



Solving the Math Problem: Remediating Students (And Courses) By Training Teachers

RACHEL WALKER AND CHRISTINE PAIGE

ACCESS VIRTUAL LEARNING



By planning and setting common standards, you can create effective, accessible content.

Objectives

- Discuss best practices in creating and evaluating accessible screencast content (QM 6.1, 6.2, 6.4, 8.2, 8.4, 8.5)
- Analyze video viewership, survey, and course data to assess effectiveness of a large-scale screencast training (QM 4.1, 4.2, 6.1, 6.2)
- Evaluate a screencast video for quality and accessibility (QM 4.1, 6.1, 6.2, 8.2, 8.4, 8.5)



SETTING THE SCENE

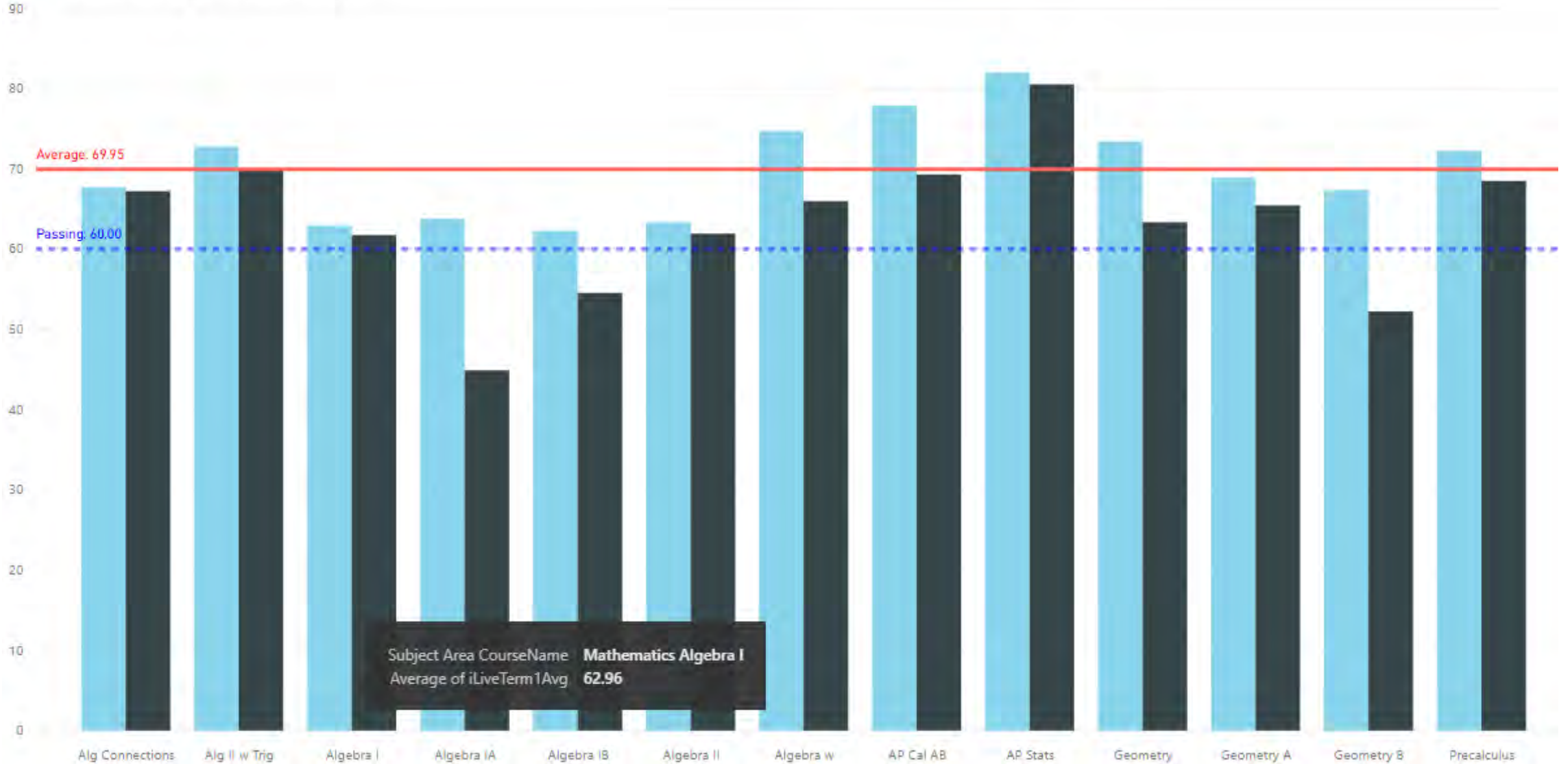
WHY WAS THE MATH BOOK DEPRESSED?

IT HAD A LOT OF PROBLEMS. (SO DID OUR COURSES.)



Average of iLiveTerm1Avg and Average of iLiveTerm2Avg by Subject Area and CourseName

Average of iLiveTerm1Avg ● Average of iLiveTerm2Avg




FLASH

Lesson 5-02:
Simplify Trigonometric Identities

Introduction
✓ Lesson
Practice
Task

Lesson

Content on this page requires a newer version of Adobe Flash Player.

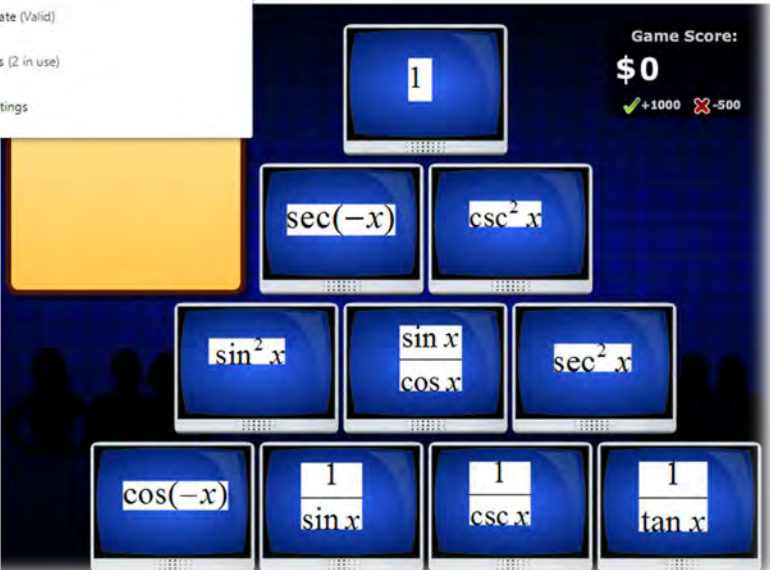


accesssdl.state.al.us/AventaCourses/access_courses/precalculus_v17_ua/5_unit/05-01_practice.htm

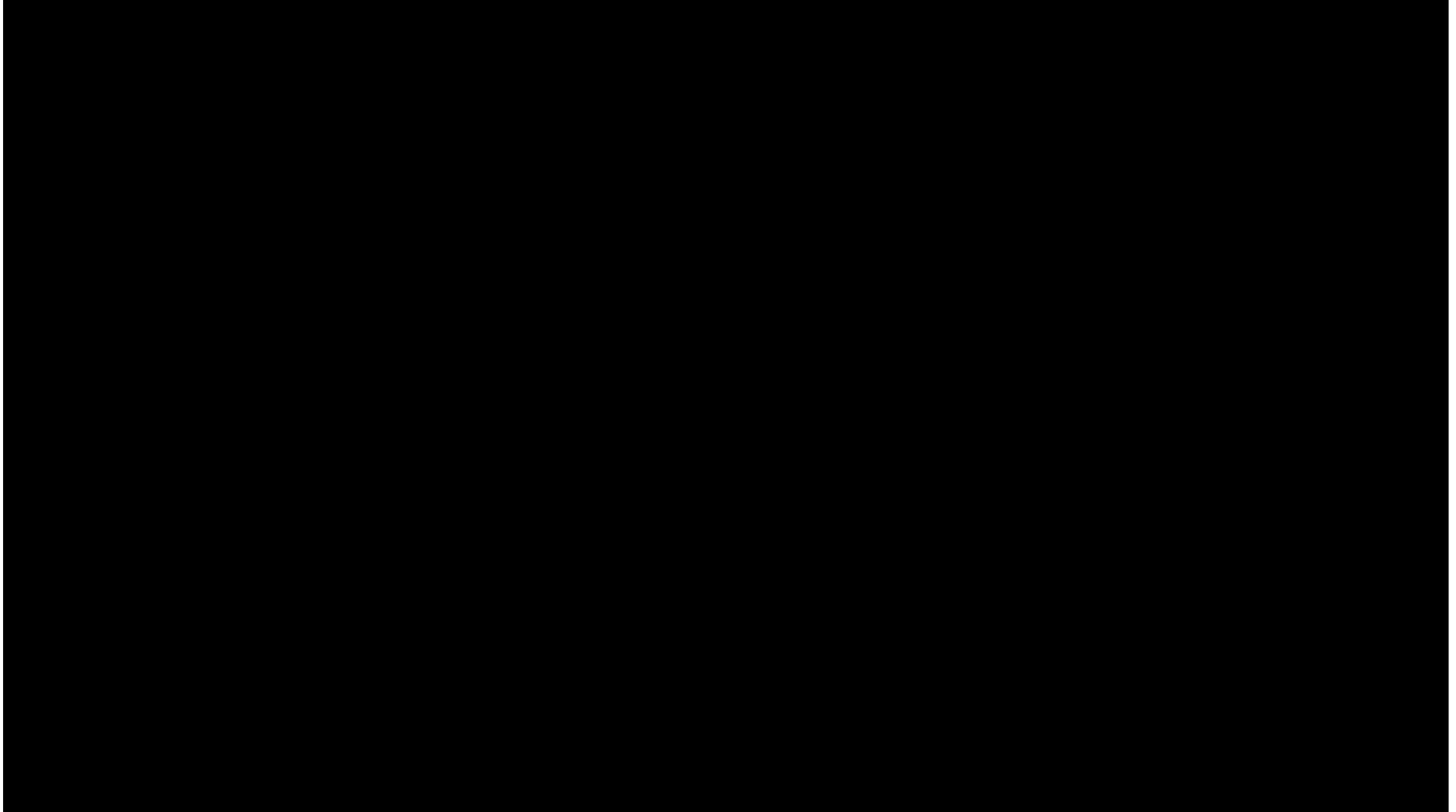
Your connection to this site is not fully secure
Attackers might be able to see the images you're looking at on this site and trick you by modifying them. [Learn more](#)

- Flash: Allow
- Automatic Downloads: Allow
- Certificate (Valid)
- Cookies (2 in use)
- Site settings

Game Score: \$0
✓ +1000 ✗ -500



The game interface shows a grid of screens displaying trigonometric identities. The top screen shows the number 1. Below it are two screens with $\sec(-x)$ and $\csc^2 x$. The next row has three screens with $\sin^2 x$, $\frac{\sin x}{\cos x}$, and $\sec^2 x$. The bottom row has four screens with $\cos(-x)$, $\frac{1}{\sin x}$, $\frac{1}{\csc x}$, and $\frac{1}{\tan x}$. A score of \$0 is shown in the top right, with a green checkmark for +1000 and a red X for -500.



MATH 7

4.01 Basic Geometric Figures

Introduction **Learn** Try It Task

Learn

Define and Name Basic Geometric Figures Identify Collinear Points, Coplanar Points, and Intersections

Draw Geometric Figures

Draw Geometric Figures

Watch the Draw Geometric Figures video (4:47) below.

[Open Draw Geometric Figures in a new window](#)

Example 7: Draw and label the following.

a.) Draw three non-collinear points M, N, and O. Then sketch line MN.

b.) Draw two points A and B. Then sketch Segment AB. Add a point W between A and B.

Paused 2:23 / 4:47

Note: The presentation may take a moment to load.

3.03 Solve One-Step Equations with Multiplication and Division

Introduction **Learn** Try It Task

Learn

One-Step Equations Solving One-Step Equations **One-Step Word Problems**

Solve One-Step Word Problems Using Multiplication and Division

Watch the Solve One-Step Word Problems Using Multiplication and Division video (6:19) below.

[Open Solve One-Step Word Problems Using Multiplication and Division in a new window](#)

Example 3 Write an equation that models the given word problem. Then, solve the problem.

Jordan wants to make a dessert, but he only wants to make $\frac{3}{4}$ of the original recipe. After cutting the recipe down, he uses four cups of blueberries. How many blueberries did the original recipe call for?

$\frac{3}{4}b = 4$

$\frac{3}{4}b = 4 \cdot \frac{4}{3}$

$b = \frac{16}{3}$ or $5\frac{1}{3}$ cups

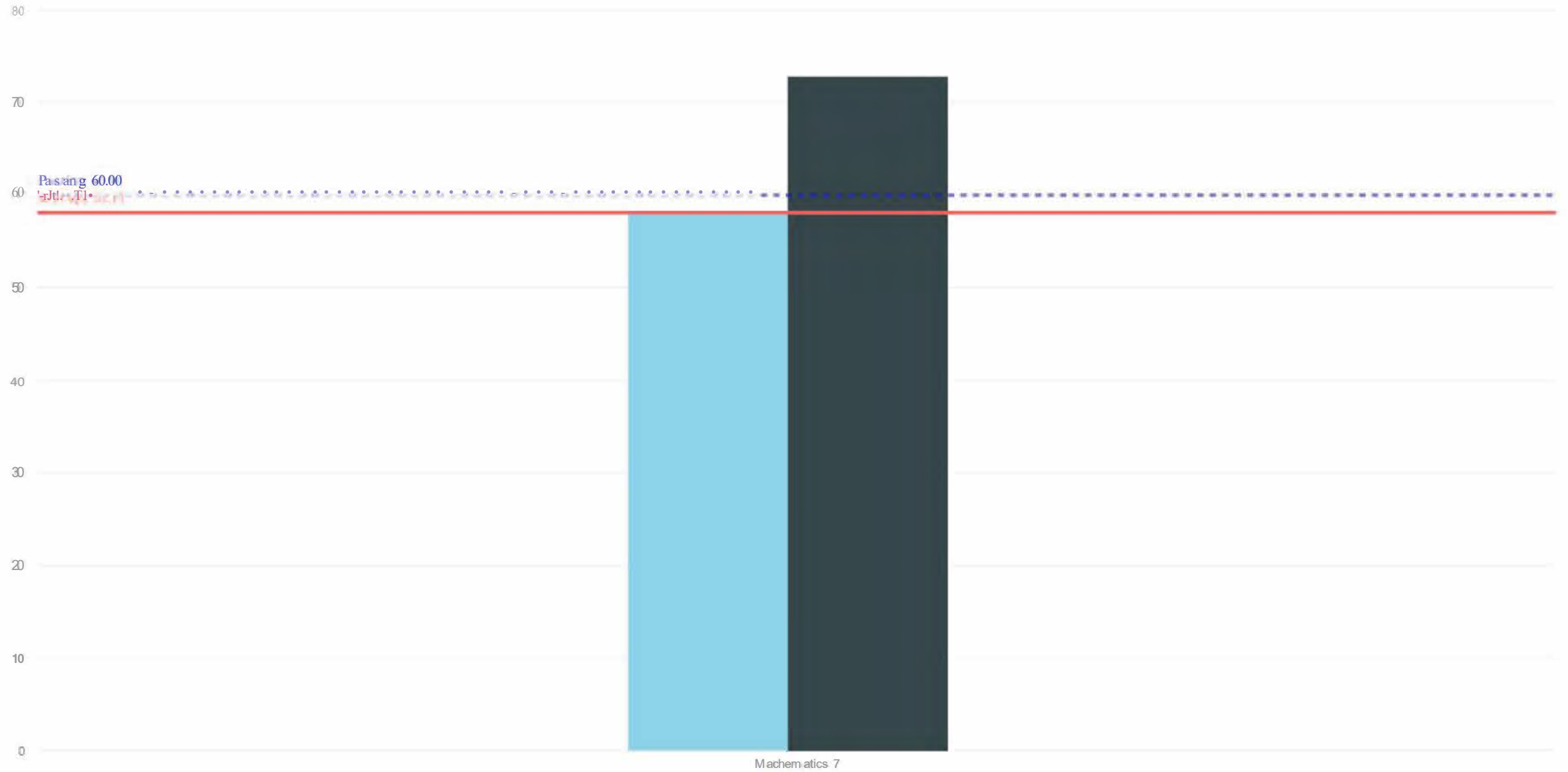
Check: $\frac{3}{4} \cdot \frac{16}{3} = 4$

Paused 5:47 / 6:19

Note: The presentation may take a moment to load.

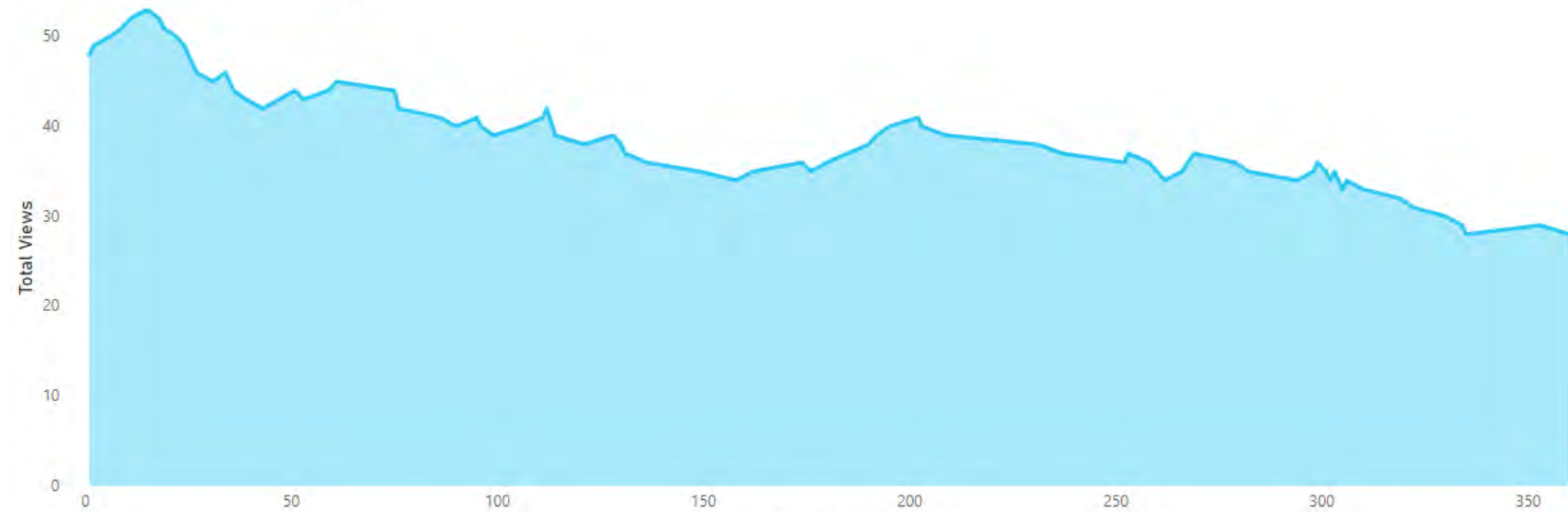
Average of iLiveTerm1Avg and Average of iLiveTerm2Avg by Subject Area and CourseName

● Average of iLiveTerm1Avg ● Average of iLiveTerm2Avg



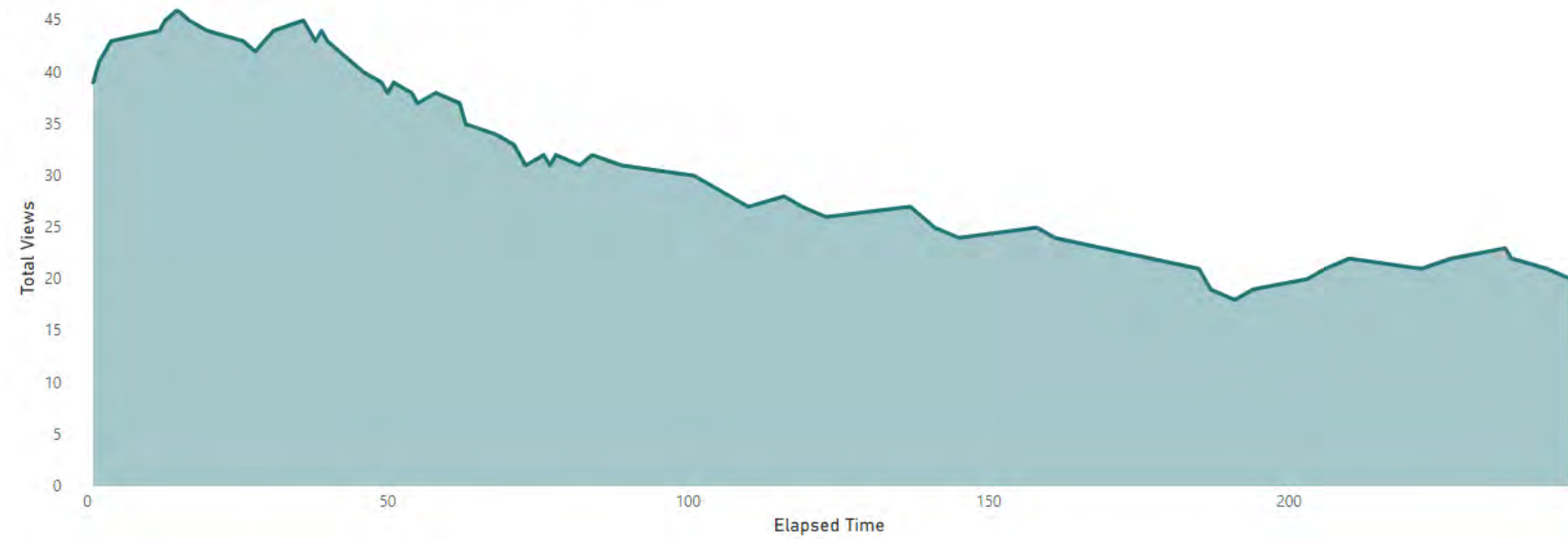
Total Views by Elapsed Time and Presentation Title

Presentation Title ● Solve One-Step Inequalities



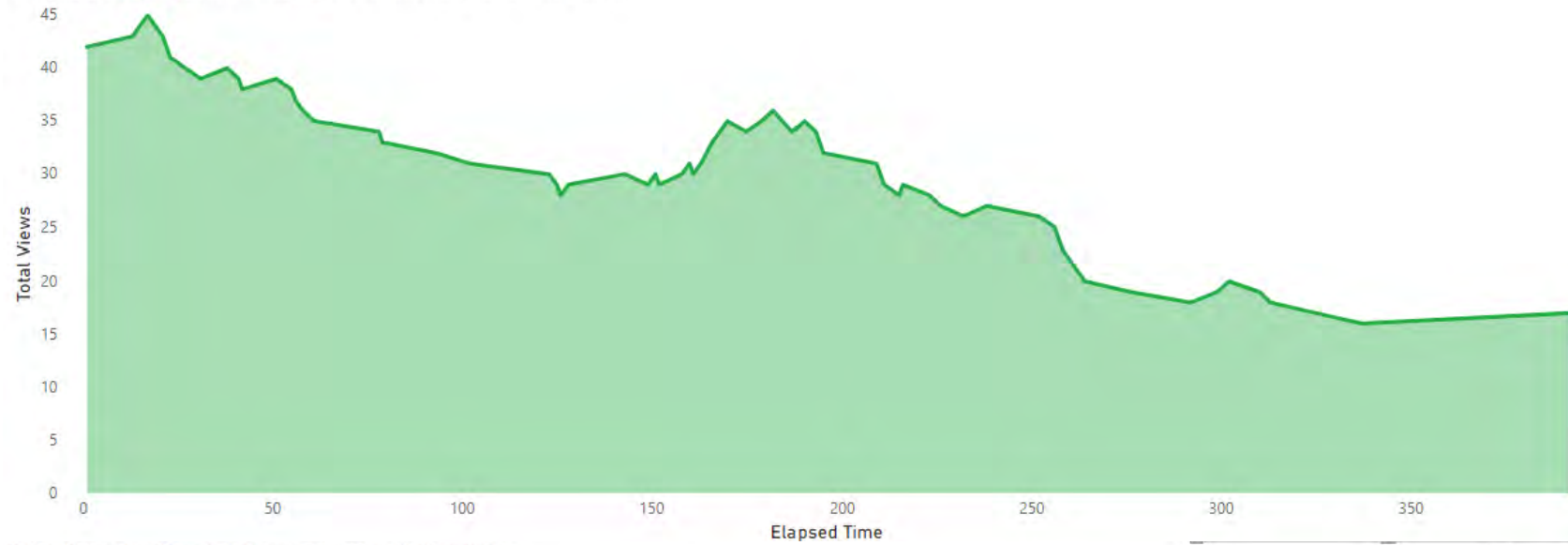
Total Views by Elapsed Time and Presentation Title

Presentation Title ● Solve One-Step Equations with Addition and Subtraction



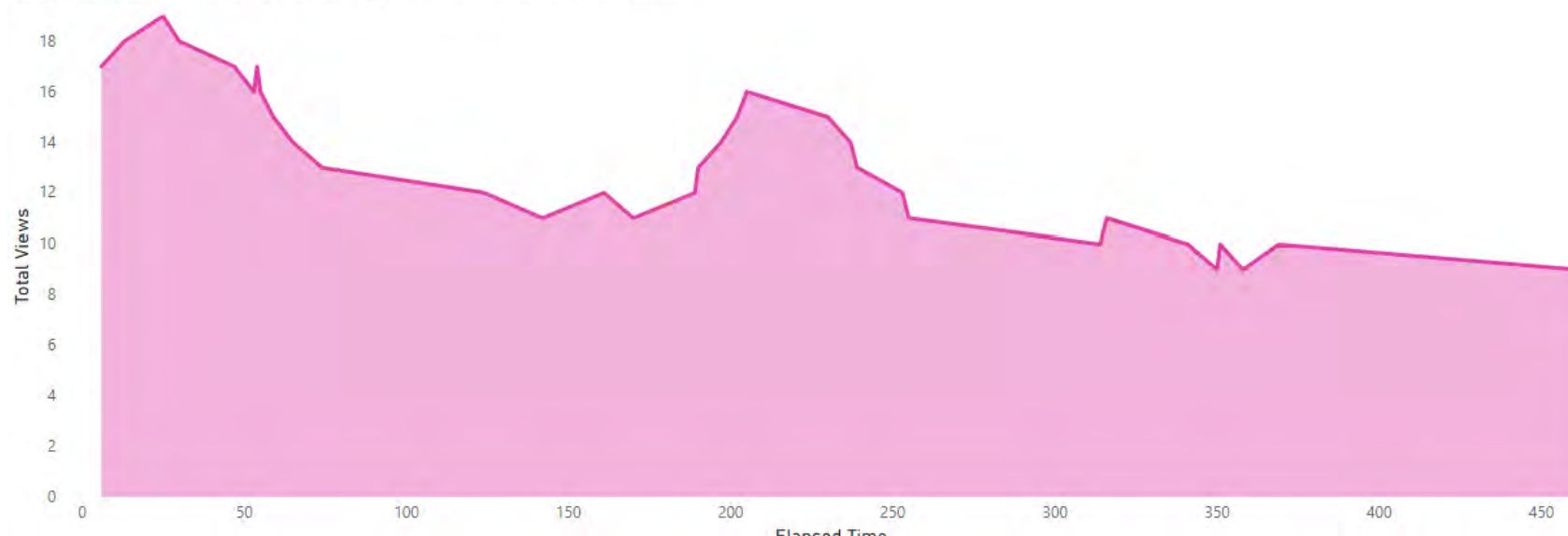
Total Views by Elapsed Time and Presentation Title

Presentation Title ● Solve One-Step Equations with Multiplication and Division



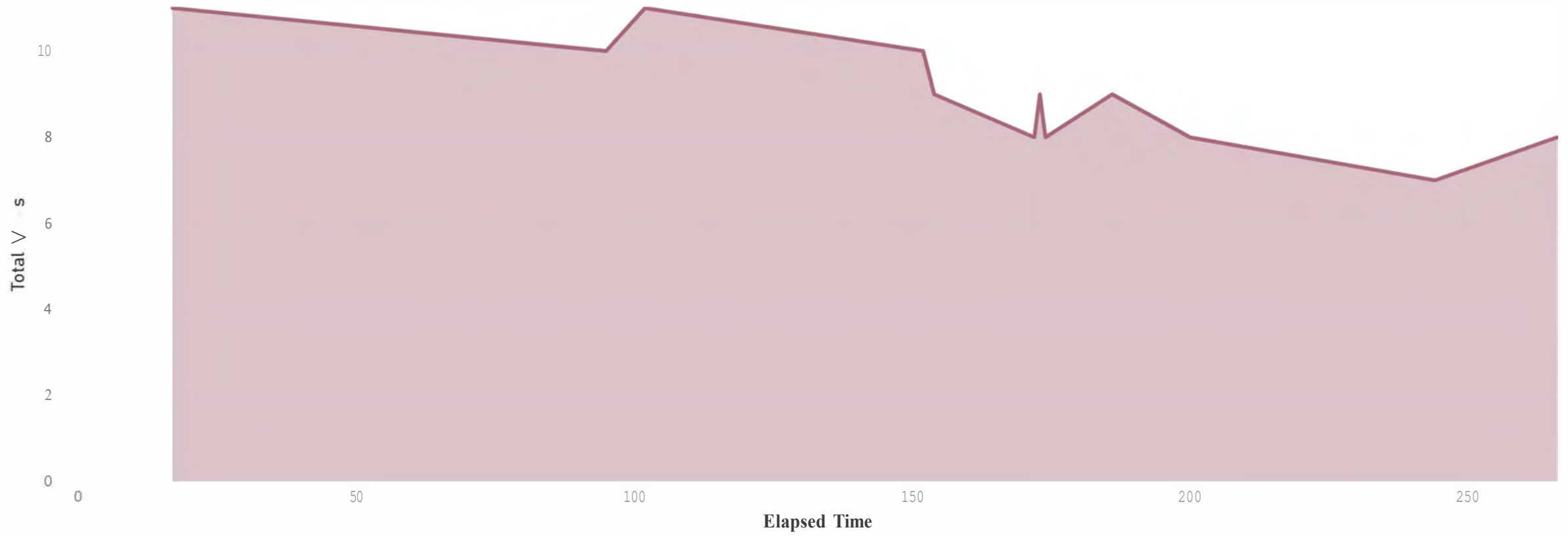
Total Views by Elapsed Time and Presentation Title

Presentation Title ● More Solving One-Step Equations with Addition and Subtraction





Presentation Title • Identity, Zero, and Additive Inverse Properties





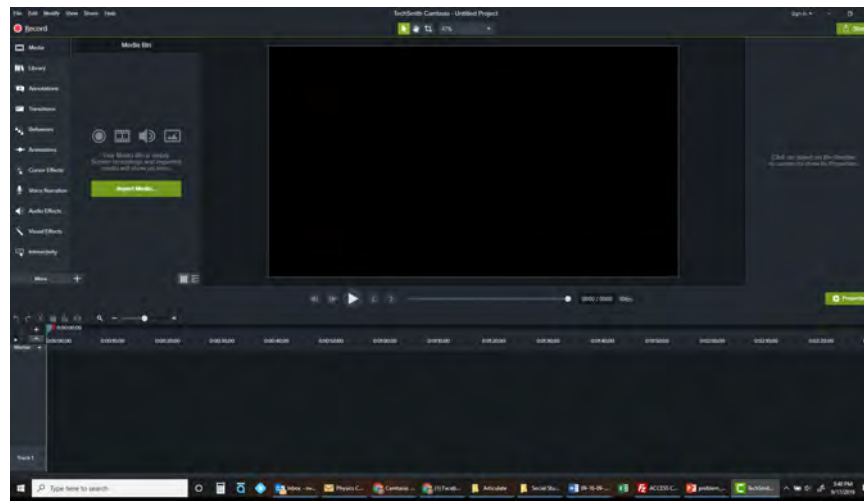
OUR SOLUTION

$X + Y = Z$

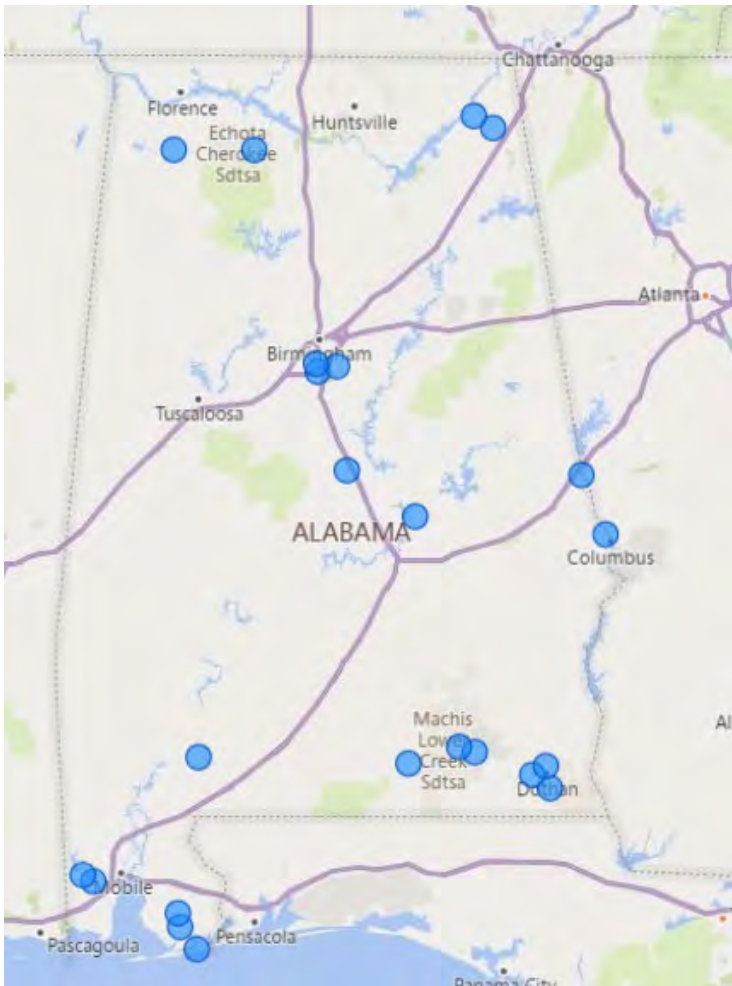
X SAID TO Z, "IF YOU'RE NOT PART OF THE PROBLEM, YOU'RE PART OF THE SOLUTION."



TEACHER TRAINING: PEN INPUT + SCREENCASTING + STANDARDIZATION / ACCESSIBILITY



NEW PROBLEMS



- Response higher than anticipated
- Distributed trainees
 - Delivery of hardware
 - Installation of software
- Accessibility



BLENDED TECHNOLOGY TRAINING

ARE MONSTERS GOOD AT MATH? NO, UNLESS YOU COUNT DRACULA.



TRAINING MODEL

The screenshot shows the Wacom website's training section. The main heading is "Using Your Wacom Intuos". Below it, there are several video thumbnails with titles and "Watch the video" links. The central focus is a "Wacom Tablet Properties" dialog box, which is open to the "Mapping" tab. This tab shows a grid for mapping the tablet's active area to the computer screen, with various settings for "Tablet Pen" and "Mapping". Other tabs visible include "Application", "Pen", and "On-Screen Controls". The battery level is shown as 100%. To the right of the main content, there is a vertical video player showing a woman's face. At the bottom, there are three more video thumbnails: "Using your Wacom Pen 4K", "Replacing nibs in your Wacom Pen 4K", and "Downloading software for your Wacom Intuos".

The screenshot shows an LMS course page for "ACCESS Math Course". The page title is "Session 2 Recording and Editing Your Screencasts". The user is Rachel Walker. The page includes a navigation menu with options like "Content", "Assessment", "Communication", "Users", "Grades", and "Edit Course". The date is Tuesday, September 24, 2019. There are icons for "Print" and "Settings". The page content includes a search bar, a "Syllabus" link, a "Course Schedule" link, and a "Table of Contents" section with a list of sessions and their durations. The "Session 2 Objectives" section lists three bullet points: "To record screen annotations on a math background template using Camtasia and the Intuos tablet", "To make basic edits in Camtasia, including trimming audio; cutting silence, audio errors, or background noise; editing callouts; and adding images to the timeline", and "To export and publish recorded screencasts as .zip and .mp4 files". There are buttons for "New", "Add Existing Activities", and "Bulk Edit". The "Session 2 Recording and Editing Your Screencasts" item is highlighted with a checkmark.

TRAINING DEMO

Home | ACCESS | Screncasting Basics for ACCESS Math Cour... | Grid | Mail | Chat | Notifications | Rachel Walker | Settings

Content | Assessment | Communication | Users | Grades | Edit Course | Tuesday, September 24, 2019

Search Topics

Syllabus

Course Schedule

Table of Contents (17)

- Session 1 Preparing for Screencasts (9)
- Session 2 Recording and Editing Your Screencasts (3)
- Session 3 Accessibility and Other Considerations (5)

Add a module...

Session 1 Preparing for Screencasts

Add dates and restrictions... Visible

Print Settings

Session 1 Objectives

- To identify the expectations for successful completion of this training
- To identify best practices in screencasting
- To prepare materials for screencasting, including appropriate background templates and images
- To install and use Camtasia Studio and the Intuous tablet

New | Add Existing Activities | Bulk Edit

- Introduction (Discussion Topic) ✓

Please take a second to briefly introduce yourself. Be sure to include the subjects you teach both face-to-face and for ACCESS, as well as any other information you would like to share. Participation is encouraged, but not required.
- Session 1 Recording ✓

ACCESSIBILITY GUIDELINES

The image shows a screenshot of a digital document with a dark theme. On the left is a navigation menu with categories like 'Color Contrast', 'Text (Font Size/Color)', 'Legible Handwriting', 'Voice Narration and Audio', 'Presentation of Content', and 'Other Style Issues'. The main content area is white and features a title 'Creating Built-in Audio Description' followed by an introductory paragraph. Below this are seven numbered tips in purple boxes, arranged in two columns. The right side of the document has a 'RESOURCES' header and navigation arrows at the bottom.

MENU

RESOURCES

Creating Built-in Audio Description

Students with visual impairments or some cognitive processing disorders benefit from an oral description of diagrams, graphs, and other visual information. Here are some tips for building that information into your video.

- 01** Verbally read each problem or directions in its entirety before solving or explaining the problem.
- 02** Display each problem and its directions throughout the video.
- 03** Speak and explain all steps presented for each problem.
- 04** Verbally read the answer or answers to each problem.
- 05** Verbally describe all visual text and content.
- 06** Provide a verbal description or explanation of all added images, diagrams, graphs, or charts. [Example - Description of a Quadrilateral](#)
- 07** Do not add flashing or flickering content. This type of content can trigger epilepsy, dizziness, nausea, or migraines to individuals prone to them.

< >

MATH SCREENCAST EVALUATION RUBRIC

REQUIRED ELEMENTS

Please place a check next to the elements that are present. All required elements must be present.

- The objective covered in the video is clearly stated at the start, either in text on the video title slide or orally.
- The video should not include the following information (for reusability)
 - The course title
 - The lesson title or number
 - The course of study standard or number
 - Numbered examples (Use "In this example" instead)
- The original problem is clearly and legibly displayed throughout the video.
- The narrator reads the problem at the beginning of the video.
- Text is legibly written.
- The narrator speaks clearly and at an appropriate volume.
- The capture area does not include any unnecessary or distracting visuals (i.e., screencaster's desktop, distracting images, notifications).
- The screencast has little or no background noise.
- The solution presented is correct.
- The screencast is concise and to-the-point, no longer than 2-3 minutes for most problems.

Provide any specific comments for improvement here: [Click or tap here to enter text.](#)

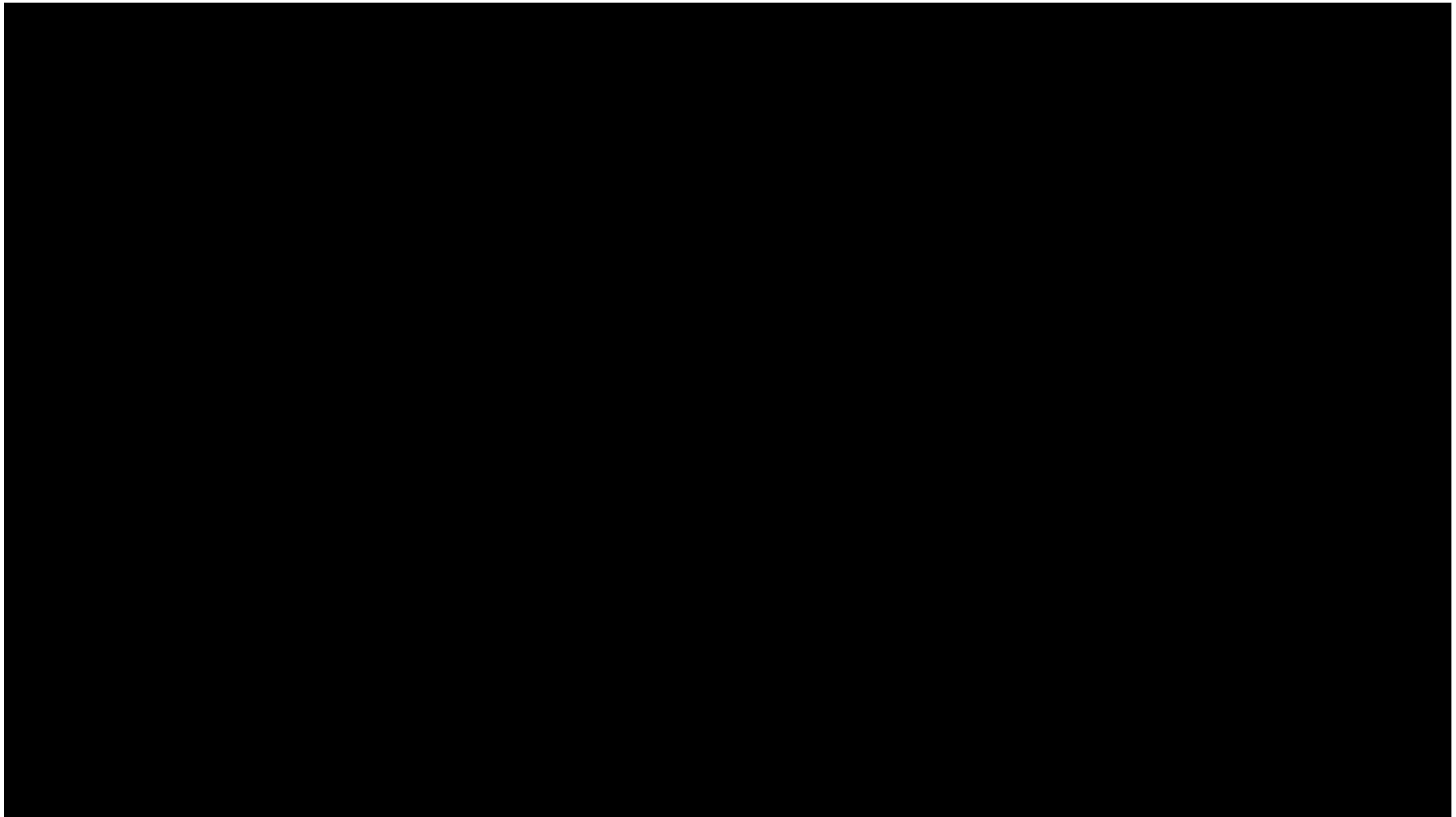
QUALITY EVALUATION

Characteristic	Superior - 3	Good - 2	Needs Improvement - 1	Score Earned
Alignment	The objective is clearly identified; the objective is measureable; the objective is written for students; all elements of the objective are met in the video	The objective is clearly identified and written for students but is not measureable; objective is not fully met by the video	The video is lacking an objective or it is not clearly identified; the objective is filled with content area-terms that the student may not understand; the objective is not clearly addressed by the video	Click or tap here to enter text./3
Comments on alignment: Click or tap here to enter text.				
Clarity and Accuracy	The video provides clear, well-organized and clearly sequenced steps to solve the problem. Major steps are not skipped or treated cursorily. The video does not need to be supplemented with additional explanation. Major concepts are clearly linked to the problem-solving steps. The main idea of the video is clearly identified. All information is accurate.	The video provides somewhat organized and somewhat sequenced steps to solve the problem. One or two minor steps may be brief, but no major steps are unexplained. The video does not need to be supplemented with additional explanation. Major concepts may be mentioned but are not clearly linked to the problem-solving steps. The main idea of the video is identified. All information is accurate.	The video is unorganized or problem-solving steps may be out of sequence. One or more major steps are not explained. The video must be supplemented with additional explanation. Major concepts are not mentioned or clearly linked to the problem-solving steps. The main idea of the video is not identified. At least one statement / concept is inaccurate or misleading.	Click or tap here to enter text./3
Comments on clarity and accuracy: Click or tap here to enter text.				
Visual Quality	An appropriate background is used. The text is neatly written and sized appropriately (typed and written) to make it clear and easy-to-read. Visuals are synched with the audio. Appropriate contrast is present.	An appropriate background is used. Almost all text is neatly written and sized appropriately (typed and written) to make it clear and easy-to-read. Visuals are mostly synched with the audio. Appropriate contrast is	The video does not have an appropriate background. Text may be too small or large. Text may illegible in some sections. Visuals and audio are out of synch and distract the learner. Appropriate contrast is not	Click or tap here to enter text./3

	Relevant supporting visuals (images, drawings, graphs, etc.) are included as needed and are neat and clearly labeled.	present. Relevant supporting visuals (images, drawings, graphs, etc.) are included as needed, but may be somewhat sloppy or not fully labeled.	present. Relevant supporting materials are absent, poorly drawn, or unclearly labelled.	
Comments on visual quality: Click or tap here to enter text.				
Audio Quality	The narrator has a smooth delivery in a conversational style. The narrator's voice is clear, expressive, and enthusiastic. The voice volume enhances presentation. The audio is free of background noise, fumble sounds or dead air. The narration has 0-2 minor grammatical errors that are not distracting.	The narrator's deliver is almost always smooth. The narrator's voice is clear and expressive, but enthusiasm may not be clearly evident. The voice volume fits presentation. The audio includes some extra noise, fumble sounds, or dead space that does not interfere with meaning. The narration has 2-4 minor grammatical errors that are not distracting.	The narrator's delivery largely sounds mechanical. Some parts of the narration lack clarity or expression or are unintelligible. The voice volume is too loud or soft. The audio includes background noise, frequent and distracting fumble sounds, or dead air. The audio includes one or more distracting grammatical errors.	Click or tap here to enter text./3
Comments on audio quality: Click or tap here to enter text.				
Accessibility	The narrator uses color with appropriate contrast in all graphics and writing. Text (both written and printed) is appropriately weighted for contrast. When color coding is used to identify objects or text, the narrator also identifies the object or text in another manner (such as pointing to it, highlighting it, naming it, or describing it). Graphics are described with all critical information. The narrator states the operation being completed or names terms / expressions / lines (one minor error allowed).	The narrator uses color with appropriate contrast in all graphics and writing. Text (both written and printed) is appropriately weighted for contrast. When color coding is used to identify objects or text, the narrator also identifies the object or text in another manner (such as pointing to it, highlighting it, naming it, or describing it). Graphics are described with some (but not all) critical information. The narrator generally states the operation being completed or names terms / expressions / lines, but sometimes does not name it specifically or uses	The narrator does not use appropriate color contrast in graphics and writing. Text (written or printed) is not appropriately weighted for contrast. Important graphics or text are identified by color code only. Graphics are not described orally. The narrator consistently omits important information about operations being completed in the narration.	Click or tap here to enter text./3

YOUR TURN!

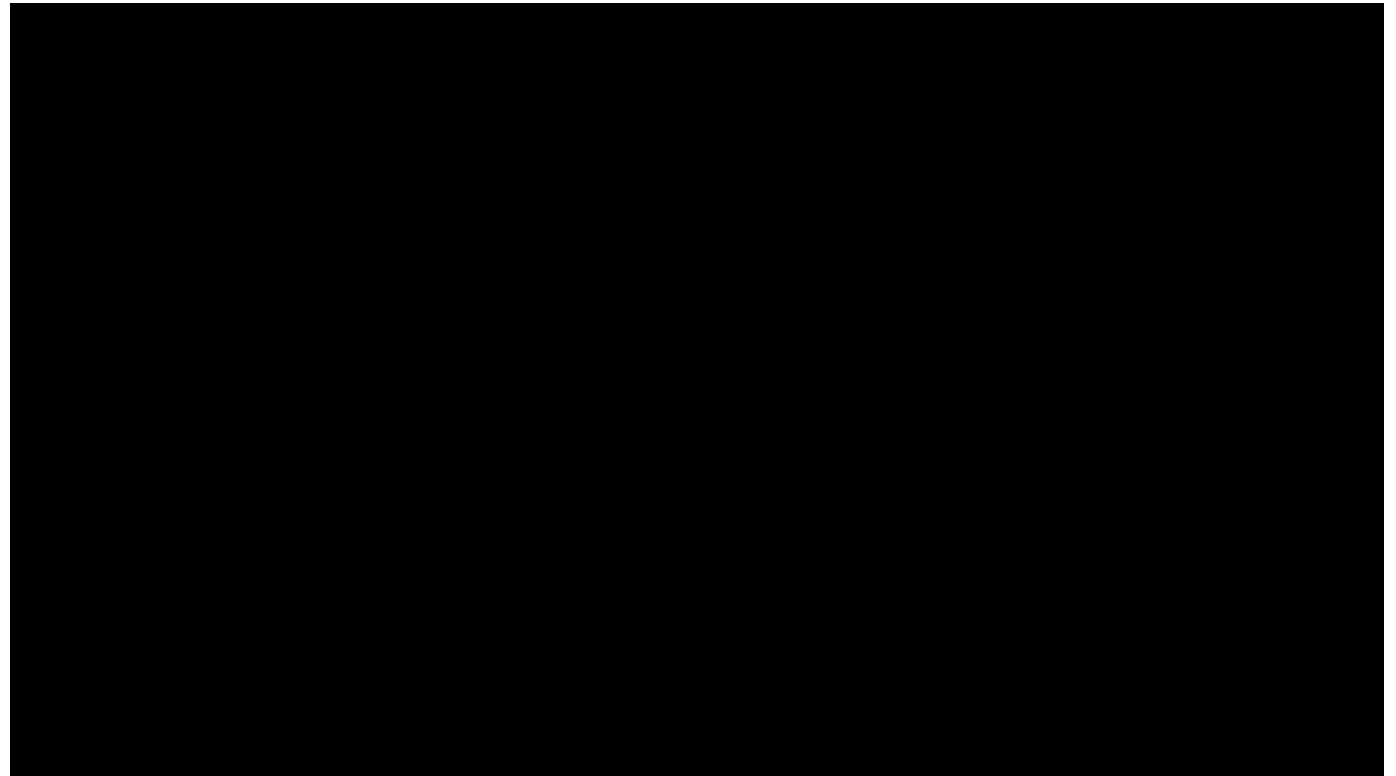
- Read through the rubric element you are assigned
- Watch the video
- Discuss how you would evaluate this video
- Provide a recommendation
 - Constructive
 - Specific
 - Measureable
 - Sensitive
 - Balanced



OUR FEEDBACK

Objective is clear, measurable, and met. Explanation is helpful and concise. Overall the visual quality is good. You made good use of white space to avoid confusion, and the size of the text is good. The pen weight is pretty light – accessibility would be better with a heavier stroke. I liked how you integrated the Desmos graph. For better accessibility, read through the problem parts. Check around 2:08 for some potential issues.

- Scores
 - 9.5
 - 11





OUTCOMES

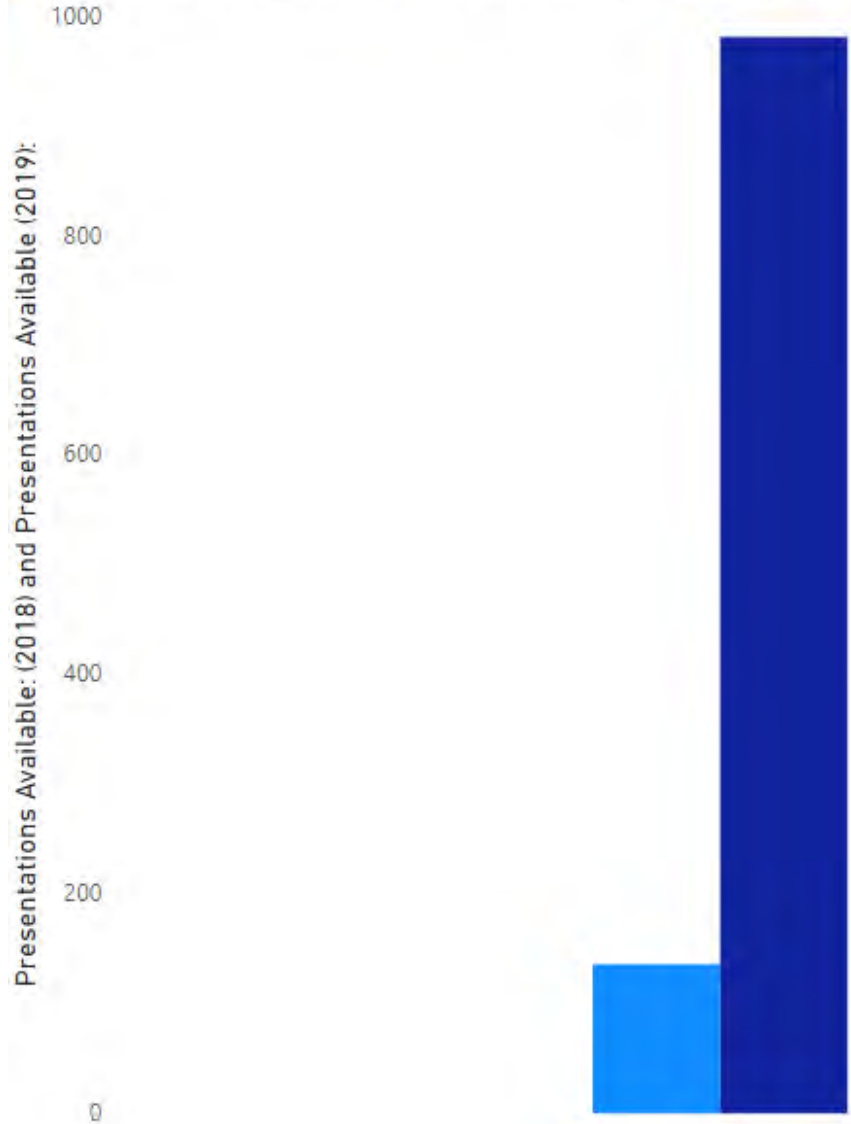
Q: WHY DID I DIVIDE SIN BY TAN?

A: JUST COS.



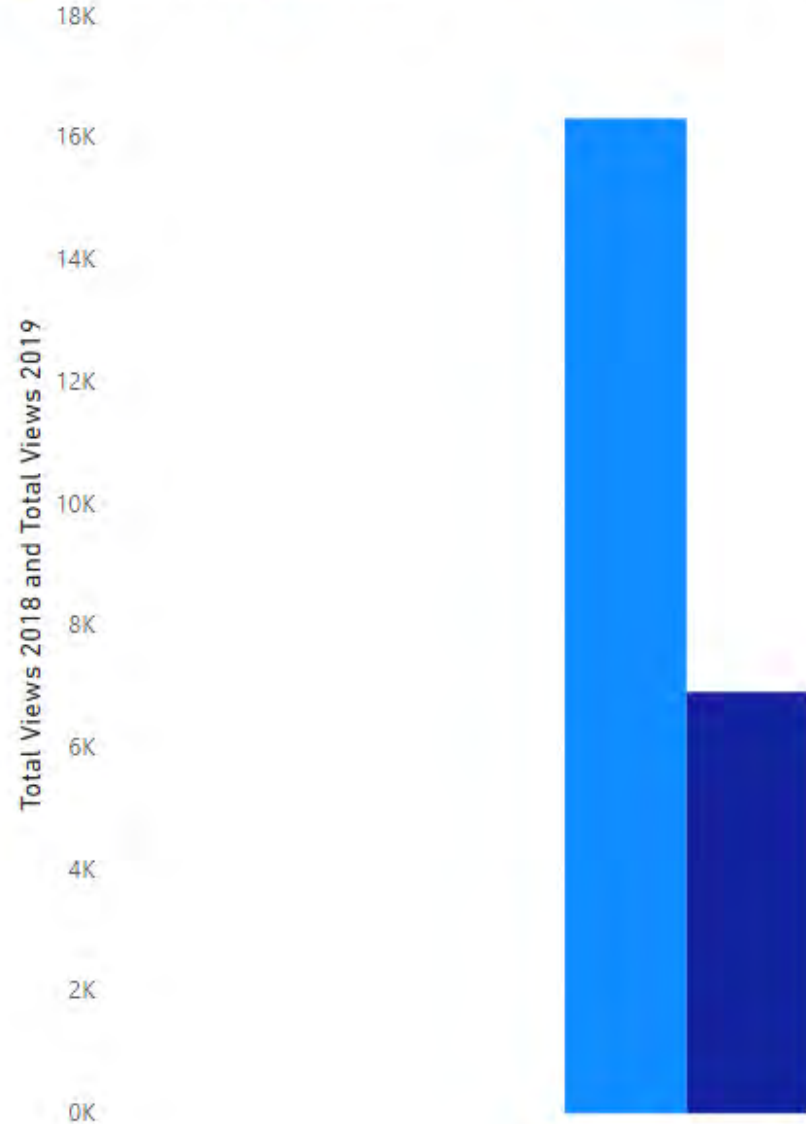
Presentations Available: (2018) and Presentations Available (2019):

● Presentations Available: (2018) ● Presentations Available (2019):



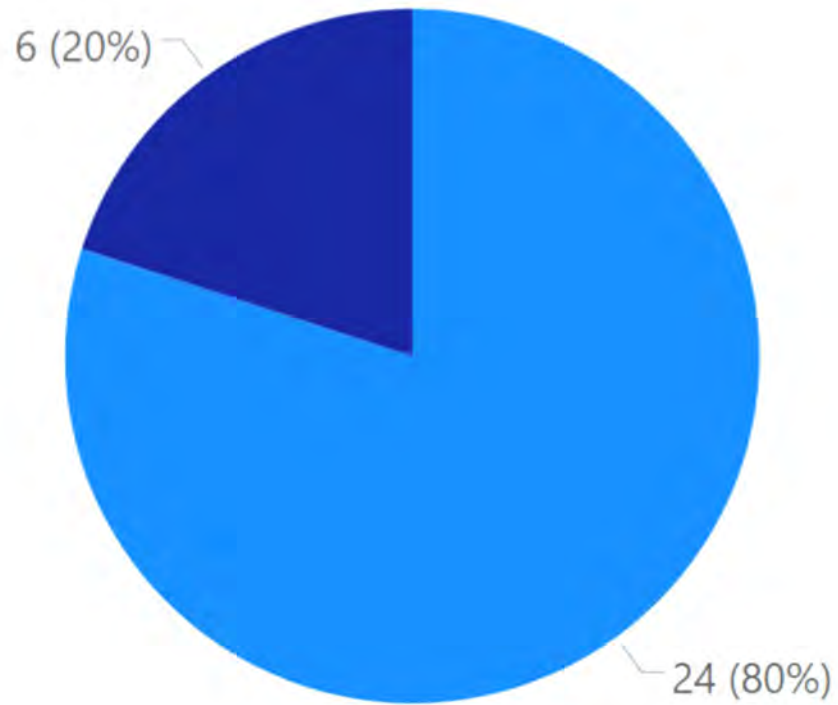
Total Views 2018 and Total Views 2019

● Total Views 2018 ● Total Views 2019

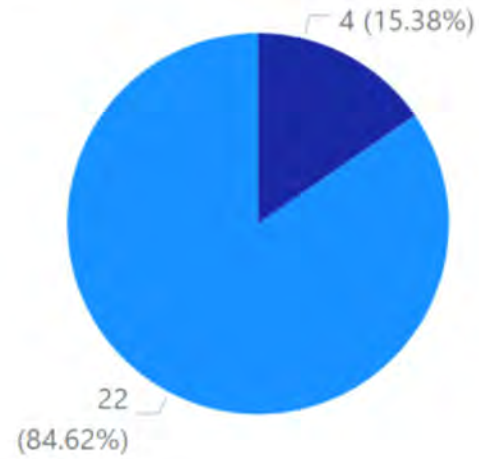


Overall Satisfaction with Training

Post-Training

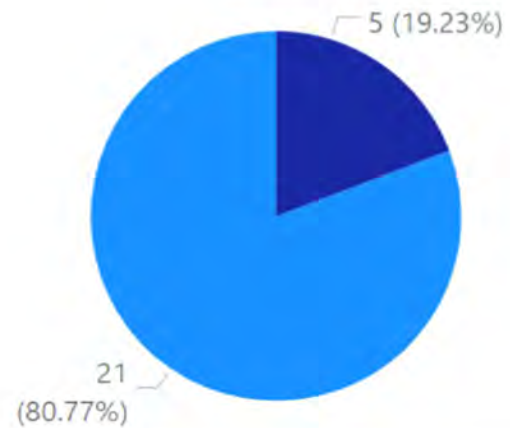


Good Use of Time



- Strongly agree
- Somewhat agree

Would Recommend



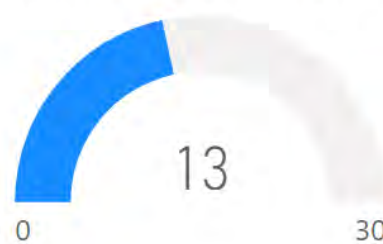
Q2 ● Extremely satisfied ● Somewhat satisfied

Post-Training Response

Grading Annotations



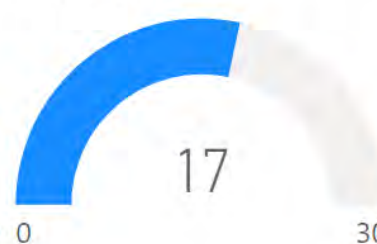
Content Creation (non-screencasts)



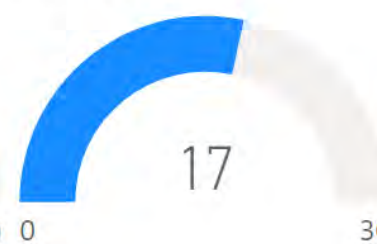
Class Content Screencasts



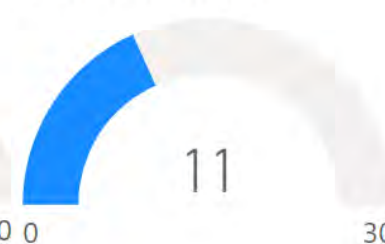
Individual Content Screencasts



Feedback Screencasts



How-to Tech Screencasts



EOS Response

Grading Annotations



Content Creation (non-screencasts)



Class Content Screencasts



Individual Content Screencasts



Feedback Screencasts



How-to Tech Screencasts



Post-Training Response

No Use



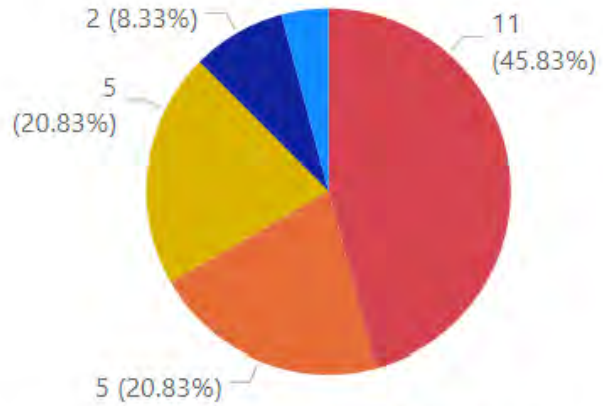
EOS Response

No Use

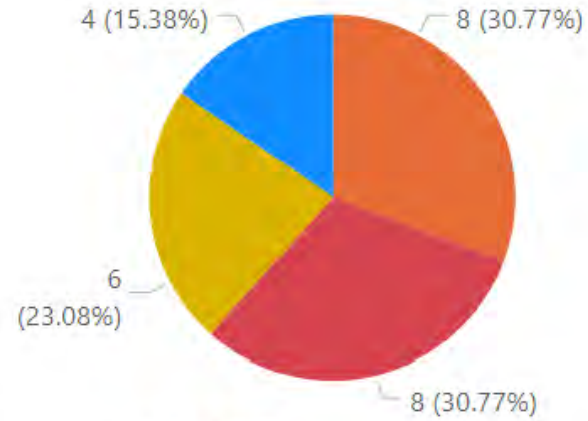


Frequency of Use

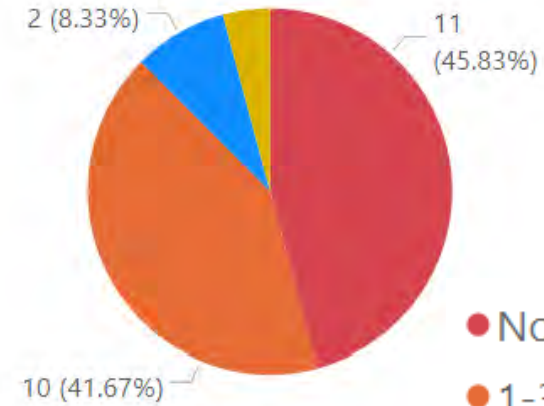
Intuious for Feedback



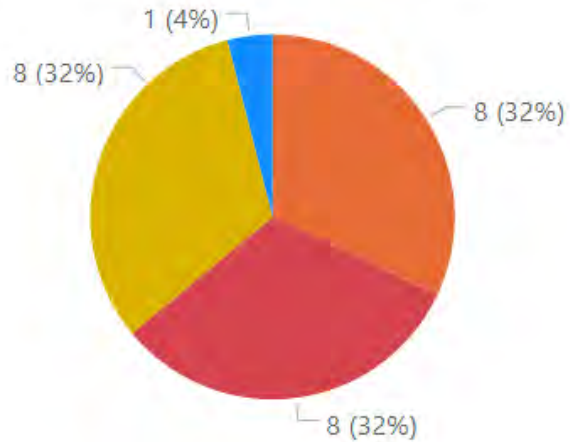
Intuious - Instructional Materials



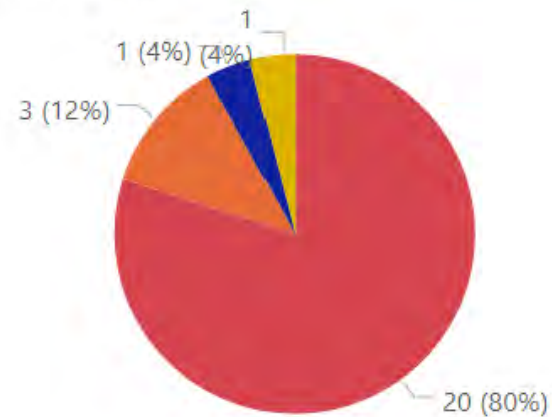
Camtasia for Feedback



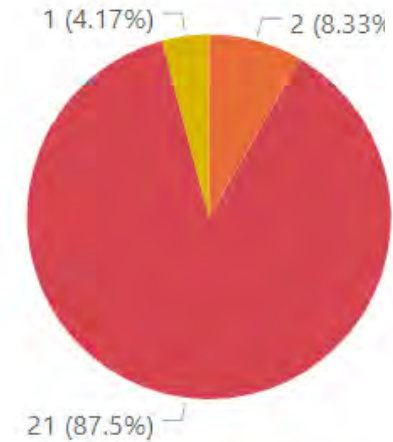
Camtasia - Instructional Materials



Intuious with F2F



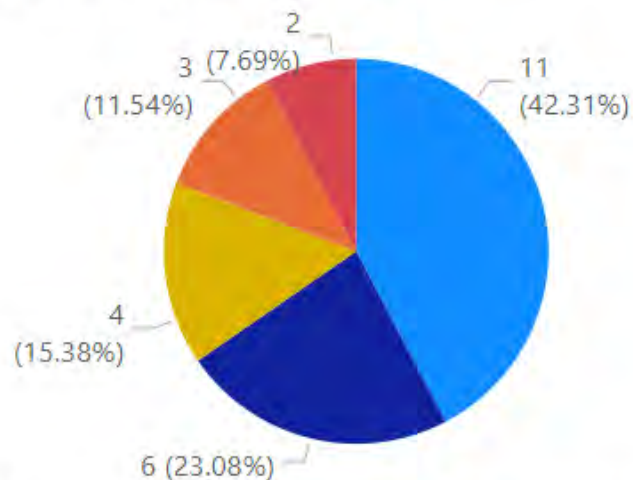
Camtasia with F2F



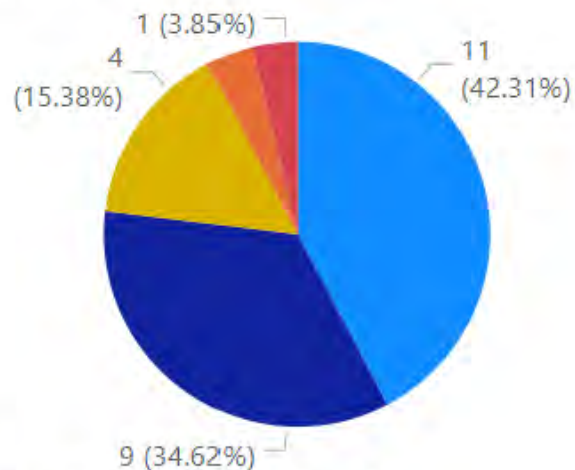
- Not at all
- 1-3 times this semester
- Weekly
- 2-3 times a week
- Daily

Impact on Teaching

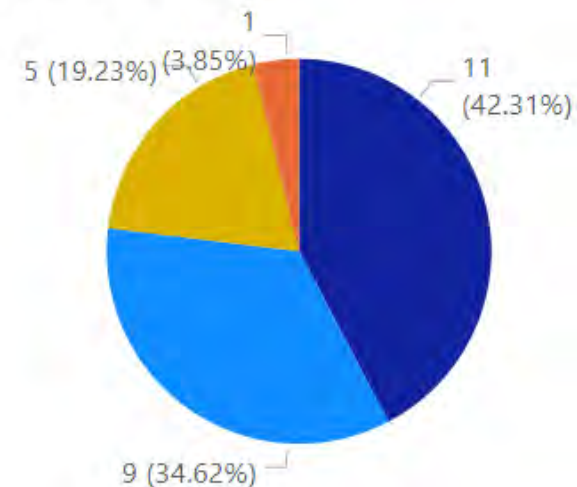
How I Provide Feedback



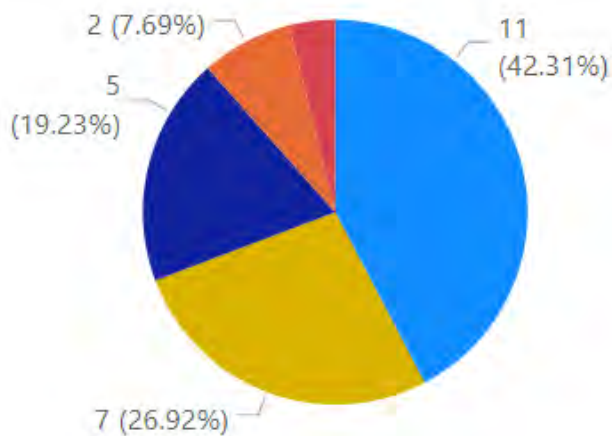
How I Provide Instruction



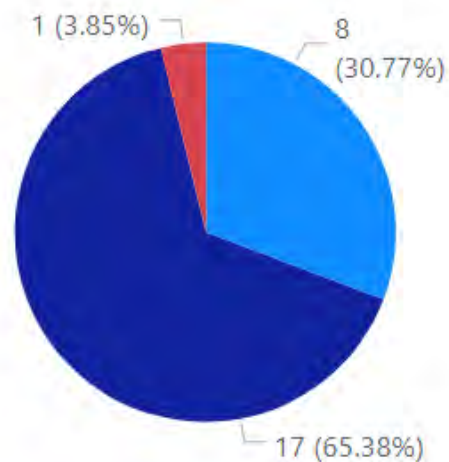
Online Presence



Difference in Student Performance



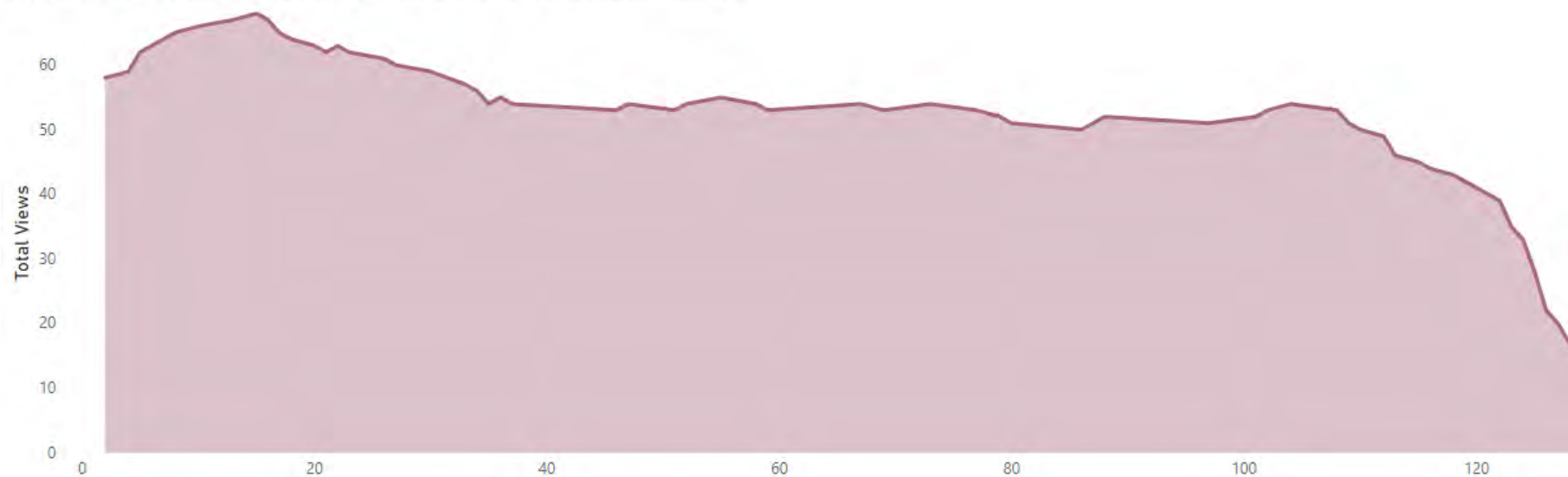
Will Continue Using Tools



- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

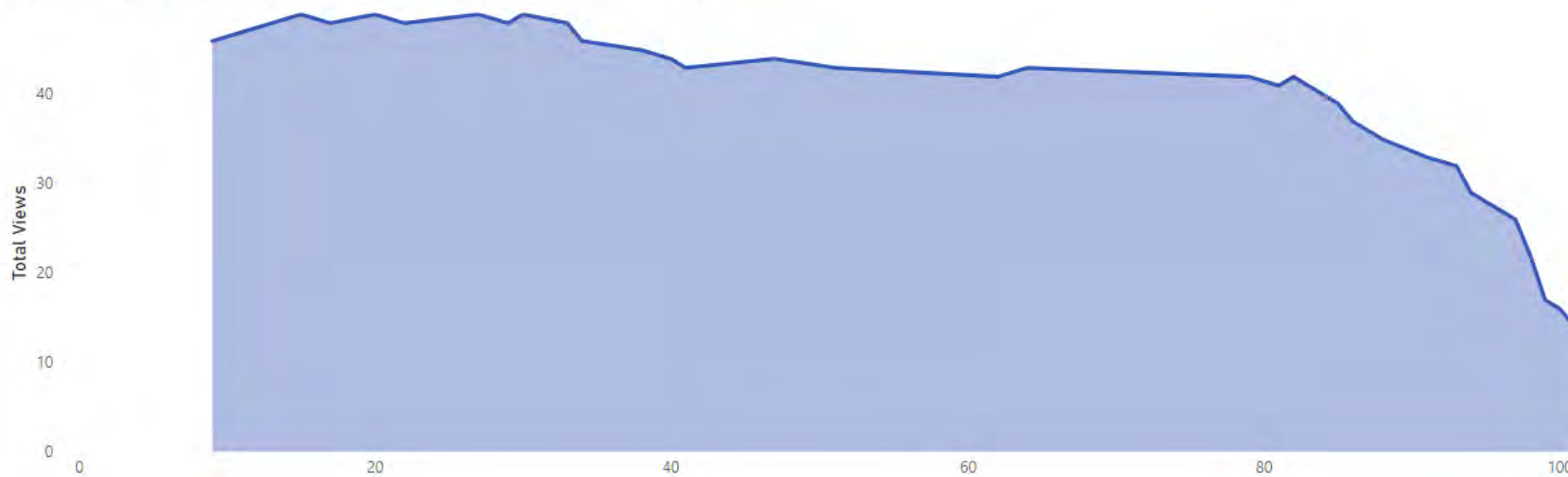
Total Views by Elapsed and Presentation Title

Presentation Title ● Write and Use Literal Equations to Solve Real-World Problems Example 1



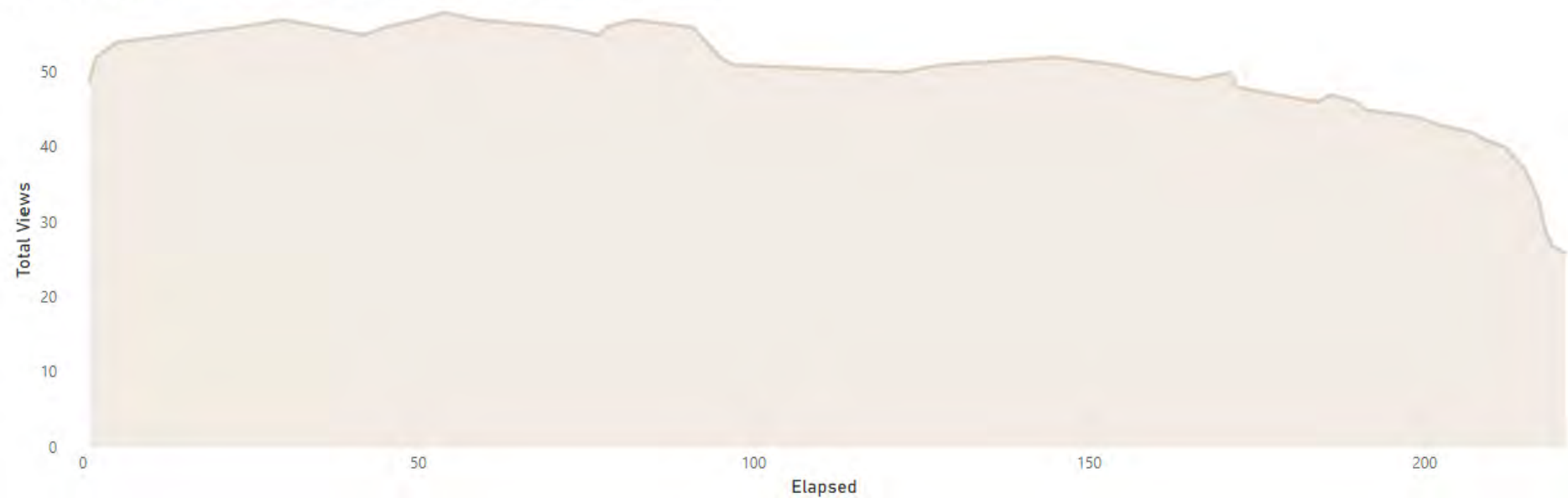
Total Views by Elapsed and Presentation Title

Presentation Title ● Write and Use Literal Equations to Solve Real-World Problems Example 2

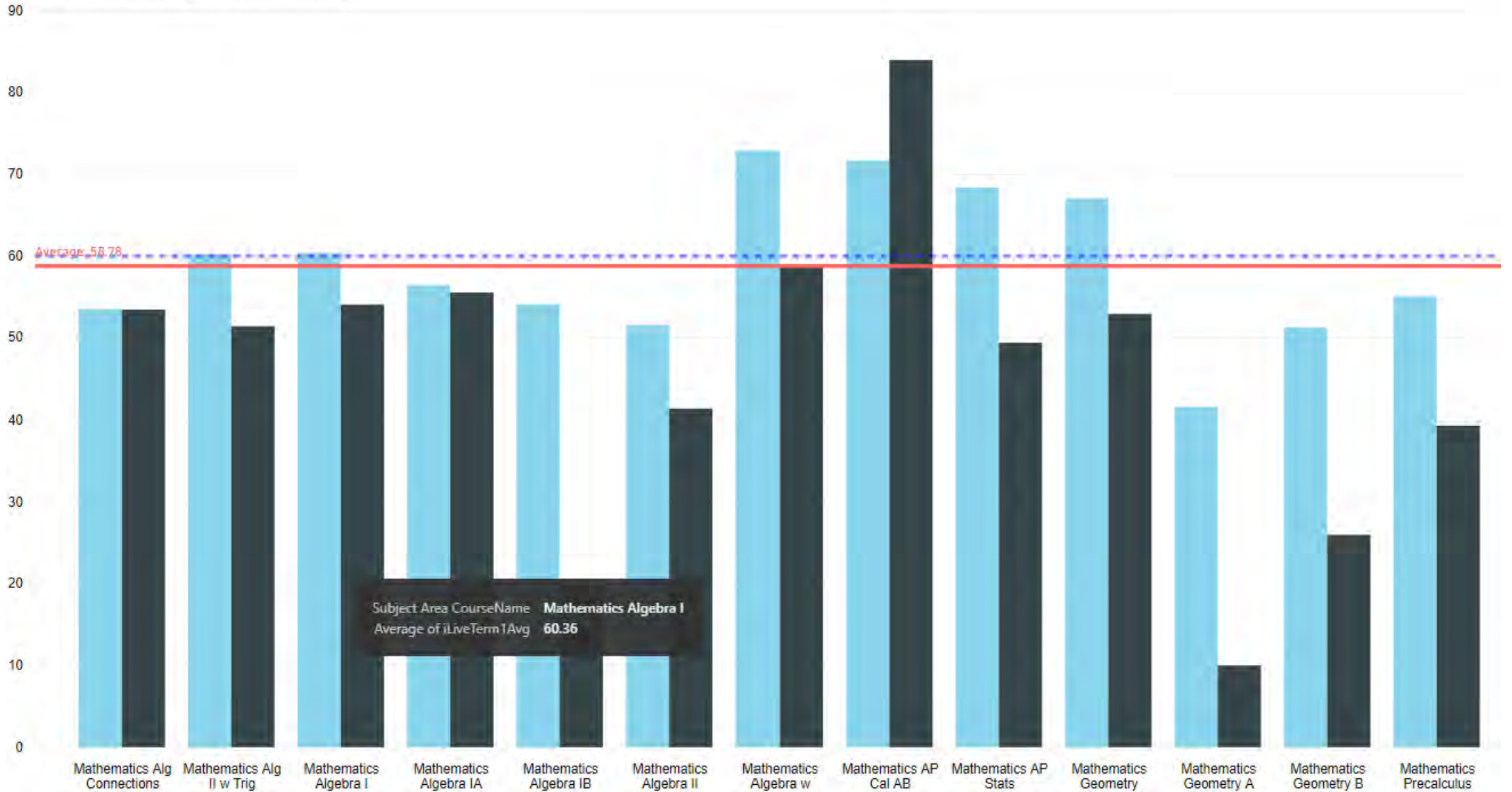


Total Views by Elapsed and Presentation Title

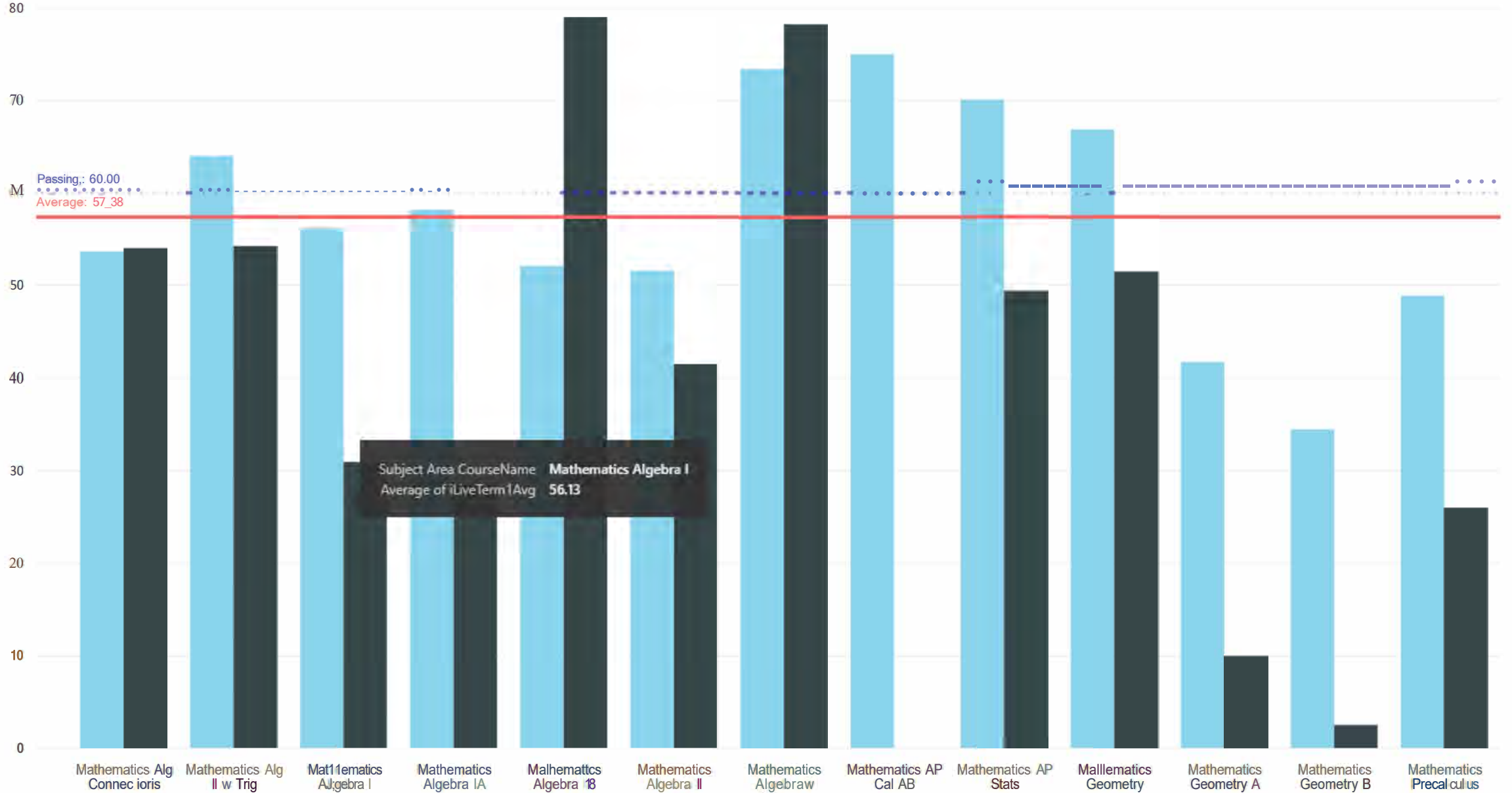
Presentation Title ● Write and Use Literal Equations to Solve Real-World Problems Example 3

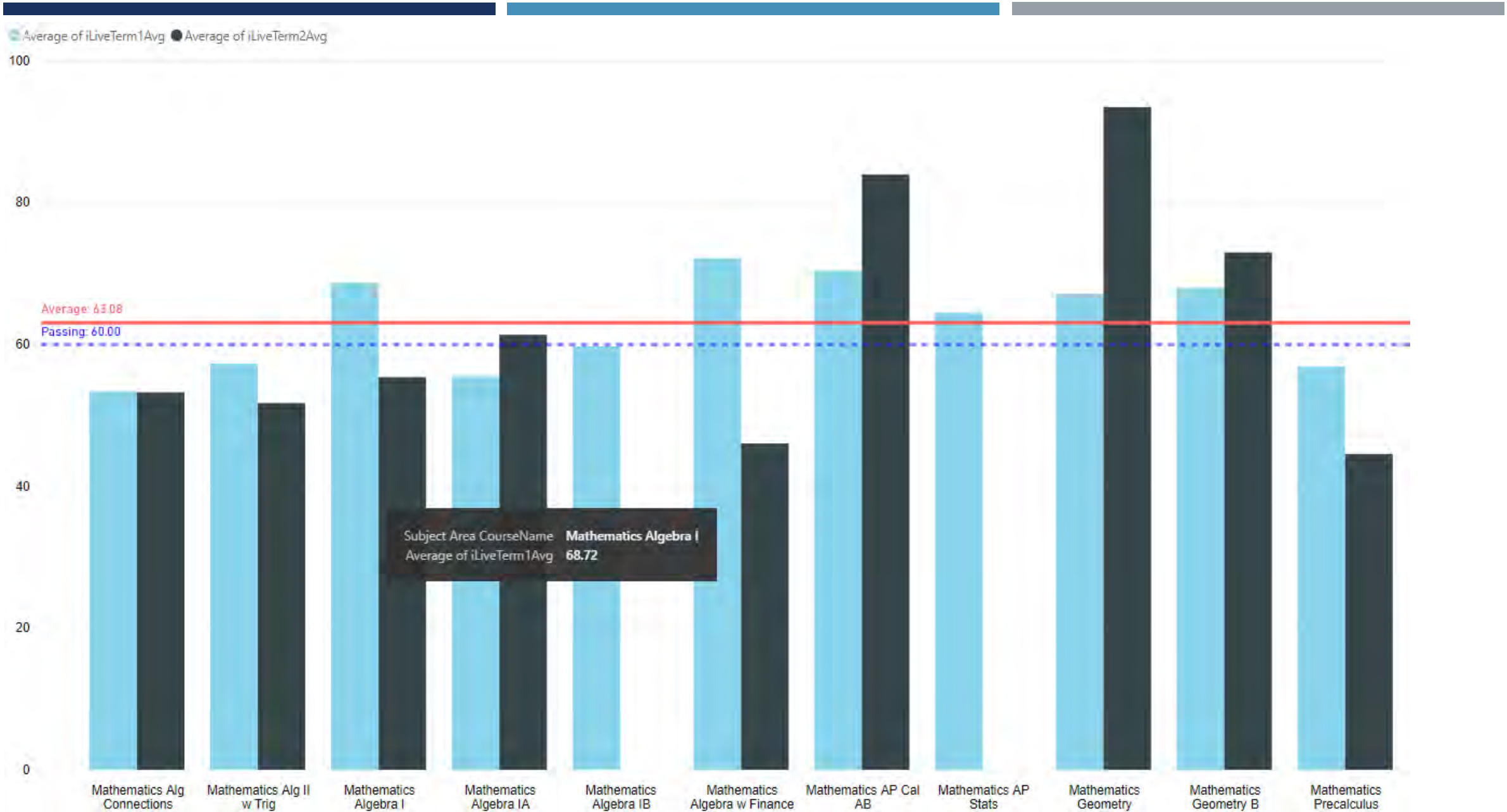


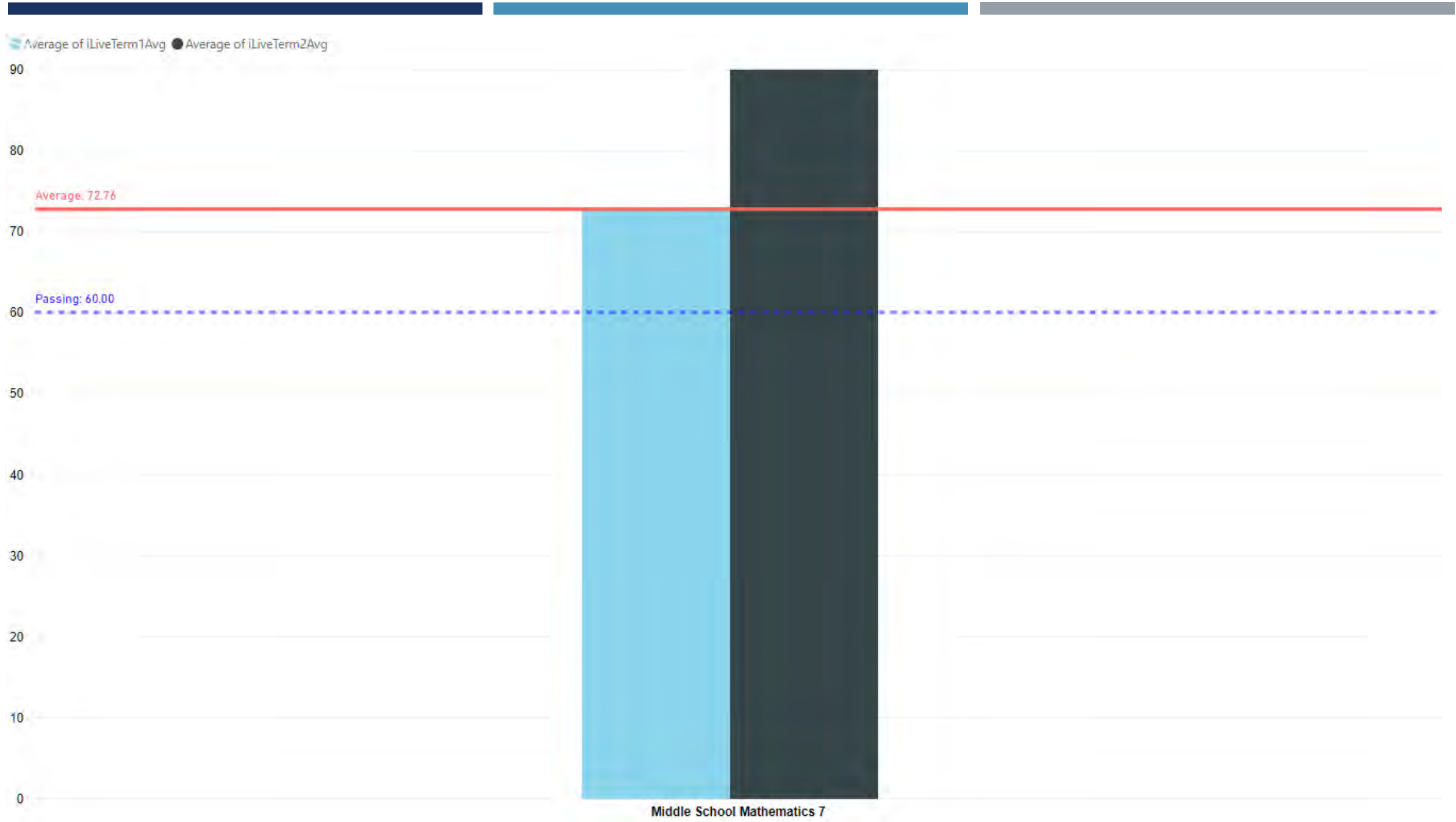
Average of iLiveTerm1Avg ● Average of iLiveTerm2Avg



Average of iLiveTerm1Avg Average of iLiveTerm2Avg







RESOURCES

- Rachel Walker (rwalker@ccs.ua.edu)
- Christine Paige (cpaige@ccs.ua.edu)
- Course package: <http://bit.ly/ACCESSmath>
- Contact us for math video access

Preview Screencasting Basics

1. Go to <https://access.desire2learn.com/d2l/login>
2. Enter username **qm.connect2019**
password: **Connect2019**
3. Enter *Screencasting Basics for Math-QM Connect 2019*
4. Select **Content**