

Using Webwork for Mathematics assignments & Students' views about Webwork

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Outline of presentation

1. What is Webwork?
2. Why use Webwork?
3. Setting up a Webwork course and creating assignments
4. Students' feedback on the use of Webwork

1. What is Webwork?

- Webwork is a free **online platform** that can be used to assign **homework** or **quizzes** for many college and university level **mathematics** and some **science** courses.
- Webwork was **originally created in 1995** by two faculty members at University of Rochester.
 - Today, Webwork it is maintained by contributors from several colleges and universities.
 - It is supported by the Mathematical Association of America and the National Science Foundation.
- Webwork courses at Thompson Rivers University include Precalculus, Calculus, Algebra, Differential Equations, Linear Algebra, Abstract Algebra, Geometry, Statistics, Graph Theory, Set Theory, Financial Mathematics, and Mathematical Analysis.

Example of a Webwork page.

- Homework Sets
- User Settings
- Grades
- Instructor Tools
- Classlist Editor
- Set Assigner
- Hmwk Sets Editor**
- Problem Editor
- Library Browser
- Statistics
- Student Progress
- Scoring Tools
- Email
- File Manager
- Course Configuration
- Help
- Report bugs

WeBWork / Math 0600 F24 Ringa / Instructor Tools / Hmwk Sets Editor

Hmwk Sets Editor ?

Please select action to be performed. X

- Filter
- Sort
- Edit
- Publish
- Import
- Export
- Score
- Create
- Delete

Show which sets? enter matching set IDs below v

Match on what? (separate multiple IDs with commas) *

Filter

Showing 6 out of 6 sets.

Set List

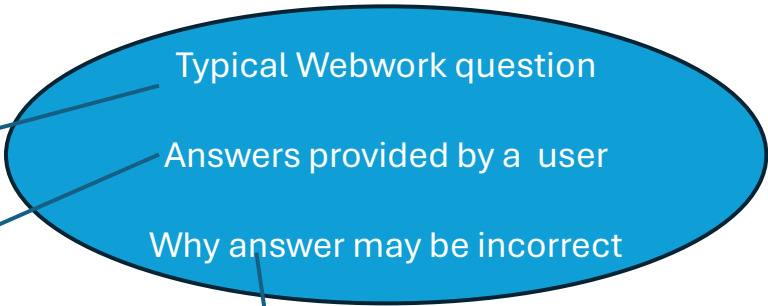
<input type="checkbox"/>	Edit Set Data	Edit Problems	Edit Assigned Users	Visible	Open Date	Close Date	Answer Date
<input type="checkbox"/>	Functions domain range zeros odd even ✎	29	18/23	Yes	10/14/24, 11:59 PM	12/3/24, 11:59 PM	12/3/24, 11:59 PM
<input type="checkbox"/>	Piecewise functions ✎	10	18/23	Yes	10/21/24, 12:59 AM	12/3/24, 11:59 PM	12/3/24, 11:59 PM
<input type="checkbox"/>	Transformations of functions ✎	31	18/23	Yes	10/23/24, 12:59 AM	12/3/24, 11:59 PM	12/3/24, 11:59 PM
<input type="checkbox"/>	Linear and quadratic functions ✎	32	18/23	Yes	11/5/24, 11:59 PM	12/3/24, 11:59 PM	12/3/24, 11:59 PM
<input type="checkbox"/>	Composite functions ✎	10	18/23	Yes	11/14/24, 11:59 PM	12/3/24, 11:59 PM	12/3/24, 11:59 PM
<input type="checkbox"/>	Inverse functions ✎	19	18/23	Yes	11/14/24, 11:59 PM	12/3/24, 11:59 PM	12/3/24, 11:59 PM

Please select action to be performed. X

Dismiss All Messages

2. Why Webwork?

- It allows students to complete homework assignments **online** and **submit** them **electronically** for **automatic grading**.
- Instructors can create **custom problems** or **select from the library**.
- The Webwork **homework sets** are **individualized** so that each student has a different version of each problem.
- Students can **try each homework problem as many times as they like** before the due date set by the instructor, and, with each try, there is a message telling the student whether the answer is correct or not, as well as an **explanation for the possible reasons** for the wrong answer.
- Students can receive **immediate feedback** after answering each problem.



Suppose $f(t) = \frac{8t + 9}{5}$.

(a) Evaluate $f(11)$.
 $f(11) = \frac{97}{5}$ [help \(fractions\)](#)

(b) Solve $f(t) = 4$.
 $t = 2t$ [help \(fractions\)](#)

Results for this submission

Entered	Answer Preview	Result	Message
97/5	$\frac{97}{5}$	correct	
2*t	2t	incorrect	Your answer isn't a fraction of integers (it looks like a formula that returns a number)

At least one of the answers above is NOT correct.

- Your score was recorded.
- You have attempted this problem 2 times.
- You received a score of 50% for this attempt.
- Your overall recorded score is 50%.
- You have unlimited attempts remaining.

Demonstration: working out questions on Webwork

https://webwork.tru.ca/webwork2/Math_0600_F24_Ringa/instructor/sets?effectiveUser=nringa

- Log into Webwork
- Find your course and click on 'Homework Sets'
- Select the homework set you want to work on.
- Select a problem to work on
- Click on 'submit Answers' after providing your solution.
- Click on 'Next Problem' to move to the next problem

3. Setting up a Webwork course and creating assignments

- **Initial setup and enrolment of users** (instructor and students): **Institution IT**
- **Create and assign homework sets and set due dates: Instructor**

Demonstration – creating & assigning homework sets - Instructor

Link to Webwork courses TRU:

<https://webwork.tru.ca/webwork2>

*Create a new, empty homework set

- Select your course
- Enter login information
- Click on '[Hmwk Sets Editor](#)'
- Click on '[Create](#)'
- Complete the box titled 'Name the new set*'
- In the next box, select '[a new empty set](#)'
- Click on '[Create](#)' below the second box

*Add questions to the new homework set

- Click on '[Library Browser](#)'
 - In the first box, select the newly created Target Set
 - Select desired Subject, Chapter and Section
 - Click on '[View Problems](#)'
 - On the top-left side of each box, click on '[Add](#)' to add a question to the homework set
- * You can click on '[Hmwk Sets Editor](#)' to verify that the questions have been added the set

*Assign homework set to users

- Click on '[Hmwk Sets Editor](#)'
- In the box containing a list of homework sets, under 'Edit Assigned Users', click on the cell corresponding to the new homework set.
- Check boxes against assigned users

*Set Open Date and Close Date

- Click on '[Hmwk Sets Editor](#)'
- Click on the "[pencil](#)" next to the name of the new homework set
- Select Open Date, Close Date and Answer Date
- Click on '[Save Edit](#)'

Demonstration: viewing student progress - Instructor

Link to Webwork courses TRU:

<https://webwork.tru.ca/webwork2>

- Click on 'Student Progress'
- Click on the name of a homework set or the name of a student

4. Students' feedback on the use of Webwork

- To assess students' views on the use of Webwork in ABE Mathematics at Thompson Rivers University, we administered a **questionnaire** (see next page) to **39 students** taking MATH 0510 (Advanced Algebra) and MATH 0600 (Provincial Precalculus 1) in Winter 2025.
- The students started using Webwork at the beginning of Winter 2025, and the survey was **conducted half-way through** the Winter 2025 term (**10th -14th February 2025**)

Instructor: Notice Ringa

Questionnaire

Rate yourself on a scale from 1 to 10 with 1 being the lowest,

1. Webwork helps me learn and practice mathematics concepts.

1 2 3 4 5 6 7 8 9 10

2. I would like to have a webwork assignment for each topic covered in my mathematics course.

1 2 3 4 5 6 7 8 9 10

3. I would like to have more than 25 questions in each webwork assignment.

1 2 3 4 5 6 7 8 9 10

4. My daily schedule allows me to seek help with webwork assignments from my instructor during office hours.

1 2 3 4 5 6 7 8 9 10

5. My daily schedule allows me to complete each webwork assignment on time.

1 2 3 4 5 6 7 8 9 10

6. I would like my instructor to continue assigning webwork assignments throughout the rest of this semester.

1 2 3 4 5 6 7 8 9 10

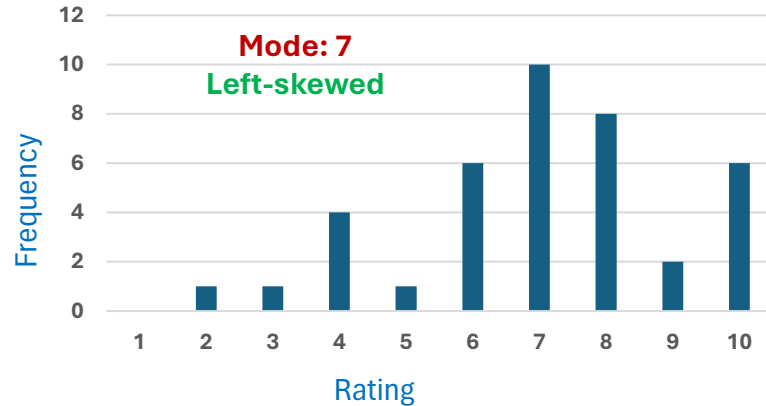
7. I recommend the use of webwork assignments in all my courses.

1 2 3 4 5 6 7 8 9 10

General recommendations to your mathematics instructor:

Bar graphs showing the responses to the questionnaire

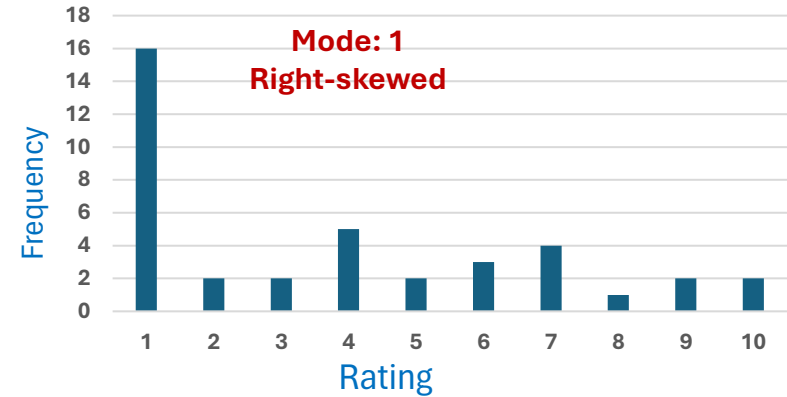
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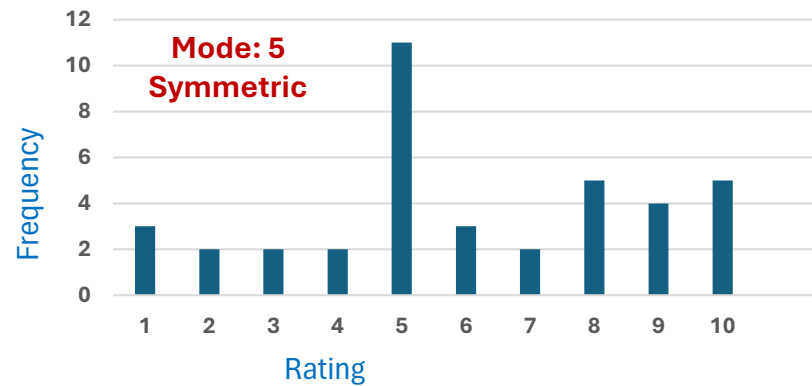
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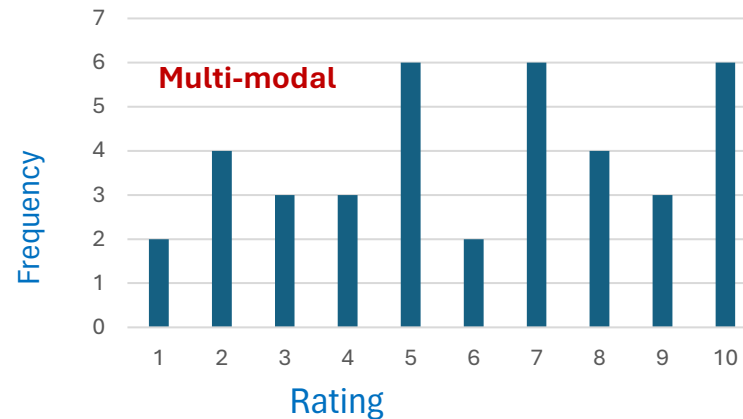
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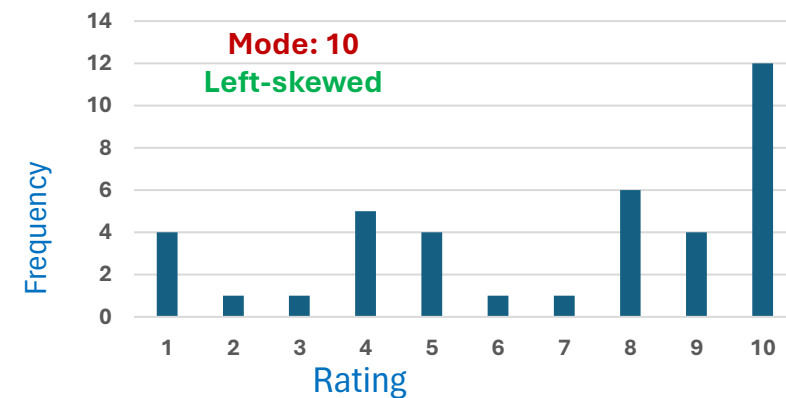
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Students' general comments about Webwork

General recommendations to your mathematics instructor:

They must not be too many questions because they end up demotivating people and up losing other way to complete the work fast

General recommendations to your mathematics instructor:

can be buggy but overall helpful

General recommendations to your mathematics instructor:

I do not have recommendation, I like every thing

General recommendations to your mathematics instructor:

He is a great teacher. He teaches us very well.

General recommendations to your mathematics instructor:

I would prefer assignments

General recommendations to your mathematics instructor:

More Step by Step Visuals
Even Videos.

General recommendations to your mathematics instructor:

I don't like webwork. I feel I spend more time trying to figure out how to write the answers than I do learning math. I feel that paper assignments would be better.

General recommendations to your mathematics instructor:

I prefer Written Assignments !!

General recommendations to your mathematics instructor:

Good

General recommendations to your mathematics instructor:

More multiple choice questions.

General recommendations to your mathematics instructor:

Some of the Questions are not solvable so I wish the instructor would go through them and make sure they all work before assigning them

General recommendations to your mathematics instructor:

It's a really great platform but our professor manages it well but less questions in the assignment will be appreciated.

Students' general comments about Webwork...

General recommendations to your mathematics instructor:

The only issue with webwork are the weird errors, otherwise love it.

General recommendations to your mathematics instructor:

Sometimes its hard to understand what format you'd like the answer in.

General recommendations to your mathematics instructor:

Not an instructor problem, but formatting in webwork is sometimes difficult and time consuming.

General recommendations to your mathematics instructor:

I want you to reduce the questions in webwork

General recommendations to your mathematics instructor:

I would like there to be better explanation in terms of how to input answers. Some will not compute properly.

General recommendations to your mathematics instructor:

Too many questions, harder than the actual quizzes, why?

General recommendations to your mathematics instructor:

It is sometimes frustrating being unable to find the answer. I would like the option to forgo the grade on a question in exchange for being able to see the answer.

General recommendations to your mathematics instructor:

Great Lectures :)

General recommendations to your mathematics instructor:

It could be nice if we didn't have so many tasks. It helps to remember a material.

General recommendations to your mathematics instructor:

Webwork is nice, but it can be too picky and/or advanced.

General recommendations to your mathematics instructor:

I don't love Webwork because I find when I don't understand a question it doesn't help or give advice in how to finish a question. I understand that I can ~~ask~~ email my prof, but I sometimes find it tedious :)

Discussion of survey results

- Most survey participants:
 - Find Webwork assignments **useful**
 - Prefer **fewer questions** in each homework set
 - Find it time consuming to deal with **Webwork syntax issues**

Limitations of the survey

- **Sample size** – only 39 students completed the survey
- **Sampling strategy** – only students in the instructor's classes asked to complete the survey
- **Survey questions designed by the instructor**
- **Limited time to complete survey** – 20 minutes
- **Survey participants' experience with Webwork** – 6 weeks

Changes implemented after survey

- **Addressing of webwork issues** during classes
- Restricted the **number of questions** in subsequent Webwork assignments to 25