

APS4Math—Adaptive Problem Solving Tutorial Teacher’s Manual

For more information please visit: www.aps4math.com

Table of Contents

1. Introduction

- 1.1. [What is APS4Math?](#)
- 1.2. [What can teachers do with APS4Math?](#)
- 1.3. [What can students do with APS4Math?](#)
- 1.4. [How has APS4Math impacted students' problem solving skills?](#)

2. Quick Start

- 2.1. [Registering as a teacher](#)

3. Setup Guide for Teachers

- 3.1. [Teacher Preparation](#)
- 3.2. [System Requirements](#)
- 3.3. [Logging into APS4Math](#)

4. Teacher Module: Basic Interface

- 4.1. [Teacher Interface](#)
- 4.2. [Create Tab](#)
 - 4.2.1. [Create a Question](#)
 - 4.2.2. [Edit a Question](#)
 - 4.2.2.1. [Add Subquestions](#)
 - 4.2.2.2. [Add Hints](#)
 - 4.2.2.3. [Add Explanations](#)
 - 4.2.2.4. [Add Standards](#)
 - 4.2.2.5. [Delete a Question](#)
 - 4.2.3. [Create a Question Set](#)
 - 4.2.4. [List My Question Sets](#)
 - 4.2.5. [Assign/Unassign a Question Set](#)

- 4.2.5.1. [Assign a Question Set to a Class, Group, or Individual\(s\)](#)
- 4.2.5.2. [Unassign a Question Set from a Class, Group, or Individual\(s\)](#)
- 4.2.6. [Edit Start and/or End Date for a Question Set](#)
- 4.3. [Manage Tab](#)
 - 4.3.1. [Student Operations](#)
 - 4.3.1.1. [Add a Student](#)
 - 4.3.1.2. [Assign Students to a Class](#)
 - 4.3.1.3. [Unassign Students from a Class](#)
 - 4.3.1.4. [Assign Student to a Group](#)
 - 4.3.1.5. [Unassign Students from a Group](#)
 - 4.3.2. [Class Operations](#)
 - 4.3.2.1. [Create a Class](#)
 - 4.3.2.2. [Create a Study Group](#)
- 4.4. [Facilitate Tab](#)
 - 4.4.1. [Reporting](#)
 - 4.4.1.1. [Report by Student](#)
 - 4.4.1.2. [Report by Class/Group](#)
 - 4.4.1.3. [Report by Test](#)

1. Introduction [\(Return to TOC\)](#)

1.1. What is APS4Math? [\(Return to TOC\)](#)

APS4Math is an adaptive problem solving tutorial which:

- Provides mechanisms for individualizing problem solving practice and testing for 8th and 9th grade students
- Accommodates students with different profiles, prior experience, and problem solving abilities
- Contains content which is aligned with TEKS/STAAR mathematics standards
- Is currently funded by a Next Generation Learning Challenges (NGLC) grant

1.2. What can teachers do with APS4Math? [\(Return to TOC\)](#)

With APS4Math teachers have the ability to:

- Create questions and question sets
- Create, manage, and facilitate classes
- Assign question sets to students, groups, or classes
- Monitor student performance and progress

1.3. What can students do? [\(Return to TOC\)](#)

With APS4Math students have the ability to:

- Study algebra problems at their own pace
- Receive timely hints, feedback, and support
- Access step-by-step problem solving support and
- Self-monitor their progress

1.4. How has APS4Math impacted students' problem solving skills? [\(Return to TOC\)](#)

- A recent study indicated that APS4Math significantly improved student math problem solving skills
- Students who struggled with problem solving showed the highest improvement

- Female students improved more when compared with male students
- Teachers and students asserted that the support and guidance provided by APS4Math helped students better understand the problem solving process and how to approach algebra problems

2. Quick Start ([Return to TOC](#))

In this section you will be provided with a summary of steps required to register as a teacher on APS4Math and how to obtain a class code.

2.1 Registering as a teacher ([Return to TOC](#))

In order to register as a teacher on APS4Math, please email Dr. Fethi Inan at Fethi.inan@ttu.edu. In your email, please provide the following information:

First Name:

Last Name:

Email Address #1:

Email Address #2:

Contact Phone Number:

Grade Level:

School District Name:

School Name:

School Address:

City:

State:

Zip Code:

School Phone Number:

In the subject line of your email please write “APS4Math Teacher Registration”.

Within a week, an APS4Math representative will be in contact with you to provide you with a unique Username and Password.

3. Setup Guide for Teachers ([Return to TOC](#))

3.1. Teacher Preparation ([Return to TOC](#))

As a teacher using APS4Math, you will have the ability to:

- Create questions and question sets
- Create, manage, and facilitate classes
- Assign question sets to classes, groups, or individual students
- Monitor student performance and progress

3.2. System Requirements ([Return to TOC](#))

Below you will find a summary of system requirements for APS4Math.

Operating System: Windows, or MacOS 10.3+

Processor: Any

Browser: Internet Explorer 7.0+, Firefox 3+, Chrome 4+ Safari 3+, or Firefox 3+

3.3. Logging in ([Return to TOC](#))

After you have received your username and password from an APS4Math representative, you may login by:

1. Going to www.adaptivetutor.com.
2. Typing in your username and password in appropriate fields.
3. Clicking Login button.

APS4Math Teacher Manual

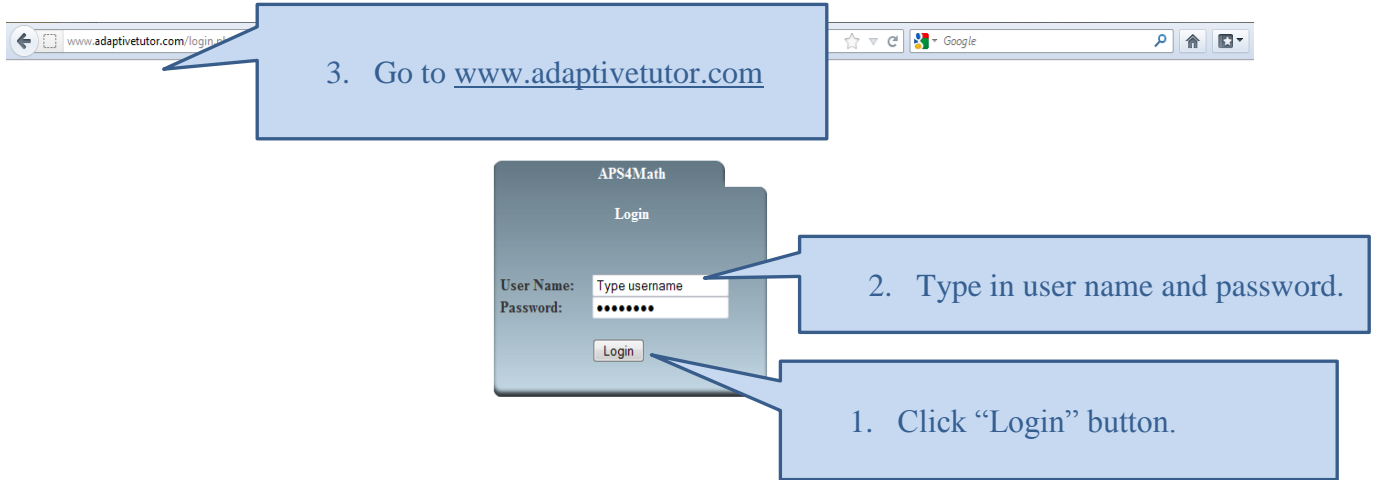


Figure 1: Login Screenshot

4. Teacher Module: Basic Interface [\(Return to TOC\)](#)

4.1. Teacher Interface [\(Return to TOC\)](#)

After you have logged in, you will be taken to the home page of APS4Math. On the homepage you will see a top navigation menu, a link to logout, and your dashboard. See Figure 2.

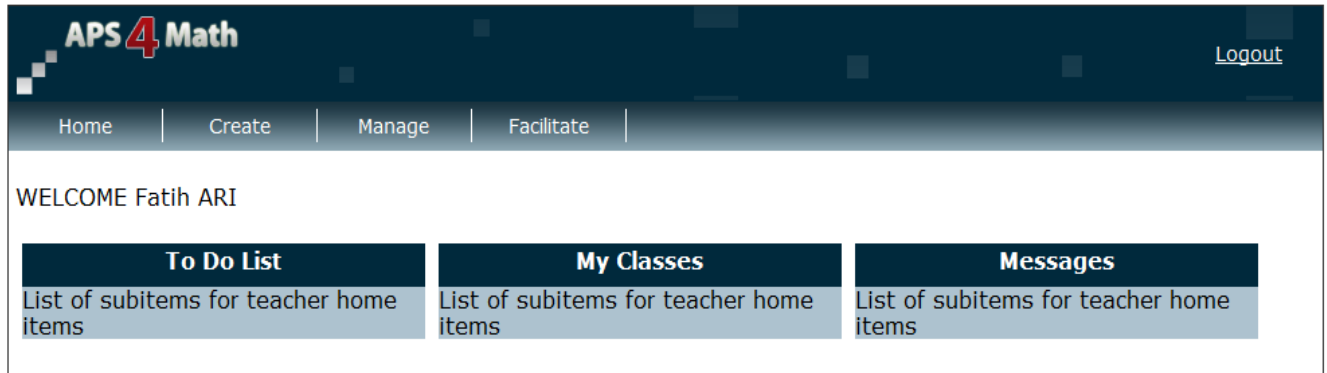


Figure 2: APS4Math Home Page

Top Navigation Menu:

Home: Click to return to homepage

Create: Click to create a question, edit a question, create a question set, list question sets available, and/or assign question sets to students.

Manage: Click to add a student, assign students to a class, unassign students from a class, assign students to a group, unassign students to a group, create a class and/or create a study group.

Facilitate: Click to view student and/or class/group progress reports.

Logout Link:

Click this link to logout from APS4Math.

Dashboard:

On the APS4Math dashboard you will be able to see your to do list, list of classes that you have created, and a list of messages.

4.2. Create Tab ([Return to TOC](#))

By clicking the create tab, you may create a question, edit a question, create a question set, list question sets, and/or assign question sets to students.

4.2.1. Create a Question ([Return to TOC](#))

To create a question you should:

1. Click on the Create Tab from the Home Page.
2. Select “Create Question” which will take you to the Create Question Page. See Figure 3.

On the Create Question Page, you will be able to enter a new question by:

4. Entering a title for the question (e.g. ‘Q’).
5. Typing in the question’s text in text area. You may also edit the question’s formatting by using the format tools provided (5a).
6. Selecting the difficulty level of the question. Options: Easy, Medium, and Hard.
7. Selecting the grade level of the question. Options: 8th, 9th, or 10th grade.
8. Entering the multiple choice options for the question.
9. Clicking on the radio button next to the correct option to signify which of the options is correct.
{optional} Typing additional feedback for each option.
10. {Optional} Typing keywords that you can later use to search for questions by.
11. {Optional} Selecting question source. Options: Source 1 (Copyrighted), Source 2 (Non-copyrighted), and Other.
12. Selecting whether you would like to share your question with other teachers who are using APS4Math.

13. Clicking the Submit button.

APS4Math Teacher Manual

The screenshot shows the 'Create Question' page in the APS4Math interface. At the top, there is a navigation bar with 'Home', 'Create', 'Manage', and 'Facilitate' tabs. Below this is a 'Question' tab. The main form is divided into several sections:

- Title:** A text input field with callout 4.
- Question Text:** A rich text editor with a toolbar. Callout 5 points to the text area, and callout 5a points to a specific toolbar icon. Below the editor are 'Difficulty: Easy' and 'Grade Level: 8th Grade' dropdown menus, with callouts 6 and 7 pointing to them.
- Answers:** Four rows, each with an 'Answer' input field and a 'Feedback' input field. Callout 8 points to the first answer field, and callout 9 points to the 'Correct' radio button of the second answer.
- Keyword(s):** A text input field with callout 10.
- Question Source:** A dropdown menu with 'None' selected, with callout 11.
- Question Shared:** Two radio buttons: 'Yes, I want to share this question' (with callout 12) and 'No, I don't want to share.'.
- Save Question:** A button at the bottom with callout 13.

Figure 3: Create Question Page Screenshot

4.2.2. Edit a Question ([Return to TOC](#))

To edit a question you should:

1. Click on the “Create Tab”.
2. Select “Edit Question(s)” which will take you to the Question List Page. See Figure 4.

#	Question Title	Question Text	Difficulty	Grade	
1	Q	A camp leader plans to buy 3 hot dogs per person for a cookout. If 30 people are going on the cookout and if hot dogs cost \$3.99 per package, what other information is needed to find the cost of the hot dogs?	Easy	8th	
2	Q	The Stars, the Tigers, and the Lobos scored a total of 56 goals during the hockey season. The Stars scored 4 more goals than the Tigers, and the Lobos scored twice as many goals as the Tigers. Which is a reasonable conclusion about the goals the teams scored?	Easy	8th	
3	Q	The results of a random survey showed that 42 out of 80 people plan to vote for Mr. Vu for city council. Which is the best prediction of the total number of votes he will receive if 2,000 people vote?	Easy	8th	
4	Q	A spinner and a fair number cube are used in a game. The spinner has an equal chance of landing on 1 of 4 colors: red, purple, blue, or green. The faces of the cube are labeled 1 through 6. What is the probability of a player spinning the color red and then rolling a 5 or 6?	Easy	8th	
5	Q	Bobby saved \$32 when he purchased a jacket at a clearance sale. If the sale price was 40% off the regular price, what was the regular price of the jacket?	Easy	8th	
6	Q	A cardboard box is 60 inches long, 18 inches wide, and 24 inches high. Which is closest to the volume of the box in cubic feet?	Easy	8th	

Figure 4: Question List Page

3. Scroll through the list of questions and locate the question that you wish to edit.
4. Click the edit button (Pencil) in the row of the question.
5. Edit the question.
6. Then finally click the “Update Question” button.

In addition to editing the text of a question, you may also: add subquestions, add hints, add explanations, and add standards. See Figure 5.



Figure 5: Edit Question Option Buttons

4.2.2.1. Add Subquestions ([Return to TOC](#))

To add subquestions to a question, follow the same steps 1-4 of *Edit Question* above, then:

1. Click the “SubQuestion” button. See Figure 5.
2. Click “Add Sub Question” button.
3. Add the subquestion information as you would any question.
4. Select the appropriate “Problem Solving Skill” from the drop down box. Options: Understand the Problem, Devise a Plan, Carry Out the Plan, and Look Back.
5. Click “Save Subquestion” button.
6. Repeat steps 2-5, until all substeps have been added.

4.2.2.2. Add Hints ([Return to TOC](#))

To add hints to a question, follow the same steps 1-4 of *Edit Question* above, then:

1. Click “Hint” button. See Figure 5.
2. Type hint in text area.
3. Click “Add Hint” button.
4. Repeat steps 2-3, until all hints have been added.

4.2.2.3. Add Explanations ([Return to TOC](#))

To add explanations to a question, follow the same steps 1-4 of *Edit Question* above, then:

1. Click “Explain” button. (See Figure 5.)
2. Type explanation into the text area.
3. Click “Add Explanation” button.

- { optional } Select Explanation Type. Options: Type 1-4.
4. Repeat steps 2-3, until all explanations have been added.

4.2.2.4. Add Standards ([Return to TOC](#))

To add standards to a question, follow the same steps 1-4 of *Edit Question* above, then:

1. Click the “Standards” button.
2. Select a “Reporting Category” from dropdown menu.
3. Select an “Objective”.
4. Select a “Standard”.
5. Then click “Add Standard(s)” button.
6. Repeat steps 2-5 until all standards have been added.

4.2.2.5. Delete Question ([Return to TOC](#))

To delete a question, follow the same steps 1-4 of *Edit Question* above, then click the delete button (Red X) in the row of the question.

4.2.3. Create a Question Set ([Return to TOC](#))

Within APS4Math, you have the ability to create question sets for students. By creating a question set, you may focus student’s practice towards specific objectives and standards. You can create a question set by:

1. Click on the “Create” Tab.
2. Click “Create Question Set”.
3. Select a question set type. You will have two options:
 - a. *Static Question Set*: A common set of questions that are provided to all students. In this set the teacher decides and selects which questions his or her students will work on.
 - b. *Adaptive Question Set*: A dynamic set of questions which vary depending on student profiles, prior experience, and problem solving abilities. The order and sequence of questions is system controlled.

Static Question Set Instructions:

To create a Static Question set:

1. Click “Create Static Question Set”.
2. Type in a Question Set Name in text field. See Figure 6.
3. Select a “Use Mode”.

Options:

Practicing: Students work through questions and have access to hints, explanations, and/or feedback.

Testing: Students work through questions but not have access to hints, explanations, and/or feedback.

Tutoring: Students work through questions and have access to hints, explanations, and/or feedback. Questions are individualized to student progress.

4. Select whether you want to share your question set with other teachers who use APS4Math.
{ optional } If you make changes to question set name, use mode, or shared option, click “Update Question Set Info” button to save those changes.
5. Select *Reporting Category*, *Objective*, *Standard*, *Grade Level*, and *Difficulty Level*.
6. Click “List Available Questions” button to retrieve all available questions from the database that meet the criteria set in Step 5.
7. Select questions which you would like to include question set by clicking on checkbox.
8. Click “Right Arrow” to add your questions to the set. (You may also select and remove questions from your set by clicking the checkbox in the right hand panel of the question and then clicking the “Left Arrow”.)
9. { optional } After you have created your question set, you may change to order of how the questions are given to students by first clicking the checkbox to the left of the question and then the up or down arrows to the right of the question.

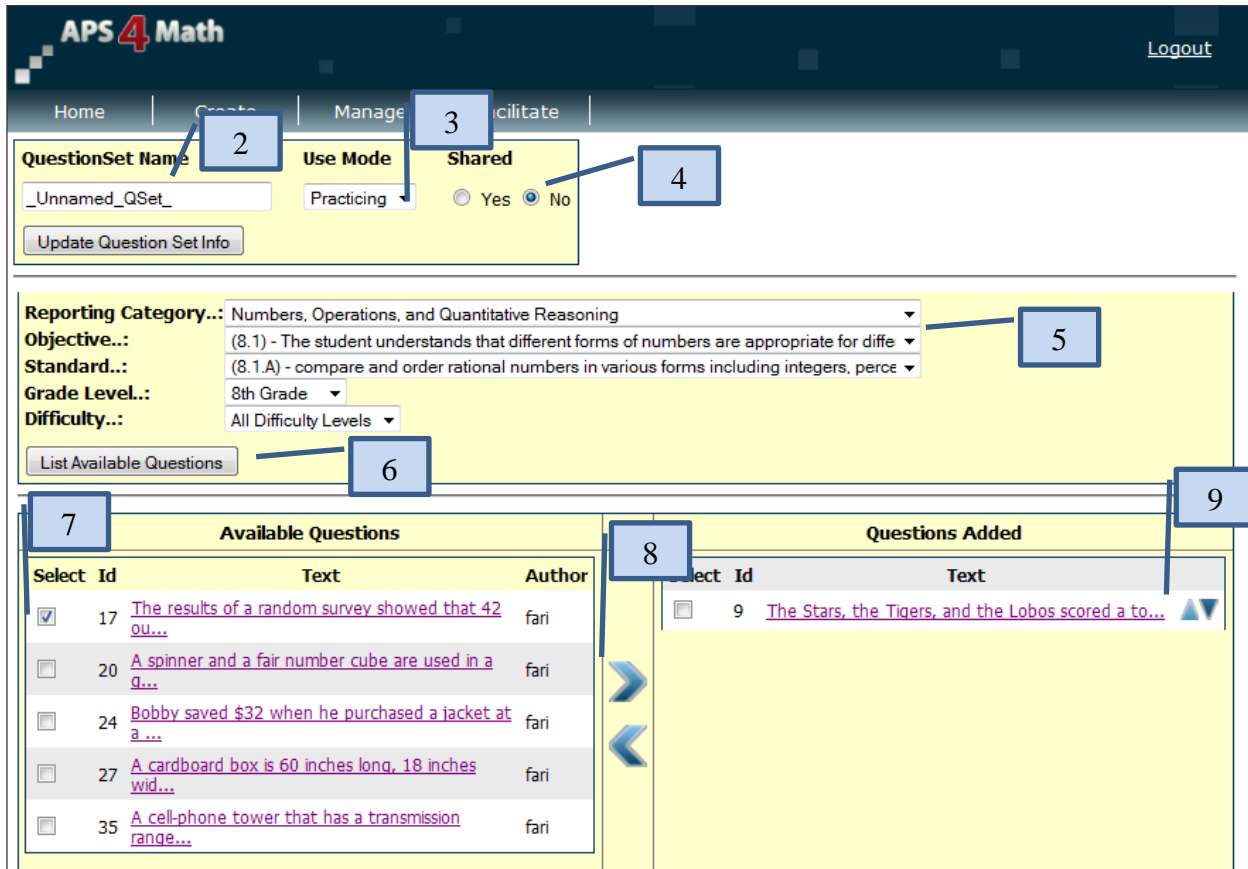


Figure 6: Static Question Set Screenshot

Adaptive Question Set Instructions:

To create a Static Question set:

1. Click “Create Adaptive Question Set”.
2. Type in a Question Set Name in text field. See Figure 7.
3. Select a “Use Mode”.

Options:

Practicing: Students work through questions and have access to hints, explanations, and/or feedback.

Testing: Students work through questions but not have access to hints, explanations, and/or feedback.

Tutoring: Students work through questions and have access

to hints, explanations, and/or feedback. Questions are individualized to student progress.

4. Select whether you want to share your question set with other teachers who use APS4Math.
5. Select *Reporting Category*, *Objective*, *Standard*, *Grade Level*, and *Difficulty Level*.
6. Click “Save Question Set” button.

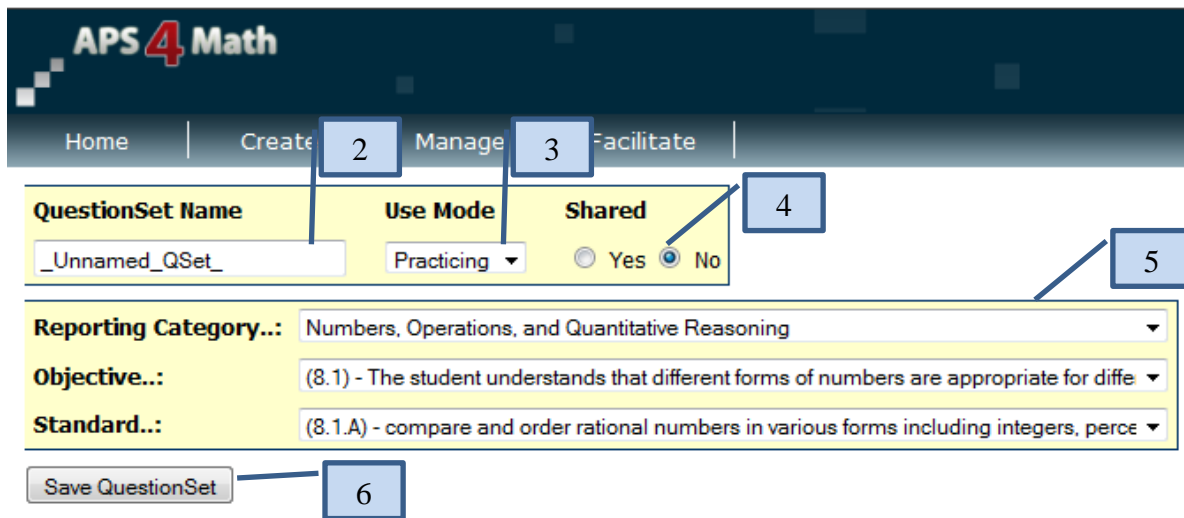



Figure 7: Adaptive Question Set Screenshot

4.2.4 List My Question Set ([Return to TOC](#))


To list the question sets that you have created and/or borrowed from other teachers:

1. Click on the “Create” Tab.
2. Click “List My Question Sets”.
 - {optional} If you wish to view or edit the question set, click the edit button (Pencil)  in the “Type” column of respective row.


4.2.5 Assign/Unassign a Question Set ([Return to TOC](#))

(Note: Before assigning a question set to a class, group or individuals, these will have to be added first. See instructions on how to “Create Class,” “Create Study Group,” or “Add Student”).

4.2.5.1. Assign a Question Set to a Class, Group, or Individual(s) ([Return to TOC](#))


1. Login and select your class. (Note: If already logged on, click “My Classes” in top right hand navigation bar.)
2. Click on the “Create” Tab.
3. Click “Edit Question Set(s)”.
4. In the respective row of the question set, click “Assign/Unassign” icon  in the last column.
5. Specify a start date and end date.
6. Select whether you want to assign the question set to a class, group, or individual(s).
7. In the left hand dropdown menu, select a class, group, or individual(s).
8. Click “Assign To ...” button.

4.2.5.2. Unassign a Question Set to a Class, Group, or Individual(s) ([Return to TOC](#))

1. Login and select your class. (Note: If already logged on, click “My Classes” in top right hand navigation bar.)
2. Click on the “Create” Tab.
3. Click “Edit Question Set(s)”.
4. In the respective row of the question set, click “Assign/Unassign” icon  in the last column.
5. Select whether you want to unassign the question set to a class, group, or individual.

6. In the right hand dropdown menu, select a class, group, or individual(s).
7. Click “Unassign from selected ...” button.
8. Click “Back to List” button.

4.2.6. Edit Start/End Date for a Question Set ([Return to TOC](#))

1. Login and select your class. (Note: If already logged on, click “My Classes” in top right hand navigation bar.)
2. Click on the “Create” Tab.
3. Click “Edit Question Set(s)”.
4. In the respective row of the question set, click “Assign/Unassign” icon  in the last column.
5. Specify or edit start/end date.
6. Click “Back to List” button.

4.2 4.3. Manage Tab ([Return to TOC](#))

By clicking the manage tab, you have to ability to manage student and class operations.

4.3.1. Student Operations ([Return to TOC](#))

Student operations include the abilities to: add students, assign students to classes or groups, unassign students from classes or groups, create classes and/or create study groups.

4.3.1.1. Add a Student ([Return to TOC](#))

1. Click on the “Manage” Tab.
2. Click “Student Operations”.
3. Click “Add Student”.
4. Fill out New Student Information.

5. Click “Add Student” button.

4.3.1.2. Assign Students to a Class ([Return to TOC](#))

Note: Class and Students must be created in the system before you can assign them to a class. See instructions on how to “Create a Class” and “Add a Student”.

1. Click on the “Manage” Tab.
2. Click “Student Operations”.
3. Click “Assign Students to a Class”.
4. Select appropriate class.
5. Highlight the students that you wish to add. (Note: For PC users, to add multiple students at once, select a student, hold CTRL button on keyboard down and select other students.)
6. After you have highlighted all the students that you wish to add, click “Add Students to Class” button.

4.3.1.3. Unassign Students from a Class ([Return to TOC](#))

1. Click on the “Manage” Tab.
2. Click “Student Operations”.
3. Click “Unassign Students from a Class”.
4. Select a class.
5. Highlight the students that you wish to remove. (Note: For PC users, to remove multiple students at once, select a student, hold CTRL button on keyboard down and select other students.)
6. After you have highlighted all the students that you wish to remove, click “Unassign Students from a Class” button.

4.3.1.4. Assign Student to a Group ([Return to TOC](#))

Note: Group and students must be created in the system beforehand you can assign them to a class. See instructions on how to “Create a Group” and “Add a Student”.

1. Click on the “Manage” Tab.
2. Click “Student Operations”.
3. Click “Assign Student to a Group”.
4. Select class you wish to work with.
5. Select the study group you wish to add students to.
6. Highlight the students that you wish to add. (Note: For PC users, to add multiple students at once, select a student, hold CTRL button on keyboard down and select other students.)
7. After you have highlighted all the students that you wish to add, click “Add Students to a Group” button.

4.3.1.5. Unassign a Student from Group ([Return to TOC](#))

1. Click on the “Manage” Tab.
2. Click “Student Operations”.
3. Click “Unassign Student from a Group”.
4. Select the class you wish to work with.
5. Select the study group you wish to add students to.
6. Highlight the students that you wish to remove. (Note: For PC users, to remove multiple students at once, select a student, hold CTRL button on keyboard down and select other students.)
7. After you have highlighted all the students that you wish to add, click “Unassign Students from a Group” button.

4.3.2. Class Operations ([Return to TOC](#))

Class operations include the abilities to: create a class and create a study group.

4.3.2.1. Create a Class ([Return to TOC](#))

1. Click on the “Manage” Tab.
2. Click “Class Operations”.
3. Click “Create Class” link.
4. Enter class information.
5. Click “Create Class” button.

4.3.2.2. Create a Study Group ([Return to TOC](#))

1. Click on the “Manage” Tab.
2. Click “Class Operations”.
3. Click “Create Study Group” link.
4. Select the class you wish to work with.
5. Enter a Study Group name.
6. Click “Create Study Group” button.

4.4. Facilitate Tab ([Return to TOC](#))

Within APS4Math, you will have the ability to further facilitate student learning by having immediate access to your students’ progress.

4.4.1. Reporting ([Return to TOC](#))

Reports of student progress can be created by student, class/group, or by test.

4.4.1.1. Report by Student ([Return to TOC](#))

1. Login and select your class. (Note: If already logged on, click “My Classes” in top right hand navigation bar.)

2. Click on the “Facilitate” Tab.
3. Click “Reporting”.
4. Click “Report by Student”.
5. Select class/group you wish to work with.
6. Click “Report” button.
7. Click on the link to individual student’s name to get further details on the student’s progress.

4.4.1.2. Report by Class/Group ([Return to TOC](#))

1. Login and select your class. (Note: If already logged on, click “My Classes” in top right hand navigation bar.)
2. Click on the “Facilitate” Tab.
3. Click “Reporting”.
4. Click “Report by Class/Group”.
5. Select class/group you wish to work with.
6. Click “Report” button.
7. View progress report.

4.4.1.3. Report by Test ([Return to TOC](#))

1. Login and select your class. (Note: If already logged on, click “My Classes” in top right hand navigation bar.)
2. Click on the “Facilitate” Tab.
3. Click “Reporting”.
4. Click “Report by Test”.
5. Select class/group you wish to work with.
6. Click “Report” button.
7. Click on the test you wish to see results on.
8. View progress report.

APS4Math Teacher Manual