

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

**Grade 8**

- 1. In grade 7, students are expected to use technology for division involving 2-digit divisors. Is it the intent that in grade 8 that students should be able to divide with 2-digit divisors in the integers chapter without technology, even though they have not yet been expected to perform such calculations with whole numbers or decimals without technology? See relevant outcomes and AIs listed below.**

**Grade 7**

**Strand: Number**

**Specific Outcome: 2**

**Demonstrate an understanding of the addition, subtraction, multiplication and division of decimals (for more than 1-digit divisors or 2-digit multipliers, the use of technology is expected) to solve problems. [ME, PS, T]**

- Solve a given problem involving the multiplication or division of decimal numbers with 2-digit multipliers or 1-digit divisors (whole numbers or decimals) without the use of technology.**
- Solve a given problem involving the multiplication or division of decimal numbers with more than a 2-digit multiplier or 1-digit divisor (whole number or decimal), with the use of technology.**

**Grade 8**

**Strand: Number**

**Specific Outcome: 7**

**Demonstrate an understanding of multiplication and division of integers, concretely, pictorially and symbolically. [C, CN, PS, R, V]**

- Solve a given problem involving the division of integers (2-digit by 2-digit) without the use of technology.**

**WNCP Response:** The Achievement Indicators in grade 8 will be changed to read “Solve a given problem involving the division of integers (2-digit by 1-digit) without the use of technology” and “Solve a given problem involving the division of integers (2-digit by 2-digit) with the use of technology.”

2. Grade 8

Strand: Number

Specific Outcome: 3

Demonstrate an understanding of percents greater than or equal to 0% [CN, PS, R, V]

Question:

The second AI listed uses the term “fractional percent”. Is this intended to mean a percent between 0% and 1% such as 0.5%,  $\frac{1}{4}\%$ ,  $\frac{1}{3}\%$ , etc. or a percent such as  $12\frac{1}{2}\%$ ,  $33\frac{1}{3}\%$ , etc. or both of these types of “fractional percents”?

WNCP Response: The intent of the term “fractional percent” is that students will work with percents between 0% and 1% and percents such as  $12\frac{1}{2}\%$ ,  $33\frac{1}{3}\%$ , etc.

3. Grade 8, Strand: Number, Outcome: 6

*Demonstrate an understanding of multiplying and dividing positive fractions and mixed numbers, concretely, pictorially and symbolically. [C, CN, ME, PS]*

- *Identify the operation required to solve a given problem involving positive fractions.*
- *Provide a context that requires the multiplying of two given positive fractions.*
- *Provide a context that requires the dividing of two given positive fractions.*
- *Estimate the product of two given positive proper fractions to determine if the product will be closer to 0,  $\frac{1}{2}$  or 1.*
- *Estimate the quotient of two given positive fractions and compare the estimate to whole number benchmarks.*
- *Express a given positive mixed number as an improper fraction and a given positive improper fraction as a mixed number.*
- *Model multiplication of a positive fraction by a whole number concretely or pictorially and record the process.*
- *Model multiplication of a positive fraction by a positive fraction concretely or pictorially using an area model and record the process.*
- *Model division of a positive proper fraction by a whole number concretely or pictorially and record the process.*
- *Model division of a positive proper fraction by a positive proper fraction pictorially and record the process.*
- *Generalize and apply rules for multiplying and dividing positive fractions, including mixed numbers.*
- *Solve a given problem involving positive fractions taking into consideration order of operations (limited to problems with positive solutions).*

The sixth achievement indicator states:

- *Express a given positive mixed number as an improper fraction and a given positive improper fraction as a mixed number.*

**In fact these conversions are also taught in the Grade 6 curriculum (See Number Outcome 4).**

**4. *Relate improper fractions to mixed numbers.***

**Question:**

**Is it the intention that these conversions between mixed numbers and improper fractions be formally re-taught at Grade 8 or should we be assuming that this is prior knowledge from Grade 6 and as such not be re-teaching it as the above mentioned Achievement Indicator seems to suggest?**

**WNCP Response:** Before students are able to multiply and divide positive mixed numbers they need to be able to express a mixed number as an improper fraction and an improper fraction as a mixed number. The Achievement Indicator is in grade 8 to point out to teachers that students must be able to do the conversion between mixed numbers and improper fractions. You are correct in assuming that students will be taught this concept in grade 6.

**4. Several achievement indicators specify situations for which the use of a model is recommended.**

- *Model multiplication of a positive fraction by a whole number concretely or pictorially and record the process.*
- *Model multiplication of a positive fraction by a positive fraction concretely or pictorially using an area model and record the process.*
- *Model division of a positive proper fraction by a whole number concretely or pictorially and record the process.*
- *Model division of a positive proper fraction by a positive proper fraction pictorially and record the process.*

**Question:**

**It is noted that the above statements involving multiplication models specify “positive fractions” whereas the statements involving division specify “positive proper fractions.” Should the multiplication models include only positive proper fractions or should they also include positive improper fractions and positive mixed numbers?**

**WNCP Response:** The multiplication models should include positive improper fractions and positive mixed numbers.