

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

General: Metric Spacing

- 1. In Number Expectation SO 1, 3, 4 for Grade 3, and in the Achievement Indicators for Number Expectation SO1 for Grade 4, and generally throughout the document, a 4-digit numeral is written with a space between the first and second digit (4 567 rather than 4567). This stands in contrast to the metric usage standards that publishers have been required to meet over the past 20 years, in order to obtain metric approval: The Canadian Standards Association (CSA) Metric Editorial Handbook, ISSN 0317-5669, indicates that metric spacing is required for numerals of more than 4 digits, but that spacing for 4-digit numerals is not required except in lists. So, CSA indicates that conventional spacing would be 1000, rather than 1 000. Could we have clarification on the desire to see correct metric spacing, according to the CSA guidelines?**

WNCP Response: The CCF will be revised to reflect the Canadian Standards Association Metric Editorial Handbook format.

Grade 1

- 2. The terms “number” and “numeral” are sometimes used interchangeably (e.g., in Number SO6, the outcome uses “numeral sequence” while the AI uses “number sequence.”). We’d like to see these occurrences addressed so that we can interpret the preferred WNCP style.**

WNCP Response: We have revised the CCF in terms of the use of numeral and number and hope it is now more consistent.

- 3. Patterns and Relations, SO1 – The outcome relates to repeating patterns, but the last bullet of the AIs refers to increasing patterns, and should probably actually read “repeating patterns.”**

WNCP Response: This change has been made.

Grade 2

- 4. Patterns and Relations, SO1 – The third AI bullet suggests using a letter code to describe a numerical pattern, but the example uses a numeral code. (i.e. 123, 123, 123).**

WNCP Response: This change has been made.

- 5. Statistics and Probability, SO2 – The first AI suggests that students determine the common attributes of concrete graphics by comparing pictographs; “pictographs” should read “concrete graphs”?**

WNCP Response: This change has been made.

Grade 3

- 6. Patterns and Relations, SO4 – A clarification of the meaning of the term “symbol” would be helpful. This is true in particular in light of verbal comments, from the Orientation meetings held October 17/18, regarding the introduction of literal variables at grade 6 only.**

WNCP Response: We addressed this at the publisher meeting and have a written response included in the questions was posted on the WNCP web site on November 9, 2005.

Grade 4

- 7. Number, SO 5 has an Achievement Indicator that appears to contradict the SO in parts. That is, the third bullet of the SO states adding or subtracting one more group while the AI states adding two more groups. Further the usual patterns in the 9s facts is that the first digit is 1 less than the multiplier and the sum of the digits of the product adds to 9. The AI indicates a method for calculating the result, not a pattern.
Please clarify.**

WNCP Response: The “two or more groups” from the AI has been removed.

- 8. Number, SO 6 has an AI that includes the phrase “multi-word problem.” Perhaps this was meant to read “multi-step” problem. Please clarify the meaning of this phrase.**

WNCP Response: This has been changed to multi-step.

- 9. Number, SO 10 requires students to express decimals as fractions. One of the AI requests that students do the converse. That is, express a fraction as a decimal, and has as an example a fraction equivalent not based on place value that requires the concept of equivalent fractions which students have not covered at this grade.
Please clarify the intent.**

WNCP Response: The AI has been revised to clarify the intent.

- 10. Shape and Space, SO 5 has 2 (of 4) AIs that requires students use a net to create or predict an object although the SO requires the design and construction of nets. In a resource, is it required that all 4 AIs are addressed in order that the outcome be deemed to be covered?**

WNCP Response: This outcome has been removed from grade 4.

11. Shape and Space, SO5 – The second AI suggests that students construct nets for cones and cylinders. If a net is viewed as a pattern, joined in one piece, of a 3-D solid, this is not possible.

WNCP Response: This outcome has been removed from grade 4.

12. During the Oct 17/18 Publishers' Orientation meetings, Debbie Duvall stated that although variables are mentioned in the Grade 4 and 5 curricula, students would not be expected to use literal variables before Grade 6. The AI for Grade 4, PR 1 shows such use. Were letters used in the interests of conserving space and for teacher use only, or are students expected to create such expressions in grade 4?

WNCP Response: This AI was removed.

Grade 5

13. Number, SO10 – The second bullet encompasses the third and fourth bullets.

WNCP Response: The second bullet has been revised.

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- 1. Why were exponents moved out of grade 7? Where are they now to be introduced?**

WNCP Response: In an attempt to align outcomes to allow for in-depth study of concepts, exponents were moved to Grade 9. Since Grades 8 and 9 are not yet finalized, this placement may change.

The move was to consolidate powers and exponents.

- 2. Must we address only the outcomes or are we allowed to bridge a potential gap leading to the outcome without being faulted for including extraneous content? For example, exponents were moved out of Grade 7. How should the formula for the area of a circle be developed without the use of exponents? Are we allowed to introduce the concept of exponents as a lead in to area?**

WNCP Response: Exponent laws are not needed to work with the area of a circle (πr^2). It is expected that students will understand that $r \times r = r^2$ from their work on multiplying numbers. This is merely symbolic knowledge, not conceptual, and thus it does not need a specific outcome of its own.

- 3. In grade 7, why was word “pictorial” taken out of fraction conceptual development? Only “concrete” and “symbolic” are mentioned. Was this an intentional omission?**

WNCP Response: We will include “pictorially” in the outcome.

- 4. Sample space appears to be first introduced in grade 7, but jumps right into two independent events. Was the term “sample space” purposefully left out of grade 6?**

WNCP Response: Sample space is not used until students work with two or more independent events.

This is consistent with what was done in the current CCF.

- 5. In grade 7, how can probabilities be calculated without multiplying fractions? Is it assumed that students will only determine the probability of independent events by counting outcomes?**

WNCP Response: We changed the wording of outcomes Grade 7 SP #5, SP #6 to make this more explicit. It is intended that students will find the sample space using such graphic organizers as tree diagrams.

- 6. In grade 7, how large a sample space is reasonable for finding probabilities without using fraction operations?**

WNCP Response: The intent was to use a reasonable combined sample space (with 36 or fewer elements) so multiplication of fractions should not be used.”

- 7. In grade 7, is it acceptable to refer to dice or number cubes in relation to sample space and probability?**

WNCP Response: The use of dice is appropriate, however, we want to see other materials like spinners or marbles in bags also used to demonstrate probability.

- 8. In grade 6, what does the word “construct” mean in the context of page 120: “Construct an example of a specified triangle ...”? Does it mean “construct” or “draw”? e.g., Are students familiar with the difference between “draw” and “construct”?**

WNCP Response: We added draw to the outcome. The intent is not to have students differentiate between draw and construct. The CCF is intended for teachers and publishers.

- 9. Grade 7 Shape and Space outcomes 4 and 5 state:**

- **Identify and plot points in the four quadrants of a Cartesian plane using integral ordered pairs.**
- **Describe positional change of points using horizontal and vertical descriptors in relation to a reference point in a four quadrant Cartesian plane.**

Given the need for integral ordered pairs, do these outcomes encompass rotations and reflections of points with respect to “positional change”? Or are these outcomes intended only to use translations?

WNCP Response: Yes- it does encompass rotations and reflections. However, the intent is to have the resulting image have points that can be described using integral ordered pairs.

This has been clarified in the achievement indicators.

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- 1. In Kindergarten, N2 indicates numbers 1 to 5, N3 indicates numerals to 10. Both seem to be about recognizing “quantity” – what types of learning activities differentiate the two outcomes?**

WNCP Response: N2 relates to subitizing numbers and was intentionally limited to 0-5.

- 2. In Grade 1, SS3 talks about constructing and deconstructing 2-D shapes and 3-D objects; it would be helpful to understand what types of materials WNCP expects children will be working with, and how complex the figures might be that they’re creating.**

WNCP Response: Children are expected to work with a variety of materials commonly found in Grade 1 classrooms. The complexity of the figures needs to be age and grade appropriate.

- 3. In Grade 3, PR1 specifies increasing patterns – what is meant by increasing patterns, and does it preclude any inclusion of repeating patterns, or should these be integrated for potential reinforcement and connections with previous work?**

WNCP Response: A repeating pattern is not an increasing pattern. Repeating patterns are dealt with in Grades 1 and 2. Increasing patterns are introduced in Grade 3.

- 4. In Grade 3, SS7 says children sort and name regular and irregular polygons according to the number of sides – some sample problems or limiting problems might help us here, as would a vocabulary list. Literally interpreted, children sort according to number of sides only? (That is, they don’t look at a set of quadrilaterals and then sort those, according to other attributes such as shape?)**

WNCP Response: At this grade level the sorting is limited to the number of sides. Both regular and irregular polygons should be used.

- 5. At several grades, the Number outcomes for operations emphasize use of personal procedures. At the same time, the same outcomes also call for students to record their work symbolically. Does this mean that the introduction of a standard algorithm is:**
 - Prohibited in any form?**
 - Acceptable if preceded by appropriate conceptual development?**
 - Acceptable if presented in conjunction with multiple recording procedures?**

I suppose there are other approaches, as well – publishers will need to know if any approach puts their submission at risk.

WNCP Response: The introduction of a more standard algorithm is acceptable if presented in conjunction with multiple recording procedures. Using only the standard algorithm would put a publisher's submission at risk.

- 6. In Grade 5, PR1 says, “Determine the pattern rule to make predictions about subsequent elements.” The second Achievement Indicator presents algebraic expressions as representations of the pattern rule. This raises the question of how we interpret other outcomes that might have more symbolic work attached, if interpreted that way – but it also has me wondering whether WNCP expects that Grade 5 students’ work will include students creating table of values for given patterns. This is more complex than just “determining a pattern rule,” – so sharing your insights will be instructive for us from the development side.**

WNCP Response: Your interpretation of an outcome should be based upon the achievement indicators as indicators encompass the breadth and the depth of an outcome. If algebraic expressions are expected this will be reflected in the achievement indicators. Grade 5 students are not expected to use a table of values but they may in fact create a table to identify the pattern rule.

- 7. In Grade 6, PR1 references T-tables – if this is the same as a table of values, and its explicit reference occurs first in Grade 6, does that mean that Grade 5 is NOT about tables of values after all? As you can see, we could use some elucidation. This particular question relates to another, bigger, question I have that relates to the use of graphic organizers or other such tools – tables of values, graphs, Venn diagrams, Carroll diagrams, tallies. Sometimes they’re explicitly referenced in the curriculum at a certain grade level; should we interpret this as a strict indicator of students’ first exposure to such tools?**

WNCP Response: Yes. This is the grade at which the use of a table of values will be assessed. Students may have experience with graphic organizers from other experiences, and may use them as a tool for learning in earlier grades. Pre-exposure should be limited to the Teacher Resource Manual as a possible student response.