Using the M6 Item Description Report 2014 - 2015 to Support Next Steps in Instruction for the Class and for Individual Students

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Before we begin…

If you have any questions during the presentation, please post them in the chat at the left of your screen, and we will spend some time during the webinar as a Q/A time.

This session will be recorded and the archive will be available within the next two weeks on the DVL website. http://dvl.ednet.ns.ca

Please download the Mathematics 5 Curriculum document and the recording sheet. Click on "Documents to download" button from the bottom right of this screen.

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Description

The purpose of this webinar is to support teachers, school administrators, board mathematics leads, mathematics coaches, mathematics mentors, and others in using the 2014-2015 NSA M6 Item Description Report to inform next steps in instruction for the class and for individual students. The session will take participants into the item analysis provided to

- examine the outcome and the item description
- discuss why an item is described as a Knowledge, Application, or Analysis question
- identify patterns of student performance within strands, outcomes, and/or levels of question
- use the curriculum documents to support the next steps in instruction for the class and individual students

Welcome

- Introductions
- Logistics

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Goals of the Webinar

- Support teachers, school administrators, board mathematics leads, mathematics coaches, mathematics mentors, and others in using the 2014-2015 NSA M6 Item Description Report to inform next steps in instruction for the class and for individual students.

Sequence of the Webinar

The session will allow participants to

- understand the cognitive levels and why an item is described as
  - Knowledge (Level 1)
  - Application (Level 2)
  - Analysis question (Level 3)
- understand the background to the creation of the Item Description Report
- understand the connection between the 2014-2015 Item Description Report analysis and the ***Lessons Learned*** document for Grade 6
- examine provincial, board, and school data
- examine the outcome and the item description
- identify patterns of student performance within strands, outcomes, and/or levels of questions
- use the curriculum documents to support the next steps in instruction for the class and individual students

Cognitive Levels

Knowledge questions (Level 1) may require students to recall or recognize information, names, definitions, or steps in a procedure.

Example: For each fraction, write the equivalent decimal.

a. $\frac{25}{100}$ is the same as _____

b. $\frac{6}{10}$ is the same as _____

c. $\frac{9}{100}$ is the same as _____

Cognitive Levels

Application/comprehension questions (Level 2) may require students to make connections, represent a situation in more than one way (translating between representations), or solve contextual problems.

Example:

Elastics are sold in boxes of 500 elastics, large bags of 100 elastics, small bags of 50 elastics, balls of 10 elastics, and single elastics. What would you buy if you wanted 753 elastics?

Cognitive Levels

Analysis questions (Level 3) may require students to go beyond comprehension and application to higher order thinking skills, such as generalizations and non-routine problem-solving.

Example:

Melinda wants to build a pen for her chickens. She bought 6 large squares of plywood for the floor of her chicken pen. She arranges the squares so that all sides are touching. Find all possible shapes for the floor of the pen. How much fencing would she need for each pen?

Analysis of Provincial Data

- The ***Lessons Learned*** document was developed based on an analysis of the Item Description Report for the 2014–2015 Nova Scotia Assessment (NSA): Mathematics in Grade 6 (M6).

- The document is a living document which means that we will be updating it each assessment year with the new provincial data based on the Item Description Report.

Examining the Item Description Report

- We will use the provincial data to take you through the process of the analysis as your school data is all very different.
- We will use a recording sheet(s) to organize the data that we have highlighted.
- Using this organized data, we can look at the areas of challenge for our students.
- This will enable us to use use the curriculum documents to support the next steps in instruction for the class and individual students.

Question Number	Strand	Component	Outcome Match	Cognitive Level	% Provincially Correct	Item Descriptor
Day3_01_1	Operations	Computation	4B1	Knowledge	54%	subtract decimal hundredths from a whole number horizontally
Day3_01_2	Operations	Computation	4B1	Knowledge	55%	subtract decimal hundredths from a whole number written in words
Day3_01_3	Operations	Computation	4B5	Knowledge	58%	divide a 3-digit whole number by a single-digit divisor
Day3_01_4	Operations	Computation	5B1	Knowledge	24%	subtract decimal thousandths from decimal hundredths horizontally
Day3_05	Operations	Model	4B6	Application	69%	add two fractions with common denominators using a fraction model
Day3_06	Number	Representation	4A2	Application	79%	interpret and represent decimal tenths and hundredths using base-ten blocks
Day3_07	Pattern	Identify	3C1	Application	75%	identify missing numbers on a hundred chart using place value strategies
Day3_08	Number	Representation	5A11	Knowledge	55%	identify all the factors of a given number
Day3_09	Number	Compare, Order	4A2	Application	68%	compare and order a decimal number involving hundredths using a number line
Day3_10	Number	Representation	4A5	Application	74%	identify an equivalent fraction for a given fraction
Day3_11	Number	Compare, Order	5A10	Application	39%	compare and order fractions with like and unlike denominators
Day3_12	Operations	Model	5B6	Application	29%	model division of a decimal number by a single-digit whole number using base-ten blocks
Day3_13	Pattern	Chart	5C3	Analysis	52%	determine the pattern rule to predict subsequent terms
Day3_14	Number	Representation	4A5	Application	44%	compare and order fractions using benchmarks of 0, 1/2 and 1
Day3_15	Operations	Rounding,Estimation	5B11	Application	71%	estimate the product of two whole numbers in a context
Day3_16	Pattern	Identify	4C3	Application	71%	extend a pattern using a chart to solve a word problem
Day3_17	Pattern	Id/Increase/Rule	2C2	Application	80%	extend an increasing number pattern when a pattern rule is provided
Day3_18	Operations	Word Problems	5B6	Application	60%	solve a word problem involving division of a decimal by a whole number
Day3_19	Number	Representation	5A6	Application	74%	translate written words to standard form (millions)
Day3_20	Number	Compare, Order	5A8	Application	76%	compare and order large numbers from the least to the greatest (millions)
Day3_21	Number	Representation	2A2	Application	78%	identify the value of a set of coins
Day3_22	Operations	Word Problems	4B12	Application	48%	solve a word problem involving money (separate: result unknown)

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Recording Sheet

Grade	Outcome	Cognitive Level	Verb	Topic
4	4B1	knowledge	subtract	decimals
4	4B1	knowledge	subtract	decimals
4	4B5	knowledge	divide	single digit divisor – whole number dividend
5	5B1/ 5N11	knowledge	subtract	decimals
5	5A11	knowledge	identify	factors
5	5A10/ 5N07	application	compare and order	fractions
5	5B6	application	model	single digit divisor – whole number dividend using base-ten blocks
5	5C3/ 5PR01	analysis	determine	pattern rule to predict subsequent terms
5	4A5	application	compare and order	fractions
4	4B12	application	solve	word problem

Analysis of School Data

- Using your school data, we are going to take you through the same process that we used when analyzing the provincial data to create the ***Lessons Learned*** document.
- Using an electronic or hard copy of your schools results, highlight all items in your school results that students scored 60% or lower.
- Use the Recording Sheet(s) to organize the data that you have highlighted.
- This process helps us to see patterns, trends, verbs in the item descriptors, mathematics concepts/topics that challenged our students and the cognitive level of the items.

Next Steps for Instruction and Assessment

- Use the trends you've discovered to determine next steps for classroom-based instruction and assessment.

- Knowing the grade level, outcome, level of question, and topic, you can identify sample questions from the curriculum document (or your core resource) that should be part of instruction and assessment in your classroom.

Knowledge (Level 1) 5B1 / 5N11

Item Descriptor:

Subtract decimal thousandths from decimal hundredths horizontally

5B1: Students will be expected to find sums and differences involving decimals to thousandths.

5N11: Students will be expected to demonstrate an understanding of addition and subtraction of decimals (limited to thousandths).

Knowledge, Level 1: 5B1 / 5N11

Using your curriculum guide, find outcome 5B1 / 5N11.

Find 3 samples of knowledge (level 1) questions.

Record those questions.

Application (Level 2) 5A10 / 5N07

Item Descriptor:

Compare and order fractions with like and unlike denominators

5A10: Students will be expected to compare and order fractions using conceptual methods.

5N07: Students will be expected to demonstrate an understand*i*ng of fractions by using concrete, pictorial, and symbolic representations to

- create sets of equivalent fractions
- compare and order fractions with like and unlike denominators

Application (Level 2) 5A10 / 5N07

Using your curriculum guide, find outcome 5A10 / 5N07.

Find 3 samples of application (level 2) questions.

Record those questions.

Analysis (Level 3) 5C3 / 5PR01

Item Descriptor:

D*etermine the pattern rule to predict subsequent terms*

5C3: Students will be expected to solve problems using patterns.

5PR01: Students will be expected to determine the pattern rule to make subsequent terms (elements).

Analysis (Level 3) 5C3 / 5PR01

Using your curriculum guide, find outcome 5C3 / 5PR01.

Find 3 samples of analysis (level 3) questions.

Record those questions.

Summary

Using the item descriptors, analyzing the data, and making connections to the curriculum outcomes, and the suggestions for instruction and assessment contained within the curriculum documents can help us identify next steps for instruction.

Questions and Contact Information

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http://dvl.ednet.ns.ca/browse/results/taxonomy%3A169

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