

NEO LEARNING SYSTEMS

DESIGN DOCUMENT – PROJECT RAPTOR

ENHANCEMENTS

JANUARY 2017

VERSION 1.11

CONFIDENTIAL

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2 OVERVIEW

Neo Learning Systems (NLS) is a software provider of classroom testing and analytics for the education market. Our software is directly tied to the Ontario standardized mathematics curriculum. The software is role based and provides user interfaces for students, teachers and administrators of varying levels.

This document, Project Raptor V1.11 Enhancements will list all the new features that have been implemented and will implement in the Teacher App and Student App. This will also list all the changes in database.

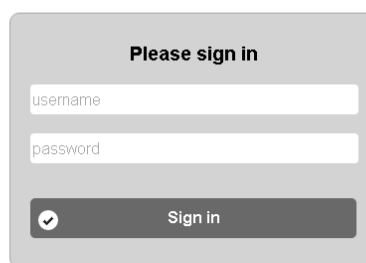
Web development and enhancements will be executed by W5RTC.

3 TEACHER ROLE

The following sub-sections correspond to the various enhancements that are implemented or will be implemented in NEOLS.

3.1 TEACHER LOGIN

There will be session control over the Teacher app. A user should only be able to log in via the login page by entering the login details. If the user tries to login using the browser forward/ back button they are redirected to the login page.

The login screen is a light gray rectangular box with rounded corners. At the top, it says "Please sign in" in bold. Below this are two white input fields with gray borders. The first field is labeled "username" and the second is labeled "password". At the bottom of the box is a dark gray button with a white checkmark icon on the left and the text "Sign in" on the right.

Figure 1: Login screen for the teacher, principal, board and ministry user roles

The user should be able to logout using only the logout link from the App Menu. They should not be allowed to use the forward/back button of the browser. In doing so the user should be redirected to the login page. If the user has been logged in for more than 2 hours they should be logged out automatically and redirected to the login page.

Once logged in the landing page should be the Classes module.

NEO

Whiteboard

Marta Lucas

Classes

Curriculum

Students

Scorecard

Groups

Question Rating

Library

Assessments

Calendar

Whiteboard

Exit Tickets

Logout

Whiteboard Details

Course

Math

Grade

3

Library

Public

Strand

Patterning and Algebra

General Expectation

Patterns and Relationships

Specific Expectation

represent simple geometric patterns using a number sequence, a numbe

Type

Multiple Choice

List

Question Selections

Page 0 of 0

Previous

Next

Launch Whiteboard

The menu highlights the tab which the user has selected, this enables the user to know in which module they are currently in.

For e.g. below the image shows the user is currently in Library module

Classes

Curriculum

Students

Scorecard

Groups

Question Rating

Library

Assessments

Calendar

Whiteboard

Exit Tickets

Logout

Question Tags

Course

Math

Grade

3

Strand

Patterning and Algebra

General Expectation

Patterns and Relationships

Specific Expectation

create a number pattern involving addition or subtraction, given a pattern represented on a number line or a pattern rule expressed in word

Type

Text input

Question ID

QM5252

List

Text and Images

Line 1

This is a test questions

Line 2

Image 1

Choose File

Line 3

Image 2

Choose File

Line 4

Image 3

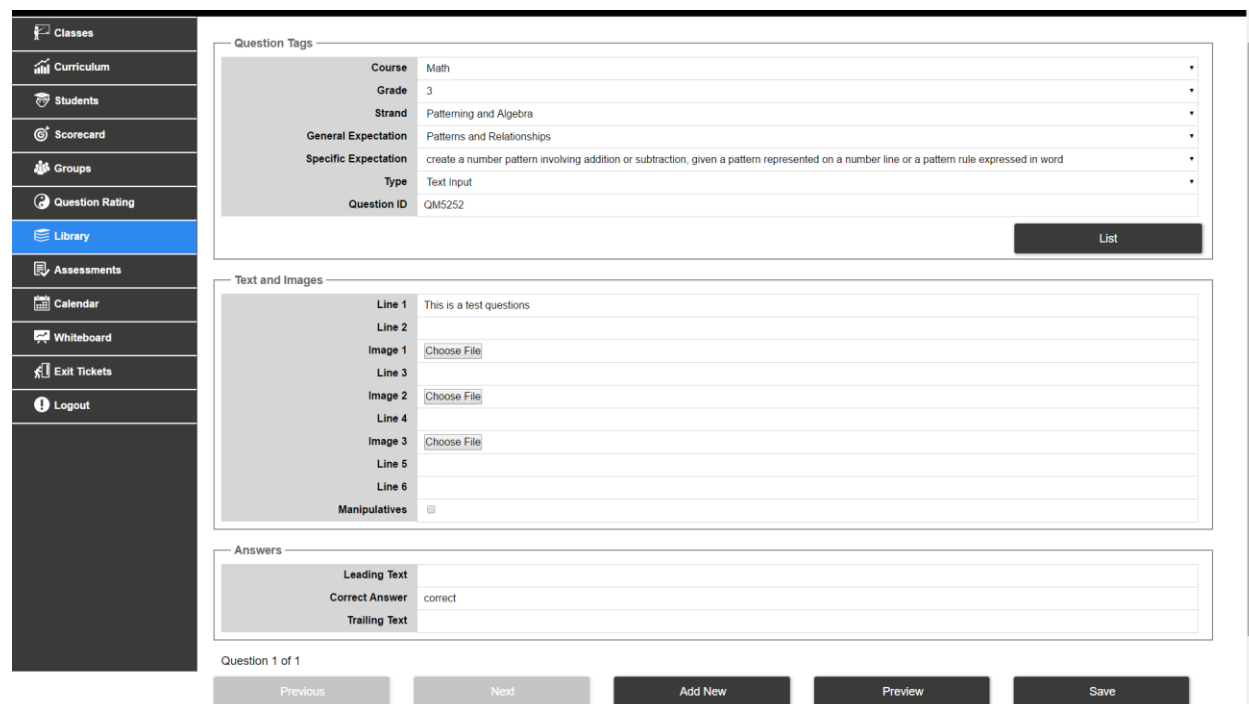
Choose File

Line 5

Line 6

Manipulatives

3.2 LIBRARY TAB



The screenshot shows the 'Library' tab selected in the left sidebar. The main content area is divided into three sections:

- Question Tags:** A table with the following data:

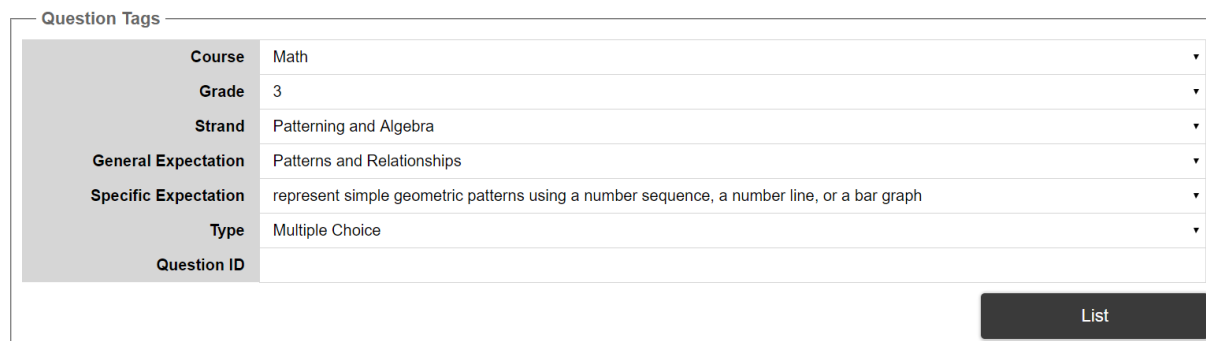
Course	Math
Grade	3
Strand	Patterning and Algebra
General Expectation	Patterns and Relationships
Specific Expectation	create a number pattern involving addition or subtraction, given a pattern represented on a number line or a pattern rule expressed in word
Type	Text Input
Question ID	QM5252

 A 'List' button is located at the bottom right of this section.
- Text and Images:** A form with fields for Line 1 through Line 6, Image 1 through Image 3 (each with a 'Choose File' button), and a 'Manipulatives' checkbox.
- Answers:** A form with fields for Leading Text, Correct Answer (containing the text 'correct'), and Trailing Text.

At the bottom, there is a status bar showing 'Question 1 of 1' and buttons for 'Previous', 'Next', 'Add New', 'Preview', and 'Save'.

Figure 2: Library Tab

3.2.1 QUESTION TAGS



This screenshot shows the 'Question Tags' section of the Library Tab. It contains a table with the following data:

Course	Math
Grade	3
Strand	Patterning and Algebra
General Expectation	Patterns and Relationships
Specific Expectation	represent simple geometric patterns using a number sequence, a number line, or a bar graph
Type	Multiple Choice
Question ID	

A 'List' button is located at the bottom right of the table.

The Manipulatives options was moved to 'Text and Images' section.

There is no restriction on the list of Grades in this module. Depending on the Grade selected Strand and Expectations are listed accordingly.

On click of List button the list of questions are displayed one by one. They start with the first available question; so if 5 questions fit the query, the first question from the query result is displayed. The user

can then parse through the available questions using the Previous and Next button. The Question Id is displayed only on click of the List button or when a new question is saved to the Library.

3.2.2 TEXT AND IMAGES

A check box is added to this grouping called “Manipulatives”. The check box is defaulted to unchecked and saved as “false” in the field “manipulatives” in the database.

Text and Images	
Line 1	
Line 2	
Image 1	Choose File
Line 3	
Image 2	Choose File
Line 4	
Image 3	Choose File
Line 5	
Line 6	
Manipulatives	<input type="checkbox"/>

3.2.3 ANSWERS

Answers	
Leading Text	
Correct Answer	correct
Trailing Text	

For questions of type “Text Input”, the Answers section gives the user the option to input a single correct answer along with a Leading Text and Trailing Text. The leading text and trailing text are displayed in the Student App for Input Type questions and the values for this are stored under the field name “part1” and “part2” in the database.

3.2.4 BUTTONS

Question 1 of 1

Previous	Next	Add New	Preview	Save
----------	------	---------	---------	------

There are 5 button on this screen:

- Previous (display previous question)
- Next (display next question)
- Add New (create a new question)

- Preview (pop up window showing what the formatted question will look like to the student)
- Save (save changes back to the database).

Above the buttons, the total number of questions available entered by the logged in teacher is displayed. Clicking on the Next button the list iterates forward. The user is able to see the question number they are in, in compared to the total list.

3.3 ASSESSMENTS TAB

This section will list out all the enhancements in the Assessment module.

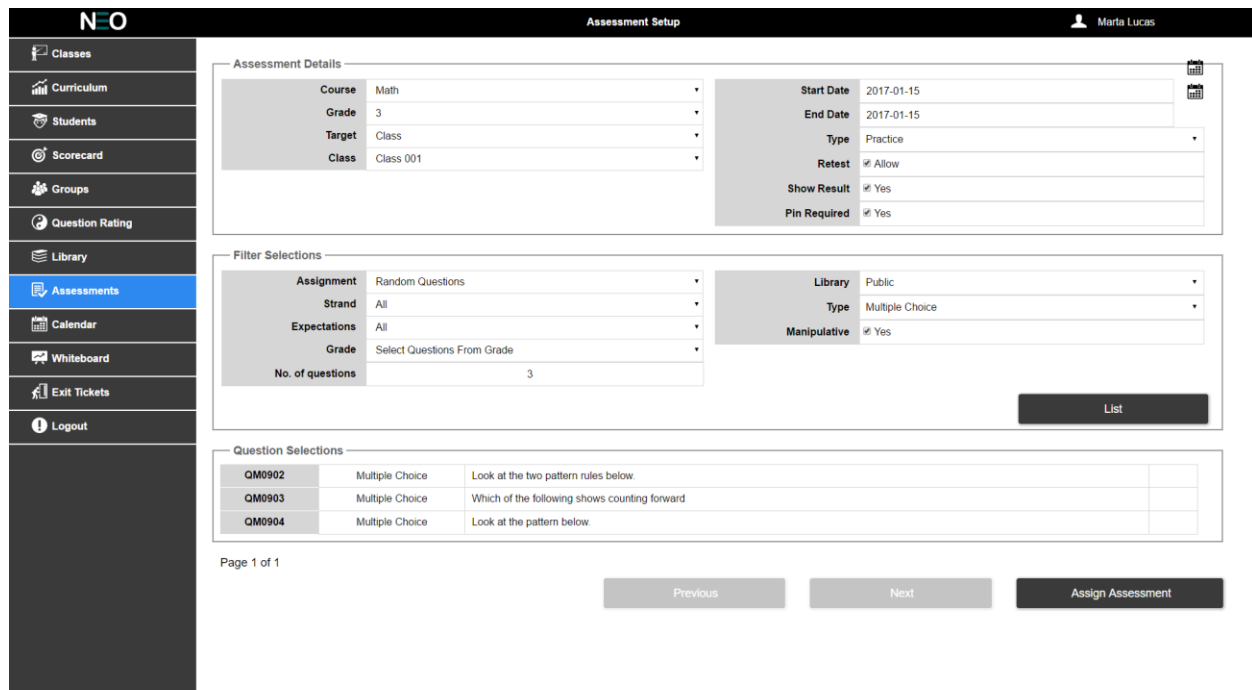


Figure 3: Assessments Tab

3.3.1 ASSESSMENT DETAILS

In this group fields Assessment Name and Pin Required has been added. The user is allowed to add a name to their assessments. This field is compulsory. The pin required field has been defaulted to checked (value is true). This option allows the teacher to enable pin validation for assessments created. The database fields, assessmentname and pin_required has been setup to accommodate this.

Assessment Details

Course	Math	Start Date	2017-05-06
Grade	3	End Date	2017-05-06
Assessment Name		Type	Practice
Target	Class	Retest	<input checked="" type="checkbox"/> Allow
Class	Class 001	Show Result	<input checked="" type="checkbox"/> Yes
		Pin Required	<input checked="" type="checkbox"/> Yes

3.3.2 FILTER SELECTIONS

In this group the Grade drop list displays the grades which the logged-in teacher does not teach. This allows the teacher to create assessments that belong to different grades. The questions displayed can be from Private or Public collections.

Filter Selections

Assignment	Random Questions	Library	Public
Strand	All	Type	Multiple Choice
Expectations	All	Manipulative	<input checked="" type="checkbox"/> Yes
Grade	Select Questions From Grade		
No. of questions	3		

List

The database field “ingrade” has been setup to accommodate this.

The Library drop list is now hard coded to use the following two choices: “Public” and “Private”; where “Public” is the default value.

The user will be able to select questions across multiple strands and expectations.

3.3.3 QUESTION SELECTIONS

Question Selections				
<input type="checkbox"/>	QM0902	Multiple Choice	Look at the two pattern rules below.	
<input type="checkbox"/>	QM0903	Multiple Choice	Which of the following shows counting forward	
<input type="checkbox"/>	QM0904	Multiple Choice	Look at the pattern below.	
<input type="checkbox"/>	QM0905	Multiple Choice	Look at the pattern below.	
<input type="checkbox"/>	QM0906	Multiple Choice	Look at the pattern below.	
<input type="checkbox"/>	QM0908	Multiple Choice	How many dimes are in 1 loonie?	manipulative
<input type="checkbox"/>	QM0909	Multiple Choice	In the number 614,	manipulative
<input type="checkbox"/>	QM0910	Multiple Choice	In the number 857,	manipulative
<input type="checkbox"/>	QM0911	Multiple Choice	Look at the graph below.	
<input type="checkbox"/>	QM0912	Multiple Choice	February 16th is circled on the calendar below.	manipulative

Page 1 of 35

The list of questions displays the Question ID, Type (multiple choice or text input), and Line 1 of the question. Along with this another column that has been added to display, “manipulatives”, which indicates if the question is a manipulative.

For Assignment type “Random Questions”, when the user has selected Random, All Strands, All Expectations, max questions = 3 (default). Result is 3 randomly selected questions for all five strands for a total of 3 questions.

3.3.4 BUTTONS

There are three buttons on this screen:

- Previous (which allows the user to view the previous page)
- Next (which allows the user to view the next page)
- Assign Assessment (which advances the user to the confirmation stage of the assessment setup process)

3.3.5 ASSESSMENT SETUP – ASSIGNMENT CONFIRMATION

This page will allow the user to confirm their selections from the previous step in the assessment setup process, see Figure 5 below. The user can deselect questions from the list by clicking on the check box to the corresponding questions.

A Back button has been introduced in the page. This allows the user to go back to the assessment setup page and reselect questions which will be added to the already existing list. This process is for Selected Question option in Filter Selections: Assignment. When user selects Random Questions to create an assessment, the Back button will work differently. Clicking on the back button for Random questions will clear out the list of selected questions. The user will have to re-select the questions again.

The assessment name will be displayed for the user.

Clicking on ‘Save’ will save only the questions which are unchecked.

Confirm Assessment Details

Course	Math	Start Date	2017-05-06
Grade	3	End Date	2017-05-06
Assessment Name	Test	PIN	2553
Class	Class 001		

Select Questions for Removal:

Number Sense and Numeration

☐ QM0904 Look at the pattern below.
 ☐ QM0905 Look at the pattern below.

Patterning and Algebra

☐ QM0954 Which of the following shows counting forward by 25?
 ☐ QM0953 Look at the two pattern rules below.

Geometry and Spatial Sense

☐ QM0977 Jim spins the arrow on a spinner 80 times.
 ☐ QM0978 Mike has a 3-D figure. It has 5 faces and 5 vertices.

Back

Cancel

Save

Figure 5: Assessments Tab showing Question preview

3.4 CALENDAR TAB

This section will list out the changes or enhancements done to the Calendar module.


<		>	30 April 2017 - 10 June 2017					Day Week Month					
Sunday		Monday		Tuesday		Wednesday		Thursday		Friday		Saturday	
▼ May 01		▼ 02		▼ 03		▼ 04		▼ 05		▼ 06			
Class 001:9559								Class 120 : Group test2					
Class 002:4771								Conrad Cole:5700					
Class 001 : Pattern Test													
Class 001 : Measurement													
▼ 07		▼ 08		▼ 09		▼ 10		▼ 11		▼ 12		▼ 13	
Class 001:9559													
Class 002 : Measurement										Class 001:5888			
Section A : Random List													
Section A : Selected Questions													
14		15		16		▼ 17		▼ 18		▼ 19		▼ 20	
Class 001:9559													
Section A : Random List													
Section A : Selected Questions													
Class 001:2242		Jeff Ingram:2415											
21		22		23		24		25		▼ 26		▼ 27	
Class 001:9559													
Section A : Random List													
Section A : Selected Questions													
Class 001:9836				Nathan Day:1218									
28		▼ 29		▼ 30		▼ 31		Jun 01		02		03	
Class 001:9559						Loretta Lloyd:2875							
Section A : Random List								Loretta Lloyd:4017					
Section A : Selected Questions													
Ethel Goodwin:5725													
04		05		06		07		08		09		▼ Class 120:3019	
						Tina Patton:2170							
						Eric Francis:2375							
												Jerome Manning:3534	
												Class 120:1820	
Math,practice		Math,formal		Math,ExtTicket									

Figure 6: Calendar Tab

Within the assigned block of time for the assessment, the user should be able to see the specific target, assessment name and pin number (if selected) for the assessment.

The pop-up window will for now only display Title, Start Date, End Date, Course of the said assessment. The title will display the assessment name, target and pin number. The user can only delete future assessments.

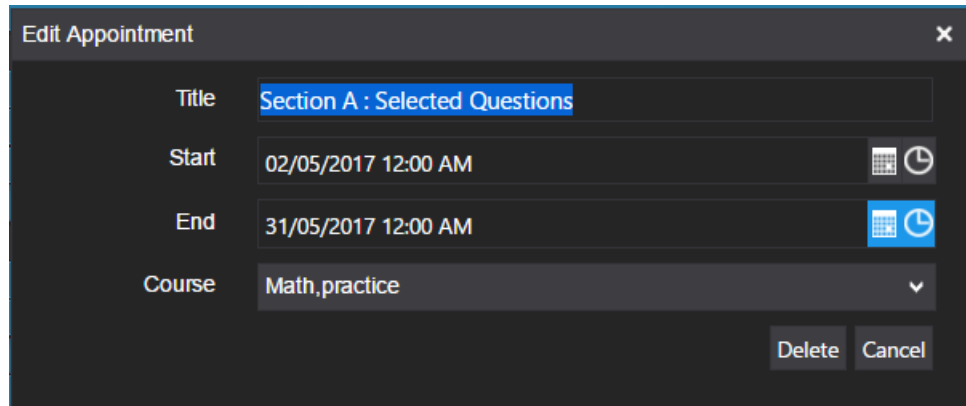


Figure 7: Assessment Details

Note: This part to be implemented at a later stage.

1. The editing feature for the assessments in Calendar will have to be implemented where the following fields (along with the previous) have to be shown to the teacher and allow editing - test dates, show result, retest and test type.
2. The legends in the Calendar should display Course and grade. The color of legend should change for different grades.

4 STUDENT ROLE

The following sub-sections are related to the Student web application that is showcased in the NLS demo.

4.1 STUDENT LOGIN

The student role will have its own login screen.

Grade
3

Math

Assessment of Math

OEN Number:	000000426	List of assessments	Exit Tickets
First Name:	Lester	<ul style="list-style-type: none"> • Class 001 : 2017-01-30 • Class 001 : 2017-02-02 	<ul style="list-style-type: none"> • Class 001 : 2017-01-30 • Class 001 : 2017-02-02
Last Name:	Davidson		

Continue

Cancel

Student Login Page – List of Assessments

On validation of the OEN Number the student will be displayed a list of valid assessments for type 'Practice' of 'Formal' only. Another column called Exit Tickets will display assessments for type 'Exit Tickets'

Primary Division

Grade
3

Math

Assessment of Math

Enter Assessment PIN

PIN:

Begin test

Cancel

Figure 8: Student Login Page – PIN number

1. On selection of a test from the Assessment list the student will be prompted to enter the Assessment Pin for the test. The student clicks on Begin Test and if the PIN is correct the student is directed to first page of the test.
2. If the test does not require a PIN login then on selection of a test the student will be redirected to the first page of the test.

4.2 ASSESSMENT

After entering the first page of test

- Group non-manipulative questions at the beginning of the test.

- Displays a maximum of one multiple choice questions per page. **Note: This will have to be changed to two multiple choice questions per page.**
- Displays a maximum of one text input question per page.
- Students are not allowed to go back once they've answered the question and clicked on the Next button.

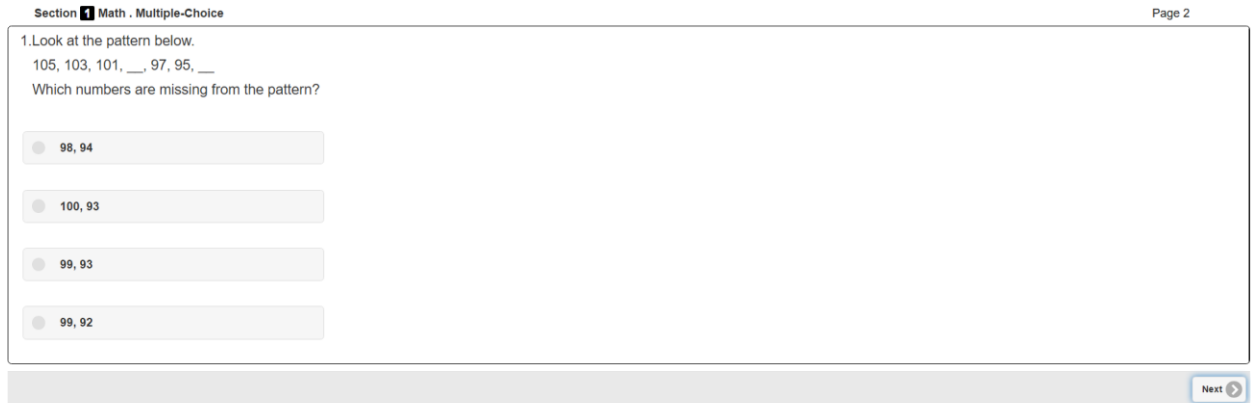


Figure 9: Multiple Choice Questions

4.2.1 OPEN-RESPONSE VS TEXT INPUT QUESTION TYPES

Note: This section is yet to be implemented

The Ontario School Boards only make reference to Open-Response questions on their standardized tests. However, for our development purposes, we have identified two questions types within this category; internally, we will refer to these two types as “Text Input” and “Open-Response” types.

In general, Text Input type questions have a final answer that student responses can be measured against and that they must type in. There is also an area where they can write in to show their work. See the Figure 10 below.

Open-Response type questions have no final answer, rather they simply have an open area where the student can draw their response. These hand drawn responses are then manually scored by the teacher. See the Open-Response section below for more details.

In either case, displayed in the page header for the student assessment will be “Open-Response” for both of these question types.

4.2.2 OPEN-RESPONSE QUESTIONS

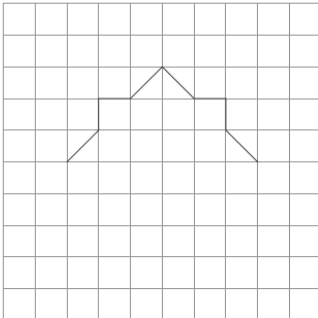
Open-Response type questions are similar to Text Input questions in that they feature a large open area for the student to hand draw their answers. Unlike Text Input questions, there is **NO** text box for the student to enter a final answer.

In most cases, the canvas area where they are drawing will have a background. As an example, see Figure 11 below which has a lined chart as the background image for the students to draw their answer on top of.

Open-Response type questions will have an impact on how assessments are marked, when they are marked, how results are displayed, and how assessments are set up; because of this, development around them should be left until after the October 1 pilot rollout, assuming that there is insufficient time before that to include them in the software.

Section **1** Mathematics • Open-Response page 8

10 Complete the shape on the grid. Use the dotted line as a line of symmetry.



Line of symmetry

Draw all lines of symmetry on the shape.
Explain why these lines are lines of symmetry.

Figure 11: Open-Response Question Type

Note: A separate document will be created to explain in detail the open-response question implementation in the Student App and Teacher App.

4.2.3 TEST SUBMISSION

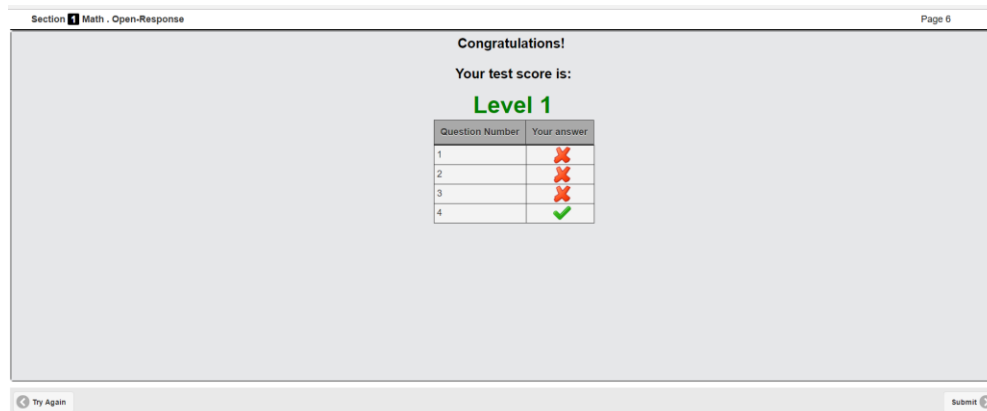


Figure 12: Test Submission

5 DATABASE

This section will only show any new collections created for the app or changes made to existing collections

5.1 COLLECTION: QUESTION

Part1	Stores the leading part of the answer for input type question
Part 2	Stores the trailing part of the answer for input type question

5.2 COLLECTION: TEST

classname	Name of class for target 'class'
groupname	name of group for target 'group'
studentname	name of student for target 'student'
ingrade	Valid values: 'true' or false'
assessmentname	Name of the Assessment
class	classid for target 'class'
group	groupid for target 'group'
student	userid for target 'student'

5.3 COLLECTION: RESULT

totallevel	Level 1, 2, 3 and 4 are stored
ingrade	Valid values: true or false

5.4 COLLECTION: COUNTER

This collections creates counters for collections question, test, transaction and group respectively

Id : seq	value: 4 digits, 0000, counter for questionID
Id :test	value: 5 digits, 00000, counter for testID
Id :transaction	value : 5 digits, 00000, counter for transaction
Id : group	value : 2 digits, 00, counter for groupID

5.5 COLLECTION: STRANDS

This collection stores the colors codes for the strands

Measurement	#603cba
Patterning and Algebra	#ffc40d
Geometry and Spatial Sense	#00A300
Number Sense and Numeration	#1e7145
Data Management and Probability	#9f00a7
Number Sense and Algebra	#E3A21A
Linear Relations	#2D89EF
Modelling Linear Relations	#1E7145
Analytic Geometry	#603CBA
Measurement and Geometry	#00A300
Measurement and Trigonometry	#FFC40D
Quadratic Relations of the Form $y = ax^2 + bx + c$	#9F00A7
Trigonometry	#E3A21A

6 NON-DISCLOSURE

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