

# Technology Tools for Mathematics Assessment

<http://college.wfu.edu/education/wp-content/uploads/ncctm2015.pdf>

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**1. Polleverywhere – Leah McCoy**

*Teacher asks a question and audience responds by cellphone or browser. Responses are displayed as table or graph. <https://www.polleverywhere.com/>*

**2. Kahoot – Andrew Boudon**

*The instructor may make or find timed quizzes for students to play. After the game, the instructor can view and download the results. <https://getkahoot.com/>*

**3. Plickers – Sydney Spangler**

*An online tool that allows teachers to efficiently assess student progress and knowledge. Students do not need a device. <https://www.plickers.com/>*

**4. Desmos – Sarah Smith**

*Desmos is an online graphing tool that allows for easy manipulation of graphs, tables, and points. <https://www.desmos.com/>*

**5. Educreations – Sydney Spangler**

*An interactive app, for both tablets and computers, that allows students and teachers to present material. <https://www.educreations.com/>*

**6. Bubbl.us – Andrew Boudon**

*Students can create concept maps to organize their understanding of material. The maps are effective for formative assessment and as study tools. <https://bubbl.us/mindmap>*

**7. Kahn Academy – Sarah Smith**

*Not just a warehouse of videos. Khan Academy now has an intelligent tutoring system feature for K-12 math that is aligned to the CCSS. <https://www.khanacademy.org/>*

**8. Socrative – Leah McCoy**

*A tool for building quizzes and seeing results in real-time. <http://www.socrative.com/>*

# PolleEverywhere

Leah McCoy

<https://www.polleverywhere.com/>

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Poll Everywhere allows a quick assessment of a small or large group. Teacher creates questions, and students respond using text, tablet, or computer.

## Tools

- The most common quiz types are multiple choice or open-ended.
- A new option is a clickable image
- Allows **LaTeX** syntax

## Teacher Setup

- Teacher creates question and obtains code for participation, which is shared with students.

## Activity

- Students log in with teacher-code, and respond.

## Outcomes

- Teacher can see and/or project responses in real time.
- Multiple Choice can be reported as graph or table.
- Open ended can be reported as Wordle.
- EDU (paid) version allows grade book report

# Kahoot





Andrew Boudon

<https://getkahoot.com/>

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Add  $f(x) = 3x^2 + x - 3$  and  $g(x) = x^3 - 7x + 3$

The image shows a Kahoot! quiz interface. At the top, the question is: "Add  $f(x) = 3x^2 + x - 3$  and  $g(x) = x^3 - 7x + 3$ ". Below the question is a large purple graphic with the Kahoot! logo and a hand holding a basket. To the left of the graphic is a purple circle with the number "17". To the right is a blue "Skip" button and a "0 Answers" indicator. Below the graphic are four colored buttons with answer options:

 $x^3 + 3x^2 - 6x + 6$	 $x^3 + 3x^2 - 6x$
 $4x^2 - 6x$	 $x^3 + 3x^2 - 8x$

Kahoot is an online tool which provides a fun way for teachers to quiz or review material with their students. The teacher creates a quiz ahead of time and determines the settings for the game. Kahoot determines scores by accuracy and response time and records the results.

## Tools on Kahoot:

- Kahoot offers three main activity types: Quiz, Discussion, and Survey.
- All of these can be effective instructional tools, but this presentation will focus on the Quiz function.

## Assessment Preparation

- Sign up for Kahoot (for free) and create the assessment ahead of time.
- Write questions and answers, and determine a variety of settings (e.g., point-value of questions, time for response).
- Preview your Kahoot to ensure functionality (and correctness).

### **Teacher Setup**

- Make sure every student or group has a personal device and have them go to [kahoot.it](https://kahoot.it).
- Have your device connected to a projector to display the questions.
- Have students enter your game code, which will be generated when you launch the Kahoot, and then have them provide (appropriate) usernames.

### **Activity**

- Students will provide answers in the time permitted for each question.
- After each question, Kahoot will reveal the correct answer and the number of people who selected each possible answer.
- Kahoot will then display a scoreboard for the game so far before moving on to the next question.

### **Outcomes**

- The teacher will have a better understanding of students' grasp of the material and their ability to apply knowledge in a timed environment.
- The teacher will be able to adjust instruction based on this information.
- Students will be able to have fun and compete as they review material / are quizzed.
- Students will gain a better understanding of their grasp of the material.

# Plickers

Sydney Spangler

<https://plickers.com/>

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**Plickers** is an online tool which can be used to check or quiz material taught. To use this tool a device that can be projected and a device with a camera is needed. The teacher creates the class and prints off specific pieces for each student. The teacher can then add multiple choice or true/false questions. Using a smartphone or tablet teachers can use the Plickers app to capture student's pieces, which display their answer. Plickers can then display how many students got the question correct and what answer students selected.

## Assessment Overview

- Create an account using Plickers. Go to Classes on top bar and add a new class. Once class is created add a new roster.
- Go to Library to add questions to be tested.
- Add the questions to the created class by clicking on the question and click Add to Queue.
- In preparation for activity, print individual card pieces by clicking on Cards on top bar.
- By using the Reports function (on top bar) you can see a summary of how individual students responded and how the class responded as a whole.

## Teacher set-up

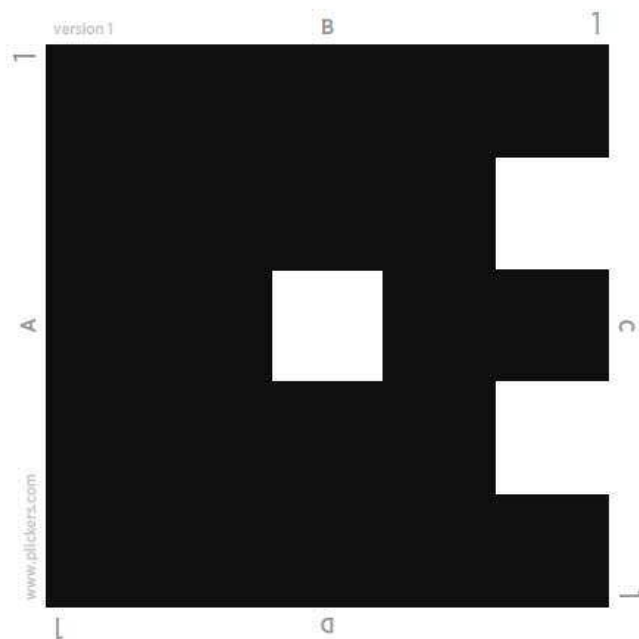
- Give each student a Plickers card. Cards are given numbers which are the same numbers assigned to students as entered in the roster.
- Have a device (not the smartphone or tablet that will be used to capture students answers) connected to a projector to display the questions using the Live View option.
- On the capturing device, open the Plickers app, click on Class, then click on the question, which will be displayed on Live View.

### Activity

- Can be used as a quick warm-up or exit ticket to check student progress.
- Can be used as a quiz to check student understanding.
- Have students solve questions displayed and then hold up Plickers card to correspond to answer. For example, if students think B is the correct answer, then they will hold their piece up with side B at the top. Teacher scans the class.
- After each question, Plickers will show the correct answer and a summary of what students answered.

### Outcomes

- Teachers can later go back to review what each student answered and to see how the class overall performed on each question.
- Plickers allows teachers to see what questions and topics students are struggling with and can adjust instruction as needed.
- Plickers allows this type of assessment to be more interactive for students and teachers.

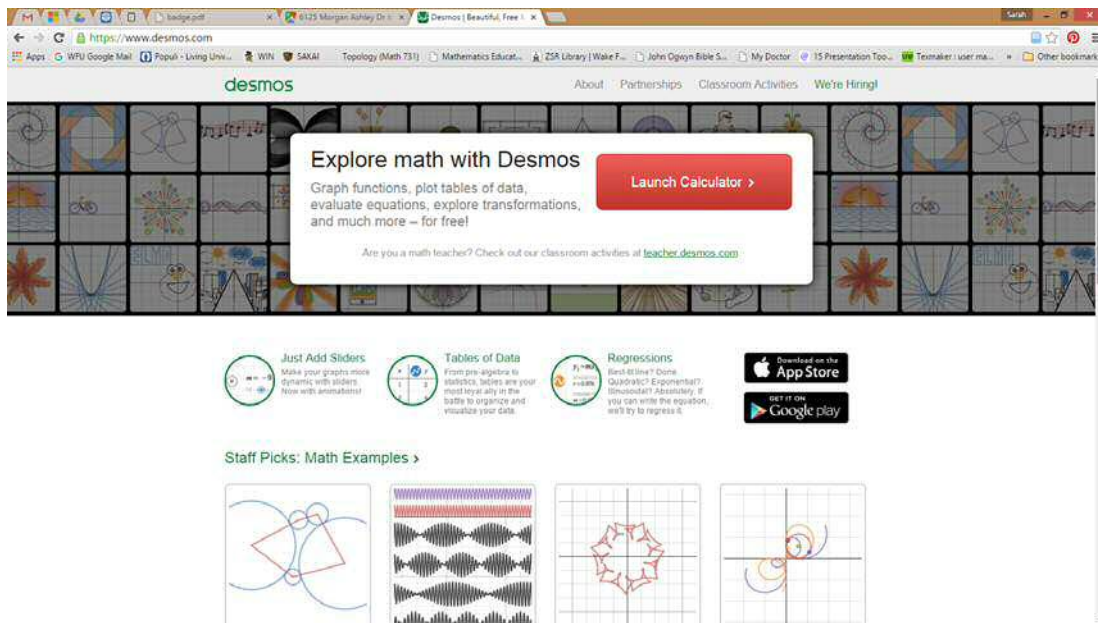


# Desmos

Sarah A. Smith

<https://www.desmos.com/>

**Desmos** is an online graphing tool that allows for easy manipulation of graphs, tables, and points.



## Features include:

- Graph functions, inequalities, tables
- Quickly identify key features (minimum, maximum, x-intercepts, y-intercepts, inflection points)
- Use parameters within equations to create sliders which allows you to easily transform the graph and identify patterns.
- Specify domain and range
- Projector mode
- Assign color and line to each graph
- Include notes
- Easily share via email, shareable link, or saving an image
- All work can be saved with an account (use a google account, or create one with an email)
- Dozens of premade graphs and activities available ranging from linear equations to Pre-Calculus and Calculus topics.

## Uses:

Desmos can be used as a planning tool to incorporate graphs or scatter plots into a document (handout, quiz, test, etc.) or presentation. Students can also use it instead of a graphing calculator or even to complete assignments and quickly share their graphs with you via multiple modes (image, link, or email). There are other Web 2.0 tools such as [www.teacher.desmos.com](http://www.teacher.desmos.com) that use Desmos to create student paced online activities similar to a web quest.

# Educreations

Sydney Spangler

<https://www.educreations.com/>

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**Educreations** is an internet tool that can be used on a tablet as an app or on a computer using the internet. Educreations can be used as a presentation tool by a teacher or students. This presentation tool includes a recording tool in use with text and pictures. This provides an interactive tool for both students and teachers to share information. Can be saved and shared through an email, social media, or a link

## Assessment Overview

- Students will create a presentation in small groups or individually using Educreations as an assessment.
- If using tablets, make sure to download the Educreations app ahead of the activity. The app does not require internet access, unless you wish to share the presentation through email, social media, or a link.

## Teacher Setup

- Make sure each student or group has either a tablet or computer.
- Have one student from each group create a free account on Educreations.

## Activity

- Assign students projects and have them create a presentation.
- Have students solve a problem using the features of Educreations.
- Presentations can include both writing and recording.
- Students can present their creation by displaying on a projector.



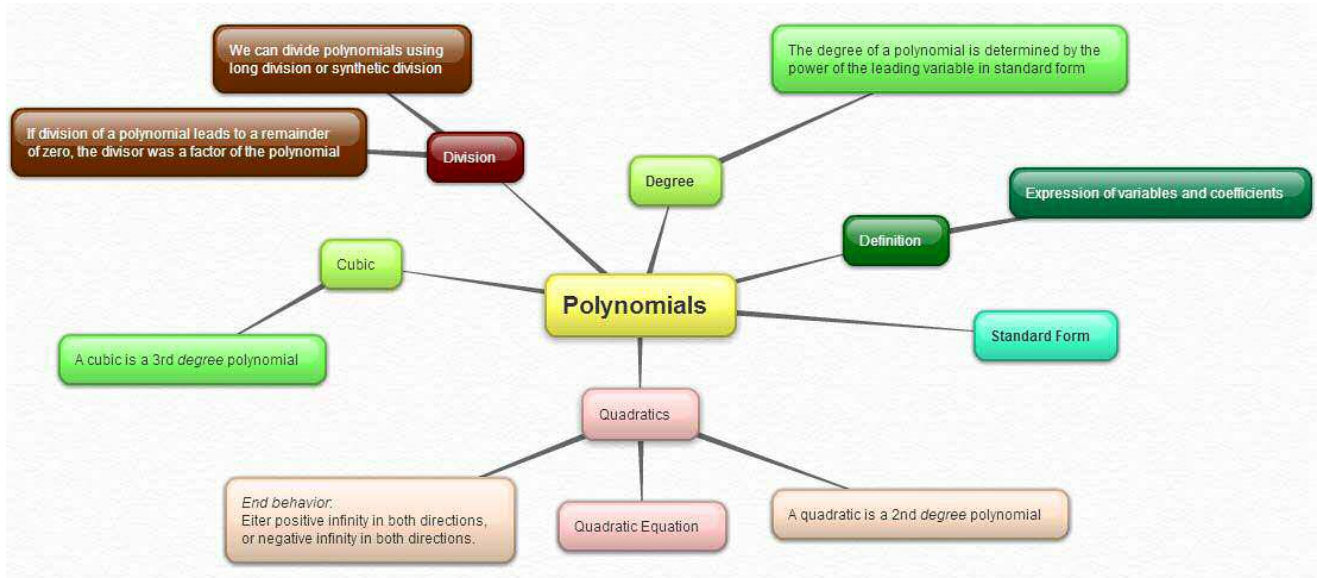
## **Outcomes**

- Students will have a more engaging way of working through a problem. By using the recording function of Educreations, students will have a better understanding of the material by using it to fully explain what they are doing to solve the problem.
- Teachers will be able to see what students know, how they are solving the problem, and what their depth of knowledge is by watching and listening to the presentation.
- Using Educreations provides an interactive way to solve problems in a group format.
- Presentations can be saved and shared, so both students and teachers can view them at any time.

# Bubbl.us

Andrew Boudon

<https://bubbl.us/mindmap>



Bubbl.us is a concept mapping tool which allows users to organize information visually and hierarchically. Users can choose a topic, brainstorm, and use the software to assemble a coherent and well-formatted product.

## Assessment Preparation:

- The teacher will need to make sure ahead of time that all students or student groups will have a device with internet access.
- You do not need an account to use the website, though it may be convenient to have students make accounts so they can more easily save/store concept maps. They can sign in through Facebook or Google Plus.

## Teacher Setup:

- Choose a topic, ideally a broad one, about which students will be able to organize their thoughts. In this case, students will represent their understanding of polynomials so far.
- The teacher may also choose a handful of important terms and ask students to include or define them in the concept map, as a way of guiding their reflection.

**Activity:**

- Students will create their own concept map to organize what they have learned (about polynomials in this example).
- They will define, in their own words, at least three important terms from a list provided by the teacher.

**Outcomes:**

- Students will create a representation of their learning which the teacher can easily assess for misconceptions/strengths/weaknesses.
- Students will have something which organizes material in a way that makes sense to them. The map can provide help and guidance for further studying.

Using the Tool: The website allows for a variety of decisions regarding formatting text and hyperlinks. The page <https://bubbl.us/help/gettingstarted> introduces the user to the important features clearly and concisely.

# Khan Academy

Sarah A. Smith

<https://www.khanacademy.org/>

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## Description:

Most know Khan Academy for its topic specific videos but within the past few years they have developed what they call a “coaching feature”. This allows parents and teachers to set up an account for their students and assign specific skills aligned to the CCSS for grades K-12 as well as track their progress. This is an intelligent tutoring system that once a skill is assigned will scaffold the instruction to fit individual students’ needs and help everyone reach mastery.



## Coach’s View Includes:

- Able to create multiple classes and add students to each.
- When assigning students to classes an existing email (recommend one provided by the school) can be used or create a long in and password for each student.
- Teachers can assign a premade curriculum (Algebra 1, Geometry, Pre-Calculus, 7<sup>th</sup> Grade, 3<sup>rd</sup> Grade, etc.) to an entire class
- Teachers can assign specific skills aligned to CCSS to individual students
- Track student progress
  - Overall progress
  - Individual skill progress
  - Time spent on each skill
  - Number of questions answered correct/incorrect for each skill
  - The amount of hint requested by the student for each skill

**Student View Includes:**

- Ability to track their own progress, similar to teacher's view
- Student work space within lessons includes hints, videos, "I didn't learn this" option, and occasionally calculators.
- Feedback on a lesson and skills they practiced after each lesson.
- New material begins with a video to introduce the topic
- Gaming Feature (for student motivation)
  - Students earn points for each question they answer correctly, for using less hints, and overall progress.
  - Students earn badges for reaching mile stones such as completing their first mission (lesson), getting a specified number of questions correct in a row.
  - The student's avatar is a creature that evolves as they progress through the skills assigned.

**Uses:**

This feature of Khan Academy can be used as a supplement for instruction by assigning skills that students have not yet mastered or skills from a previous course where students are lacking. This can also be used to differentiate within a lesson. For example, high achievers can go deeper with a topic and Khan Academy will assign problems that are appropriate for each student's level.

# Socrative

Leah McCoy

<http://socrative.com>

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A tool for building assessments and seeing results in real-time. It gives a choice of browser or tablet format. Teacher can tag to Common Core standards.

## Tools

- Quiz items can be multiple choice, true/false, or short answer.
- Quick Question. One question, students vote, Immediate report %
- Space Race. Individual or in teams. Graph of rockets moving for correct.
- Exit Ticket. Preset questions.

## Teacher Setup

- In Dashboard, teacher creates quiz or questions and it is given unique number for students (or other teachers) to use.
- Can share quiz with other teachers.

## Activity

- Students log in with teacher-code.
- It can be student paced or teacher paced.

## Outcomes

- Teacher report screen shows outcomes.
- Whole class or individual