparing and ordering in Grade 5 assumed to be included in N1, as part of the general outcome of developing number sense?**

WNCP Response: We intentionally did not include ordering. By this point, students should be able to order numbers if they have a good concept of place value. It would be acceptable if some comparing was included (as part of understanding the place value) but it should not be included as a separate topic and should not be the focus of the lesson.

Grade 8

- 1. Outcome N5 indicator 1 says “explain the meaning of a/b in a given context”. Do you mean a/b as “any situation where a is proportional to b ” or a/b strictly as a fraction?**

WNCP Response: The outcome itself is about rates, ratios and proportional reasoning. The point of indicator 1 was for students to realize that the a/b fractional form can be used to relate rates, ratios and proportions.

- 2. Outcome PR1 mentions “two-variable linear relations”. Could you please clarify which types of relations are intended by “two-variable”? Are students expected to write the relations as a function, like $y = ax + b$?**

WNCP Response: We want students to become familiar with how to work within equations showing a relationship between two variables. In the case of the fourth indicator, this is not about writing an equation but describing what is happening; e.g., the value of y is increasing as the x value increases, there does not seem to be any relationship between the value of the y value and the x value. Students should be expected to make general statements of description but are not expected to write the relations in the form $y = 3x - 4$. Students need to see and describe the concrete before progressing to the abstract of writing the equation.

- 3. Outcome PR1 includes the T process. Is use of graphing technology, such as graphing calculators, graphing software, spreadsheets recommended for this grade?**

WNCP Response: At this level, there should not be a need to use a calculator. The work the students do for this outcome should be grounded in the concrete and should emphasize the direct connection between the three forms of representing a relation (equation of the relation, table of values and graph). Notice as well that the graph is to be limited to discrete data—this means no drawing of lines.

4. **Outcome PR2 limits the coefficients and constants in relations to integers. For clarification, is the solved value of the variable also limited to integers? See PR2 indicator 6, where the variable in the example does not solve as an integer:**

$$2(x + 3) = 5$$

$$2x + 6 = 5$$

$$x = -1/2 \text{ (which seems to be beyond Gr. 8 number outcomes)}$$

WNCP Response: The students should be able to get a positive decimal or fraction answer in the final step. Students may be expected to work with operations on decimals or fractions to verify their solution. Moreover, as they do not know about rational numbers, they cannot be expected to solve equations with answers that are negative decimals or fractions because they have no context of understanding for such numbers.

5. **Outcome SS6, is it the intent of indicator 2 that shapes be excluded, rather than included, as possible tiles on the basis of angle measures?**

WNCP Response: No. If you consider some shapes by themselves, they may not tessellate but if you consider combinations of shapes, they may tessellate. It is about exploring to see what shapes do tessellate.

6. **Outcome SP1 doesn't mention histograms, however, we note that students are familiar with discrete and continuous data from previous grades, and when using continuous data and intervals to create a bar graph, you're actually making a histogram. Is the intent to save histograms for Gr 10-12, or can they be included in Gr 8 as one type of graph?**

WNCP Response: Limit the graphing of continuous data to line graphs and do not include histograms.

Grade 9

1. **Outcomes N1 and N2 don't mention scientific notation, however, there is a T process with both, from which we conclude that at an appropriate point in development, students will be using calculators when working with exponents. Since they are likely to use scientific calculators, this means that they are likely to get answers on their calculators in scientific notation. Should scientific notation be introduced in Grade 9?**

WNCP Response: No, scientific notation was intentionally removed from the K-9 CCF.