



Graspable Math Activities

Teacher User Guide

activities.graspablemath.com

contact@graspablemath.com | [@graspablemath](https://twitter.com/graspablemath)



TABLE OF CONTENTS

OVERVIEW

[What is GMA?](#)

[Creating Activities](#)

[Search Existing Activities](#)

[Assign Activities to Students as a Session](#)

[View Student Work](#)

GRASPABLE MATH (GM) GESTURES

[Gesture User Guide](#)

LOGGING INTO GRASPABLE MATH ACTIVITIES (GMA)

[Logging into GMA as a Teacher](#)

[Logging into GMA as a Student](#)

CREATING A CLASS

[Creating a Class](#)

[Assign an Activity](#)

[View Student Work from a Class](#)

CREATING A SESSION

COPYING AND NAMING ACTIVITIES

[Making a Session](#)

[Renaming Activities](#)

SHARING ACTIVITIES

[Making an Activity Public](#)

[Sharing Activities Using a Public Link](#)

OVERVIEW OF GRASPABLE MATH TASK TYPES

GOAL STATE

[Overview](#)

[Adding a New Goal State Task \(Task Builder\)](#)

[Student View of Goal State Tasks](#)



[Teacher View of Student Work in Goal State](#)

GRASPABLE MATH ACTIVITIES (GMA) CANVAS

[Introduction](#)

[Adding a New Canvas Task \(Task Builder\)](#)

[Adding to GMA Canvas](#)

[Adding an Expression](#)

[Adding a Graph](#)

[Adding Text](#)

[Insert Image/Video](#)

[Insert Function](#)

[Importing a Canvas from \[graspablemath.com\]\(https://graspablemath.com\)](#)

[Adding a Reflection Prompt](#)

[GMA Canvas Tools](#)

[Go Fullscreen](#)

[Transform Mode](#)

[Scrubbing](#)

[Arranging](#)

[Keypad Mode](#)

[Drawing Mode](#)

[Tracing Terms](#)

[Saving the Canvas](#)

[Loading the Canvas](#)

[Settings on the Canvas](#)

[Document Settings](#)

[Student View of Canvas Tasks](#)

[Teacher View of Student Work in Canvas](#)

HOT SPOT

[Overview](#)

[Adding a Hot Spot Task \(Task Builder\)](#)

[Student View](#)

[Teacher View of Student Work](#)

LINE IT UP

[Adding a Line It Up Task \(Task Builder\)](#)



[Student View of Line It Up](#)

[Teacher View of Student Work in Line It Up](#)

MULTIPLE CHOICE

[Adding a Multiple Choice \(Task Builder\)](#)

[Creating Questions](#)

[Insert Options](#)

[Including Reflection Prompt](#)

[Adding Images](#)

[Adding Videos](#)

[Adding Expressions and Equations](#)

[Making Multiple Selections](#)

[Student Feedback](#)

[Student View of Multiple Choice](#)

[Teacher View of Student Work in Multiple Choice](#)

MULTIMEDIA

[Overview](#)

[Insert Options](#)

[Adding a GIF/Image](#)

[Adding a YouTube Video](#)

[Adding a Hyperlink](#)

[Adding Text](#)

INTEGRATION WITH GEOGEBRA

[2D Algebra](#)

[2D Tools](#)

[3D Algebra](#)

[3D Tools](#)



OVERVIEW

Assign algebra tasks to your students and see live feedback of their step-by-step work. Discover, create, and share engaging math activities for 4th to 12th graders.

What is GMA?

With Graspable Math Activities, you can assign algebra tasks to your students and see live feedback of their step-by-step work. It is powered by Graspable Math, a digital algebra notation that provides a powerful and flexible way to work with algebra in the digital space.

In a time of powerful digital tools and online learning, most feel the easiest way to write and solve an equation is still by hand, on paper. We love paper, but shouldn't computers and touchscreens provide intuitive and fluid interfaces for math instead of getting in the way?

Our answer is Graspable Math: algebra notation reconstructed for the digital space. Algebraic expressions turn into interactive objects and support students in flexible reasoning, exploring structure, and inquiring into how math works.



Getting Started with GMA

A brief overview of GMA vocabulary



STUDENTS

play

SESSION

assign



TASK

ACTIVITY

Tasks

A task is an individual exercise that is a part of an activity for students to complete during a session. There are six types of GMA tasks to choose from.

Activities

An activity is a group of customizable tasks, created by teachers for students to complete during a session.

Sessions

A session is a finalized activity assigned either to a class with a code or as an assessment that is accessible to anyone with a link.

powered by





Creating Activities

Activities are the central pieces of Graspable Math Activities (hence our name!); therefore, it's important for us to guide our users through creating new activities. By creating your own activities, you can customize and tailor your own content, in a way that is useful to your students or your target audience.

But don't worry if you're just starting using Graspable Math Activities (GMA) and not completely confident about creating your own activities yet! We have a collection of shared, ready-to-use algebra activities made by our team and our community of GMA users for you to refer to and adapt. Please visit the [Search Existing Activities](#) section to see how you can find these activities.

Here, we will guide you through how to create a new activity in GMA.

1. Go to the “**Activity Bank**” tab on the left bar of your GMA page, then select the “**Create Activity**” button on the top right corner.

The screenshot shows the Graspable Math Activities web application. On the left sidebar, the 'Activity Bank' tab is highlighted with a red circle. In the top right corner of the main content area, the 'CREATE ACTIVITY' button is also highlighted with a red circle. The main content area displays a table of activities under the 'Activity Bank' tab.

Title	Owner	Last Edited ↓	# Tasks	
Transformations as Functions	Laura Woodham	12/16/2020	6	MAKE SESSION
Examples of Weight	Gregory Guyon	12/15/2020	7	MAKE SESSION
Weight	Gregory Guyon	12/15/2020	7	MAKE SESSION
Open Middle 8.12 Decimal Approximations of Roots	Laura Woodham	12/14/2020	2	MAKE SESSION
Open Middle 8.11 Pythagorean Theorem	Laura Woodham	12/14/2020	2	MAKE SESSION
Open Middle 8.10 Rational, Irrational or Whole Roots	Laura Woodham	12/14/2020	2	MAKE SESSION

2. A card screen will pop up, where you can type in the **name** of the activity you're creating. When you're ready, click “**Create**”.

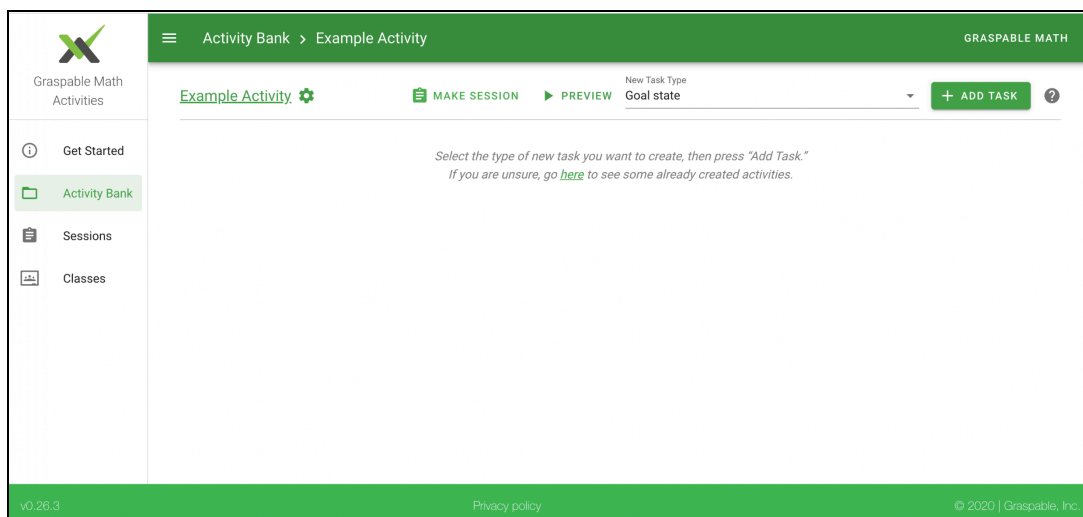


New Activity

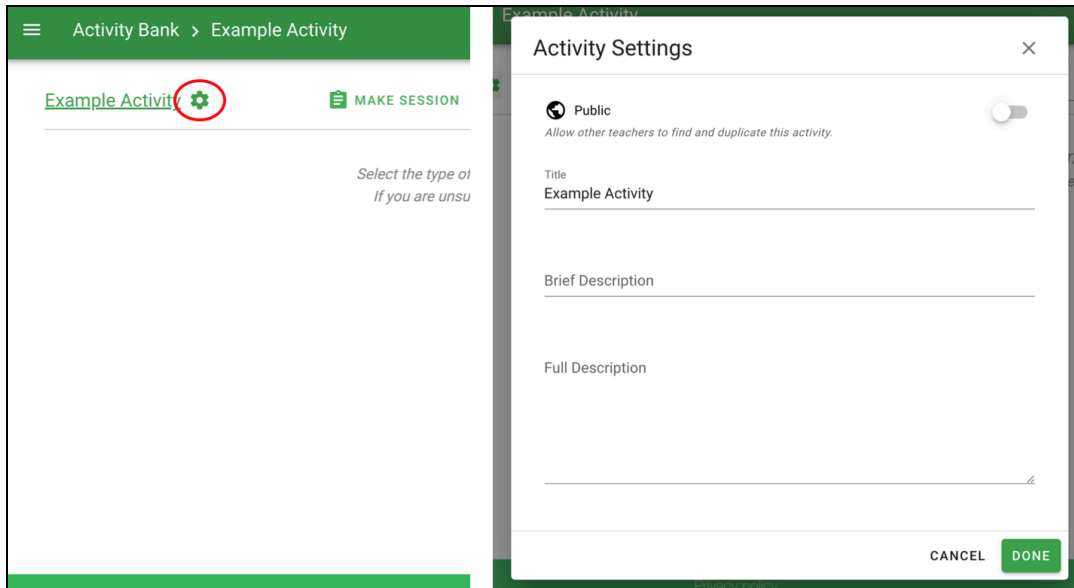
Title
Example Activity

CANCEL CREATE

3. You will then be automatically transferred to a new page where you can start working on your new activity.

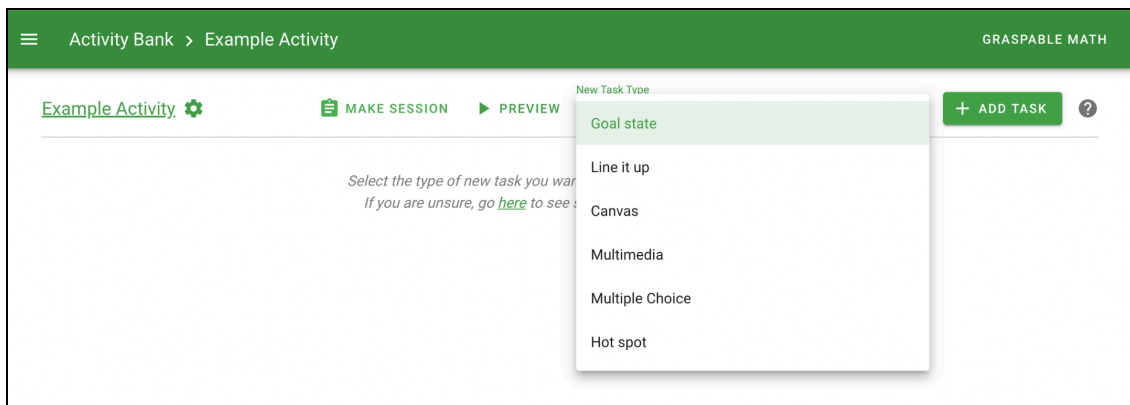


You can also modify your activity settings by clicking on the gear symbol next to your activity's name at the top left corner. A pop-up screen will appear with the **Activity Settings**. Your activities are always set as private by default, and you can make them public by turning the **Public** mode on. You can also modify the name of your activity under **Title**, or add **Brief** and **Full Descriptions** of your activity so that you and other GMA users can easily find your activity by searching keywords. To see step-by-step instructions, please visit [here](#).



Tasks are crucial parts of an activity, and they are what your students will see and work on when they arrive at your activity. You can add different types of tasks to your activity.

To see the different task types available on GMA, and how you can create tasks for each type, please visit [here](#).





Search Existing Activities

One of the beautiful things about Graspable Math Activities is that we have a community of GMA users, so we have built a communal, ready-to-use collection of shared activities created by our team and the GMA user community.

You can see this collection of existing activities made by others on our platform by going to the “**Activity Bank**” tab on the left, and selecting the “**Explore**” tab on the tab bar.

The screenshot shows the 'Activity Bank' interface. On the left sidebar, 'Activity Bank' is highlighted. The top navigation bar has 'EXPLORE' circled in red. The main area displays a table of activities with columns for Title, Owner, Last Edited, and # Tasks. A search bar is at the top of the main area.

Title	Owner	Last Edited ↓	# Tasks	
Graspable Math Teacher's Guide	Graspable Math (you)	9/18/2020	26	MAKE SESSION
Exponents: Rational Exponents (IA) ★	Graspable Math (you)	9/18/2020	27	MAKE SESSION
Exponents: Product Rule Review (IA) ★	Graspable Math (you)	9/18/2020	17	MAKE SESSION
Proportional Relationship (IA)	Yousuf Marvi	9/17/2020	5	MAKE SESSION
Absolute and literal equations practice	Nick Corley	9/17/2020	12	MAKE SESSION
Discrete: Activity 1.1 Reasoning (BR)	Jennifer St. John	9/16/2020	3	MAKE SESSION

A collection of all existing public activities will show up, listed by their last edited date (**Last Edited**). You can filter and sort these activities based on the activity's title (**Title**) or owner's name (**Owner**).

If you have a topic in mind that you would like to see existing activities on, or how other people have approached this topic, you can use the **Search** function to filter and find the activities aligned to your topic of interest.

In the search bar, type in the keyword that you are interested in, and click on the “Enter” button on your keyboard. A list of existing activities related to your keyword will appear.



The screenshot shows the 'Activity Bank' interface. On the left is a sidebar with 'Get Started', 'Activity Bank' (selected), 'Sessions', and 'Classes'. The main area has tabs for 'EXPLORE', 'FEATURED', and 'MY ACTIVITIES'. A search bar at the top of the main area contains the text 'Order of Operations'. Below the search bar is a table of activities.

Title	Owner	Last Edited	# Tasks	
3. Introduction to Order of Operations ★	Graspable Math (you)	10/27/2019	21	MAKE SESSION
Expressions: Order of Operations (IA) ★	Graspable Math (you)	7/31/2020	23	MAKE SESSION
7. Practicing Order of Operations ★	Graspable Math (you)	10/27/2019	18	MAKE SESSION
Expressions: Order of Operations (PA) ★	Graspable Math (you)	8/11/2020	14	MAKE SESSION
Simplifying Expressions Basics: Order of Operations (PA)	Mike Bevelacqua	6/18/2020	10	MAKE SESSION
4°ESO B - 0. Aprende a usar GRASPABLE MATH	Alejandro Olea Vergara	5/8/2020	21	MAKE SESSION

At the bottom of the interface, it shows 'v0.26.1', 'Privacy policy', and '© 2020 | Graspable, Inc.'.

If you find an existing public activity that you like, you can copy that activity or make your own session. To see how to copy an activity or make an existing activity your own, please see the instructions [here](#).

Assign Activities to Students as a Session

In GMA, you can make a session from one of our featured activities or a custom activity of your own.

1. Once you have decided which activity you would like to assign as a session, select it. Then click the **“Make Session”** icon on the bottom right of the activity window.



5. Mixed Practice with Addition and Subtraction

This activity has students practice addition and subtraction

This level helps you get used to all the GMA gestures that you've practiced so far, such as commuting terms and working with negative signs. The focus of this level is mixed practice with addition and subtraction, and the objective is for you to transform the starting expression to match the goal.

Tasks

1. Goal state $8 + 4 - 4$ $\hookrightarrow 8 + 0$	2. Goal state $15 - 6$ $\hookrightarrow 9 + 0$
3. Goal state 0 $\hookrightarrow 171 - 171$	4. Goal state $3 + 5 + 5 - 4$ $\hookrightarrow 8 + 1$
5. Goal state $6 - 2 + 7$ $\hookrightarrow 11 - 1$	6. Goal state $4 + 6 - 3 - 7 + 0$ $\hookrightarrow -10 + 0 + 10$
7. Goal state	8. Goal state

CANCEL PREVIEW COPY ACTIVITY **MAKE SESSION**

- a. You will then see an overview of the tasks. When you are ready to assign, click the 'Make Session' button with a green clipboard icon in the lower right.

Title	Last Edited ↓	# Tasks	
Fractions: Simplify (IA)	10/9/2020	20	MAKE SESSION ⋮

2. Before creating the session, there are two optional session modes you can choose from, described below. When you are ready to share the activity, click the 'Create Session' button.
- Assessment Mode** – GMA does not show correctness feedback for Multiple Choice and Hot Spot tasks. After students press the “Turn in All” button, they will not be able to change their work.
 - Assign to Specific Classroom** – If you assign this to a class, then students will need their student code to join. Each student's individual student code is listed in their roster on that class' dashboard. Students' work is automatically saved and students can return to their work whenever they want.



- i. If you assign the session to a pre-existing classroom, your students will automatically receive a notification that a new session has been added.
- c. **No Option Selected** - If you do not assign this to a class, the session will be open for anyone to join, if they have the link or session code. Users will identify themselves by first name and last initial.

New Student Session

A session code will be assigned to this session that students can join.

Session name

5. Mixed Practice with Addition and Subtraction—10/5/20, 11

☐ Assessment mode ?

☐ Assign to specific class ?

CANCEL CREATE SESSION

3. After creating the session, you will be forwarded to the activity session. On the left-hand tab, you will find:
 - The “**session code**” allows you to share your session with whoever you’d like. They can log into GMA as students and then enter the session code.
 - “**This session is assigned to**” section will only appear if you assign the session to a classroom in the previous step.
 - More information on assigning an activity can be found [here](#).
 - The activity session link that you can share with your students via email, Slack message, Google Classroom, etc.



Session Code
5H46K

This session is assigned to
Pre-Algebra-P2
Distribute this link:
<https://activities.graspablemath.com/s/5H46K>

Waiting for students to join...

Sessions > 5H46K

PAUL PACHECO

Task 1 (Multimedia)

a)

Task 2 (Canvas)

GM Canvas

Task 3 (Goal state)

e)

$$\frac{15}{20} \rightarrow \frac{3 \cdot 5}{4 \cdot 5}$$

Task 4 (Goal state)

e)

$$\frac{10}{25} \rightarrow \frac{2 \cdot 5}{5 \cdot 5}$$

Task 5 (Goal state)

e)

$$\frac{10}{12} \rightarrow \frac{5 \cdot 2}{6 \cdot 2}$$

Task 6 (Goal state)

e)

$$\frac{13}{52} \rightarrow \frac{13}{4 \cdot 13}$$

Task 7 (Goal state)

e)

$$\frac{28}{24} \rightarrow \frac{7 \cdot 4}{6 \cdot 4}$$

Task 8 (Canvas)

GM Canvas

Task 9 (Canvas)

GM Canvas

Task 10 (Multimedia)

Watch this video to see how you can simplify a fraction by dividing out the Greatest Common Factor (GCF).

v0.26.1

Privacy policy

© 2020 | Graspable, Inc.

- You can view all of your open sessions by going to the “**Sessions**” section under the GMA navigation tabs on the left-hand side.

Graspable Math Activities

- Get Started
- Activity Bank
- Sessions**
- Classes

Sessions

Title	Created ↓	# Tasks	Session Code	Allow Join	Assessment Mode	Delete
5. Mixed Practice with Addition and Subtraction—10/5/20, 11:24 AM	10/5/2020	18	RHD3B	☒		
Equivalent Expressions Identification - Part 1—10/5/20, 10:47 AM	10/5/2020	16	AUF77	☒	☒	
Equivalent Expressions Identification - Part 2—10/3/20, 1:08 AM	10/3/2020	16	SQE8T	☒	☒	
Equivalent Expressions Identification - Part 1—10/3/20, 1:07 AM	10/3/2020	16	LVYQX	☒	☒	
Equivalent Expressions Identification—10/1/20, 10:48 AM	10/1/2020	10	VYZAM	☒		
test—9/29/20, 4:52 PM	9/29/2020	3	VR8Z3	☒		
test—9/29/20, 4:51 PM	9/29/2020	3	Q5ZSM	☒		
GMA Pilot Introductory Activity 1- Fall 2020—9/28/20, 10:37 AM	9/28/2020	23	9HUU9	☒	☒	
sample—9/25/20, 12:14 PM	9/25/2020	7	DBMZ6	☒	☒	

v0.26.4

Privacy policy

© 2020 | Graspable, Inc.



View Student Work

Our GMA platform also allows you to view your students' work easily and intuitively.

1. On your Session tab, select a session in which you want to see your students' work.

Title	Created ↓	# Tasks	Session Code	Allow Join	Assessment Mode	Delete
Equivalent Expressions Identification - Part 2—10/3/20, 1:08 AM	10/3/2020	16	5QE8T	☒	☒	
Equivalent Expressions Identification - Part 1—10/3/20, 1:07 AM	10/3/2020	16	LVYQX	☒	☒	
Equivalent Expressions Identification—10/1/20, 10:48 AM	10/1/2020	10	VYZAM	☒		
test—9/29/20, 4:52 PM	9/29/2020	3	VR8Z3	☒		
test—9/29/20, 4:51 PM	9/29/2020	3	Q5ZSM	☒		
GMA Pilot Introductory Activity 1- Fall 2020—9/28/20, 10:37 AM	9/28/2020	23	9HUU9	☒	☒	
sample—9/25/20, 12:14 PM	9/25/2020	7	DBMZ6	☒	☒	
stacybreakingnumbers—9/25/20, 10:53 AM	9/25/2020	12	AYQQQ	☒		
stacybreakingnumbers—9/25/20, 10:42 AM	9/25/2020	12	FV2NZ	☒		

2. A dashboard showing the overall view of your students' work for the session will be displayed.
3. On the left-hand tab, you will find a list of students who have joined the session. The fractions next to their name indicate how many of the tasks they've completed for this activity (e.g., 4/16, 7/16).



Session Code
AUF77

This session is assigned to
[Test Class](#)
Distribute this link:
<https://activities.graspablemath.com/s/AUF77>

Assessment Mode

STUDENT OVERVIEW

14 of 15 students joined.

Student	Progress
Jen	4/16
Jenny	7/16
JiEun	9/16
Katie	0/16
Luisa	10/16

Tasks Overview

Task 1 (Multiple Choice)	Task 2 (Multiple Choice)	Task 3 (Multiple Choice)	Task 4 (Multiple Choice)	Task 5 (Multiple Choice)
Are th	Are	Are	Are	Are these

Task 6 (Multiple Choice)	Task 7 (Multiple Choice)	Task 8 (Multiple Choice)	Task 9 (Hot spot)	Task 10 (Hot spot)

© 2020 | Graspable, Inc.

List of students & their work progress

4. On each task, you will see 2 icons:

- shows how many students are at this specific task. This can mean that the students are currently working on this task or that they paused on it.
- shows how many students have successfully completed this specific task.

5. To see how a specific student performed on all of the tasks, you can click on the student's name on the left tab.



Session Code
AUF77

This session is assigned to
[Test Class](#)
Distribute this link:
<https://activities.graspablemath.com/s/AUF77>

Assessment Mode ?

STUDENT OVERVIEW

15 of 16 students joined.

Elena	1/16
Jen	4/16
Jenny	7/16
JiEun	9/16
Katie	0/16
Luisa	10/16

Tasks Overview

Task 1 (Multiple Choice) Are th [Diagram: A right triangle with a horizontal base and a vertical height, forming a corner shape.]	Task 2 (Multiple Choice) Are [Diagram: A right triangle with a horizontal base and a vertical height, forming a corner shape.]	Task 3 (Multiple Choice) Are [Diagram: A right triangle with a horizontal base and a vertical height, forming a corner shape.]	Task 4 (Multiple Choice) Are 1 [Diagram: A right triangle with a horizontal base and a vertical height, forming a corner shape.]	Task 5 (Multiple Choice) Are these [Equation: $2 \cdot (3y - 1)$]
Task 6 (Multiple Choice)	Task 7 (Multiple Choice)	Task 8 (Multiple Choice)	Task 9 (Hot spot)	Task 10 (Hot spot)

- a. After selecting a student, you will first see summary information of that student's work and performance in the session.
- This summary includes: how many problems the student has started vs. completed, their percentage of correct and incorrect answers, and if there are any problems that the student was not auto-graded on (needs manual grading from teachers).

Sessions > AUF77 > Students > Jenny

Jenny 0315

Worked on 16 of 16 tasks (100%).

Completed 16 of 16 tasks (100%).

- 7 correct (44%)
- 9 incorrect (56%)
- 0 not auto-gradable (0%)

Summary Information

Task 1 (Multiple Choice) Are th [Equation: $2c$]	Task 2 (Multiple Choice) Are [Diagram: A right triangle with a horizontal base and a vertical height, forming a corner shape.]	Task 3 (Multiple Choice) Are [Equation: $7 - c$]	Task 4 (Multiple Choice) Are 1 [Equation: $2 \cdot$]	Task 5 (Multiple Choice) Are these [Equation: $2 \cdot (3y - 1)$]
---	--	---	---	--

Privacy policy

© 2020 | Graspable, Inc.



- b. You can also review the student's work on each task, and quickly see whether they got an answer correct or not.

Sessions > AUF77 > Students > Jenny

GRASPABLE MATH

Are these equivalent?

$2c$

☒ Equivalent
☐ Not Equivalent

Are these equivalent?

$7 - c$

☒ Equivalent
☐ Not Equivalent

Are these equivalent?

$2c$

☒ Equivalent
☐ Not Equivalent

Are these equivalent?

$2 \cdot (3y - c)$

☐ Equivalent
☒ Not Equivalent

Please select the correct answer

Privacy policy

© 2020 | Graspable, Inc.

6. You can also click on a specific task to see the student's work on that task in detail.

Session Code
AUF77

This session is assigned to
[Test Class](#)

Distribute this link:
<https://activities.graspablemath.com/s/AUF77>

Assessment Mode ?

STUDENT OVERVIEW

14 of 15 students joined.

Jen ✓
Jenny ✓
JiEun ✓
Katie •
Luisa ✓

Sessions > AUF77 > Task 1

GRASPABLE MATH

Selected task: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Are these equivalent?

$2c$

Student Work

Student 7: Are these equivalent? $2c$ ✓
Student 4: Are these equivalent? $2c$ ✓
Student 6: Are these equivalent? $2c$ ✓
JiEun: Are these equivalent? $2c$ ✓
Luisa: Are these equivalent? $2c$ ✓

v0.27.0

Privacy policy

© 2020 | Graspable, Inc.



- On the left-hand tab, you will find a list of students who have joined this task. The green check next to each student's name indicates that they have completed the task.
- You can also click on the specific task card to see how different students solved the problem.

- You can also see a student overview dashboard. This dashboard provides a short summary of your students' work, showing their correctness and status on tasks in the session.



- a. You can hover your cursor on each icon to see what they mean (shown in picture below).

Sessions > AUF77 > Students GRASPABLE MATH

Student Overview ☐ Show joined students only

	1. Mult. Choice	2. Mult. Choice	3. Mult. Choice	4. Mult. Choice	5. Mult. Choice	6. Mult. Choice	7. Mult. Choice	8. Mult. Choice	9. Hot spot	10. Hot spot	11. Hot spot	12. Hot spot	13. Hot spot	14. Hot spot	15. Hot spot	16. Hot spot
Jen	✓	✓	✓	✓	•	•	•	•	•	•	•	•	•	•	•	•
Jenny	✓	✗	✓	✗	✗	✓	✓	✗	✓	✗	✗	✗	✓	✓	✗	✗
JiEun	✓	✓	✓	✓	✓	✓	✓	✓	✓	•	•	•	•	•	•	•
Katie	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Luisa	✓	✓	✗	✓	✗	✓	✗	✓	✗	✗	✓	✓	✓	✓	•	•
shreya	✓	✗	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Stacy	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

Task started.

Currently on task

Rows per page: 100 1-15 of 15

Privacy policy © 2020 | Graspable, Inc.

GRASPABLE MATH (GM) GESTURES

Gesture User Guide

If you would like to have a hands-on experience on the different gestures on GMA, go to this link below and follow the steps to try out our various gestures!

<https://activities.graspablemath.com/s/VRWRV>

Frequently Used Gestures in Graspable Math

Tap, drag, and hold terms in Graspable Math to rewrite mathematical expressions into equivalent ones:

1. *Click or tap*: apply an operation (e.g. "+") or resolve parentheses ("(").



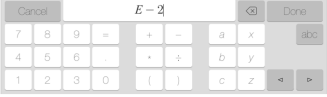
2. *Tap + drag*: drag terms where you want them to go to trigger the corresponding transformation. GM indicates valid places to drop a term with blue rectangles.
3. *Tap and hold*: apply a keyboard rewrite (e.g. hold "=" to enter an operation to apply to both sides of the equation)

Operations, Commutative Property, Factoring

Commute Terms Drag terms to commute. $2 + 3$ $3 + 2$	Commute Negative Terms In GM, a + or - is picked up with the term, so you can commute with negative terms. $6 + 2 - 4$ $6 - 4 + 2$	Perform Operations I Tap on operators or drag terms onto each other to add, subtract, multiply, etc $2 + 7 + 3$ or $2 + 7 + 3$ $2 + 10$
Perform Operations II Tap the division bar or drag terms onto each other to divide. $8/4$ or $8 \div 4$ 2	Combining Signs Tap the left sign to resolve "+-" and "-+". $2 + (-3)$ or $2 - (-3)$ $2 - 3$ or $2 + 3$	Order of Operations When tapping an operator that can't be applied, GM will shake the terms. $5 + 2 \cdot 3$ $5 + (2 \cdot 3)$
Decompose and Factor Numbers Select "keypad" mode and tap on a number to replace it with an equivalent expression. 12 $6 \cdot 2$	Picking Up Multiple Terms I Pick up groups of terms by their operator or brackets around them, or fraction bar. $2a + 3b$	Picking Up Multiple Terms II Pick up groups of terms by dragging down a term until more terms snap to it. $2a + 3b$



Distributive Property, Rearranging Equations

Distribute a Term Drag a term into parentheses to distribute. Automatically simplifies in advanced settings $2 \cdot (3 + a)$ $2 \cdot 3 + 2a \text{ or } 6 + 2a$	Distribute a Negative Sign Tap on the negative sign to distribute. $2x \ominus (x - 3)$ $2x - x + 3$	Distribute Multiple Terms Drag one sum in another to distribute. Double-tap "(" instead to skip line 2 below. $(x + 2) \cdot (x - 2)$ $x \cdot (x - 2) + 2 \cdot (x - 2)$ $x^2 - 2x + 2x - 4$
Factor a Term Drag common terms onto each other to apply the distributive property. $2 \cdot 3 + 2a$ $2 \cdot (3 + a)$	Finding Greatest Common Factors When numbers don't match, GM finds their greatest common factor. $6x + 8y$ $2 \cdot 3x + 2 \cdot 4y$	Factoring Multiple Terms You can factor groups of terms, too. $x \cdot (x - 2) + 2 \cdot (x - 2)$ $(x + 2) \cdot (x - 2)$
Equations: Do the Same to Both Sides I Tap and hold the "=" and enter an operation to apply to both sides in the keypad. $a + 2 \ominus 5$  $a + 2 - 2 = 5 - 2$	Equations: Do the Same to Both Sides II Drag a term to the other side of the equation to apply the inverse. $a + 2 = 5$ $a + 2 - 2 = 5 - 2$ (auto-simplify setting off) $a + 2 = 5$ $a = 5 - 2$ (auto-simplify setting on)	
Equations: Invert Power I Drag the exponent across the "=" to invert it. $x^2 = 4$ $x = \pm\sqrt{4}$	Equations: Invert Power II Drag the base across the "=" to apply the logarithm to both sides. $2^x = 16$ $x = \log_2(16)$	Equations: Swap Sides Tap on the "=" to swap sides. $a + 2 \ominus 5$ $5 = a + 2$



Fractions and Powers

Turn Fraction into Decimal Tap on the fraction bar to compute. If the result is not an integer, double-tap. $\frac{10}{5}$ or $\frac{2}{5}$ 2 0.4	Adding Fractions I Tap or drag to add fractions with common denominators. $\frac{2}{5} + \frac{4}{5}$ or $\frac{2}{5} + \frac{4}{5}$ $\frac{6}{5}$	Adding Fractions II To rewrite fractions to have the same denominator, drag one denominator onto the other one. (Short-cut: double-tap "+") $\frac{1}{3} + \frac{1}{5}$ $\frac{2}{2 \cdot 3} + \frac{1}{2}$ $\frac{2}{2 \cdot 3} + \frac{3}{2 \cdot 3}$
Cancelling Fractions Drag matching terms on top of each other to cancel them out. $\frac{a}{2b}$ or $\frac{a}{2b}$ $\frac{a}{b}$	Nested Fractions Drag a fraction out of the denominator to invert it. $\frac{\frac{a}{b}}{c}$ $a \cdot \frac{c}{b}$	Distribute Denominator Drag and add out of the numerator or the denominator onto the numerator. $\frac{3+5}{3}$ or $\frac{3}{3} + \frac{5}{3}$
Multiply Powers Tap the "*" or drag to multiply powers. $2^3 \cdot 2^5$ or $2^3 \cdot 2^5$ 2^{3+5}	Split Powers Drag an addend out of an exponent to split a power. (You may use keypad mode to replace an exponent with a sum first.) $2^3 \cdot 2^5$ $2^3 \cdot 2^5$	Distribute Exponents Drag an exponent into a product to distribute it. $(2a)^3$ $2^3 \cdot a^3$
Factor Exponents Drag an exponent over matching exponents to pick them up, then drop them next to the product. $2^3 \cdot a^3$ $(2a)^3$	Move Powers Across Fractions Drag a power across the fraction bar to invert the exponent.	Negative Exponent → Fraction Drag a power with a negative exponent down and drop it to create a fraction.

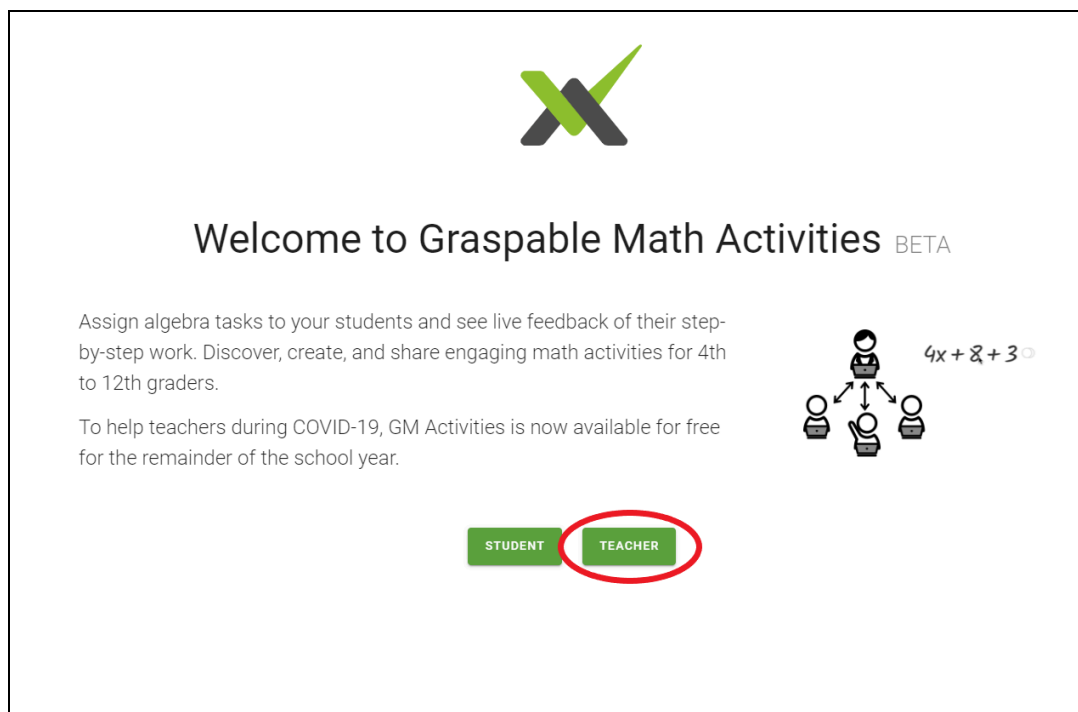


	$\frac{2}{ab^{-2}}$ $\frac{2b^2}{a}$	$\frac{1}{x^{-1}}$ $\frac{1}{x}$
--	--------------------------------------	----------------------------------

LOGGING INTO GRASPABLE MATH ACTIVITIES

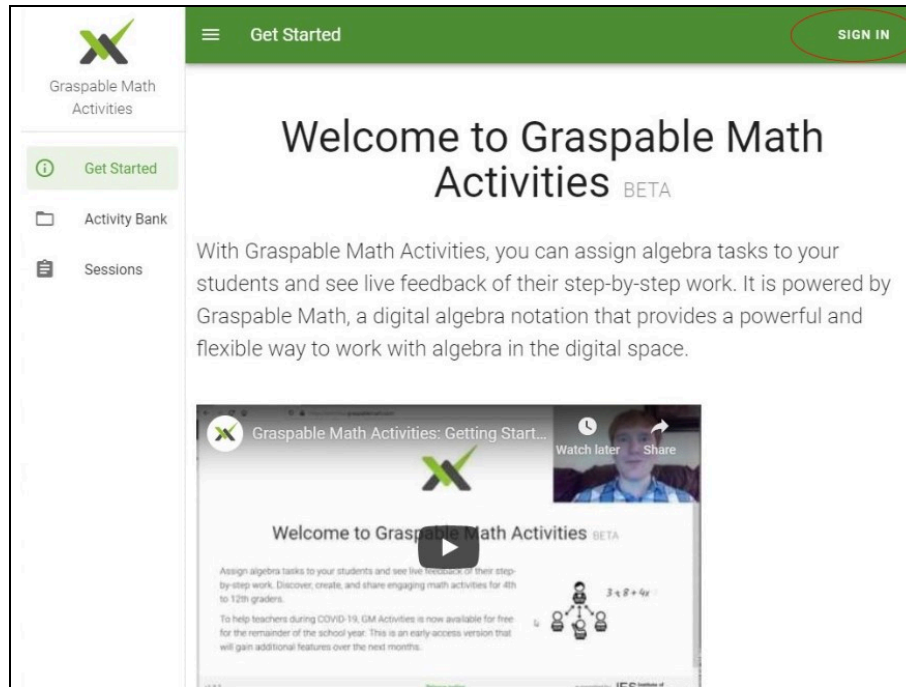
Logging into GMA as a Teacher

1. When you arrive at the GMA page <https://activities.graspablemath.com/>, you are asked if you want to sign in as a teacher or a student. Select **“TEACHER”**.

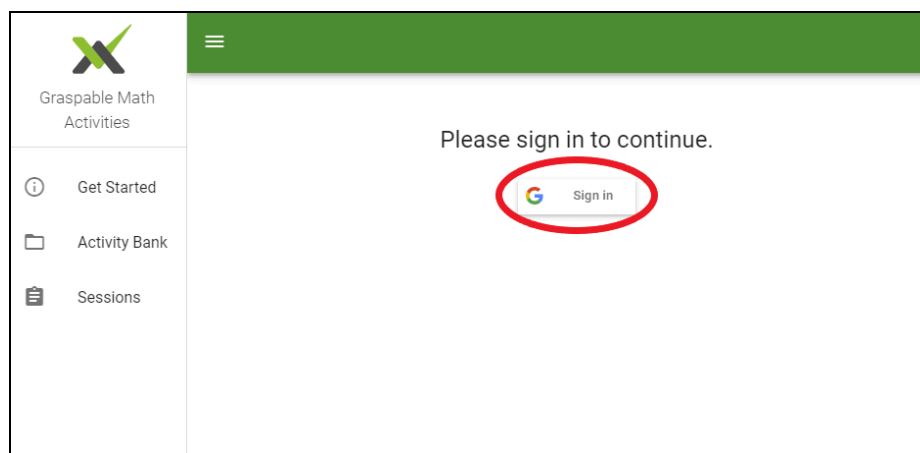




2. Once you've arrived on the teacher homepage, select the **"SIGN IN"** button on the upper right corner.



3. You will be shown a sign-in screen as below. Click the **"SIGN IN"** button next to the Google icon. Once you select this button, you are prompted to sign in with a Google account.



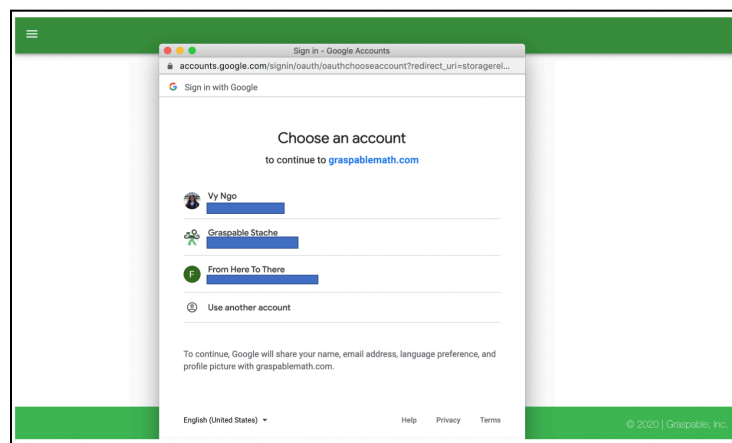
Note: If you do not have a Google account already, we suggest creating one as it will be functional across every platform of Graspable Math.



Logging Into The Wrong Account?

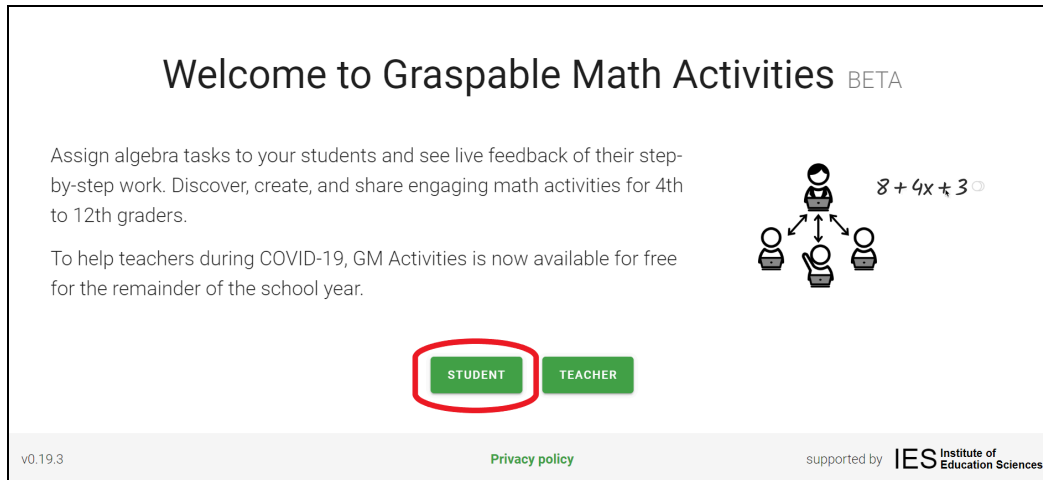
In the case that you are managing between two or more accounts, first make sure that you are signed in to all of your Google accounts in your browser. When you select **"SIGN IN"** on the GMA page, a window will pop up, allowing you to select which Google account you want to log in with (see *image below*).

Otherwise, if you are logging into the wrong account, you will need to open another tab on your browser, go to <https://google.com>, log in to the correct Google account, then go back to the GMA page <https://activities.graspablemath.com/> and try logging in again.



Logging into GMA as a Student

1. When you arrive at the GMA page <https://activities.graspablemath.com/>, you are asked if you want to sign in as a teacher or a student. Select **"STUDENT"**.



2. You will be shown a “**Join Session**” window. Enter your five-digit/letter code provided by your teacher to join their activity.
3. Then enter your first name, last initial, and select “**Join**” to start working on the assigned activity.

CREATING A CLASS

Creating a Class

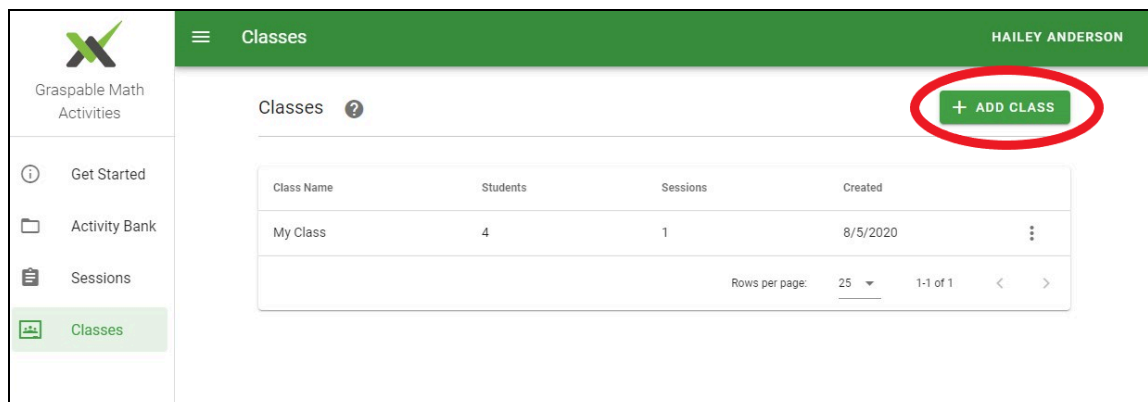
If you have a fixed class, or a list of students whom you are planning on assigning several GMA activities to, you will benefit from creating a class function on GMA!



To create a class, you can either import a class roster or enter your students' names manually. GMA will then generate unique ID numbers for each of your students, which they will use to log into GMA. Then you can easily assign activities to your GMA class, and your students' work will be saved under their class and sorted based on their information.

Below, we will guide you step-by-step through how to create a class in GMA.

1. Locate the **"Classes"** tab on the left, then click on the **"+ ADD CLASS"** button on the top right to create a new class.



2. A pop-up screen will appear, where you can enter your class name. Once you're ready, click **"Create"**, and you will automatically be taken to a new page where your new class is created.



Rows per page:

Create a Class

Name
A Class

CANCEL CREATE

There are 2 ways to add students to the class. The first way is to import students' information from a class roster:

1. Click on the **"Import"** button next to your class's name. A pop-up screen for importing roster will appear.

The screenshot shows the Graspable Math Activities interface. On the left is a sidebar with the logo and navigation links: Get Started, Activity Bank, Sessions, and Classes (highlighted). The main content area is titled 'Classes > A Class'. Below this is a section for 'A Class' with a pencil icon. It contains a 'Class Roster' section with a table header 'Student Code' and 'Student Name', and an 'IMPORT' button circled in red. Below the table is a button 'Add One Student' with a plus icon. There is also a section for 'Sessions Assigned To This Class' with a table header 'Tasks', 'Session Name', 'Assigned', 'Session Code', and 'Allow Join'. The table is currently empty, showing 'No sessions assigned to this class, yet.' At the bottom, there is a 'Rows per page' dropdown set to 25.



2. Prepare your class roster on a spreadsheet or any kind of workbook. Then select all cells with student names and copy (Ctrl+C / Cmd+C). Then go back to the pop-up screen on GMA and paste (Ctrl+V / Cmd+V) the names of your students into the grey text box on the pop-up screen on GMA.

	A	B	C	D	E	F	G
1		Albert A.					
2		Susan A.					
3		Casey F.					
4		Dan N.					
5		Emily P.					
6		Johanna R.					
7		Estaban S.					
8							

Update or Import Roster

Copy and paste your student roster from your school website or from a spreadsheet program into the box below. If copying from a spreadsheet, try including the column headers.

Roster to Import

Dan N.
Emily P.
Johanna R.
Estaban S.

Found 7 new students we can import

- Albert A
- Susan A
- Casey F
- Dan N
- Emily P
- Johanna R
- Estaban S

Note: we have automatically truncated the last name to one letter, to protect the students' privacy.

CANCEL ADD 7 NEW

3. The system in GMA will automatically detect students' names to be imported. Please note that in GMA, students' last names are cut to one letter to protect their privacy (e.g., Smith -> S.).
If multiple students share the same first letter for their last names, the roster will automatically sort them in alphabetical order based on their first name.



When you've confirmed that all students' information is correct, click the **"Add New"** button. Your students' information is successfully imported to your new class.

A Class

Class Roster **IMPORT**

☐	Student Code	Student Name	
☐	8425	Albert A	
☐	4745	Susan A	
☐	1638	Casey F	
☐	8138	Dan N	
☐	3245	Emily P	
☐	2504	Johanna R	
☐	5238	Estaban S	
Add One Student			

Sessions Assigned To This Class

Tasks	Session Name	Assigned	Session Code	Allow Join
No sessions assigned to this class, yet.				
Rows per page: 25 - < >				

Once you've created a class, you can also add more students by using either of these two methods. To remove students from a class, click on the **3 dots symbol** next to their name, and select **"Delete student"**.

Class Roster **IMPORT**

☐	Student Code	Student Name	
☐	3473	student 1	
☐	1715	student 2	
☐	6677	student 3	
Add One Student			

Delete student

The second way is to add students by manually entering their information:



1. Click on the **"Add One Student"** box, and type in an individual student's name. Click on the **"+"** sign or click **"Enter"** on your keyboard when you're done. Repeat until you have entered all of your students' names.

The left screenshot shows the 'A Class' page. It has a 'Class Roster' section with a table header 'Student Code' and 'Student Name'. Below the header is a button 'Add One Student' with a '+' sign, which is circled in red. There is also an 'IMPORT' button. Below the roster is a 'Sessions Assigned To This Class' section with a table header 'Tasks', 'Session Name', 'Assigned', 'Session Code', and 'Allow Join'. The right screenshot shows the 'Class Roster' page. It has a table header 'Student Code' and 'Student Name'. Below the header is a text input field with the placeholder 'Add One Student' and a '+' button, both circled in red. The input field contains the text 'Student 1'.

Assign an Activity

Once you've created a class in GMA, you can assign an activity to your class easily! This method allows you to make sure that only students of your existing classes will gain access to your activity, and their work will be recorded and sorted based on the class roster.

You may choose to assign one of the various math activities designed by the GMA team and community, or one of your very own.

1. To assign an activity to your class, first locate the activity you want. First click on "Activity Bank" in the left tab. Then you can quickly find an activity using the **"Search"** function under the Explore tab (for the community) or under the "My Activities" tab. Once you've located the desired activity, click on the **"Make Session"** button on the right hand side.



←

Search activities here

Title	Last Edited ↓	# Tasks	
Copy of Fractions: Simplify (IA)	9/21/2020	19	 MAKE SESSION

Rows per page:

25 ▾

1-1 of 1

<

>

2. A **"New Student Session"** pop-up screen will appear, where you can also edit the name of your session (If you are assigning one activity to several classes, renaming the session to make it unique to a specific class might be very helpful!)

Select the **"Assign to specific class"** option. A drop-down menu will show a list of classes that you've created. Select the class you would like to assign the activity to, then click **"Create Session"**.

New Student Session
A session code will be assigned to this session that students can join.

Session name
Copy of Fractions: Simplify (IA)—9/21/20, 1:58 PM

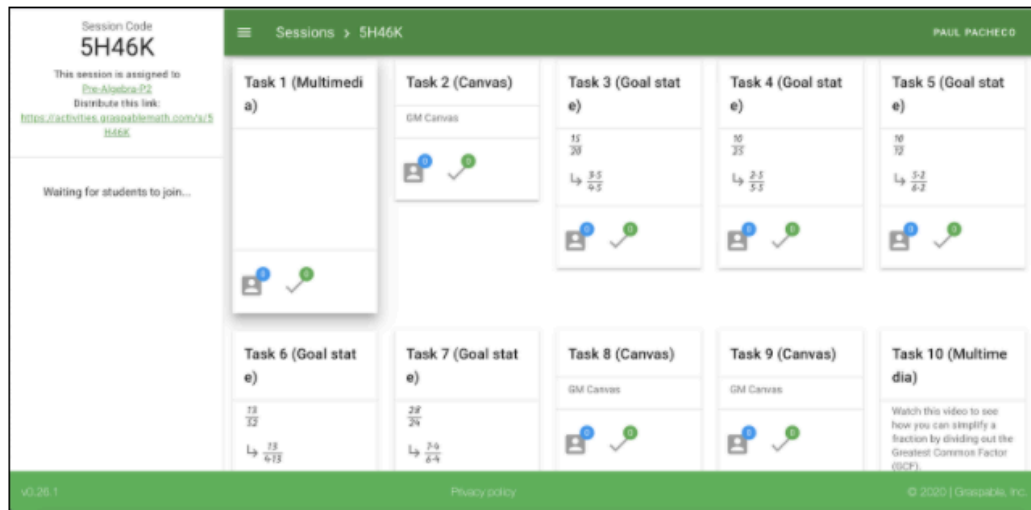
☐ Assessment mode

☒ Assign to specific class

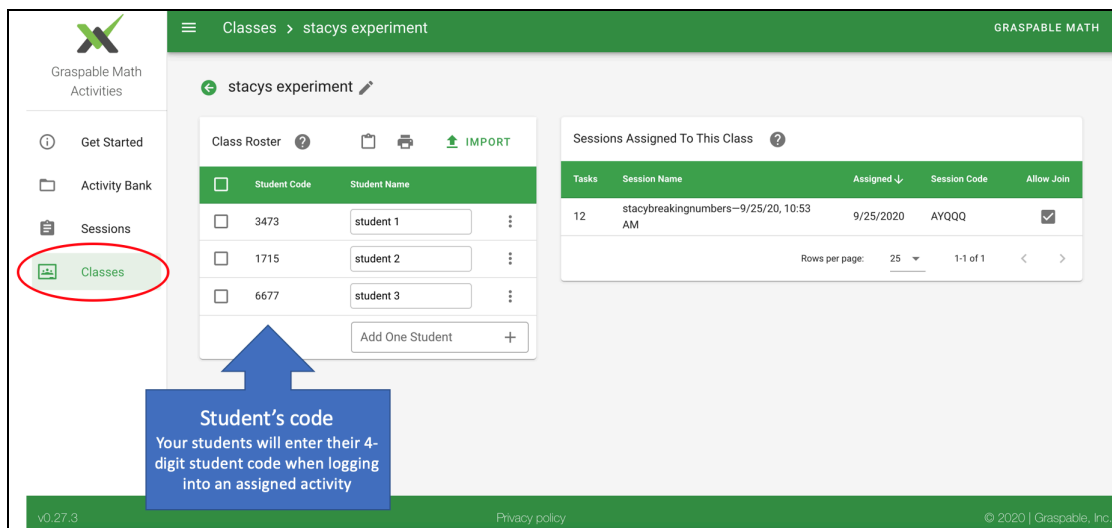
Pre-Algebra-P2
H-Algebra-One-Period3

CANCEL CREATE SESSION

3. You will then be forwarded to the activity session. On the left-hand tab, you will find:
 - o The **"session code"** students can use to access the activity session,
 - o The class the activity is assigned to,
 - o The activity session link that you can share with your students via email, Slack message, Google Classroom, etc.,
 - o Students who have joined the session.



You have now successfully assigned an activity to your class! To join your session, your students will need their student code, which can be found on the roster on that class' dashboard (click "**Classes**" in the left menu).



Students' work on a session is automatically saved, and they can return to their work whenever they want.

View an Activity Session from the Classroom Window



You can view your class roster and active activity sessions by opening the classroom window on GMA. You can also change the status of a session (active/joinable or inactive/un-joinable). This feature is great for closing sessions when a deadline has passed.

1. Navigate to your classes by clicking on the **“Classes”** tab located on the left-hand side menu. Then select the class you would like to view.

Class Name	Students	Sessions	Created
Pre-Algebra P2	4	0	9/21/2020
H Algebra One Period3	4	0	9/21/2020

2. You can view the activities that have been assigned to that class and their status on the right side of the page. If an activity is open, the box under **“Allow Join”** will be checked. If you want to close an activity and make it un-joinable, make sure that the box is unchecked.



The screenshot shows the 'Pre-Algebra-P2' class page. On the left is a sidebar with 'Get Started', 'Activity Bank', 'Sessions', and 'Classes' (selected). The main area has a 'Class Roster' table and a 'Sessions Assigned To This Class' table. The 'Sessions Assigned To This Class' table is highlighted with a red box.

Tasks	Session Name	Assigned ↓	Session Code	Allow Join
19	Copy of Fractions: Simplify (A) - 9/21/20, 1:58 PM	9/21/2020	5H46K	☒

Below the table, it says 'Rows per page: 25' and '1-1 of 1'.

View Student Work from a Class

You can navigate and view your students' work on using your class window easily. Your students' work will be sorted based on the class roster.

1. S

The screenshot shows the 'Classes' page. On the left is a sidebar with 'Get Started', 'Activity Bank', 'Sessions', and 'Classes' (selected). The main area has a 'Classes' table.

Class Name	Students	Sessions	Created
test	5	5	9/14/2020
stacys experiment	3	1	9/25/2020
Test Class	15	7	10/5/2020
anthony	3	3	10/12/2020

Below the table, it says 'Rows per page: 25' and '1-4 of 4'.

2. Then select the activity that you want to examine from the "Sessions Assigned To This Class" pane.



Graspable Math Activities

Classes > Test Class

Test Class

Class Roster

☐	Student Code	Student Name	
☐	1337	Jon	
☐	6547	Student 2	
☐	4357	Student 3	
☐	5507	Student 4	
☐	5005	Student 5	
☐	1876	Student 6	
☐	0273	Student 7	
☐	0315	Jenny	

Sessions Assigned To This Class

Tasks	Session Name	Assigned	Session Code	Allow Join
21	2. Introduction to Multiplication—10/26/20, 2:22 PM	10/26/2020	GAHNT	☒
16	Equivalent Expressions Identification - Part 1—10/20/20, 1:54 PM	10/20/2020	R8BWA	☒
23	GMA Pilot Introductory Activity 1 - Fall 2020—10/20/20, 1:10 PM	10/20/2020	4BNS2	☒
20	9. Introduction to Inverse operations + and —10/20/20, 1:09 PM	10/20/2020	H7XCN	☒
16	Equivalent Expressions Identification - Part 1—10/16/20, 2:48 PM	10/16/2020	DXUF9	☒
11	Line-It-Up - Sample—10/8/20, 3:35 PM	10/8/2020	72UVZ	☒
16	Equivalent Expressions Identification - Part 1—10/5/20, 10:47 AM	10/5/2020	AUF77	☒

v0.27.0 Privacy policy © 2020 | Graspable, Inc.

3. A dashboard showing the overall view of your students' work for the session will be displayed. To see what type of information the dashboard provides, please visit the ["View Student Work" section](#) starting at Step 2.

CREATING A SESSION

1. To create a session, you will need a completed activity that you want to assign to your student ready in your **"My Activities"** tab. Locate the desired activity and click on the green **"Make Session"** button next to it.



The screenshot shows the 'Activity Bank' interface with a green header. The 'MY ACTIVITIES' tab is selected and circled in red. Below the header, there is a search bar labeled 'Filter Activities' and a 'CREATE ACTIVITY' button. A table lists activities with columns for Title, Last Edited, and # Tasks. The 'MAKE SESSION' button for the first activity is circled in red.

Title	Last Edited ↓	# Tasks
Practicing the basic GM gestures	10/21/2019	20
Introducing GM Goal State	8/2/2019	10
Wednesday's warm-up	6/26/2019	5

2. A pop-up screen will appear, showing the details of the session that will be created. You can change the name of the session here, as well as choose how you want to create your session.

You can either create a session in **assessment mode**, which GMA does not show correctness feedback for Multiple Choice and Hot Spot tasks. After students press the “Turn in All” button, they will not be able to change their work

You can also create a session and **assign it to a specific class**. The session will then be created and directly assigned to your classroom, so you won't have to share a code with your entire class. To learn how to do this, please go to [this section](#).



New Student Session

A session code will be assigned to this session that students can join.

Session name

Practicing the basic GM gestures—9/7/20, 10:23 AM

☐ Assessment mode ?

☐ Assign to specific class ?

You have no classes. Create a class first if you want to assign a session to a particular class.

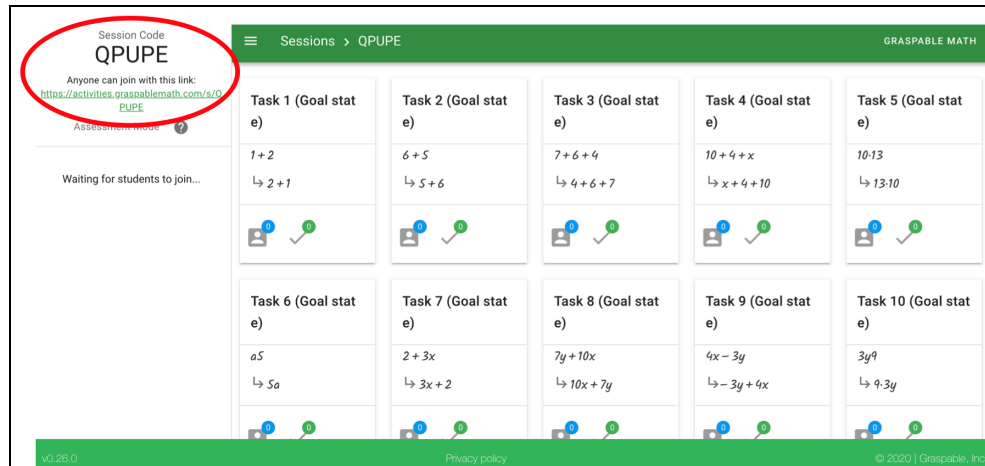
CANCEL CREATE SESSION

* You can also hover your cursor on the (?) sign next to each sharing mode to see more of the difference between them.

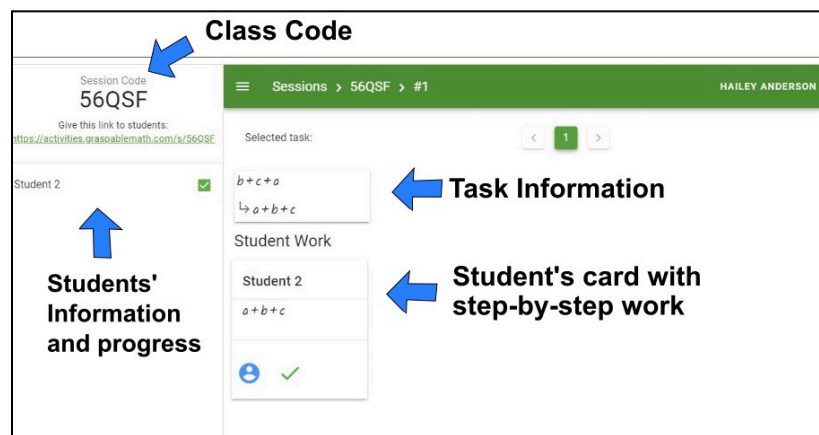
3. To simply create a session, select the **Assessment mode** and click “**Create Session**”. A new webpage will appear with your session created.

The **code** on the top left is your session code. You can share this code with whoever you want, and they can access your session by logging into GMA as students and entering your session code.

The **link** on the top left has your session code embedded, and will directly take anyone with this to your activity. You can send this instead of the code for simple access to your session.



As your students access and complete work in your session, their name will appear in the left column and their work for each task will appear within the individual task card.



COPYING AND NAMING ACTIVITIES

Making a Session

You can easily make a session for your students from one of the available activities on our GMA platform! To do this, you will copy an activity, make a session derived from that activity, and send a message to your students. Sessions can be assigned to students individually or to your classes.



In GMA, you can make a session from one of our featured activities or a custom activity of your own. Once you have decided which activity you would like to assign as a session, click on it. Then locate and select the **“Make Session”** icon on the bottom right of the activity window.

5. Mixed Practice with Addition and Subtraction

This activity has students practice addition and subtraction.

This level helps you get used to all the GMA gestures that you've practiced so far, such as commuting terms and working with negative signs. The focus of this level is mixed practice with addition and subtraction, and the objective is for you to transform the starting expression to match the goal.

Tasks		
1. Goal state $8 + 4 - 4$ $\hookrightarrow 8 + 0$	2. Goal state $15 - 6$ $\hookrightarrow 9 + 0$	3. Goal state 0 $\hookrightarrow 171 - 171$
4. Goal state $3 + 5 + 5 - 4$ $\hookrightarrow 8 + 1$	5. Goal state $6 - 2 + 7$ $\hookrightarrow 11 - 1$	6. Goal state $4 + 6 - 3 - 7 + 0$ $\hookrightarrow -10 + 0 + 10$
7. Goal state $7 + 16 - 6 - 4$ $\hookrightarrow 7 + 6$	8. Goal state $3 + 6 - 8 + 7$ $\hookrightarrow 10 - 2$	9. Goal state $-45 + c - 17 - 6$ $\hookrightarrow -25 - 20 + c - 23$
10. Goal state	11. Goal state	12. Goal state

CANCEL PREVIEW COPY ACTIVITY **MAKE SESSION**

The rest of the steps can be followed similarly in the **“Create a Session”** section [here](#).

Renaming Activities

1. To rename an activity, go to your **“My Activities”** tab and find the desired activity.



Graspable Math Activities	Activity Bank			GRASPABLE STACHE		
	EXPLORE	FEATURED	MY ACTIVITIES			
Get Started	kim test canvas	6/29/2020	2	MAKE SESSION		
Activity Bank	kim test	6/29/2020	2	MAKE SESSION		
Sessions	IES: Assignment 1	6/26/2020	19	MAKE SESSION		
	Copy of Equations: Literal Equations (PA)	6/19/2020	11	MAKE SESSION		
	Equations: Square Roots (PA)	6/12/2020	12	MAKE SESSION		
	Nick's Exponents	6/10/2020	9	MAKE SESSION		
	Copy of Simplify Algebra Expressions	5/21/2020	10	MAKE SESSION		
	Copy of 11. Introduction to Factoring	4/30/2020	21	MAKE SESSION		
	candace	4/29/2020	0	MAKE SESSION		
	canvas tasks	4/22/2020	4	MAKE SESSION		
	New	3/27/2020	1	MAKE SESSION		

v0.24.1 Privacy policy © 2020 | Graspable, Inc.

- Once you selected the desired activity, locate the name of the activity to the left of the screen, and click on the name or gear symbol next to it.

Activity Bank > canvas tasks GRASPABLE STACHE

canvas tasks MAKE SESSION PREVIEW New Task Type Goal state + ADD TASK ?

1 - Canvas GM Canvas EDIT

2 - Canvas GM Canvas EDIT

3 - Canvas GM Canvas EDIT

4 - Canvas GM Canvas EDIT

Privacy policy © 2020 | Graspable, Inc.

- A window will pop up, where you can rename the activity, include a brief or full description, and make the activity public. Click on the current name, replace it with the new one, and select **“Done”**.



Activity Bank > canvas tasks GRASPABLE STACHE

canvas tasks

1 - Canvas GM Canvas

4 - Canvas GM Canvas

Activity Settings

Public

Allow other teachers to find and duplicate this activity.

Title

Canvas tasks for classroom 1

Brief Description

Full Description

CANCEL DONE

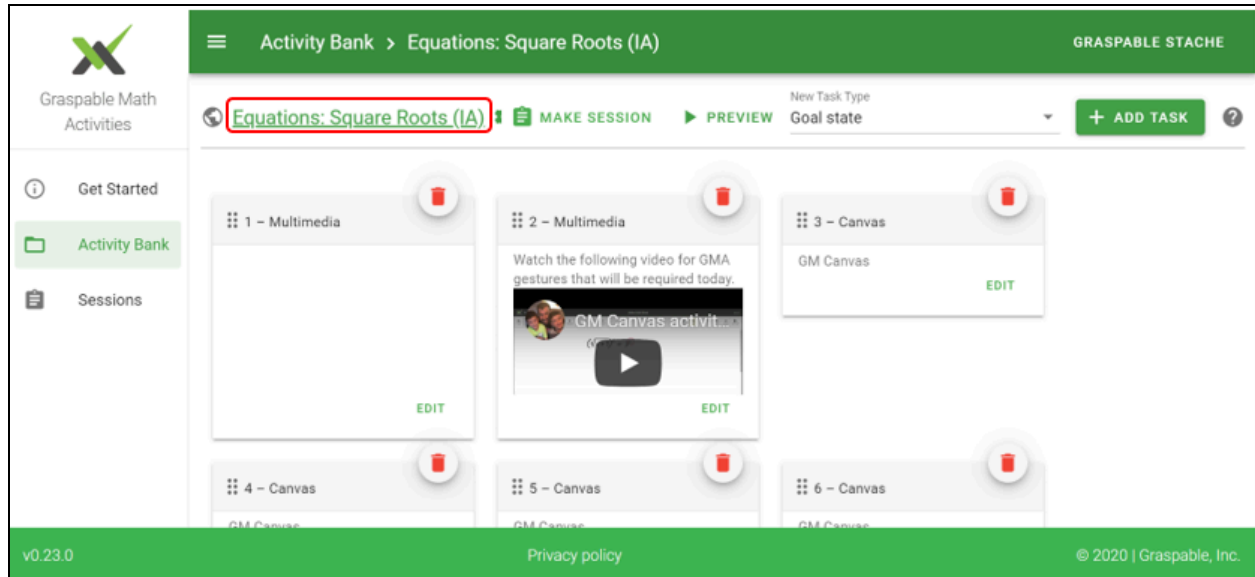
Privacy policy © 2020 | Graspable, Inc.

SHARING ACTIVITIES

Making an Activity Public

When you finish creating an activity, you have the option of making it public so other users can view, do, or copy your activity to make it their own.

1. To make your activity public, locate the name of the activity at the top of the page. Click the name or gear symbol next to it.



2. A menu will pop up that has a toggle to allow you to make your activity public. If the toggle is switched to the left side and is grey, the activity is not public. If the toggle is switched to the right side and is green, the activity is public.

On this menu, you can also modify the **Title**, and add **Brief** and **Full Description** of your activity. If you want to share your activity with other creators, we encourage you to utilize this space to include as much information as you find useful for others.



Activity Settings ×

 **Public** ☒
Allow other teachers to find and duplicate this activity.

Title
Equations: Square Roots (IA)

Brief Description
This is an instructional activity that focuses on the topic of solving equations

Full Description
This activity will expand students' knowledge of solving equations to include the idea of solving equations using square roots. We will begin with simple equations and build a greater understanding by exploring more complicated equations that will require knowledge of

CANCEL **DONE**

Once your activity is public, anyone can find your activity on the GMA's **Explore** page.



The screenshot shows the Graspable Math Activities interface. The top navigation bar is green with the text "Activity Bank" and "GRASPABLE STACHE". Below the navigation bar, there are tabs for "EXPLORE", "FEATURED", and "MY ACTIVITIES". The "EXPLORE" tab is selected and circled in red. On the left sidebar, there are icons for "Get Started", "Activity Bank", and "Sessions". The "Activity Bank" icon is highlighted. In the main content area, there is a search bar with the text "equations: square roots" and a magnifying glass icon, which is also circled in red. Below the search bar, there is a table of activities. The table has columns for "Title", "Owner", "Last Edited", and "# Tasks". The table lists several activities, including "Equations: Square Roots (IA)" and "Equations: Square Roots (BR)". Each activity has a "MAKE SESSION" button next to it. At the bottom of the table, there is a footer with the text "v0.24.1", "Privacy policy", and "© 2020 | Graspable, Inc."

Title	Owner	Last Edited	# Tasks
Equations: Square Roots (IA)	Nick Corley	6/1/2020	15
Equations: Square Roots (IA)	Graspable Stache (you)	7/8/2020	17
Equations: Square Roots (BR)	Nick Corley	5/29/2020	5
Equations: Square Roots (PA)	Nick Corley	6/1/2020	10
Equations: Square Roots (PA)	Graspable Stache (you)	6/12/2020	12

Sharing Activities Using a Public Link

Once you've made your activities public, you can also share your activities directly with other GMA users through public links.

1. Select an activity of yours that is public. To check if an activity is public or not, see if the activity has a "globe" icon next to its name.



Activity Bank

GRASPABLE MATH

EXPLORE

FEATURED

MY ACTIVITIES

My Activities ?

CREATE ACTIVITY

Q

Filter Activities

Title	Last Edited ↓	# Tasks	
Simple Equations 2 Steps: Multiplication (PA)	10/22/2020	27	MAKE SESSION
jonandstacy	10/20/2020	0	MAKE SESSION
Equivalent Expressions Identification - Part 2	10/16/2020	16	MAKE SESSION
Equivalent Expressions Identification - Part 1	10/16/2020	16	MAKE SESSION
shreya	10/16/2020	1	MAKE SESSION
sample	10/12/2020	1	MAKE SESSION

Privacy policy

© 2020 | Graspable, Inc.

- Once you've selected the public activity, you can copy the public link of the activity directly on the browser's URL box. You can send any GMA user this link, and they will be able to open and access your public activity.

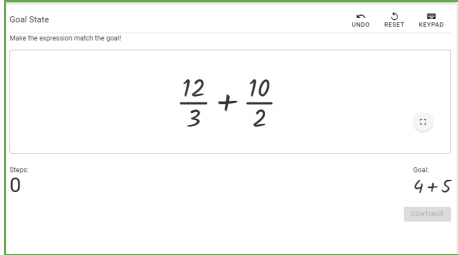
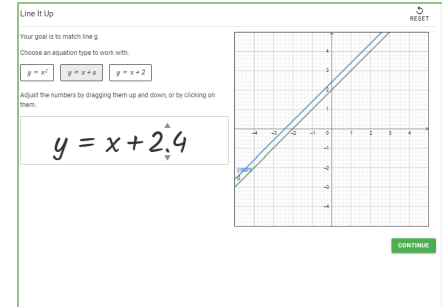
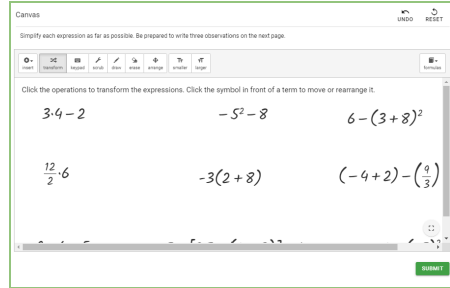
The screenshot shows the Graspable Math Activities interface. The browser's address bar displays the URL: activities.graspablemath.com/teacher/activity-bank/edit/5f77fbfee0454c0011fa3c82. The page title is "Activity Bank > Equivalent Expressions Identification - Part 2". The main content area shows a grid of 8 multiple-choice tasks. The first task is "Are these two ex" with the expression $3b + 4b$. The second task is "Are thes" with the expression "Are thes". The third task is "Are these two e" with the expression $a + 2 = 6$. The fourth task is "Are these two expressi" with the expression "Are these two expressi". The fifth task is "Are these two ex" with the expression "Are these two ex". The sixth task is "Are the" with the expression "Are the". The seventh task is "Are these two ex" with the expression "Are these two ex". The eighth task is "Are thes" with the expression "Are thes".

Below is a public link to one of our activities, Equivalent Expressions Identification - Part 1. Please feel free to click the link and see how you can share and let others access your public activities using public links:

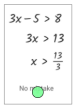


<https://activities.graspablemath.com/teacher/activity-bank/edit/5f75df751d51300012bf92eb>

OVERVIEW OF GRASPABLE MATH TASK TYPES

Goal State	The Goal State task type explores mathematical equivalence. This task allows students to manipulate numbers and mathematical pieces as moving objects. Students can move numbers and terms around to match the goal expression or equation.	
Line it Up	The Line it Up task explores graphs and their coefficients. Students will learn the structures and roles of formulas by choosing or dragging graph equations to match a goal graph.	
Canvas	The Canvas task is similar to a whiteboard, where teachers can incorporate open-ended questions for students. Teachers and students can create functions, graphs, insert videos, images,...freely on Canvas.	



Multimedia	The Multimedia task is an open-ended page for teachers to present media to students, whether it be text, video, or photos.	Multimedia If you wanted to topple over a domino the size of a skyscraper, how many dominoes would you need? Think of the Equation $y = mx + b$  Make sure you check over your answer on the next problem.
Multiple Choice	The Multiple Choice task is a traditional multiple-choice format. However, the freedom of this task allows teachers to have multiple right answers, create surveys, or incorporate different media into questions.	Multiple Choice What is the longest that an elephant has ever lived? (That we know of) ☐ 10 years ☐ 40 years ☐ 80 years ☒ 140 years I picked this answer: Because I know elephants live over 100. Check
Hot Spot	The Hot Spot task lets teachers incorporate a picture into the questions, and students can click on specific parts of the picture to answer the questions. The possibilities are endless with Hot Spot!	Hot Spot  Mark the place or places where there are mistakes. If no mistake was made, mark no mistake. Hotspot markers: Click and drag onto the image. If there is a mistake, describe it. If there is no mistake, write no mistake. No mistake Continue

GOAL STATE

Overview

The Goal State task in GMA presents an innovative way for students to experience mathematical equivalence. In Goal State, numbers and mathematical symbols become virtual objects that students can pick up and move, and the goal is to turn an original math expression or equation to match a goal expression.

Goal State is especially useful for younger students who are learning the rules of algebra. Thanks to the error feedback system built into Goal State, which provides students with immediate feedback throughout the task, students will understand what

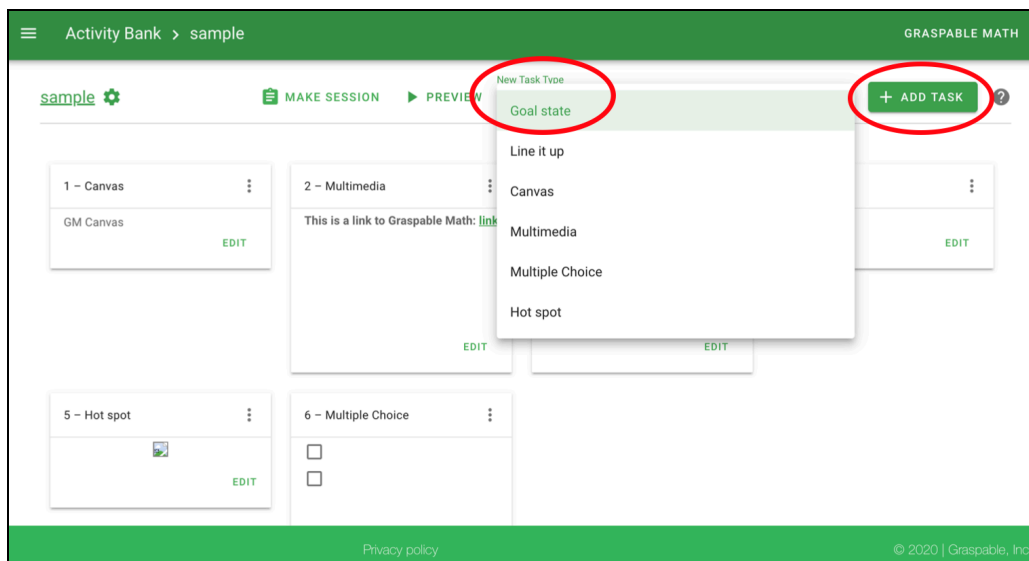


they did right and wrong -- and can quickly and intuitively learn the rules of mathematics.

Below, we will guide you on how to create a typical Goal State task.

Adding a New Goal State Task (Task Builder)

1. To create a new Goal State task, first create a new activity or select the existing activity where you want to add the Goal State task.
Then click on the dropdown menu under the “**New Task Type**” line, and select “**Goal state**”. Then click on the “**+ Add Task**” button.



2. A task card for Goal State will be created, and a task menu for the Goal State will automatically appear.



sample

Goal State ?

×

☐ Include reflection prompt ?

Initial State ?

Goal State ?

Instructions for students ?

Normal

÷

B

I

↶

↷

↵

↶

↷

≡

≡

≡

A

A

I_x

f_x

Make the expression match the goal!

CANCEL

DONE

- First, you would want to type in the initial and goal states for your students to work with. These states can be anything from math expressions to equations. To put in the states, click on the boxes for each state and a keypad will pop up. You can either click on the keypad, or simply type on your own keyboard to create the initial and goal states.

Goal State ?

×

☐ Include reflection prompt ?

Initial State ?

Goal State ?

Instructions for students ?

Normal

÷

B

I

↶

↷

↵

↶

↷

≡

≡

≡

A

A

I_x

f_x

Make the expression match the goal!

CANCEL

DONE

Cancel

$y = 16 + 5x^2 + 7 + x^2$

Done

abc

7

8

9

÷

x

y

a²

a³

aⁿ

qβy

4

5

6

*

(

)

[...]

√

n√

1

2

3

-

,

x_n

log

ln

Δ

0

.

=

+

e

i

□

long var

<

▽

>



sample

Goal State ?

☒ Include reflection prompt ?

Question asked after student does this task to reflect on it
What type of equation is this?

Initial State ?

$y = 16 + 5x^2 + 7 + x^2$

Goal State ?

$\hookrightarrow y = 6x^2 + 23$

Instructions for students ?

Normal $\div$ B I $\hookrightarrow$ $\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$

$\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$

Make the expression match the goal!

CANCEL DONE

Privacy policy

4. You can also write instructions to students on what they should do. The default instruction is always: “Make the expression match the goal”, but please feel free to modify it based on your choice and your students’ needs.

Instructions for students ?

Normal $\div$ B I $\hookrightarrow$ $\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$

$\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$

Make the expression match the goal!

CANCEL DONE

5. You can also add a reflection question for your students. This is a great way for your students to reflect on their work and deepen their understanding. On top of the Goal State task card, check the “**Include reflection prompt**” box, and write the question you want your students to answer.



Goal State ?

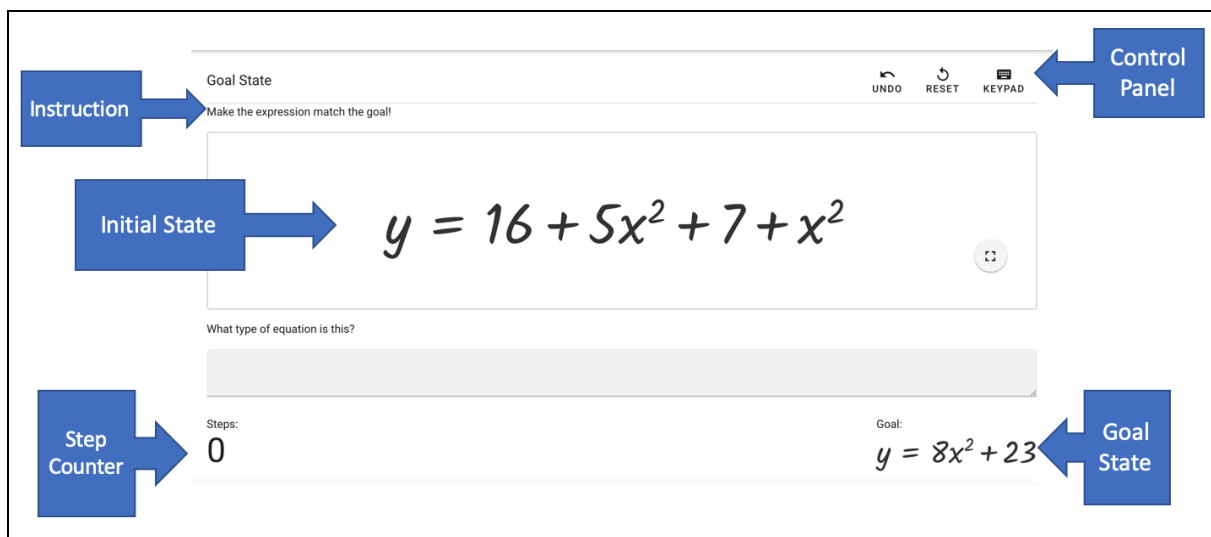
☒ Include reflection prompt ?

Question asked after student does this task to reflect on it

What type of equation is this?

Student View of Goal State Tasks

Below is an overview of what students see when they reach a Goal State task:



1. Students can interact with the initial state by picking up the math objects / terms, and moving them around. To see all of the gestures students can perform, please visit the [Gesture User Guide section](#).
2. Once students successfully manipulate the math expression to match the goal state, the active canvas will turn green.



Goal State

Make the expression match the goal!

$$y = 6x^2 + 23$$

What type of equation is this?

Steps: 2

Goal: $y = 6x^2 + 23$

SUBMIT

- Students can also use the control panel on the top left to **undo** a step, **reset** the problem, or use the **keypad** to enter equivalent terms. To see how to use the keypad, please visit the [Keypad Mode](#) section in our user guide.
- Once they have completed the Goal State task and answered the reflection prompt (if applicable), students can submit their answer by clicking on the **"Submit"** button at the bottom right.

Goal State

Make the expression match the goal!

$$y = 6x^2 + 23$$

What type of equation is this?

This looks like an equation for a parabola.

Steps: 2

Goal: $y = 6x^2 + 23$

SUBMIT

Teacher View of Student Work in Goal State



Once your students have worked on the Goal State task, you will see task cards representing the work of each student in the **Session** tab on GMA.

1. These task cards show students' transformation work, whether they reached the correct goal state, and their answer to the reflection prompt (if applicable).

Sessions > DBMZ6 > Task 7 GRASPABLE MATH

Selected task:

$$y = 16 + 5x^2 + 7 + x^2$$

$$\hookrightarrow y = 6x^2 + 23$$

Student Work

Vy N	Jenny C	Hailey A	Nic C	Paul P
$y = 6x^2 + 23$	$y = 6x^2 + 23$	$y = 6x^2 + 23$	$y = 16 + 5x^2 + 7 + x^2$	$y = 23 + 6x^2$
What type of equation is this?	What type of equation is this?	What type of equation is this?	What type of equation is this?	What type of equation is this?
Graph equation	This is a parabola equation.	I'm not sure		I'm not sure

Privacy policy © 2020 | Graspable, Inc.

2. You can also click on a specific task card to expand the view and see individual students' work in detail.

Vy N's Work

$$y = 16 + 5x^2 + 7 + x^2$$

$$y = 16 + 7 + (5+1)x^2$$

$$y = 16 + 7 + 6x^2$$

$$y = 23 + 6x^2$$

$$y = 6x^2 + 23$$



GRASPABLE MATH ACTIVITIES (GMA) CANVAS

Introduction

Canvas is similar to a traditional white board, but with much more potential and flexibility. GMA Canvas provides a platform where users can freely interact and explore our dynamic algebra notation system. Using the application, teachers can integrate open-ended problems into larger assignments.

ADDING TO GMA CANVAS

Adding A New Canvas Task (Task Builder)

To create a new Canvas Task, follow the steps below.

1. Open the activity you would like to create the Canvas Type activity in. Then locate and click on the **“New Task Type”** bar on the top right of the screen.



Activity Bank > Fractions: Simplify (IA) PAUL PACHECO

Fractions: Simplify (IA) MAKE SESSION PREVIEW New Task Type Goal state + ADD TASK ?

1 - Multimedia EDIT

2 - Canvas GM Canvas EDIT

3 - Goal state $\frac{15}{20}$ $\rightarrow \frac{3 \cdot 5}{4 \cdot 5}$ EDIT

4 - Goal state $\frac{10}{25}$ $\rightarrow \frac{2 \cdot 5}{5 \cdot 5}$ EDIT

5 - Goal state $\frac{10}{12}$ $\rightarrow \frac{5 \cdot 2}{6 \cdot 2}$ EDIT

6 - Goal state $\frac{13}{32}$ $\rightarrow \frac{13}{4 \cdot 8}$ EDIT

7 - Goal state $\frac{28}{24}$ $\rightarrow \frac{7 \cdot 4}{6 \cdot 4}$ EDIT

8 - Canvas GM Canvas EDIT

v0.26.8 Privacy policy © 2020 | Graspable, Inc.

2. A drop-down menu will open. Select **“Canvas”** then click **“ADD TASK”**.

New Task Type

Goal state

Line it up

Canvas

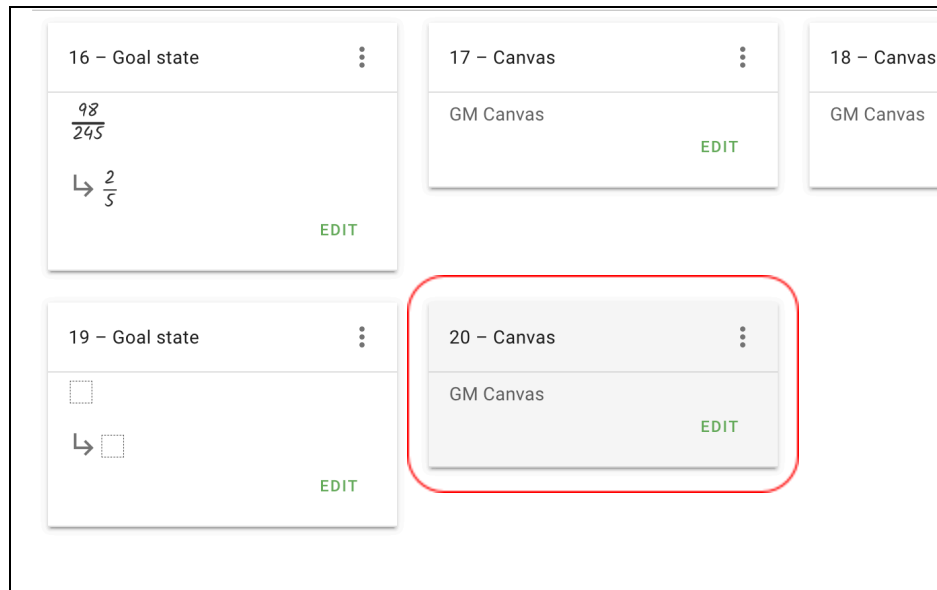
Multimedia

Multiple Choice

Hot spot

+ ADD TASK

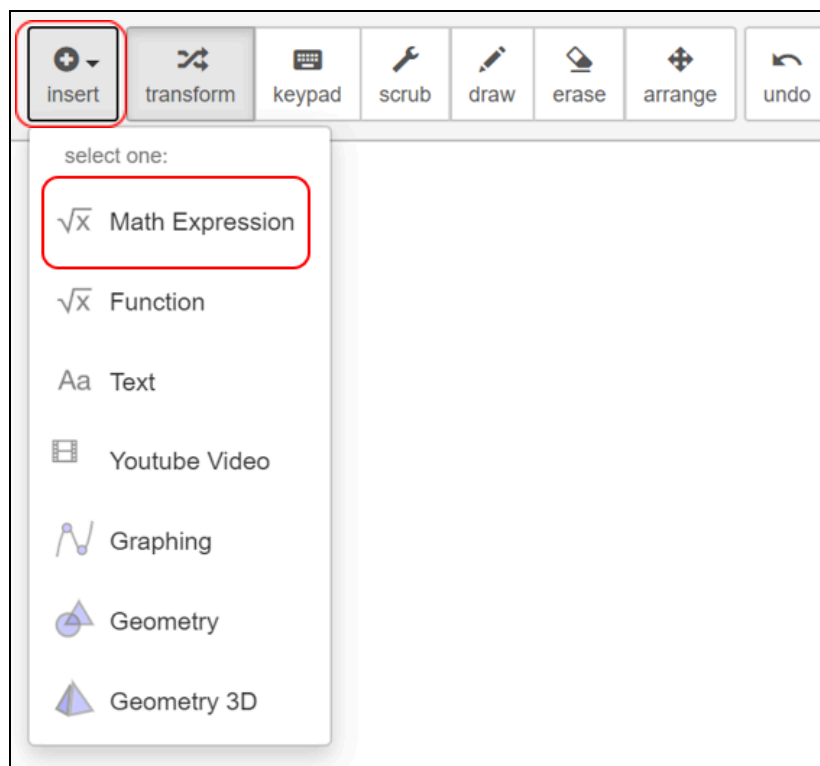
3. The new Canvas Task will be created at the end of your activity. You can click on the task to edit it, or drag the task wherever you'd like within the activity.



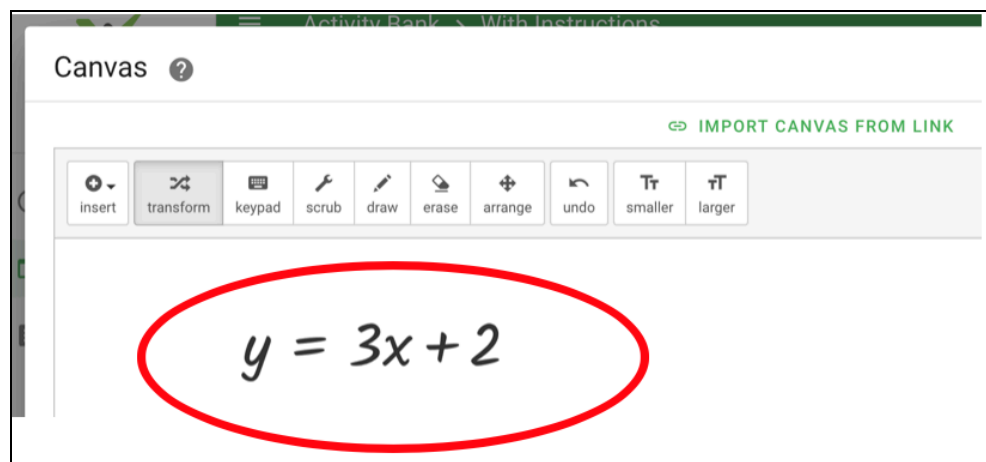
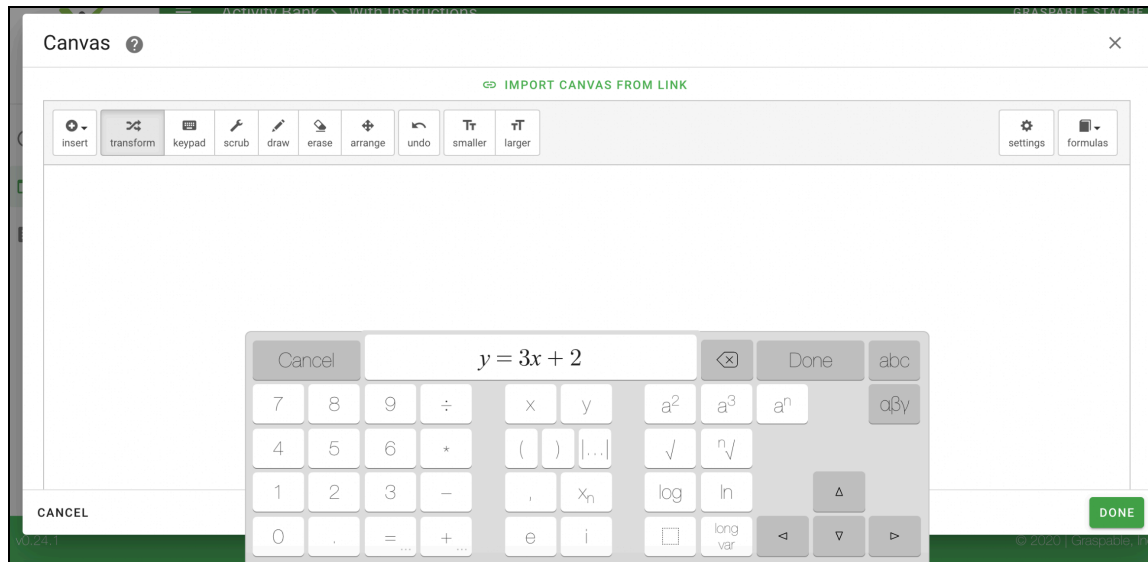
Adding an Expression

On GMA Canvas, users can insert math expressions that other users can interact with.

1. To insert a math expression on Canvas, select the **“Insert”** button on the top left of the Canvas page. After clicking this icon, a dropdown menu will appear, listing multiple things that you can insert into the Canvas, including math expressions, functions, videos and graphs.
2. Select **“Math Expression”** to insert a math equation or expression.



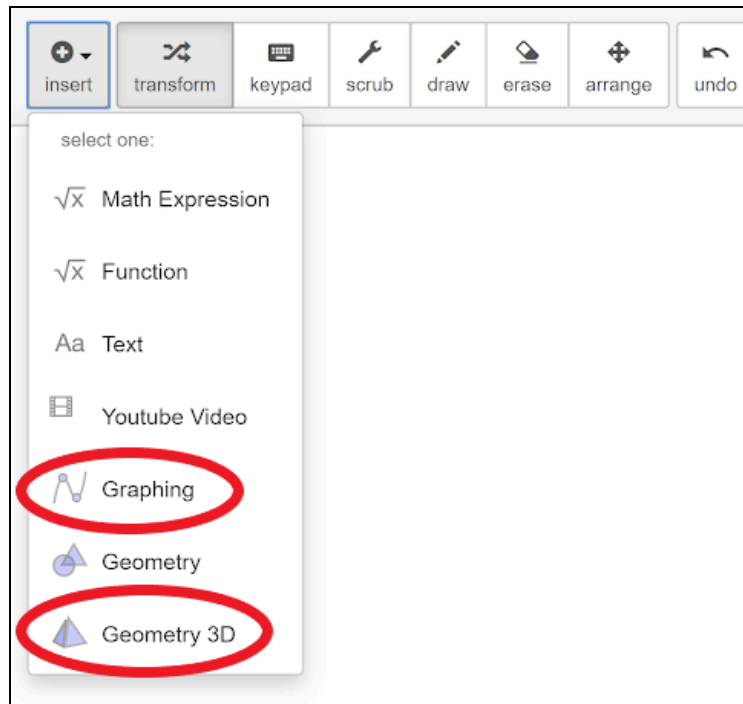
3. After selecting “**Math Expression**”, a keyboard will pop up on the screen. You can create a math expression or equation either by clicking on numbers and symbols on the keypad or by typing in your desired expression.
4. Select “**Done**” when you are finished, and the expression you created will then appear on your Canvas.



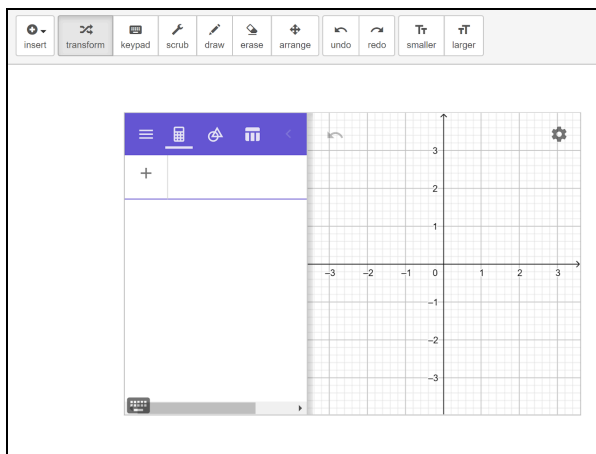
Adding a Graph

Creating a graph on Canvas is very simple, and is especially helpful for users who are teaching / learning algebraic graphing.

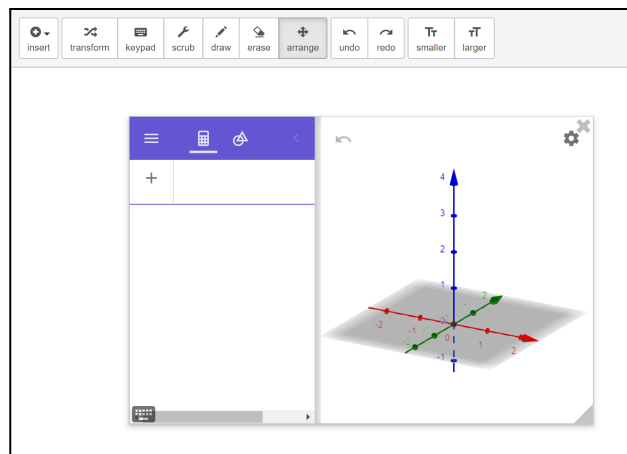
1. To add a graph, select the **“Insert”** button on the top left corner of the page.
 - Select the **“Graphing”** option to add a **two-dimensional** graphing window,
 - Select the **“Geometry 3D”** option to create **three-dimensional** graphs.



2D Graph (Graphing)



3D Graph (Geometry 3D)

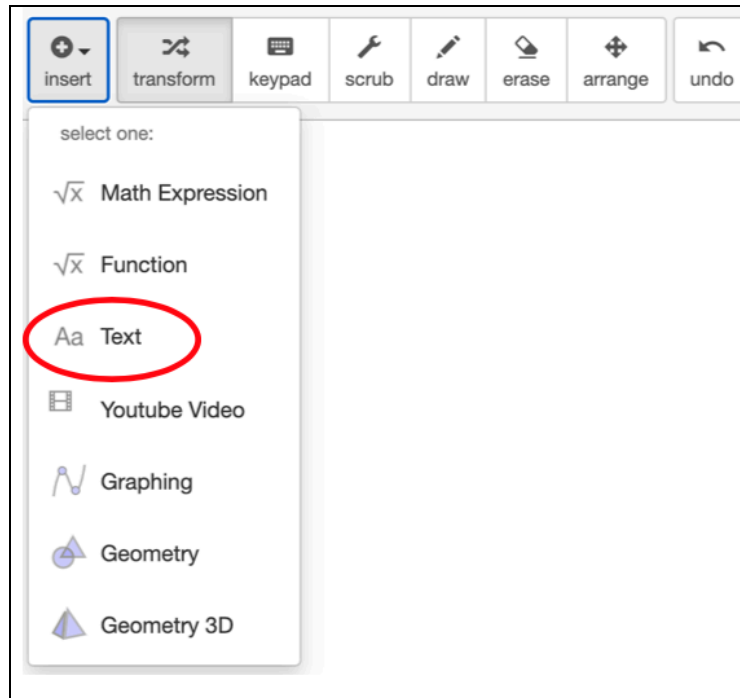


Adding Text

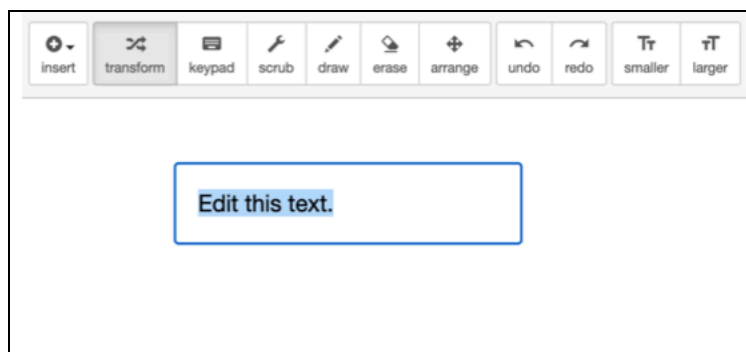
Adding text on a GMA Canvas is how you can provide direction and instructions to your students regarding the assigned task.

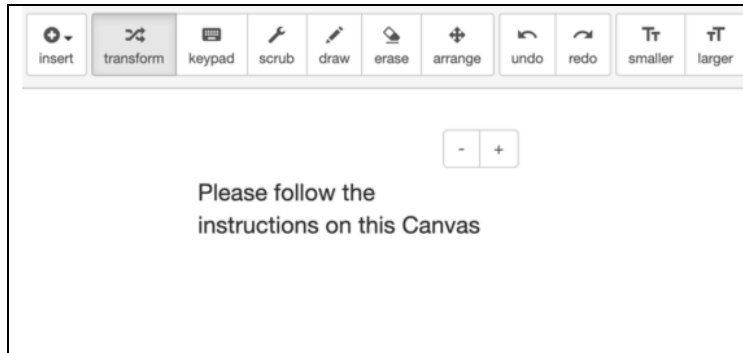


1. To insert text on your Canvas, click on **"Insert"** then select **"Text"** from the dropdown menu.



2. A text box will appear on your Canvas with the line **"Edit this text"**. Click on the text box and type in text to create any instructions or direction for your students.





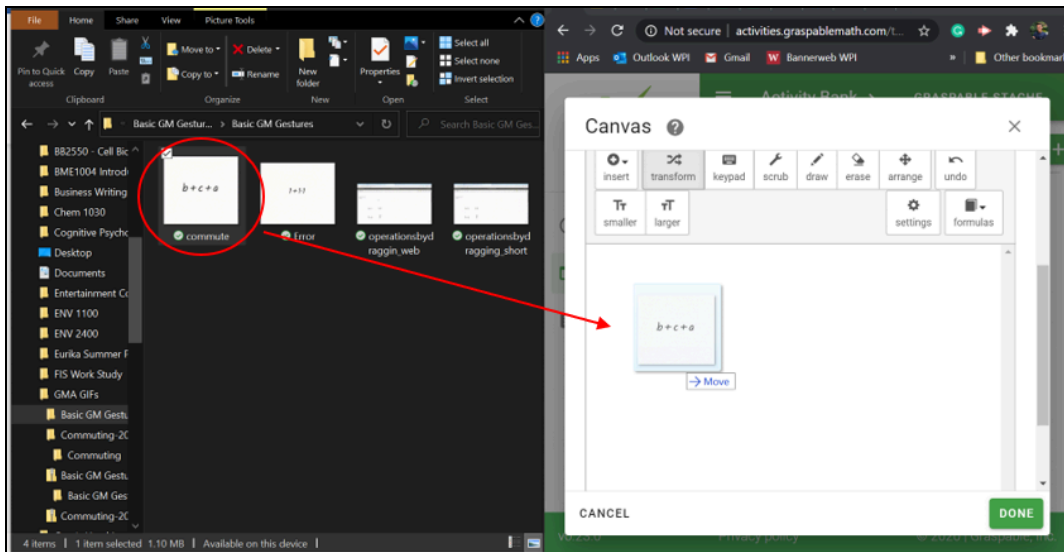
3. You can increase or decrease the size of your text by clicking on the “-/+” button on the upper left corner of the text box.
4. Click anywhere on the canvas outside of the text box when you have finished editing.

Insert Image/Video

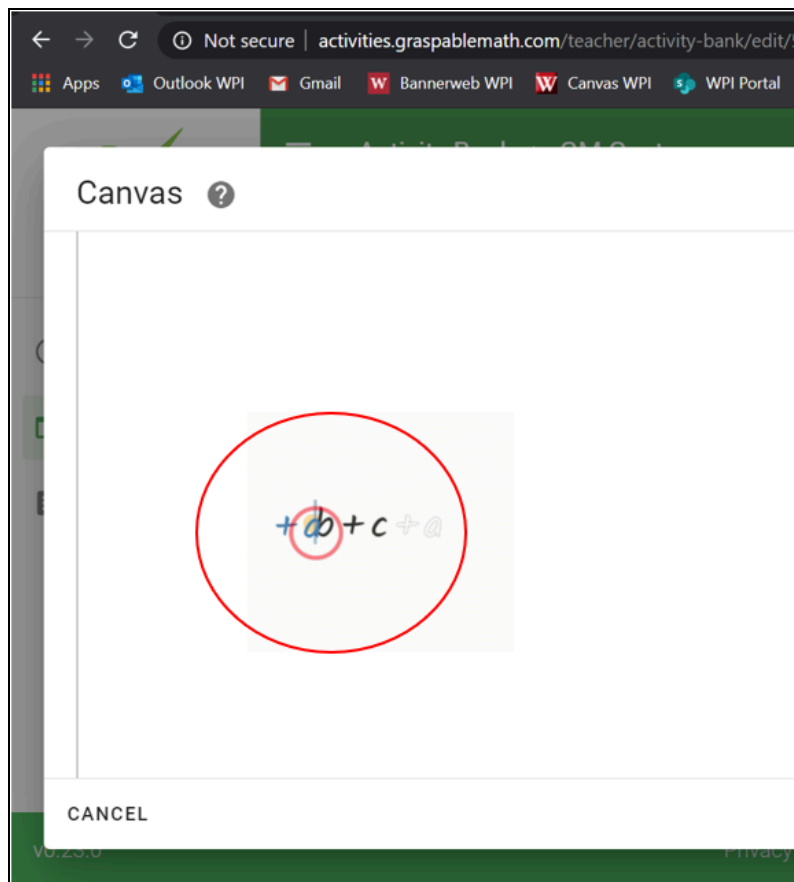
Inserting an Image or GIF

All images or GIFs that you would like to add to your Canvas page must first be downloaded onto your computer.

1. While having your Canvas open, open your file folder containing the image/gif you’d like to insert. You can add images/gifs onto your Canvas task as easily as dragging it onto the page.

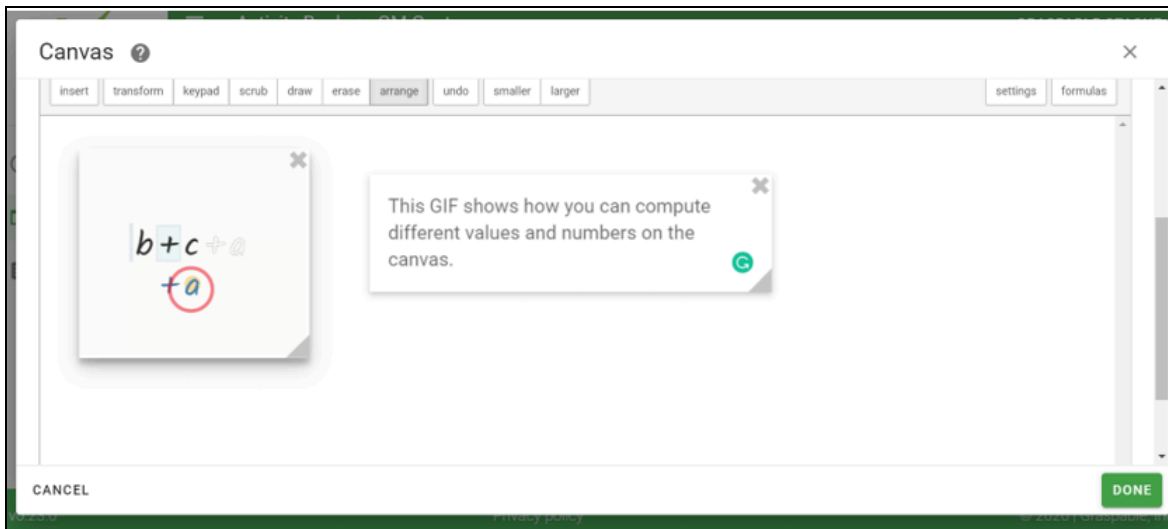


2. When you see your image/gif displayed on your Canvas, that means it is successfully uploaded.





3. Once your file has been uploaded, you can arrange or resize it to fit your needs. You can also place text, math equations, graphs, etc. next to the image for description or instruction.

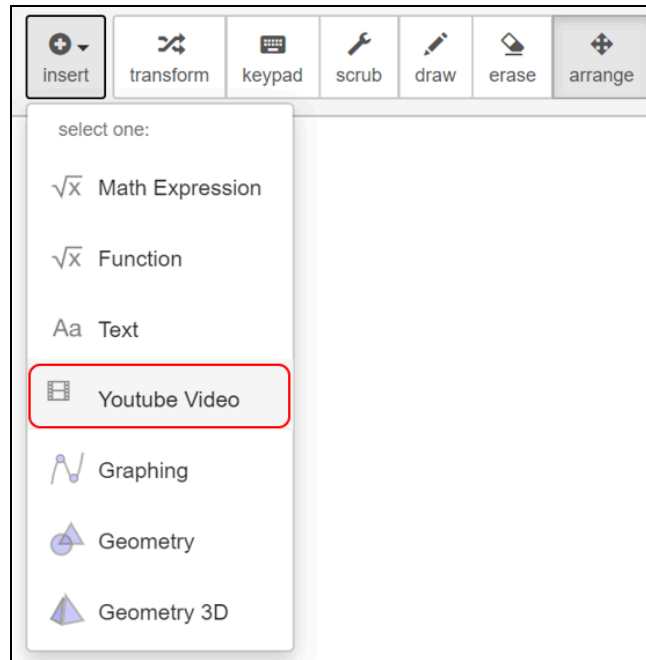


Inserting a YouTube Video onto the GMA Canvas

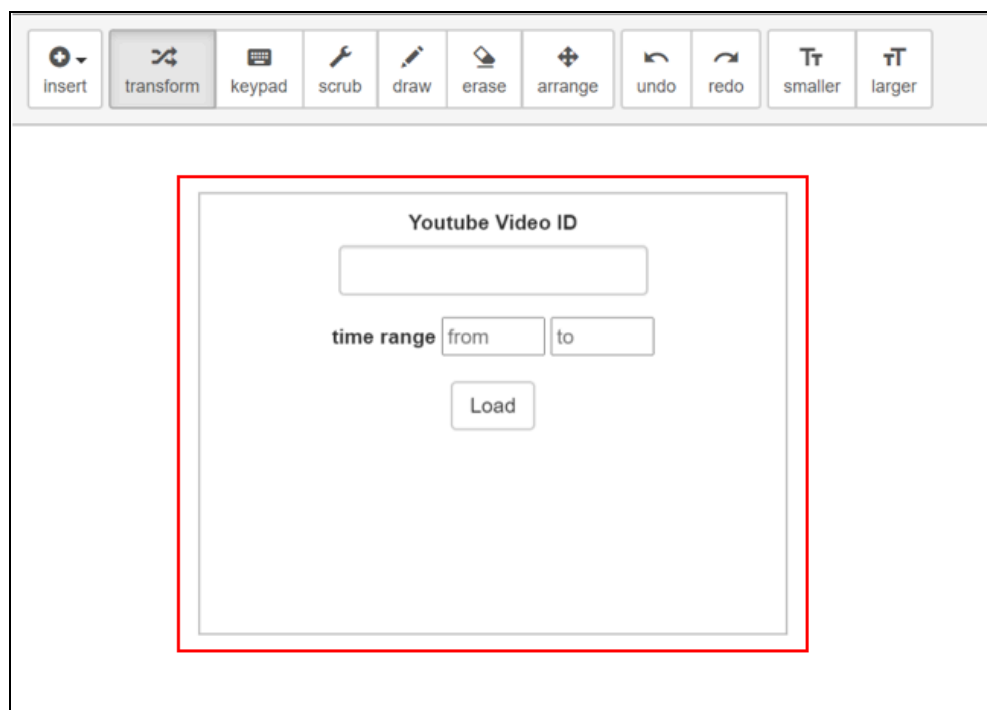
At the time being, GMA only allows YouTube videos to be published onto the Canvas. Videos that are not publicly available on YouTube can still be posted on the Canvas page. We strongly encourage teachers to create their own videos to best tailor the needs of their students.

Please feel free to visit our YouTube channel [Graspable Stache](#) for plenty of videos and resources on GMA content, instructions, and gestures!

1. To insert a video onto the Canvas, locate the **“Insert”** button on the top-right of the canvas, then select **“Youtube Video”** in the dropdown menu.



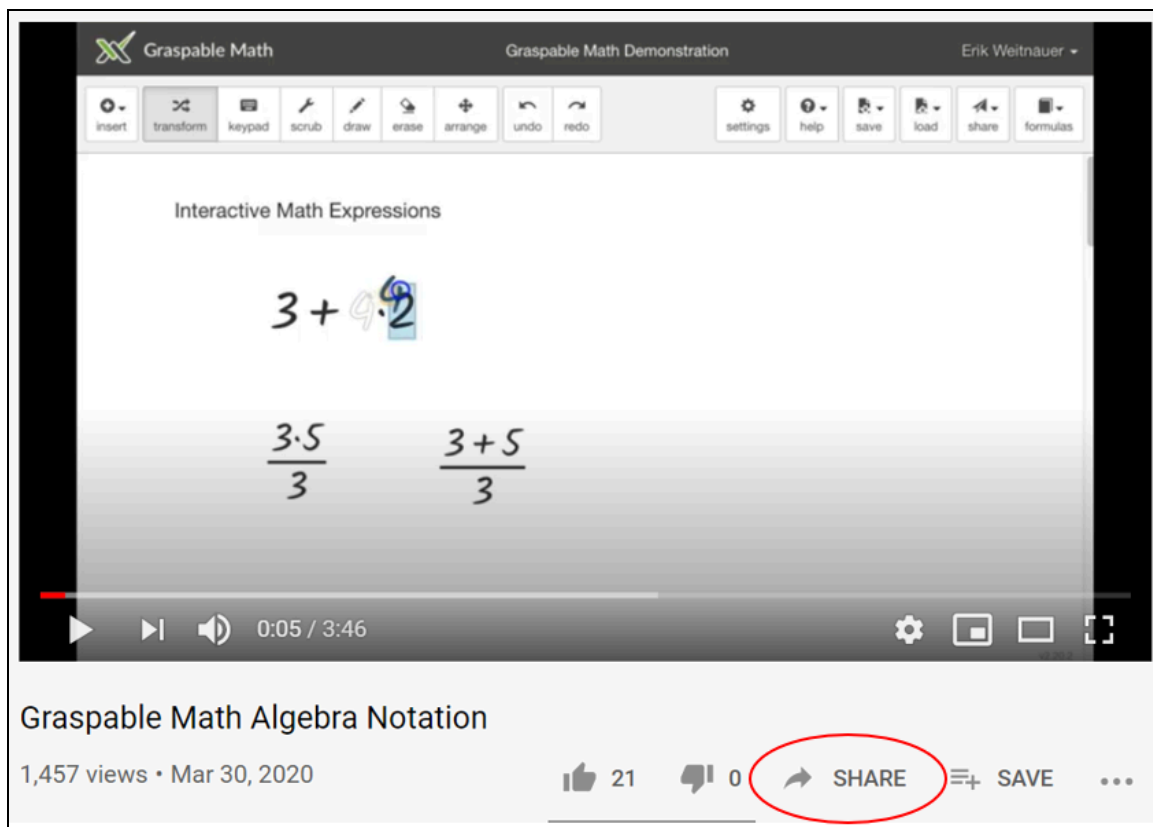
2. The “**Youtube Video ID**” window will appear.

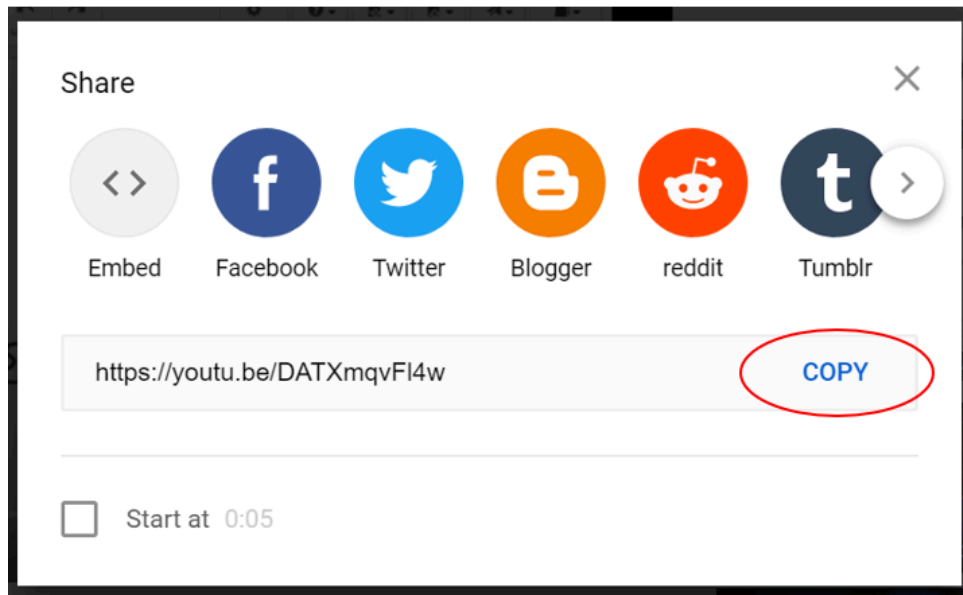




- To link your video, you will need to copy the URL for your video (see figure below) into the first text box, underneath **"Youtube Video ID"**. If you would like to specify a custom range for the starting and ending point of the video clip, type them into the boxes located to the right of **"time range"**. If unspecified, the entire video clip will be added.

To obtain your YouTube video's link, click the **"share"** button in the bottom right corner. Then click **"copy"** on the right side of the link.





Here is an example of how to fill out the “**Youtube Video ID Window**”.

Youtube Video ID

https://youtu.be/DATXmqvFI4w

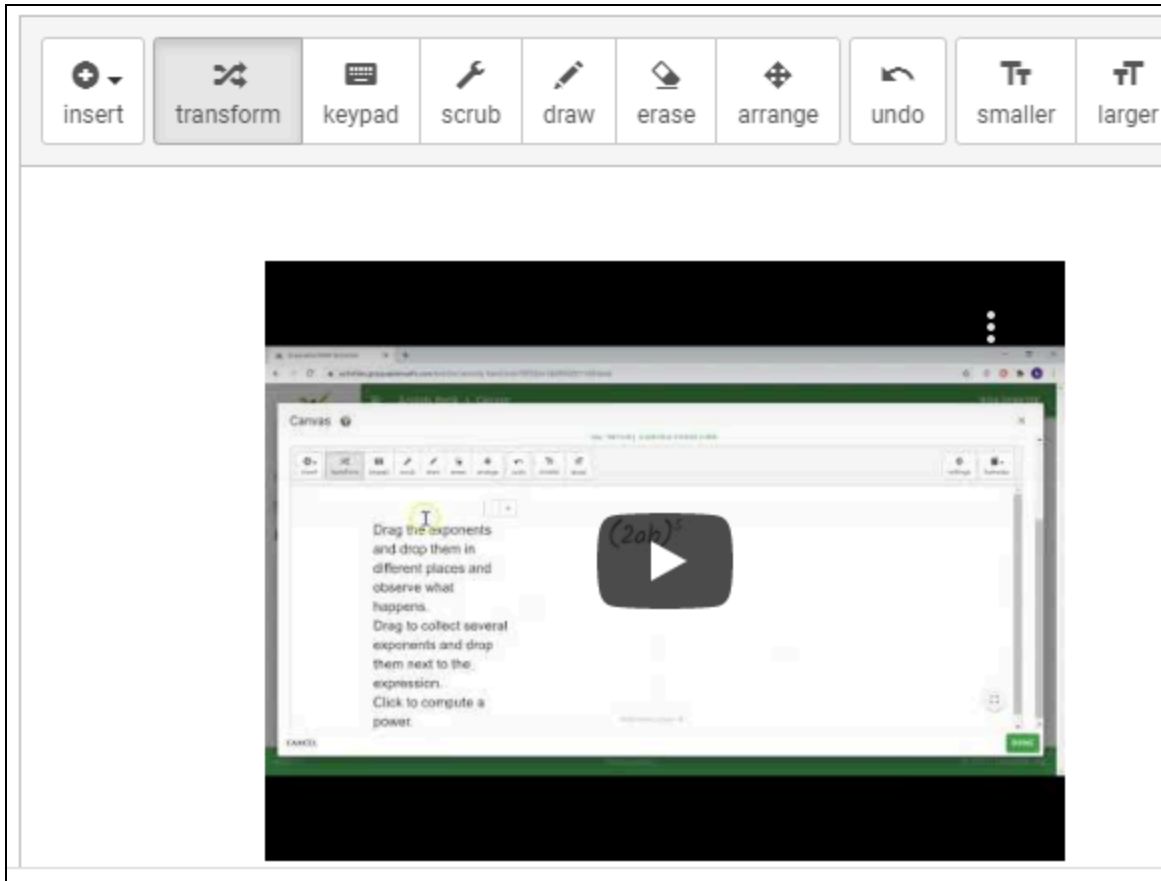
time range

0:00

5:35

Load

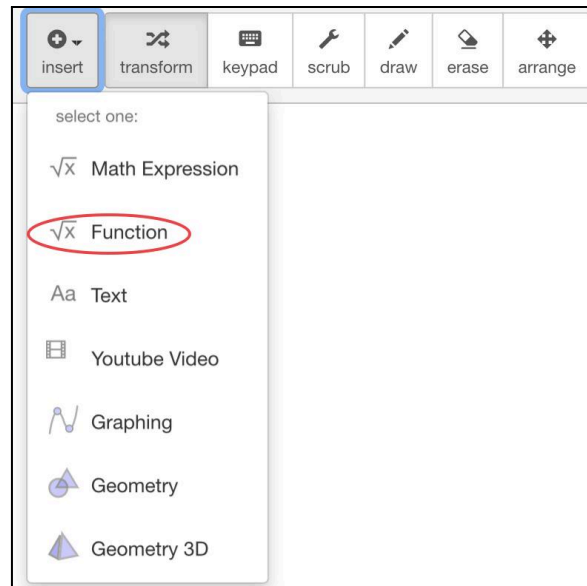
4. Click “**Load**” to complete add the video to the page. Here is the complete result.



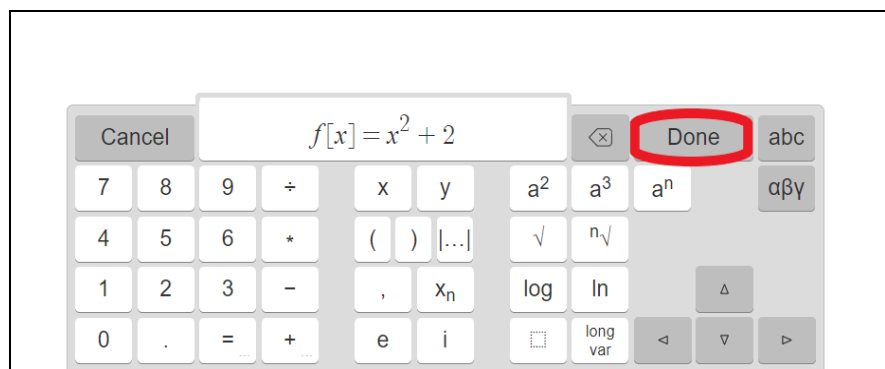
Insert Function

Functions are an integral part of mathematics, and Canvas allows you to manipulate every part of a function to give your students a deeper understanding of the inner workings of mathematical properties.

1. Select the **“Insert”** button on the toolbar, then in the dropdown menu, select **“Function”**.



2. A keypad will pop up with the text " $f[x] = x$ ". You can replace the " x " on the right-hand side of the equal sign with your desired function. Then select "**Done**".



Importing a Canvas from graspablemath.com

You can also import the Canvases you have created on Graspable Math (GM) into Graspable Math Activities (GMA) and assign them as activities to your students. This import function allows you to utilize the flexibility of GM Canvas, and then conveniently assign Canvases as activities in GMA!

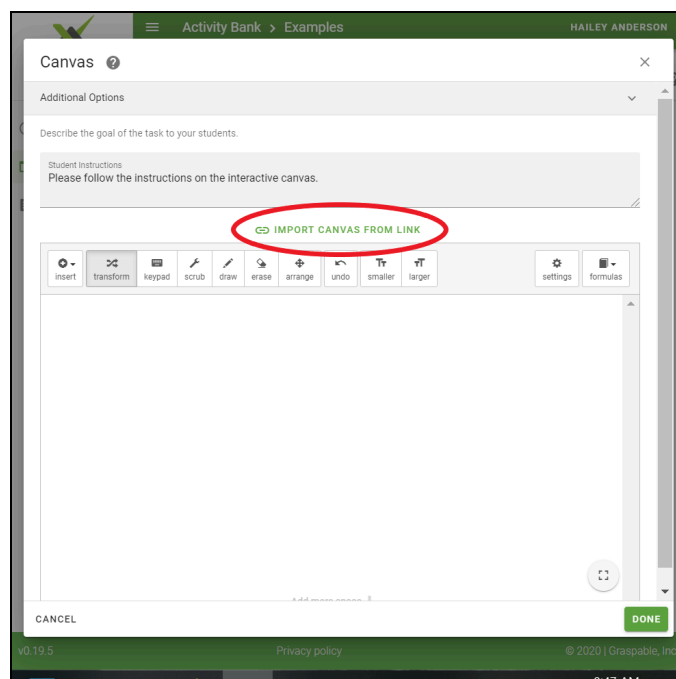
To learn how to create a Canvas task using GM Canvas, please see [this guide](#).



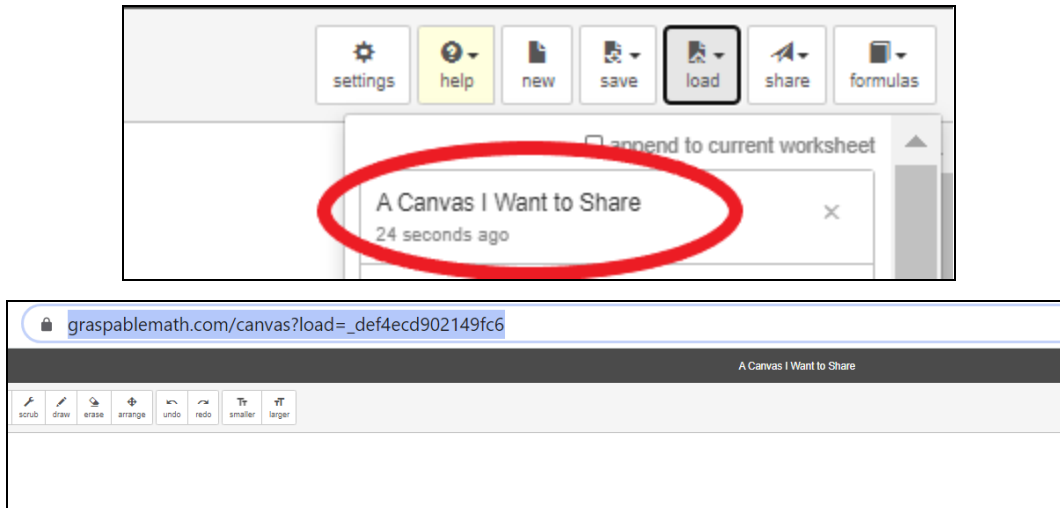
To begin the process of importing a GM Canvas, first log into your account on the GMA website: <https://activities.graspablemath.com/>. Create a new activity or modify an existing activity. Then create a new Canvas task (select “**Canvas**” in the drop down for “**New Task Type**” and then hit the “**+ Add Task**” button).



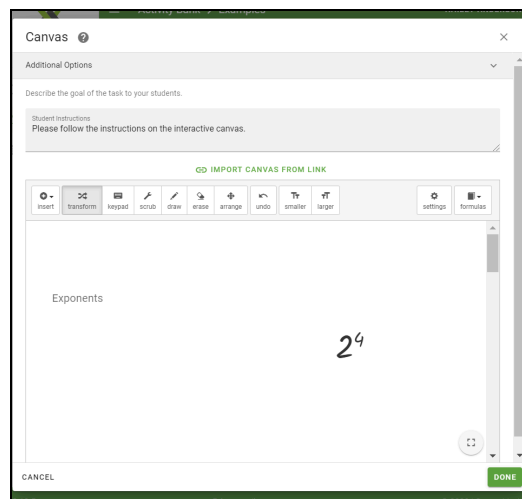
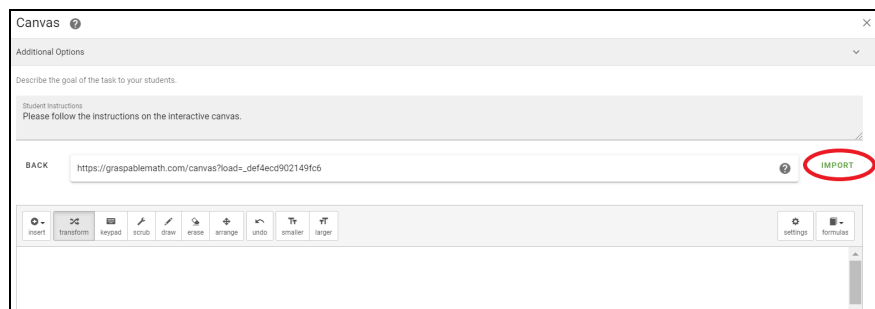
When the popup window appears, click the green line indicating “**Import Canvas From Link**”.



In another browser window or tab, go to <https://graspablemath.com/canvas> and click “**Load**” to see previously made canvases. Select the canvas that you want to import, then copy the URL link.



Go back to the GMA website, paste the URL link in the box provided and click **“Import.”** Your GM Canvas will be imported to GMA and displayed on your GMA Canvas task. Select **“Done”** when you are ready.





Adding a Reflection Prompt

Reflection prompts are great for gaining a better insight into students' understanding and progress. Including prompts in GMA Canvas tasks can also help students reflect on the tasks they complete and the answers they provide.

1. Click on the downward arrow next to **"Additional Options"** in the upper right.

The screenshot shows a modal window titled 'Canvas' with a question mark icon and a close button (X). Below the title is a section labeled 'Additional Options' with a downward-pointing arrow icon circled in red. Underneath, there is a text input area with the placeholder 'Describe the goal of the task to your students.' and a box labeled 'Student Instructions' containing the text 'Please follow the instructions on the interactive canvas.' At the bottom, there is a green link that says 'IMPORT CANVAS FROM LINK' with a chain-link icon.

2. A dropdown menu will appear. Check the box next to **"Include reflection prompt"**.

The screenshot shows the same 'Canvas' modal window. The 'Additional Options' section is expanded, showing a checkbox labeled 'Include reflection prompt' which is circled in red. There is also a question mark icon next to the checkbox. The 'Student Instructions' box and the 'IMPORT CANVAS FROM LINK' link are still visible at the bottom.

3. A box for reflective questions will be displayed, where you can type in your question for your students.



Canvas ?

Additional Options

☒ Include reflection prompt

?

Question asked after student does this task to reflect on it

Below is how your reflection prompt will be displayed for students in a GMA Canvas task (below the canvas).

Canvas

UNDO RESET

Solve for x.

insert transform keypad scrub draw erase arrange smaller larger formulas

$$y = 5x^2 + 2$$

Add more space ↓

Was the path you took the most efficient one?

SUBMIT

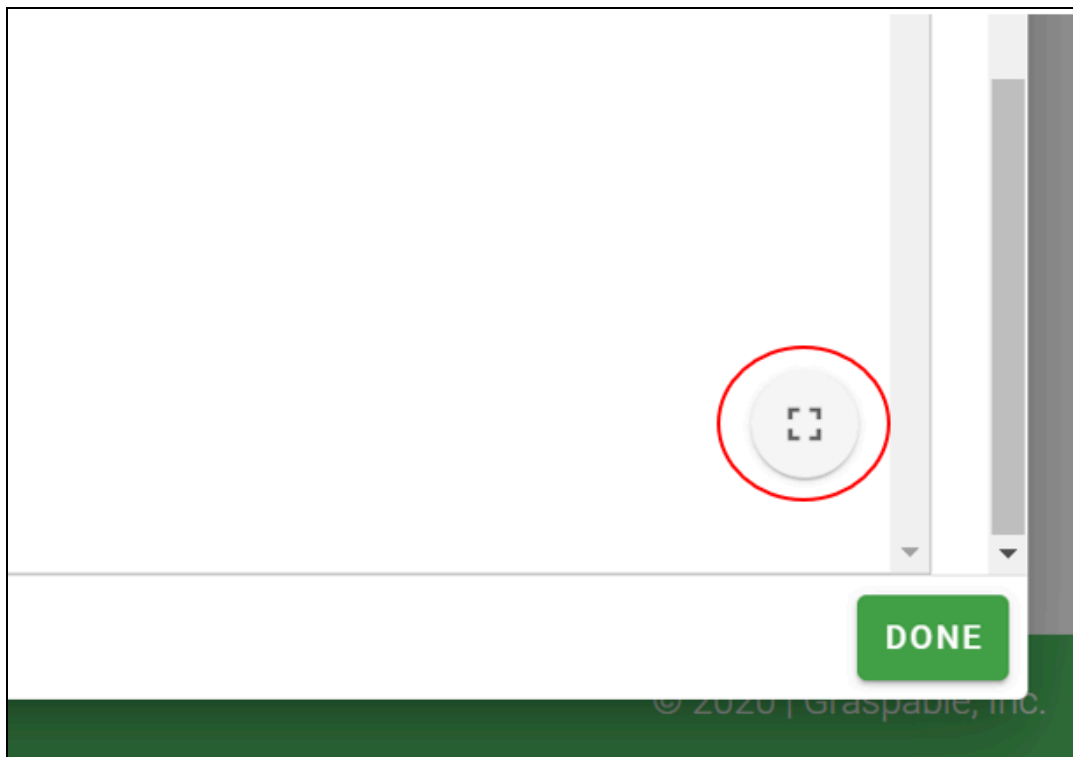
GMA CANVAS TOOLS



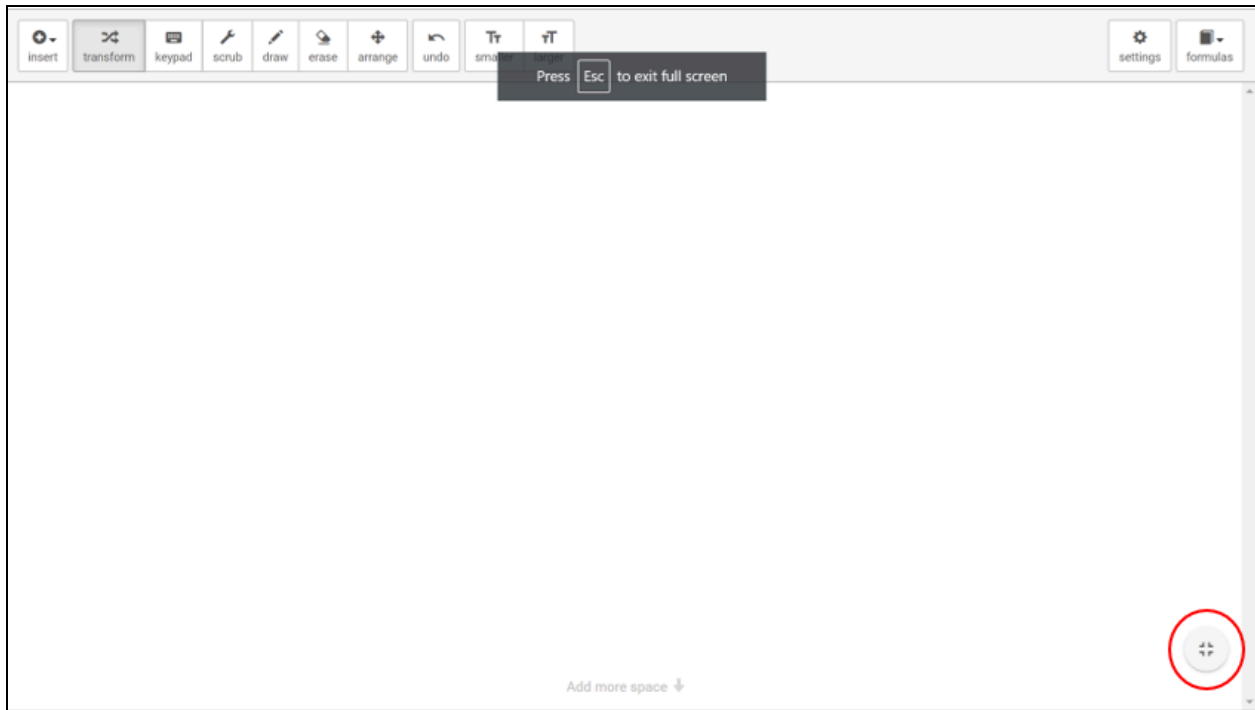
Go Fullscreen

Teacher's POV

While creating a Canvas activity on GMA, you can go fullscreen to get a better view of your Canvas, as well as expand the workspace. To expand your Canvas workspace to fullscreen, locate and click on the expand button on the bottom right of the screen.



Once your screen is expanded, you can minimize your screen to go back to the original task menu. Locate the minimize button at the bottom right of the screen, or press “**Esc**” on the top left side of your keyboard.



Student's POV

While working on an activity as a student, you can also go fullscreen to get a better view. Click on the expand button on the bottom right of the screen.



Teacher Pre... < This is the teacher preview. To let your students work on this activity, exit the preview and create a session. EXIT PREVIEW

Tasks |< |>

- 1. Multimedia ☒
- 2. Multimedia ☐
- 3. Goal state ☐
- 4. Goal state ☐
- 5. Goal state ☐
- 6. Canvas ☐
- 7. Canvas ☐
- 8. Canvas ☐
- 9. Canvas ☐
- 10. Canvas ☐
- 11. Canvas ☐
- 12. Canvas ☐

Goal State

Solve the given equation for y, and try to match the goal state.

$x + y = 8$

Steps: 0

Goal: $y = -x + 8$

CONTINUE

UNDO RESET KEYPAD

Your screen will then enter fullscreen mode. To minimize your screen and go back to the original screen, locate the minimize button at the bottom right of the screen, or press “Esc” on the top left side of your keyboard.

Press **Esc** to exit full screen

$x + y = 8$

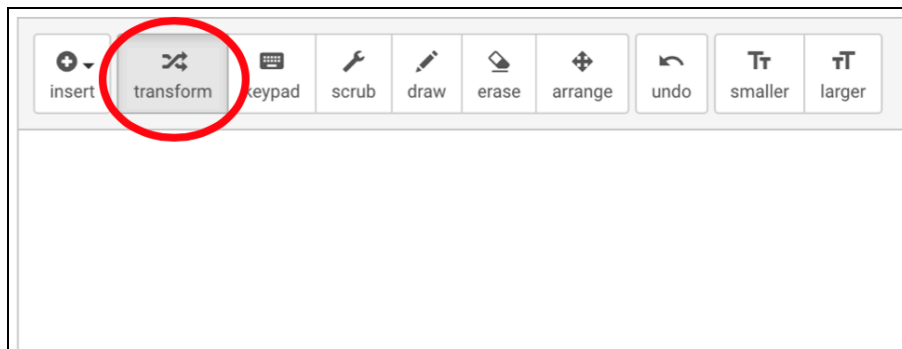
Minimize button (bottom right)



Transform Mode

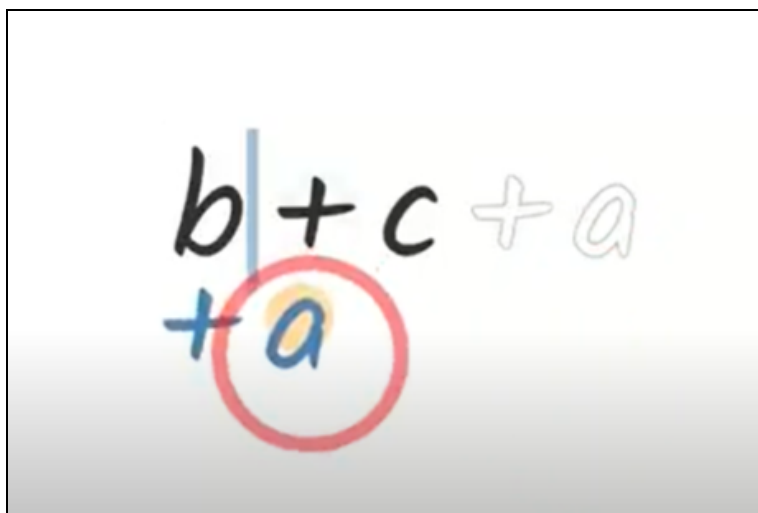
The Transform mode in Canvas is a critical function to know! This mode allows you and your students to manipulate equations to mathematically transform expressions. In this mode, you can also show the history of the problem transformations or replicate an equation.

1. To use this mode, select the “**Transform**” button on the top left corner of the toolbar.



Solving Equations

In Transform mode, you can click and drag terms in order to solve math equations.



To learn more about the gestures, look into the [gesture tutorials](#).



Showing History

After you solved a math equation on Canvas, you can see the history of all of your transformations by dragging down the circle next to your final equation.

$$x > \frac{2}{5}$$

↓

$$12x > 2x + 4$$

$$12x - 2x > 4$$

$$10x > 4$$

$$x > \frac{4}{10}$$

$$x > \frac{2 \cdot 2}{5 \cdot 2}$$

$$x > \frac{2}{5}$$

If there are two stacked circles shown next to an equation, that means there are more steps that can be shown.

$$12x > 2x + 4 \circ$$

$$6x > x + \frac{4}{2} \circ \circ$$

$$6x > x + 2 \circ$$

$$6x - x > 2 \circ$$

$$5x > 2 \circ$$

$$x > \frac{2}{5} \circ$$



Replicating An Equation

In order to replicate an equation, drag the circle next to the equation to the area of the canvas you would want to place the replica.

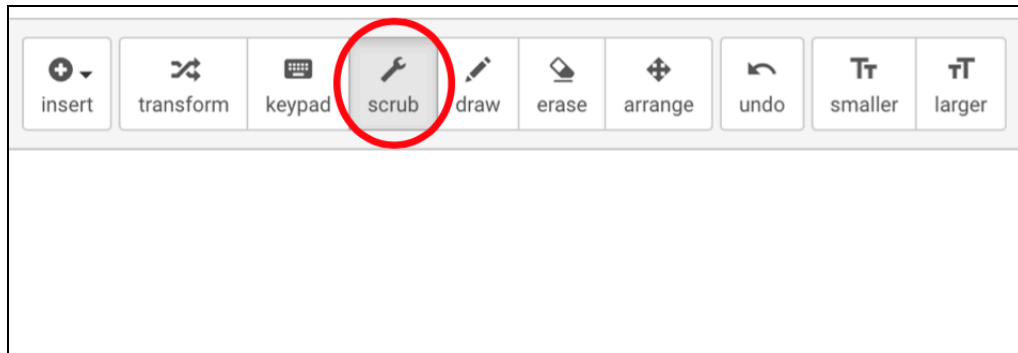
$12x > 2x + 4$

$12x > 2x + 4$ $12x > 2x + 4$

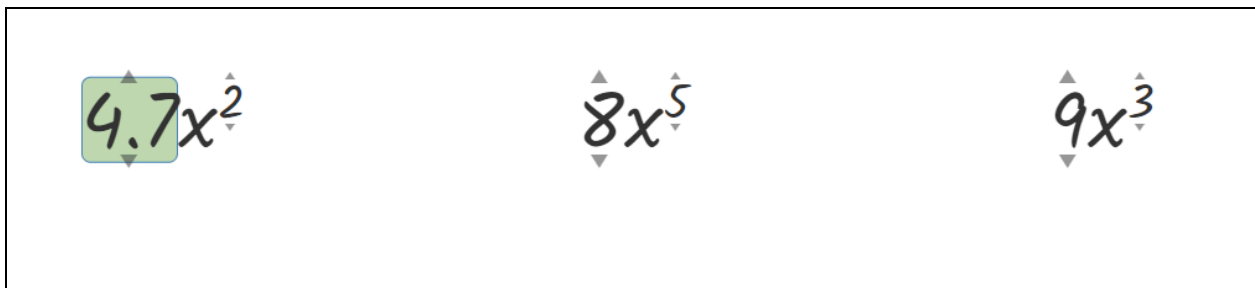
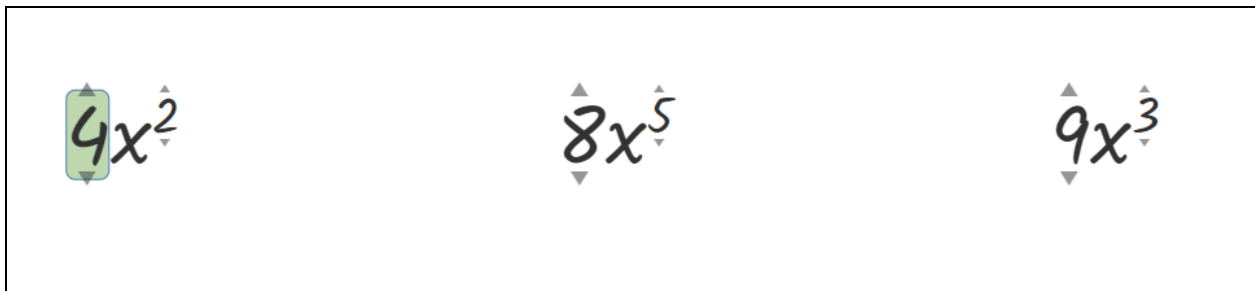
Scrubbing

Scrubbing is a tool that allows you or your students to change the value of any number in the Canvas by clicking on the number and using a sliding motion via mouse or trackpad. Scrubbing is especially useful for when you want students to see the incremental changes in math expressions.

1. To scrub any number, select the **“Scrub”** button on the tool tab, then a pair of arrows will appear on top and under any number that can be scrubbed.



2. To increase the value, click on the number you wish to change, click on your mouse / mousepad, hold and scroll up.



3. To decrease the value, click on the number you wish to change, click on your mouse / mousepad, hold and scroll down.



$$4x^2$$

$$8x^5$$

$$9x^3$$

$$2.7x^2 \circ$$

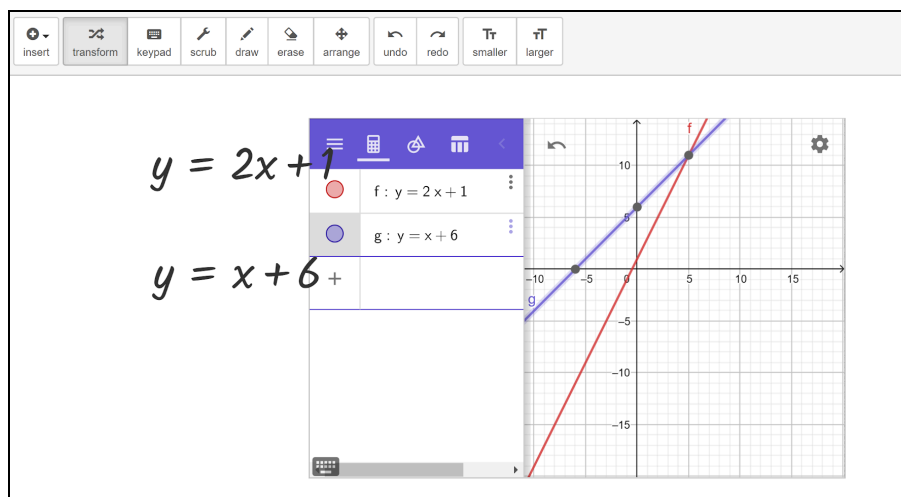
$$8x^5$$

$$9x^3$$

Arranging

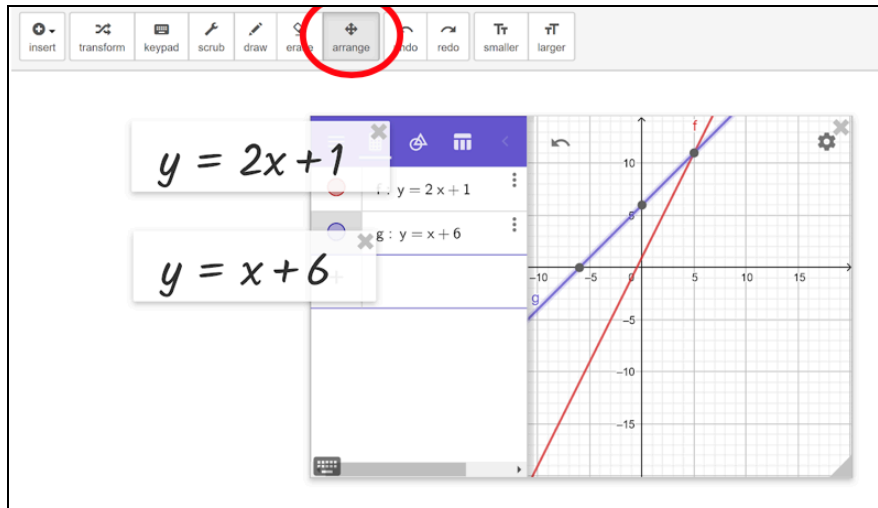
The “**Arrange**” tool will help you organize your work on Canvas. You can use this tool to **arrange or delete** the content on your Canvas.

For instance, the Canvas below has overlapping content (equations on top of graph), which makes it bothersome for users to see and navigate. This is an example of how the “**Arrange**” tool can benefit you greatly.

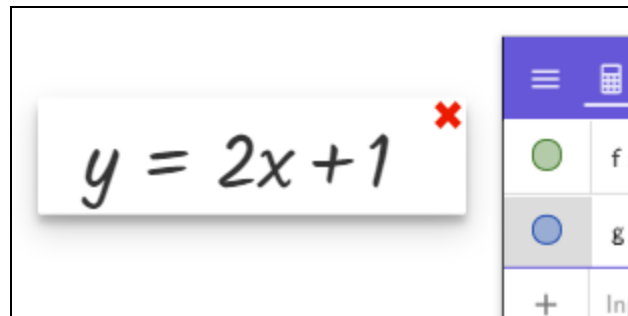




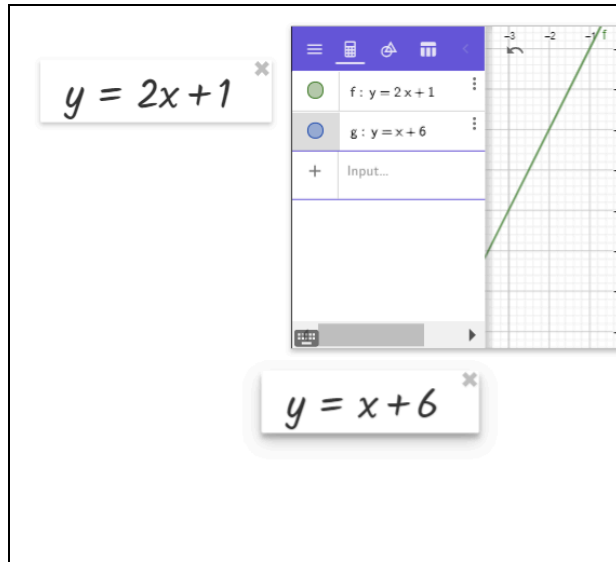
1. Select the “**Arrange**” tool in the middle of the tool bar. All pieces of content you’ve created on Canvas will be displayed in overlapping boxes, which can be moved or deleted.



2. To delete a piece of content, hover over the box of content you wish to delete, and click on the **x** on the top right of the box.



3. In order to move and organize objects, click and drag a box of content to its new location.

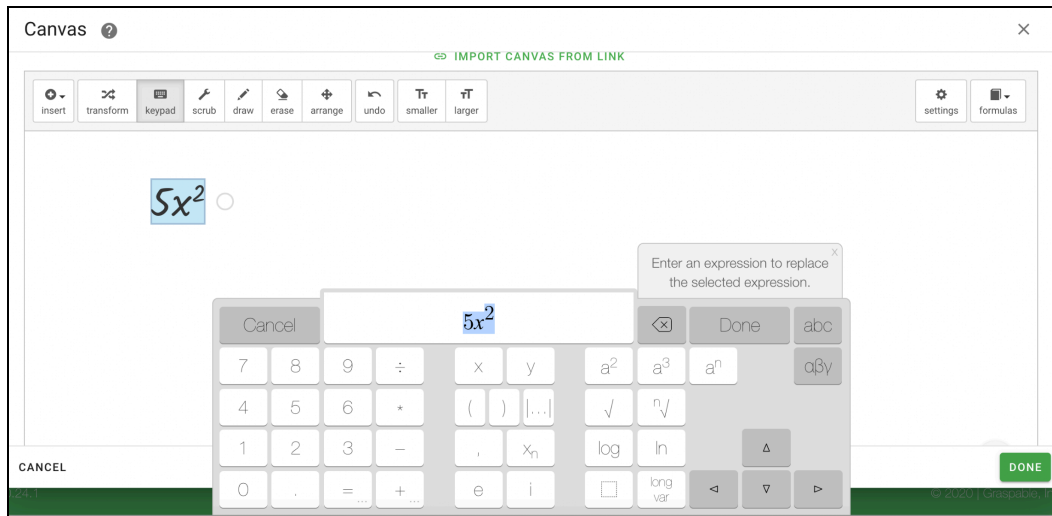


Keypad Mode

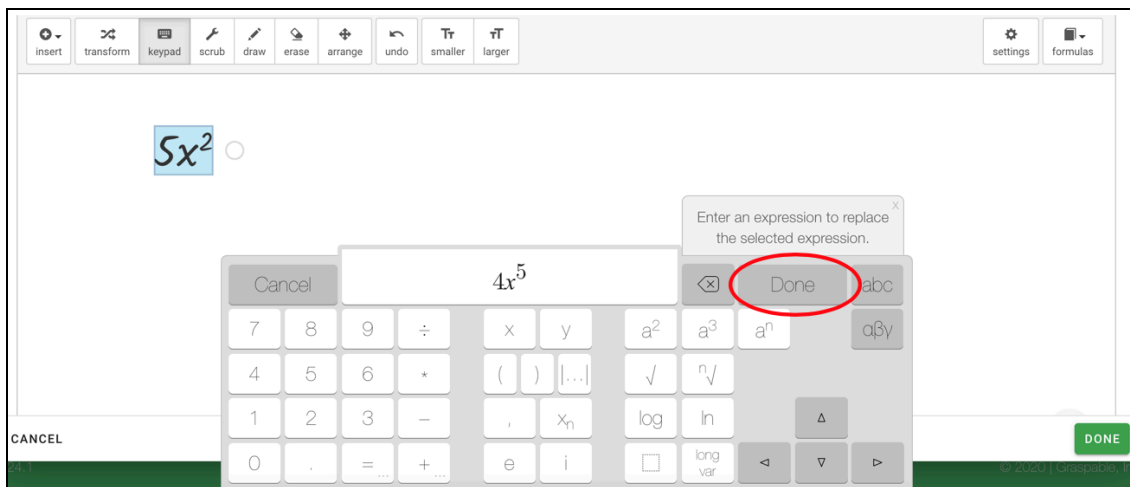
The keypad allows you to modify existing math expressions. Using the keypad, you can type in any changes to the expression, from changing the coefficient of a variable to changing its exponent.

Changing a term using the keypad

1. Select the **"Keyboard"** button on the top left of the page, then select the term you want to modify.



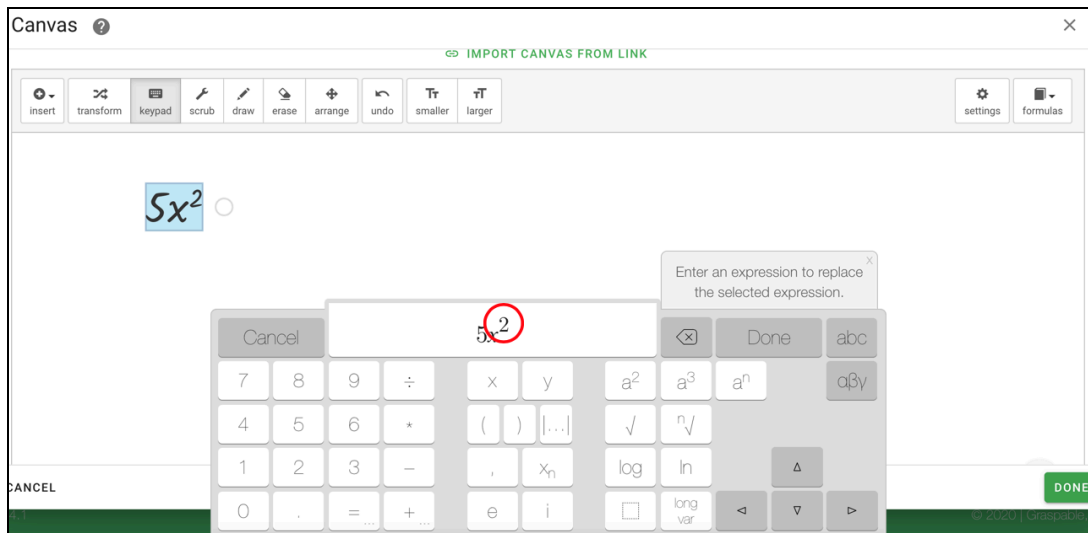
- On the keypad, type in the new term you want to replace the highlighted term, and click **“Done”** twice to confirm the change. The old term will be modified into your desired new term.



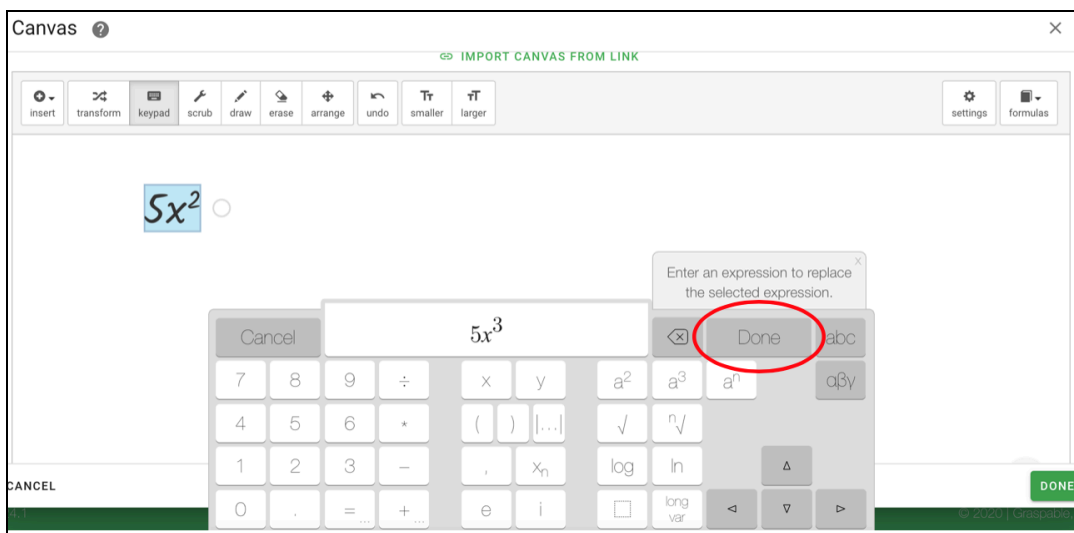


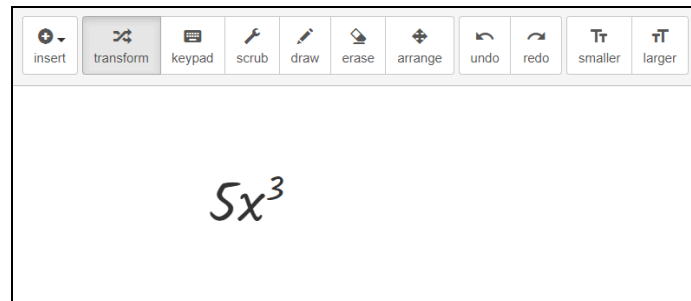
Changing part of a term using the keypad

1. Select the “**Keyboard**” button on the top left of the page, then select the section of a term you want to modify. In the example below, we are showing you how to modify the exponent part within a term.



2. On the keypad, make the desired change, and click “**Done**” twice. The old exponent will be replaced with the new exponent.

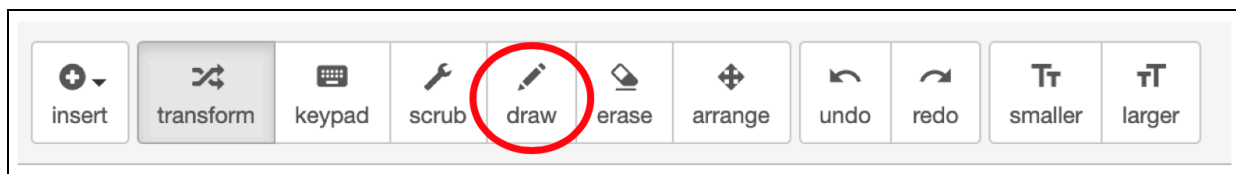




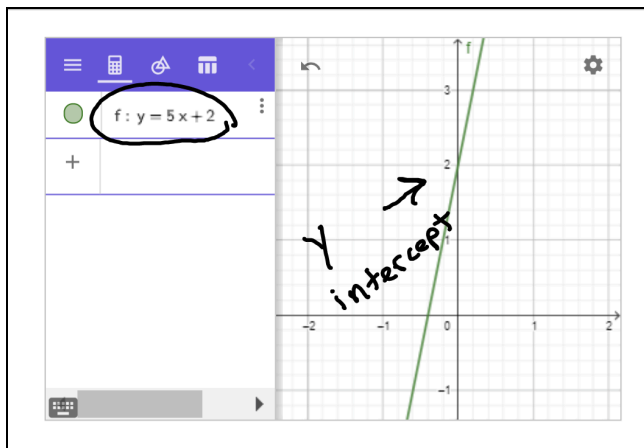
Drawing Mode

The drawing mode is a useful tool for working out problems by hand, as well as highlighting and annotating materials.

1. In order to draw on Canvas, select the “**Draw**” button on the toolbar.



2. Click and drag the mouse or use a stylus to draw on the Canvas. Any materials on Canvas can be drawn on, including graphs, pictures and videos.



$$\frac{y-2}{5} = x$$

$$y = 5x + 2$$

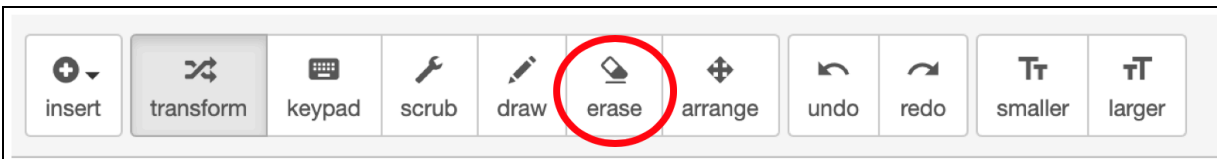
$$y - 2 = \frac{5x}{5}$$

$$\boxed{\frac{y-2}{5} = x}$$

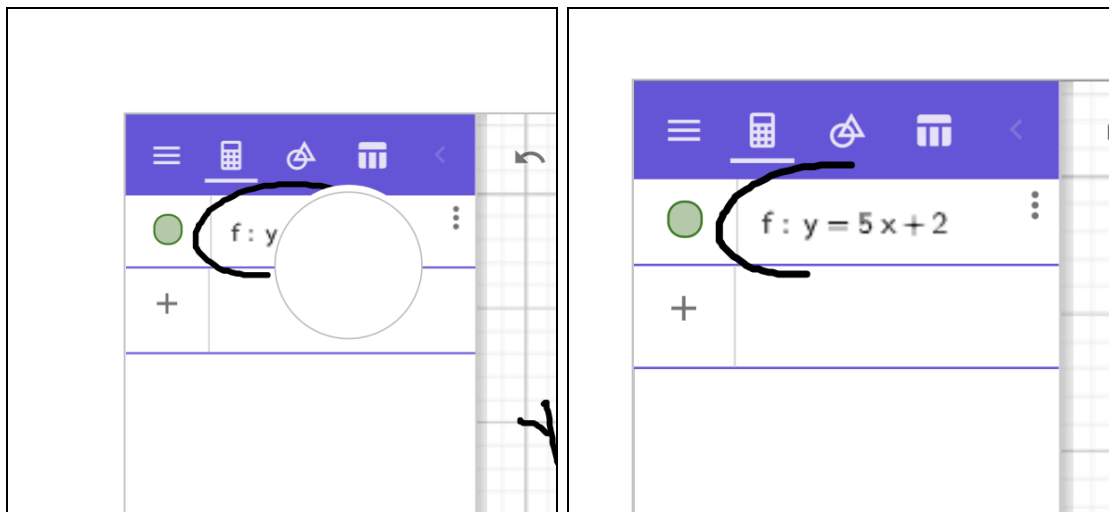


How To Erase

1. To erase your drawing on the Canvas, select the “**Erase**” button next to the drawing button.



2. A white circle will appear that will erase anything it hovers over. Drag the circle around to erase drawings on Canvas.



Tracing Terms

Canvas and GMA allows users to trace terms within a transformation; in other words, users can select a mathematical term and see its past transformation on the Canvas. Tracing terms is helpful to show students how a term was transformed within an equation, and how they can reconstruct terms as needed.

1. To trace a term, first you will need to show the full history of the transformed equation.



$$\begin{array}{lcl}
 x = 2 & \text{○} & 8x + 6 = 22 \text{ ○} \\
 \downarrow & & 8x = 22 - 6 \text{ ○} \\
 & & 8x = 16 \text{ ○} \\
 & & x = \frac{16}{8} \text{ ○} \\
 & & x = 2 \text{ ○}
 \end{array}$$

2. Select the “**Scrub**” button on the toolbar, then click on the term that you would like to trace. In our example below, we choose to trace the answer “2”. A green path will appear, showing how the term was transformed throughout the equation, and what other terms were used within the transformation.

Toolbar: insert, transform, keypad, **scrub**, draw, erase, arrange, undo, redo, smaller, larger

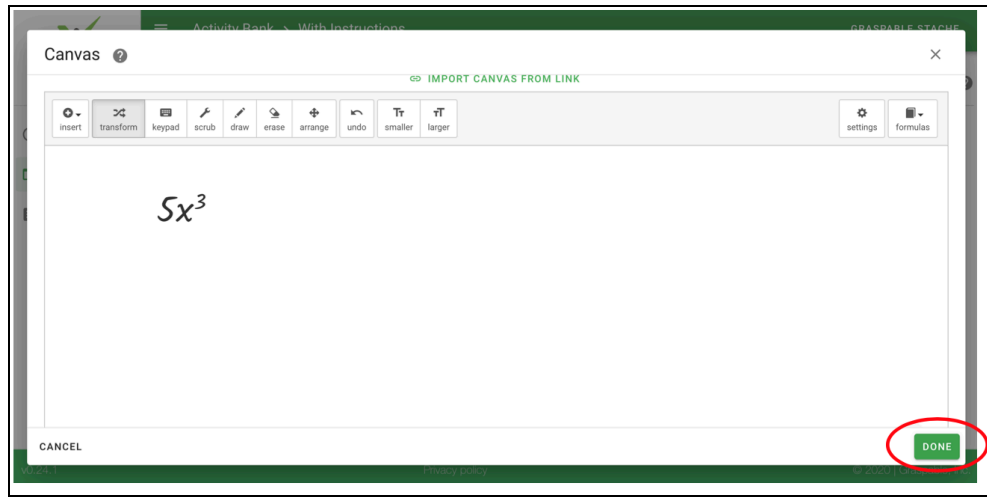
$$\begin{array}{l}
 8x + 6 = 22 \\
 8x = 22 - 6 \\
 8x = 16 \\
 x = \frac{16}{8} \\
 x = 2
 \end{array}$$

Toolbar: insert, transform, keypad, **scrub**, draw, erase, arrange, undo, redo, smaller, larger

$$\begin{array}{l}
 8x + 6 = 22 \\
 8x = 22 - 6 \\
 8x = 16 \\
 x = \frac{16}{8} \\
 x = 2
 \end{array}$$

Saving the Canvas

On GMA, once you have finished creating your Canvas, you can easily save it by clicking the green “**Done**” button at the bottom of the task window. Once you’ve clicked “Done”, your Canvas will be saved to the current activity.

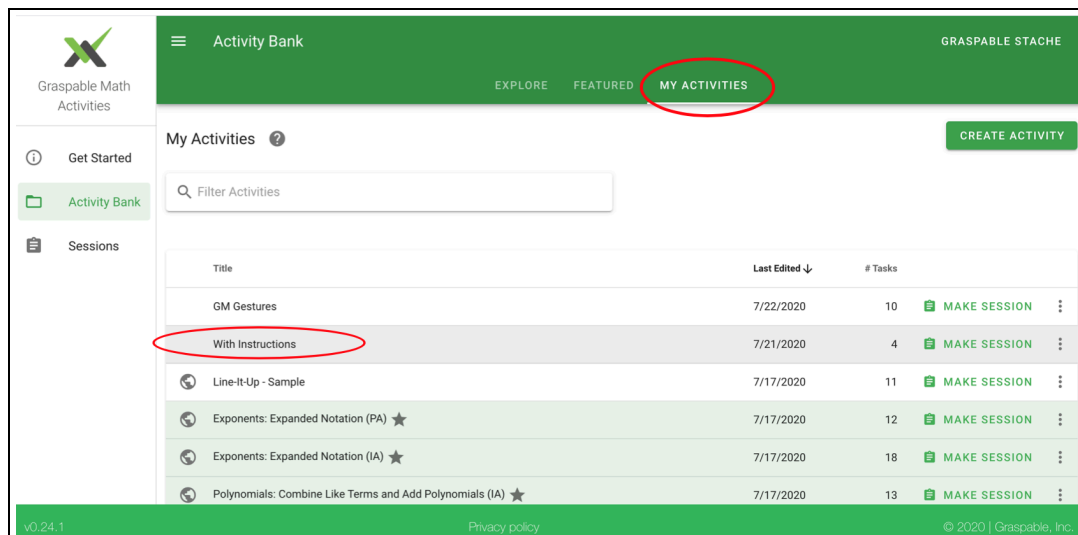


You can open an existing Canvas to modify the content -- just remember to click “Done” to save all of your work!

Loading the Canvas

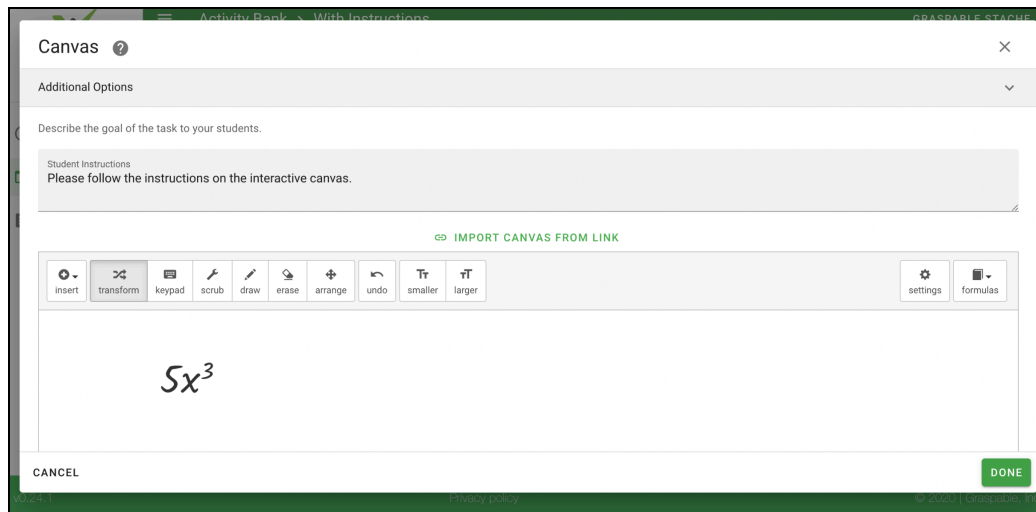
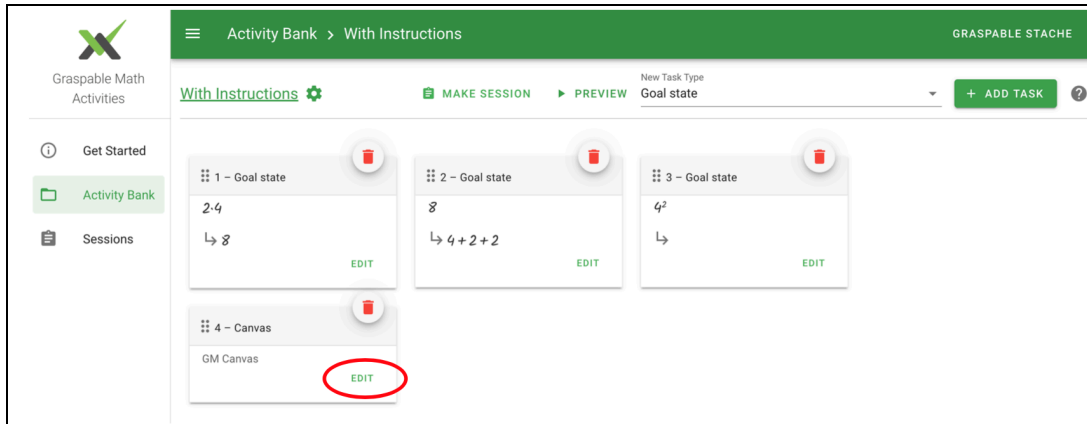
You can always open a previously-created Canvas and modify or update the task as needed.

1. To load a Canvas that you have worked on and saved, go to “**My Activities**” tab and select the activity in which the Canvas you want to load is located.





2. Within the selected activity, click **Edit** on the Canvas task that you want to load. A task window will appear and display the Canvas. You can modify the Canvas on this task window.



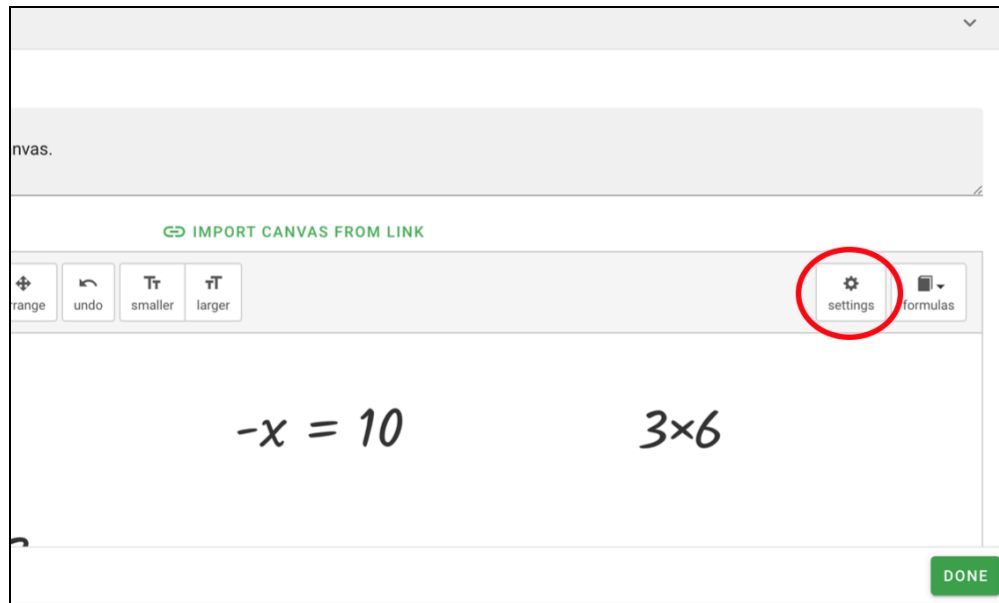
3. Once you've finished working on the loaded Canvas, don't forget to click **Done** to save your work and keep all the changes!

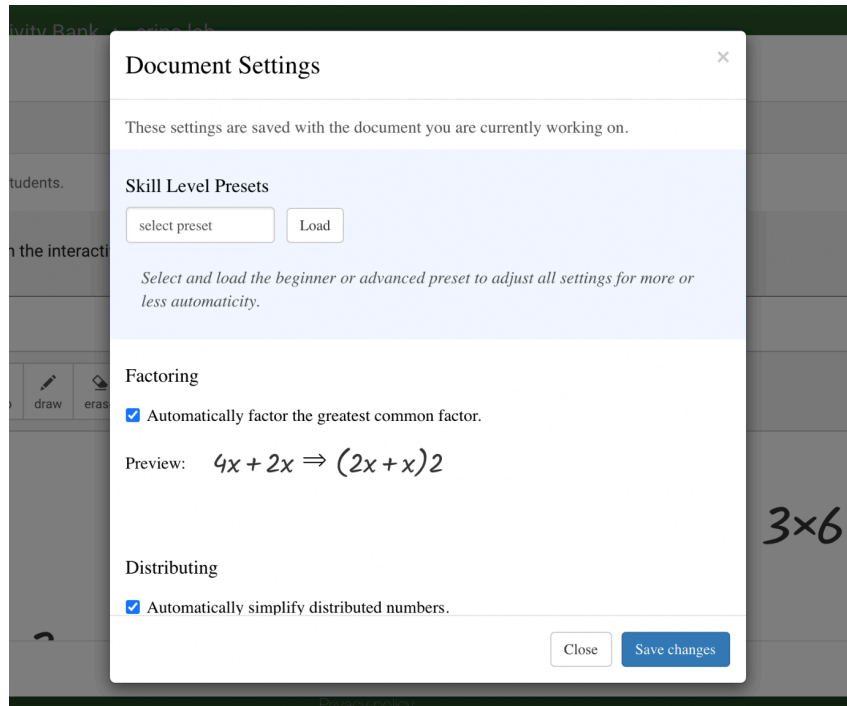
SETTINGS ON THE CANVAS



Canvas has an abundance of settings and tools that users can use when designing activities. The purpose of the document settings is to allow creators to adjust how difficult, easy, fast, or slow they would like each step to be in their activities.

Select the **“Setting”** button on the top right of the Canvas, and the **“document settings”** page will appear showing various settings available on Canvas.





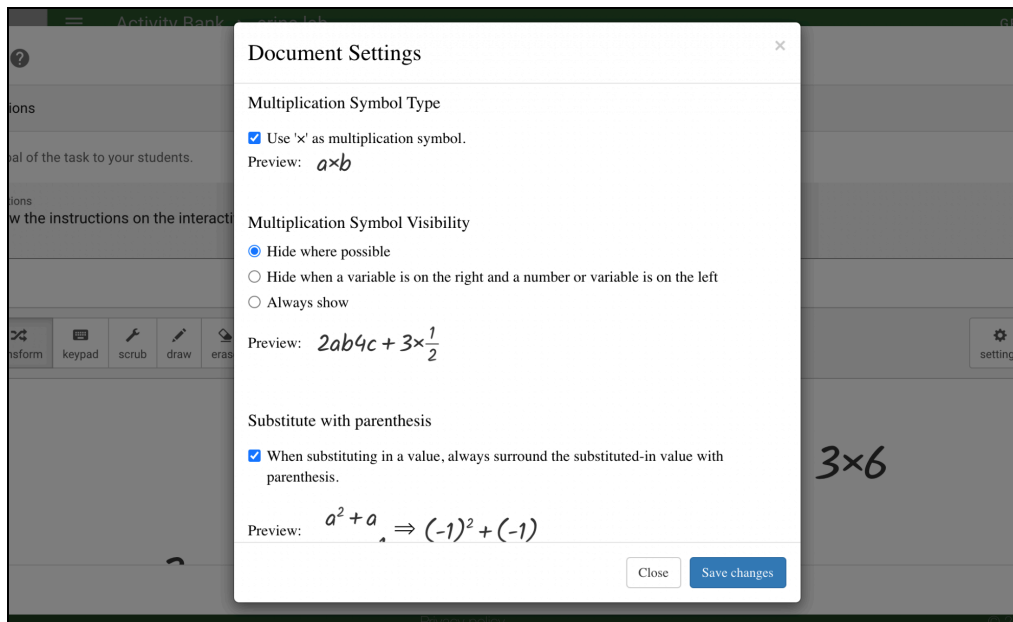
Document Settings

We will guide you through the setting menu and show you some of the settings you might find useful!

- **“Skill Level Presets”** allows the creator of the Canvas to adjust the difficulty of the settings. The **“Beginner”** setting will allow your students to use less GM functionality and stick to the basics, while the **“Advanced”** setting will include more high-level settings, such as:
 - Setting units for trigonometric functions
 - The type of multiplication symbol used; how and where a multiplication symbol can be seen
 - Whether GM shows the simplification on one click or requires multiple clicks to display each simplification step.
 - How many decimal places should be allowed.



There are plenty of adjustments and settings you can specify in GM Canvas. The ones above are just to name a few.



GMA does include default **“beginner”** and **“advanced”** presets. However, you know your students best and we recommend you set presets based on your students and their familiarity with Canvas or GMA gestures.

Please make sure to review all the settings selected to ensure they match your desired implementation.

Be sure to **save** your settings before exiting the **“Document Settings”** Window.



Document Settings

Substitute with parenthesis

☒ When substituting in a value, always surround the substituted-in value with parenthesis.

Preview: $2a + a \Rightarrow (-1)^2 + (-1)$
 $a = -1$

Unit for Trigonometric Functions

☒ Radians
☐ Degrees

Already calculated steps will not be affected by changing this setting.

Preview: $\sin\left(\frac{\pi}{2}\right) = 1$

Close Save changes

Student View Of Canvas Tasks

Below is an overview of what students see when they reach a Canvas task:



Canvas

Please follow the instructions on the interactive canvas.

Undo / Reset

UNDO RESET

insert transform keypad scrub draw erase arrange smaller larger formulas

Tool bar

Operation Gesture

In this task, you will learn how to subtract negative numbers and inverse operations on shortcuts by dragging.

As you complete this tutorial you will notice that they are gifs of each gesture type on the left slide and interactive task on right. Each interactive task corresponds with the gif on the right. Be sure to watch each gif and interactive task before moving onto the next. Have Fun!

Subtracting Negative Numbers

Try it out.

Canvas Workspace

$-9 - (-12)$

$-6 - (-9)$

1. In Canvas, students can work directly on the Canvas Workspace based on the instructions provided by teachers. Students can freely use the functions on the toolbar, undo moves and reset the Canvas space.
2. Since Canvas is an open-ended format, students will not receive correctness feedback from GMA.

Please follow the instructions on the interactive canvas.

insert transform keypad scrub draw erase arrange smaller larger formulas

As you complete this tutorial you will notice that they are gifs of each gesture type on the left slide and interactive task on right. Each interactive task corresponds with the gif on the right. Be sure to watch each gif and interactive task before moving onto the next. Have Fun!

Subtracting Negative Numbers

Try it out.

Inverse Operations on Shortcuts by Dragging

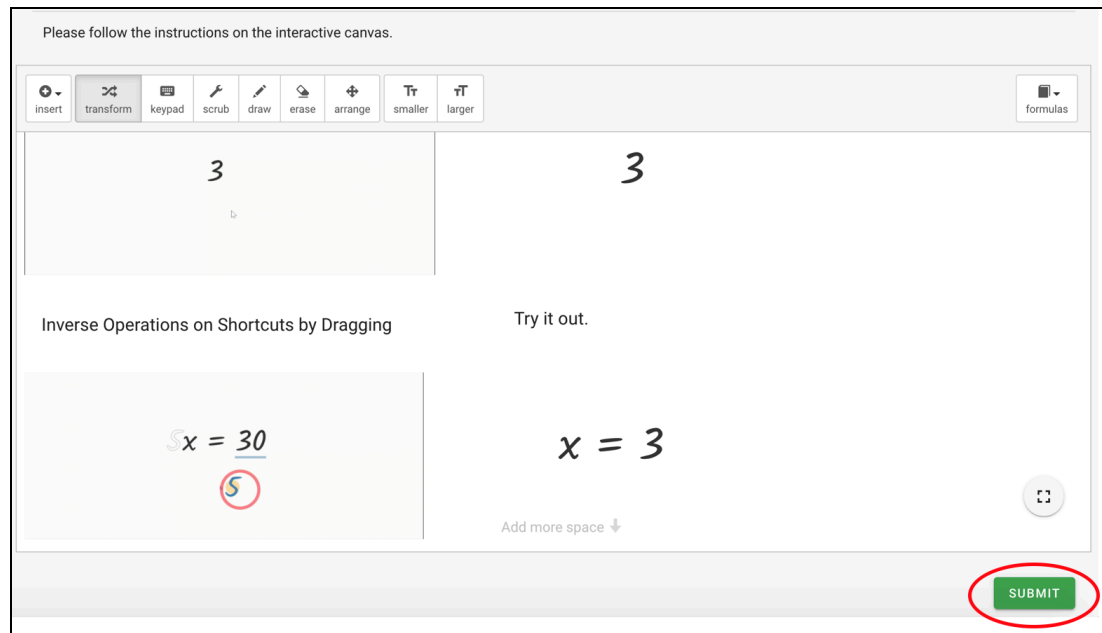
Try it out.

$- 32$

3



3. After finishing working on Canvas, students can select the “**Submit**” button at the bottom of the page to submit their Canvas task.



Teacher View Of Student Work In Canvas

Similarly to other tasks, the teacher view on GMA allows you to view your students’ work on the Canvas task.

However, as Canvas is an open-ended task, you can only see your students’ work and their completion status; correctness feedback will not be included in the teacher view. You must manually check student work to evaluate if the students’ work is correct or not.

1. Open the Canvas task you want to view your students’ work for. Upon opening, you will see task cards representing each student’s work on the Canvas, and their answer to the reflection prompt (if applicable).



Sessions > GBBQU > Task 3 GRASPABLE MATH

Selected task: < 1 2 3 4 5 6 7 8 9 10 ... 20 21 22 23 24 25 26 27 28 >

GM Canvas

Student Work

Carley G	Danielle G	Aadhya P
Show Student Work What do you notice about all of these fractions? They are all equal to $\frac{2}{7}$	Show Student Work What do you notice about all of these fractions? All the numbers have a common denominator	Show Student Work What do you notice about all of these fractions? They all simplify to the same results

Privacy policy © 2020 | Graspable, Inc.

2. Because you can only see students' completion status, and not correctness, for Canvas tasks, for each task card, you will only see one of three symbols:
 - a. means students completed the task,
 - b. means in-progress, such that students are currently working on the task,
 - c. means students have not yet attempted the task.
3. You can also click on a specific task card to expand the view and see an individual student's work on Canvas in detail.



Aadhya P's Work

insert transform keypad scrub draw erase arrange undo smaller larger settings formulas

Simplify each of these fractions.

$$\frac{3}{8} \quad \frac{3}{8} \quad \frac{3}{8} \quad \frac{3}{8} \quad \frac{3}{8}$$

The fractions on this canvas are all equivalent. Insert another fraction to this canvas that is equivalent to the others.

$\frac{6}{16}$

In your own words describe equivalent fractions?
They have the same factors

Privacy policy © 2020

- To see the steps your student took to reach their current answer, hover your mouse over any mathematical item. A grey circle will appear. By clicking and dragging the circle down, you will reveal the student's steps/actions on the Canvas task.

Aadhya P's Work

insert transform keypad scrub draw erase arrange undo smaller larger settings formulas

Simplify each of these fractions.

$\frac{18}{48}$	$\frac{36}{96}$	$\frac{21}{56}$	$\frac{30}{80}$	$\frac{39}{104}$
$\frac{3 \cdot 6}{8 \cdot 6}$	$\frac{3 \cdot 12}{8 \cdot 12}$	$\frac{3 \cdot 7}{8 \cdot 7}$	$\frac{3 \cdot 10}{8 \cdot 10}$	$\frac{3}{8}$
$\frac{3}{8}$	$\frac{3 \cdot 12}{96}$	$\frac{3}{8}$	$\frac{3}{8}$	
	$3 \cdot 12$			

You can observe how many steps a student took to reach their answers, as well as view potential errors and places where students may need extra support or instructions.



HOT SPOT

Overview

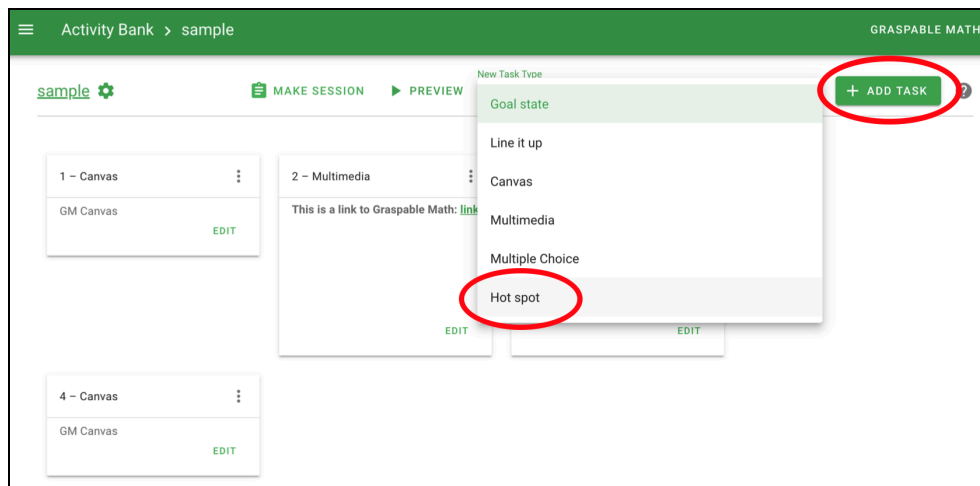
Hot Spot is an interactive task type, where students can interact with images. Hot Spot shares the same idea as a typical Multiple Choice task, but instead of clicking on the right answer within the given multiple choices, students will drag a circle and place it on an area of the image to select it.

One useful application to this task is creating questions where students can spot the error on a worked-out problem.

Below, we will guide you on how to create a typical Hot Spot task.

Adding a Hot Spot Task (Task Builder)

1. To create a new Hot Spot task, first create a new activity or select the existing activity where you want to add the Hot Spot task. Then click on the dropdown menu under the “**New Task Type**” line, and select “**Hot spot**”. Then click on the “**+ Add Task**” button.



2. A task card for Hot Spot will be created, and a task menu for Hot Spot will automatically appear.



Hot Spot

First, upload a picture. Then, give students instructions to mark a point of interest in the picture. You can set correct response areas by drag and drop on the picture (students will not see those).

Instructions for students
Mark the place that is incorrect.

Number of Markers

- ☒ Students can place one marker
- ☐ Students can place multiple markers (up to 10)

Feedback and Scoring

- ☒ Students need to mark all hotspot areas
- ☐ Students need to mark at least one hotspot area

☐ Provide GM Workspace with the image

Additional Options

CANCEL DONE

- First, upload a picture for your students to see and work with. To upload a picture, you can either drag an image from your computer onto this blank box, or you can click on the box, browse and upload an image from your computer.

Hot Spot

First, upload a picture. Then, give students instructions to mark a point of interest in the picture. You can set correct response areas by drag and drop on the picture (students will not see those).

Instructions for students
Mark the place that is incorrect.

Number of Markers

- ☒ Students can place one marker
- ☐ Students can place multiple markers (up to 10)

Feedback and Scoring

- ☒ Students need to mark all hotspot areas
- ☐ Students need to mark at least one hotspot area

☐ Provide GM Workspace with the image

Additional Options

CANCEL DONE



Hot Spot

$$5(x+2) = 30$$

$$5x+10 = 30$$

$$15x = 30$$

$$x = 2$$

CHANGE IMAGE

CANCEL

First, upload a picture. Then, give students instructions to mark a point of interest in the picture. You can set correct response areas by drag and drop on the picture (students will not see those).

Instructions for students

Mark the place that is incorrect.

Number of Markers

☒ Students can place one marker

☐ Students can place multiple markers (up to 10)

Feedback and Scoring

☒ Students need to mark all hotspot areas

☐ Students need to mark at least one hotspot area

☐ Provide GM Workspace with the image

?

DONE

4. Once an image is uploaded, you can write instructions to students on what they should do.

In our example, our image is a worked example of a math problem, but it has a mistake. We want our students to locate where the mistake is, so we write an instruction accordingly.

First, upload a picture. Then, give students instructions to mark a point of interest in the picture. You can set correct response areas by drag and drop on the picture (students will not see those).

Instructions for students

A student solved a math problem as presented in this picture. Can you spot where they made a mistake?

5. You can then mark the areas where you want your students to locate if they respond correctly. The concept is similar to a multiple choice task: once you mark an area as correct, if your students select that area, their answer will be recorded as correct.

To mark these areas, click and drag anywhere on the image to create a blue box that covers the desired area.



$$5(x+2) = 30$$

$$5x+10 = 30$$

$$15x = 30$$

$$x = 2$$

CHANGE IMAGE

6. You can also turn the Hot Spot task into a task similar to “Check all that apply”. For example, if you upload a worked math problem with multiple mistakes and you want your students to select all of them, you can create multiple blue boxes on your image.

Then under the “**Number of Markers**” section, you can select “**Students can place multiple markers (up to 10)**” to allow your students to select multiple areas in one picture.

If you only have 1 area, you can choose the option: “**Students can place one marker**”.

Number of Markers

☒ Students can place one marker

☐ Students can place multiple markers (up to 10)

7. In the “**Feedback and Scoring**” section, you can require students to select all of the interested areas by choosing “**Students need to mark all hotspot areas**”; or you can allow students to select one and not all by choosing “**Students need to mark at least one hotspot**”.



Feedback and Scoring

- ☒ Students need to mark all hotspot areas
- ☐ Students need to mark at least one hotspot area

8. Some problems are easy for students to spot mistakes, but some are more difficult, so it might be helpful for your students to have a space to work out the problems and see where the mistakes are. You can do so by checking the box **“Provide GM Workspace with the image”** and provide your students with the first line of the problem. Your student will have a GMA Canvas to work the problem out on.

☒ Provide GM Workspace with the image

$5(x + 2) = 30$

9. You can also add a reflection prompt for your students. This is a great way for your students to reflect on their work and deepen their understanding. Open the dropdown menu under the **“Additional Option”** at the bottom, check the **“Include reflection prompt”** box, and write the question you want your students to answer.

Additional Options

☒ Include reflection prompt

Question asked after student does this task to reflect on it
What did Tina do wrong?



Student's View

Below is an overview of what students see when they reach a Hot Spot task:

The screenshot shows the 'Hot Spot' task interface. On the left, a blue arrow labeled 'Image' points to a box containing a student's work:

$$\begin{array}{rcl} 5(x+2) & = & 30 \\ 5x+10 & = & 30 \\ 15x & = & 30 \\ x & = & 2 \end{array}$$

On the right, a blue arrow labeled 'Instructions' points to the text:

A student solved a math problem as presented in this picture. Can you spot where they made a mistake?

Hotspot markers. Click and drag onto the image.

A blue circle labeled 'Marker' is shown next to the instructions. Below the instructions, a blue arrow labeled 'GM Workspace' points to a workspace area containing the equation $5(x+2) = 30$. At the bottom, a blue arrow labeled 'Reflection prompt' points to a text box with the question 'What did this student do wrong?'. The workspace area also includes buttons for 'UNDO', 'REDO', 'KEYPAD', and 'RESET'.

1. Students can drag the marker and place it anywhere on the image. Once they have completed the Hot Spot task and answered the reflection prompt, students can check their answer by clicking on the **"Check"** button at the bottom right. By doing so, they will also submit their answer.



$$5x + 10 = 30$$

$$15x = 30$$

$$x = 2$$

You may work through the problem yourself in the area below, though it is not graded.

$$5(x + 2) = 30$$

UNDO
REDO
KEYPAD
RESET

What did this student do wrong?

The student distributed incorrectly

CHECK

2. If they placed the marker in the **correct** area, the marker will turn **green**, and their answer will be recorded as correct.
- If they placed the marker in the **incorrect** area, the marker will turn **red** with a message in the bottom saying: "You have not marked the correct place. Try again!"

$$5x + 10 = 30$$

$$15x = 30$$

$$x = 2$$

$$5x + 10 = 30$$

$$15x = 30$$

$$x = 2$$

You have not marked the correct place. Try again!

Teacher's View of Student Work in Hot Spot



Once your students have worked on the Hot Spot task, you will see task cards representing the work of each student in the **Session** tab on GMA.

1. On the top, you will see a **Student Work Summary**, which is an image showing all of your students' placements of their marker on the Hot Spot task.
 - a. In the picture below, the Student Work Summary shows that there were 5 students who placed their marker in the right area, while there were 2 students who placed their marker incorrectly.

☰ Sessions > AUF77 > Task 10

Student Work Summary

Which expression is equivalent to the following?

$$a + 2 - d \cdot 4$$

$a \cdot 2 - 4 + d$	$a - 2 + d \cdot 4$	$a + 2 \cdot 4 - d$ ●
$d + 4 - a \cdot 2$	$d \cdot 4 - 2 + a$	$-d \cdot 4 + 2 + a$ ●●●●

[Privacy policy](#)

2. If you scroll down, you will see specific students' work on the task. These task cards show students' placement of the marker, whether their placement is correct, their work on the GM workspace and their answer to the reflection prompt (if applicable).



Sessions > AUF77 > Task 10

GRASPABLE MATH

Student Work

Student 7	Student 4	Student 6	JiEun	Luisa
Solved!	Solved!	Solved!	Not solved.	Not solved.
Which expression is equivalent to the following? $a + 2 - d \cdot 4$	Which expression is equivalent to the following? $a + 2 - d \cdot 4$	Which expression is equivalent to the following? $a + 2 - d \cdot 4$	Which expression is equivalent to the following? $a + 2 - d \cdot 4$	Which expression is equivalent to the following? $a + 2 - d \cdot 4$
Student workspace $a + 2 - d \cdot 4$ $a - d \cdot 4 + 2$ $- d \cdot 4 + 2 + a$	Student workspace $a + 2 - d \cdot 4$	Student workspace $a + 2 - d \cdot 4$	Student workspace $a + 2 - d \cdot 4$	Student workspace $a + 2 - d \cdot 4$
✓	✓	✓	✗	✗

Privacy policy © 2020 | Graspable, Inc.

- a. You can also click on a specific task card to expand the view and see your students' work in detail.

AUF77

Session is assigned to Test Class

Share this link: [https://graspablemath.com/auf77](#)

Student 7	Student 4	Student 6	JiEun	Luisa
Solved!	Solved!	Solved!	Not solved.	Not solved.
Which expression is equivalent to the following? $a + 2 - d \cdot 4$	Which expression is equivalent to the following? $a + 2 - d \cdot 4$	Which expression is equivalent to the following? $a + 2 - d \cdot 4$	Which expression is equivalent to the following? $a + 2 - d \cdot 4$	Which expression is equivalent to the following? $a + 2 - d \cdot 4$
Student workspace $a + 2 - d \cdot 4$ $a - d \cdot 4 + 2$ $- d \cdot 4 + 2 + a$				

Jenny Not solved Student 5 Solved! Student 1 Solved! Student 3 Solved! Jen Not solved

LINE IT UP

Line It Up is a graphical task type, where students can interact, match and compare graphs and their formulas. Given a goal graph, students drag the coefficients of their own graph to match the goal. Or you can create a Line It Up task with a multiple choice

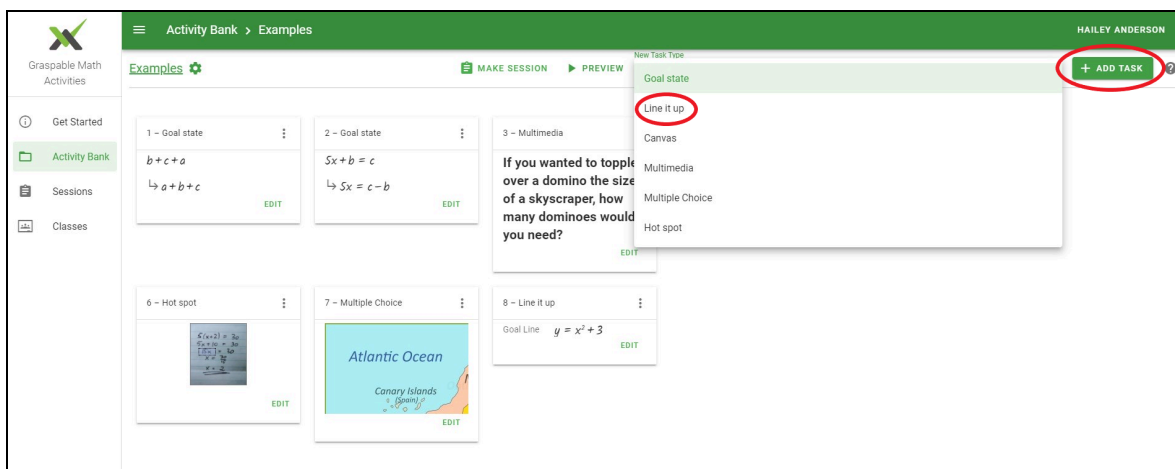


format, where students are given multiple graph formulas and they have to choose the one that matches the goal graph.

Below, we will guide you on how to create a Line It Up task.

Adding a Line It Up Task

1. To create a new Line It Up task, create a new activity, or open a pre-existing one. Then click the drop-down menu in the right top corner under the “**New Task Type**” line, and select “**Line it up.**” Then click the “**+ Add Task**” button.



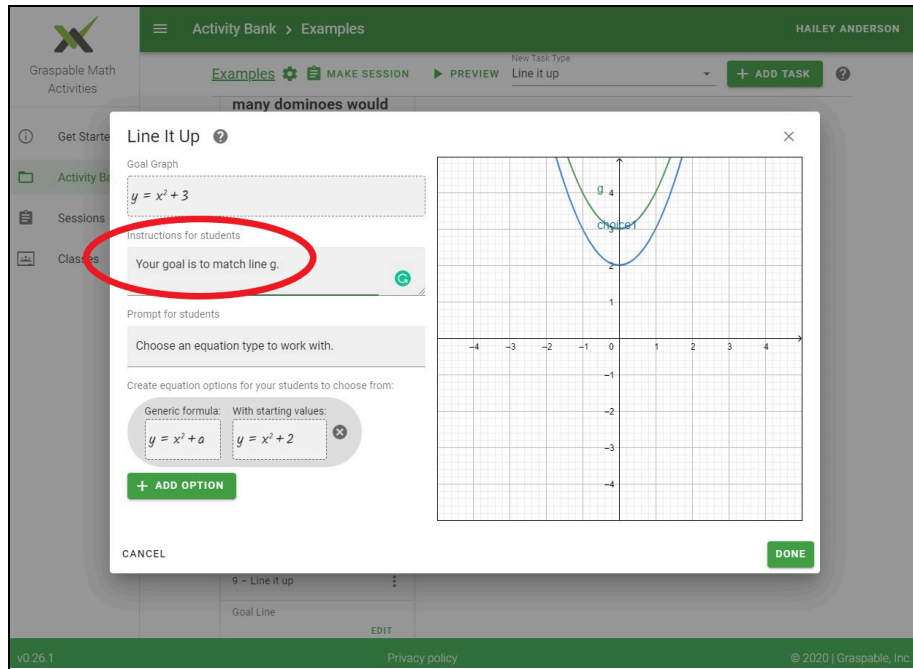
2. A task card for Line It Up will be created, and a task menu for Line It Up will automatically appear.



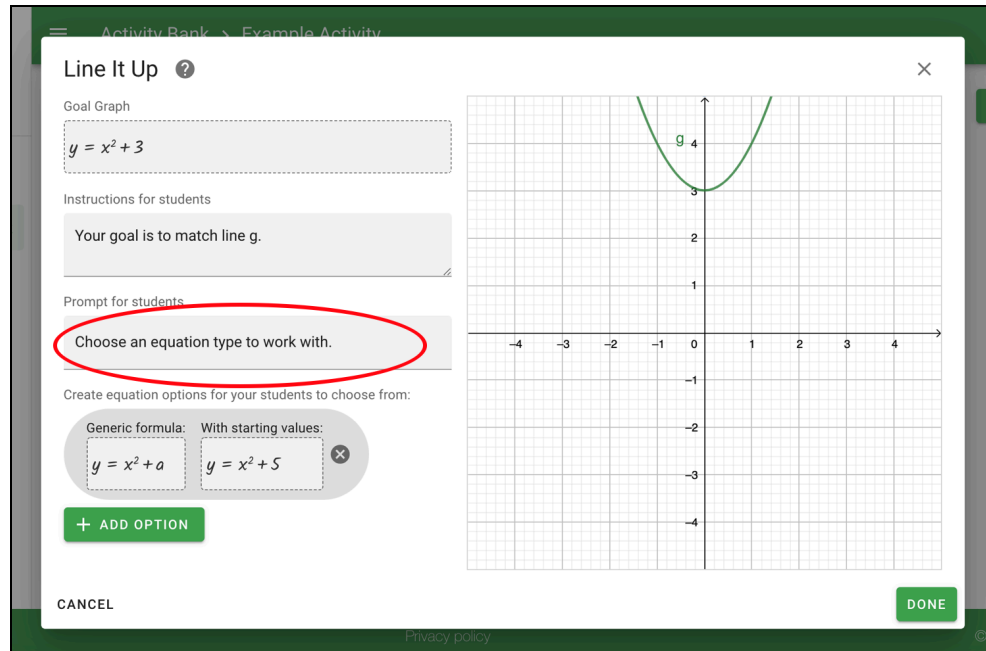
- Click on the text box under **"Goal Graph"**, and a keypad will pop up. You can click on the keypad or type in the formula for the goal graph you want to create. This goal graph will be the stationary graph that your students will try to match their answer to.



- Under the **“Instructions for students”**, you can either use the default instruction or type in a specific instruction for your students. These instructions will appear at the top of the student task card.



- Under **“Prompt for students”**, add a prompt for your students to instruct them on how they can work with the equations. The default sentence here can also stay if not edited.



6. Under “**Create equation options for your students to choose from**”, you can create the graph formulas that will be available to students. “**Generic Formula**” is how the option will appear to students initially (e.g., $y = ax + b$ is the generic formula for a line; $y = ax^2 + bx + c$ is a parabola). “**With starting values**” is how the graph function will appear once your students click the generic formula and work with it. If you want the student to be able to scrub the number, add a letter (e.g., “a”, “b”) in the place where you would want the scrubbing to take place.

- In our example, the generic formula is $y = x^2 + a$, which is what students will see as an option. Then once they click on the formula, a new formula with a starting value, which is $y = x^2 + 5$ will appear. Because the coefficient “a” is now replaced by “5” in the formula, your students will be able to scrub the coefficient 5 to change their graph.



many dominoes would

Line It Up ?

Goal Graph

$$y = x^2 + 3$$

Instructions for students

Your goal is to match line g.

Prompt for students

Choose one of the equations below:

Create equation options for your students to choose from:

Generic formula: $y = x^2 + a$ With starting values: $y = x^2 + 5$

+ ADD OPTION

CANCEL

DONE

7. If you want another available choice for the students to answer select “+ ADD OPTION”. The same rules apply for this one as well.

many dominoes would

Line It Up ?

Goal Graph

$$y = x^2 + 3$$

Instructions for students

Your goal is to match line g.

Prompt for students

Choose one of the equations below:

Create equation options for your students to choose from:

Generic formula: $y = x^2 + a$ With starting values: $y = x^2 + 5$

+ ADD OPTION

CANCEL

DONE



If you want to create a formula that does not allow scrubbing, you can type the set graph formula in the “**Generic formula**” box.

- In our example, since the formula “ $y = x^2 + 2$ ” is entered directly in the generic formula option, students will see this equation as an option, but they cannot scrub or change any coefficient.



many dominoes would

Line It Up ?

Goal Graph

$y = x^2 + 3$

Instructions for students

Your goal is to match line g.

Prompt for students

Choose one of the equations below:

Create equation options for your students to choose from:

Generic formula: $y = x^2 + a$ With starting values: $y = x^2 + 5$

+ ADD OPTION

CANCEL

Cancel $y = x^2 + 2$ Done abc $\alpha\beta\gamma$

7 8 9 + x y a^2 a^3 a^n $\sqrt{}$ $\sqrt[n]{}$ log ln Δ long var $\leftarrow$ $\rightarrow$

4 5 6 * () |...| $\sqrt{}$ $\sqrt[n]{}$ log ln Δ long var $\leftarrow$ $\rightarrow$

1 2 3 - , x_n log ln Δ long var $\leftarrow$ $\rightarrow$

0 . = + e i $\square$ long var $\leftarrow$ $\rightarrow$

Input the generic form of an equation, like $y=mx+b$

DONE

© 2020 | Graspable Math

Activity Bank > Example Activity

Line It Up ?

Goal Graph

$y = x^2 + 3$

Instructions for students

Your goal is to match line g.

Prompt for students

Choose an equation type to work with.

Create equation options for your students to choose from:

Generic formula: $y = x^2 + a$ With starting values: $y = x^2 + 5$

Generic formula: $y = x^2 + 2$ With starting values: $y = x^2 + 2$

CANCEL

Privacy policy

DONE

New formula with set coefficients

Student's View

Below is an overview of what students see when they reach a Line It Up task:



Instructions → **Line It Up**

Your goal is to match line g.

Choose one of the equations below:

$y = x^2 + 2$ $y = x^2 + a$ ← **Options**

Adjust the numbers by dragging them up and down, or by clicking on them.

$y = x^2 + 3.6$

← **Graph**

Graph

RESET

CONTINUE

- Students can scrub any coefficient with arrows on top and bottom. If a formula does not have any arrows, that means it is a set option and cannot be scrubbed or changed.

To scrub a number, students will click on the number and use their trackpad or mouse to scroll upward to increase the value of the coefficient, or downward to decrease the value.

- In our example below, the number 3.6 can be scrubbed downward to 1.9.



Line It Up RESET

Your goal is to match line g.

Choose an equation type to work with.

$y = x^2 + a$ $y = x^2$

Adjust the numbers by dragging them up and down, or by clicking on them.

$y = x^2 + 1.9$

CONTINUE

- Once their formula has matched the formula of the original graph, their workspace will be highlighted green.

Line It Up RESET

Your goal is to match line g.

Choose one of the equations below:

$y = x^2 + a$ $y = x^2 + 2$

Adjust the numbers by dragging them up and down, or by clicking on them.

$y = x^2 + 3$

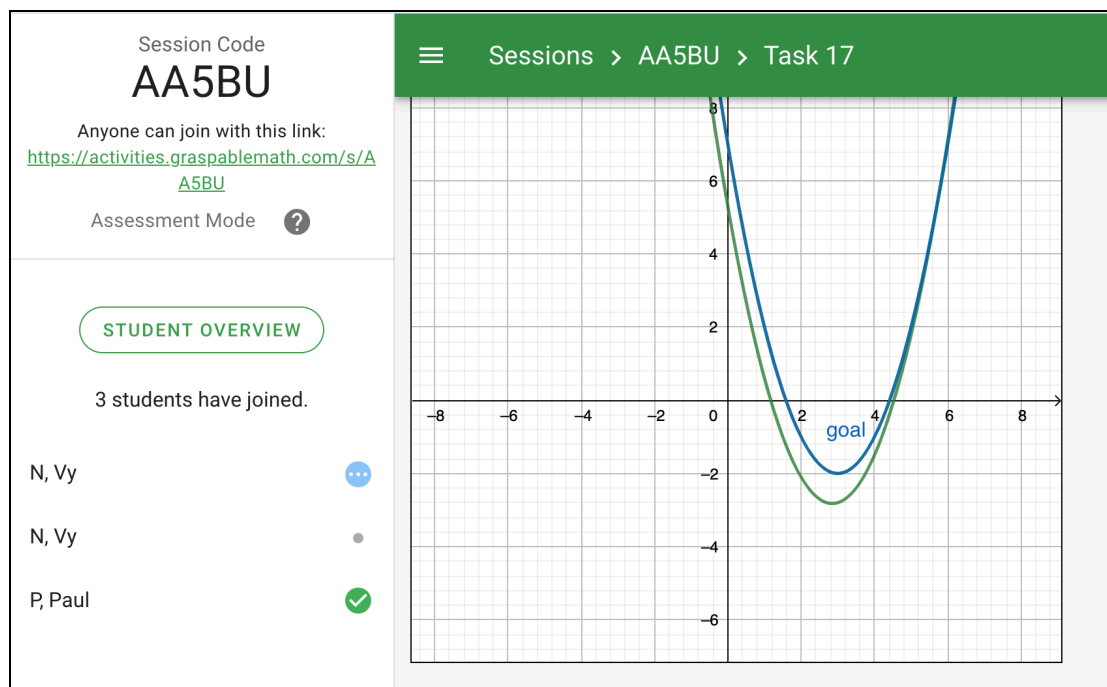
CONTINUE

Teacher's View

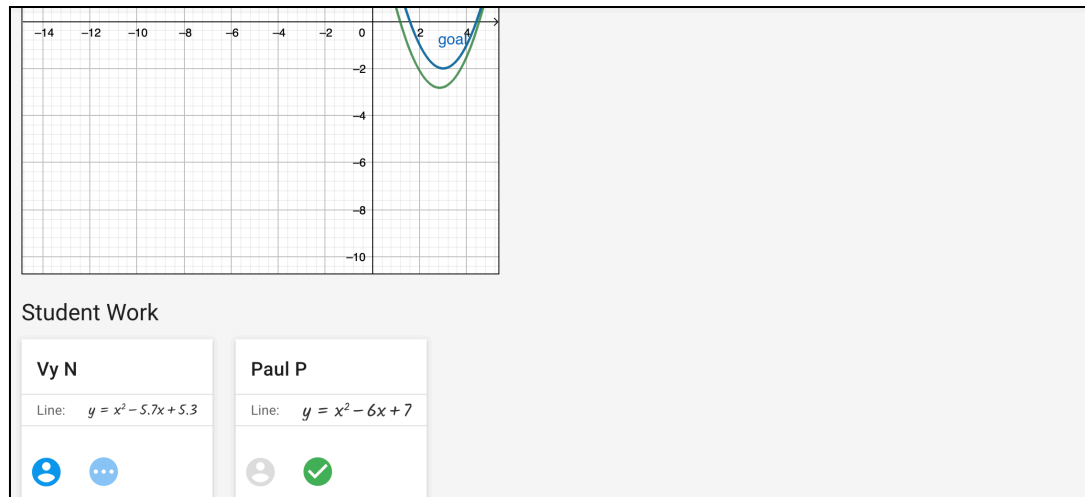
Once your students have worked on the Line It Up task, you will see task cards representing the work of each student in the **Session** tab on GMA.



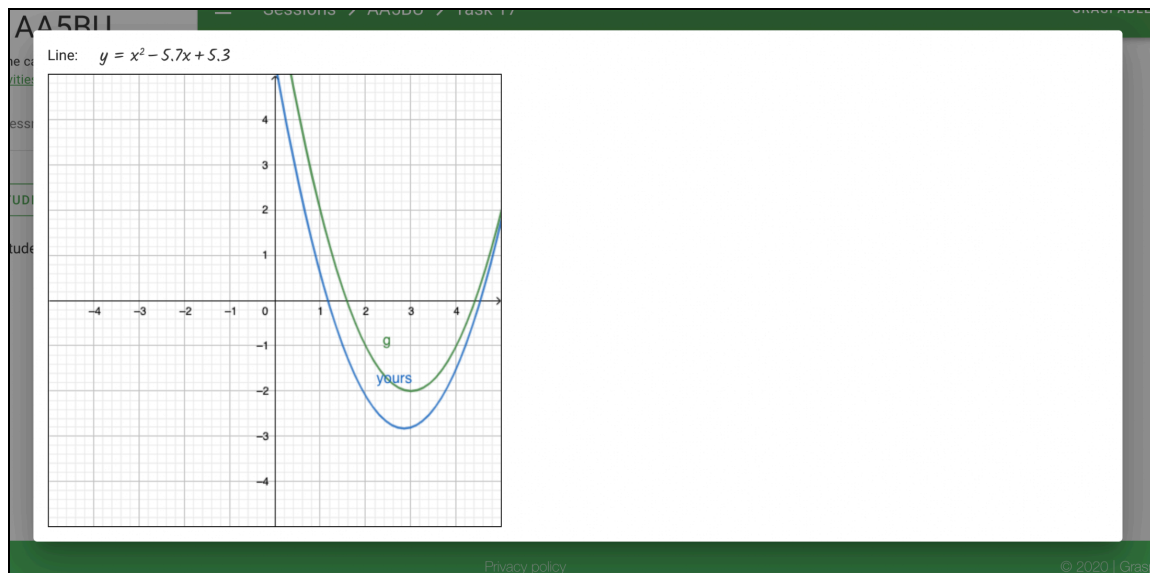
1. On the top, you will see a **Student Work Summary**, which is an image showing all of your students' work on the Line It Up task.
 - a. In the picture below, the Student Work Summary shows that there are 1 student who successfully matched their graph to the goal graph, 1 student who opened the task but is now on pause, and 1 student who hasn't started the task.



2. If you scroll down, you will see specific students' work on the task. These task cards show the status of your students' work (ongoing vs. completed; correctness) and their answers.



- a. You can also click on a specific task card to expand the view and see your students' work in detail.



MULTIPLE CHOICE

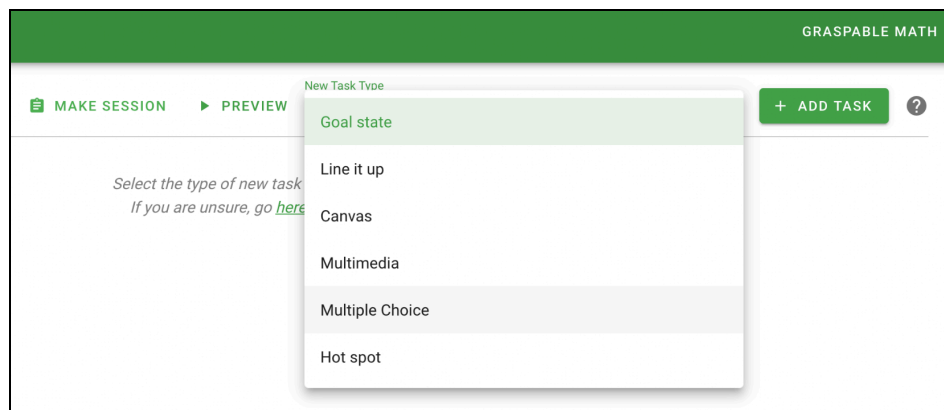
The Multiple Choice task type in GMA is a typical question and answer format. What makes GMA's Multiple Choice different from other multiple choice tasks on other



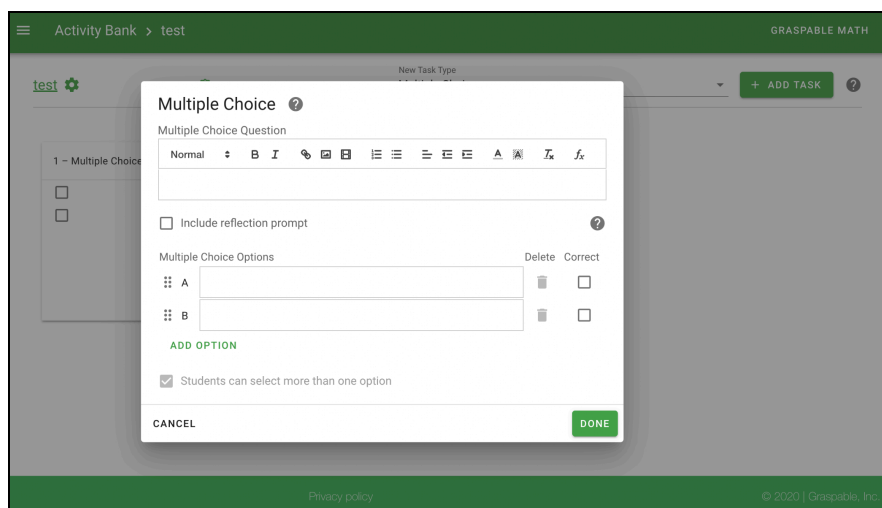
platforms is that users can incorporate several media (e.g., pictures, videos) into the questions and answers provided to students.

Adding a Multiple Choice (Task Builder)

1. To add a new Multiple Choice task, select the box under the “**New Task Type**” line. A dropdown menu will appear, where you can select “**Multiple Choice**”. Click the “**+ Add Task**” button once you’re done.



2. A task card will automatically appear, displaying the editing view of the newly-created Multiple Choice task.





Creating Questions

1. After adding a new Multiple Choice task, you can type in your question in the box under the line **“Multiple Choice Question”**.

The screenshot shows a 'Multiple Choice' question creation modal. At the top, it says 'Multiple Choice' with a help icon. Below that is the label 'Multiple Choice Question'. A text input field is present, with a formatting toolbar above it containing options like 'Normal', 'B' (bold), 'I' (italic), and various list and alignment icons. A red oval is drawn around the text input field and the toolbar. Below the input field is a checkbox for 'Include reflection prompt'. Underneath is the 'Multiple Choice Options' section, which has two rows for options A and B, each with a text input field and 'Delete' and 'Correct' buttons. There is an 'ADD OPTION' link and a checkbox for 'Students can select more than one option'. At the bottom are 'CANCEL' and 'DONE' buttons.

2. You can also modify text by using the left side buttons of the control bar. For text size, there are 4 different options: Heading 1, Heading 2, Heading 3, and Normal. You can also bold and italicize text.

Insert Options

1. To add answer options for your students, you can start by filling in the readily available boxes for option A and B, under the **“Multiple Choice Options”** line.



Multiple Choice ?

Multiple Choice Question

Normal $\div$ **B** *I* f_x

☐ Include reflection prompt ?

Multiple Choice Options

		Delete	Correct
A			☐
B			☐

ADD OPTION

☒ Students can select more than one option

CANCEL **DONE**

- Once you've filled the boxes of A and B option, you can add more answer options by selecting the **"ADD OPTION"** button. New box for options will be added at the bottom. You can add several possible options.

Multiple Choice ?

Multiple Choice Question

Normal $\div$ **B** *I* f_x

Which answer is false?

☐ Include reflection prompt ?

Multiple Choice Options

		Delete	Correct
A	3=3		☐
B	3+4=7		☐

ADD OPTION

☒ Students can select more than one option

CANCEL **DONE**

Multiple Choice ?

Multiple Choice Question

Normal $\div$ **B** *I* f_x

Which answer is false?

☐ Include reflection prompt ?

Multiple Choice Options

		Delete	Correct
A	3=3		☐
B	3+5=7		☐
C			☐

ADD OPTION

☒ Students can select more than one option

CANCEL **DONE**

- To select the correct answer, click the checkbox in the **"Correct"** row on the far right. The option that you chose to be correct will be the one your students have to pick for a correct answer.

Including Reflection Prompt

Reflection prompts are great for gaining a better insight of the student's understanding and progress. Including prompts to Multiple Choice tasks can also help students reflect on the questions asked and the answers they gave.

1. To create a reflection prompt, click the checkbox next to **"Include reflection prompt"**.

Multiple Choice ?

Multiple Choice Question

Normal ÷ **B** *I* A ~~A~~ *I_x* *f_x*

Which answer is false?

☒ Include reflection prompt ?

Multiple Choice Options

	Delete	Correct
A 3=3		☐
B 3+5 =7		☒
C 3+4=6		☐

ADD OPTION

☐ Students can select more than one option

CANCEL DONE

2. A text box will appear underneath the checkbox, allowing users to enter the desired reflection question. Please note that there can only be one reflection question per multiple choice task.

☒ Include reflection prompt

Question asked after student does this task to reflect on it

3. Click **Done** when you're finished. The multiple choice task as a whole will be updated to include the reflection prompt.

Multiple Choice ?

Multiple Choice Question

Normal $\downarrow$ B I        A   I_x f_x

Which answer is false?

☒ Include reflection prompt ?

Question asked after student does this task to reflect on it

How did you approach this problem?

Multiple Choice Options

		Delete	Correct
 A	3=3		☐
 B	3+5 =7		☒
 C	3+4=6		☐

ADD OPTION

☐ Students can select more than one option

CANCEL DONE

Below is a picture of the student's view of a multiple choice task with a reflection prompt.

Multiple Choice

Which answer is false?

☐ $3=3$

☐ $3+5=7$

☐ $3+4=6$

How did you approach this problem?

CHECK



Adding Images

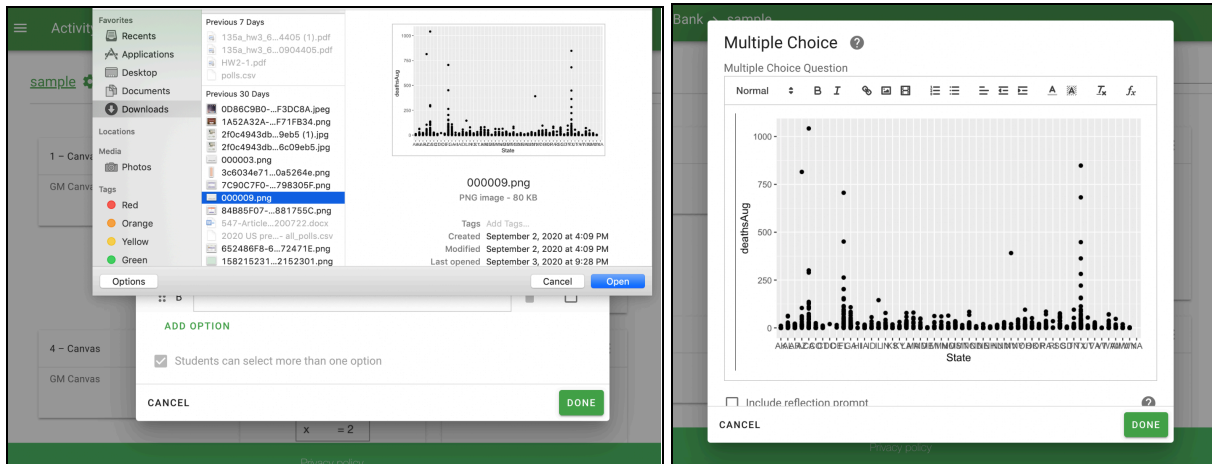
Adding images is a valuable tool to allow your students to visualize a problem. This feature also allows you to add visual aspects of any questions (e.g., graphs, charts) with ease.

1. To add an image to your Multiple Choice question, select the **image icon** on the toolbar.

Multiple Choice ?

Multiple Choice Question

Normal $\div$ B I                            



Adding Videos

You can also add videos to your Multiple Choice task. If you have instructional videos that you would like your students to see and learn from, the Multiple Choice task is a great way to ask questions about the video and make sure that they learned from it.

Please feel free to visit our YouTube channel [Graspable Stache](#) for plenty of videos and resources on GMA content, instructions, and gestures!

1. To add a video to your Multiple Choice question, select the **video icon** on the toolbar.



Multiple Choice ?

Multiple Choice Question

Normal $\div$ B I        A   $\int$ f_x

☐ Include reflection prompt ?

Multiple Choice Options

A Delete Correct

B Delete Correct

ADD OPTION

☒ Students can select more than one option

CANCEL **DONE**

2. A text box will appear under the toolbar, where you can copy and paste the URL of the desired video. Then click **“Save”** when the URL is inserted. The video will be successfully uploaded to your Multiple Choice question.

Multiple Choice ?

Multiple Choice Question

Normal $\div$ B I        A   $\int$ f_x

Enter video: **Save**

☐ Include reflection prompt ?

Multiple Choice Options

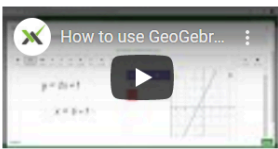
A Delete Correct

B Delete Correct

Multiple Choice ?

Multiple Choice Question

Normal $\div$ B I        A   $\int$ f_x



3. Once you've added a video to your Multiple Choice question, your students will be able to see and play the videos when they reach the task.



Multiple Choice



How do you insert a GeoGebra 2D graph onto the canvas?

- ☐ Click on insert and then click on geometry
- ☐ Click on insert and then click on geometry 3D

CONTINUE

Adding Expressions and Equations

You can also add mathematics expressions and equations that are clear and precisely formatted to your Multiple Choice questions. This function is especially useful to make sure that your students won't misunderstand the math expressions or equations.

- To add a math expression or equation to your Multiple Choice question, select the **equation icon** (f_x) on the toolbar.

S

- A text box will appear under the tool bar, where you can enter the desired expression or equation, then click **"Save"** when you're done. The precisely formulated math expression or equation will be displayed in your question box.

Multiple Choice ?

Multiple Choice Question

Normal **B** *I*

x^2

☐ Include reflection prompt ?

Multiple Choice Options

A ☐ ☐

B ☐ ☐

ADD OPTION

Inserting Expression

Multiple Choice ?

Multiple Choice Question

Normal • **B** *I*        **A**  *x* *f_x*

$y = x^2$

☐ Include reflection prompt ?

Multiple Choice Options

	Delete	Correct
 A		☐
 B		☐

ADD OPTION

Inserting Equation

You can also add math expressions and equations in your multiple choice answers! The steps are similar to creating them in your question (see *below for step-by-step instructional images*).



Multiple Choice ?

Multiple Choice Question

Normal $\pm$ B I f_x

☐ Include reflection prompt ?

Multiple Choice Options

Normal $\pm$ B I A f_x

A ☐

B ☐

ADD OPTION

Multiple Choice ?

Multiple Choice Question

Normal $\pm$ B I f_x

☐ Include reflection prompt ?

Multiple Choice Options

Normal $\pm$ B I A f_x

A ☐

B ☐

Enter formula: $y=x^3$

ADD OPTION

Multiple Choice ?

Multiple Choice Question

Normal $\pm$ B I f_x

☐ Include reflection prompt ?

Multiple Choice Options

A $y = x^3$ ☐

B ☐

ADD OPTION

Making Multiple Selections

You can transform a traditional multiple choice question into a “**Select all that apply**” question in our Multiple Choice task type by allowing your students to mark multiple answers! This option allows you to have fun and be creative with our Multiple Choice tasks!

1. After creating your question and all of your multiple choice answers, you can make multiple answers correct by clicking on the “**Correct**” boxes next to those answers.

Then click **Done** when you're ready.

Multiple Choice ?

Multiple Choice Question

Normal **B** *I* A *T_x* *f_x*

Which of the answers below are equations?

☐ Include reflection prompt

Multiple Choice Options

	Delete	Correct ?
A $y = x^2$		☒
B $y = x^3 + 2$		☒
C 55		☐

[ADD OPTION](#)

☒ Students can select more than one option

CANCEL **DONE**

You can also create a **survey question** (in which all answers are correct but students can only select one option) by using the Multiple Choice task type! This option is great when you want to survey your students' understanding or feelings after a lesson.

1. After creating your question and all of your multiple choice answers, you can make multiple answers correct by clicking on the **“Correct”** boxes next to those answers.

Then **un-select** the box next to **“Students can select more than one option”** to make sure that students can only choose one option.

Click **“Done”** when you’re ready.



Do not check
this box

Student Feedback

Unless the Multiple Choice task is in Assessment mode, your students will always receive correctness feedback from GMA for multiple choice questions after they select the “**Continue**” button.

1. If the student selected the correct answer, a green check will appear next to the task on the left-side tab.



Vy N < Multiple Choice

Tasks [4] >

1. Multiple Choice ✖

2. Multiple Choice ✔

3. Multiple Choice *

4. Multiple Choice *

5. Multiple Choice *

6. Multiple Choice *

7. Multiple Choice *

8. Multiple Choice *

9. Hot seat *

10. Hot seat *

11. Hot seat *

12. Hot seat *

13. Hot seat *

14. Hot seat *

Are these two expressions equivalent?

$\frac{2 + 6}{2 + 3}$	$\frac{6}{3}$
-----------------------	---------------

☐ Equivalent

☒ Not Equivalent

CONTINUE

2. If the student selected the incorrect answer, a red “x” will appear next to the task.

Vy N < Multiple Choice

Tasks [4] >

1. Multiple Choice ✖

2. Multiple Choice *

3. Multiple Choice *

4. Multiple Choice *

5. Multiple Choice *

6. Multiple Choice *

7. Multiple Choice *

8. Multiple Choice *

9. Hot seat *

10. Hot seat *

11. Hot seat *

Are these two expressions equivalent?

$2a$	$a + a$
------	---------

☐ Equivalent

☒ Not Equivalent

Please select the correct answer

CONTINUE

Student View of Multiple Choice

Below is an overview of what students see when they reach a Multiple Choice task:



Multiple Choice

Are these two equations equivalent?

$$\frac{3a}{2} = 6 \cdot 2$$

$$\frac{6 \cdot 2}{2} = 3a$$

☐ Equivalent
☐ Not Equivalent

Multiple choice options

Question
(can be pictures, videos, etc.)

←

CONTINUE

1. Students can select an option, then click “Continue” to move on.
2. Correctness feedback:
 - a. In **Assessment mode**, students will not receive any correctness feedback on Multiple Choice tasks from GMA. Instead, once they click “Continue”, they will see a green dot next to the task on the left-side tab indicating that they completed the task.

Progress saved

Multiple Choice

Select all of the true statements. Think about points on a number line to help you.

- ☒ A temperature of -9 degrees Celsius is four degrees warmer than a temperature of -5 degrees Celsius.
- ☐ A town with an elevation of -100 feet is 100 feet above sea level.
- ☒ A balance in a bank account of -40 dollars means that you owe 40 dollars.
- ☒ An elevation of -50 feet is farther away from sea level than an elevation of -10 feet.
- ☐ Elevations of -25 feet and 25 feet are the same distance away from sea level but in opposite directions.

CONTINUE

8. Canvas

9. Canvas

10. Canvas

11. Multimedia

12. Multimedia

13. Multimedia

14. Multimedia

15. Multimedia

16. Line Item

17. Line Item

18. Line Item

19. Multimedia

20. Multiple Choice ●

21. Multiple Choice

22. Multiple Choice

23. Multimedia

Progress saved

Multiple Choice

Select all of the true statements. Think about points on a number line to help you.

- ☒ A temperature of -9 degrees Celsius is four degrees warmer than a temperature of -5 degrees Celsius.
- ☐ A town with an elevation of -100 feet is 100 feet above sea level.
- ☒ A balance in a bank account of -40 dollars means that you owe 40 dollars.
- ☒ An elevation of -50 feet is farther away from sea level than an elevation of -10 feet.
- ☐ Elevations of -25 feet and 25 feet are the same distance away from sea level but in opposite directions.

CONTINUE



- b. If the task is **not in Assessment mode**, students will always receive correctness feedback. Once they click “Continue”, they will see either a green check or a red “x” next to the task on the left-side tab.

Vy N <

Tasks (4) >

1. Multiple Choice ✖

2. Multiple Choice ✔

3. Multiple Choice ○

4. Multiple Choice ○

5. Multiple Choice ○

6. Multiple Choice ○

7. Multiple Choice ○

8. Multiple Choice ○

9. Hot spot ○

10. Hot spot ○

11. Hot spot ○

12. Hot spot ○

13. Hot spot ○

14. Hot spot ○

Multiple Choice

Are these two expressions equivalent?

$$\frac{2 + 6}{2 + 3} \quad \frac{6}{3}$$

☐ Equivalent

☒ Not Equivalent

CONTINUE

Teacher View of Student Work in Multiple Choice

Once your students have worked on the Multiple Choice task, you will see task cards representing the work of each student in the Session tab on GMA.

1. These task cards show the status of your students' work, their answers, and whether their choices were correct.



Sessions > AUF77 > Task 1 GRASPABLE MATH

Student 7	Student 4	Student 6	JiEun	Luisa
Are th	Are th	Are th	Are th	Are th
$2c$	$2c$	$2c$	$2c$	$2c$
☒ Equivalent ☐ Not Equivalent	☒ Equivalent ☐ Not Equivalent	☒ Equivalent ☐ Not Equivalent	☒ Equivalent ☐ Not Equivalent	☒ Equivalent ☐ Not Equivalent

Privacy policy © 2020 | Graspable, Inc.

- You can also click on a specific task card to expand the view and see your students' work in detail.

AUF77

Student 4's Work

10/6/2020, 2:36:33 PM

Are these two expressions equivalent?

$2a$	$a + a$
------	---------

☒ Equivalent
☐ Not Equivalent

MULTIMEDIA



Overview

Multimedia is an open-ended option for teachers to incorporate text, photos, videos, and links into an activity.

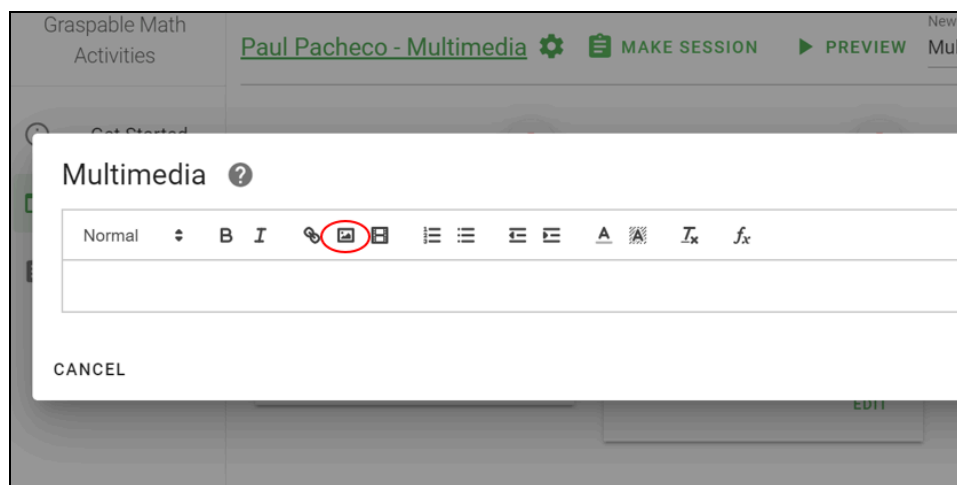
One useful application to this task is to add instructions for your students before another task. Another way you can use this task type is to link useful videos, pictures or any external resources in your Multimedia task to show your students what they are expected to do next.

Below, we will guide you on how to add different media (gif/image/video/URL link/text) to your Multimedia task.

INSERT OPTIONS

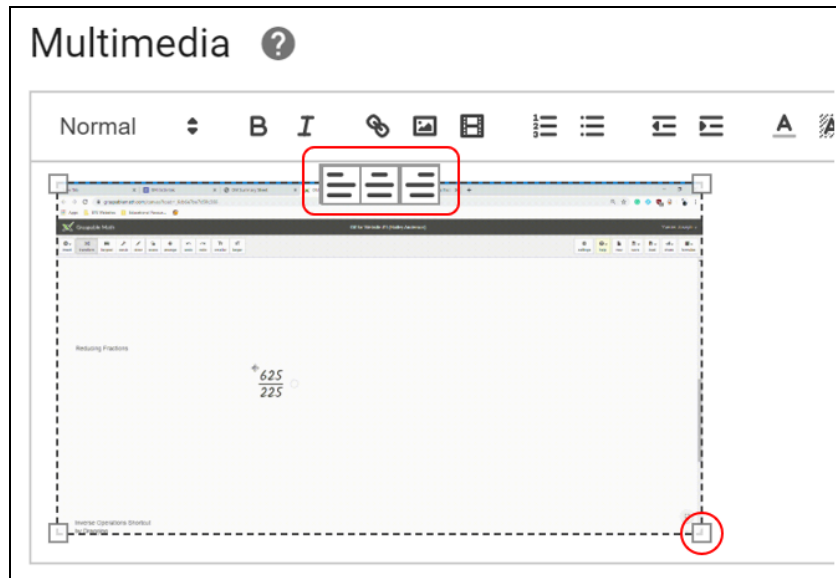
Adding a GIF/Image

1. To insert an image/gif to your Multimedia task, select the picture frame icon on the toolbar. Your computer file manager will auto open. Select and load the image/gif you would like to include in the Multimedia window.





2. After the image/gif is loaded, you can adjust its alignment on the page by clicking on the top three squares. You can also adjust the image size by sliding the corners of the image.

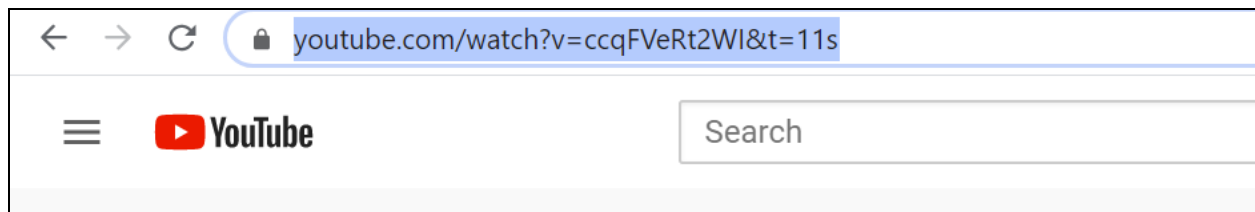
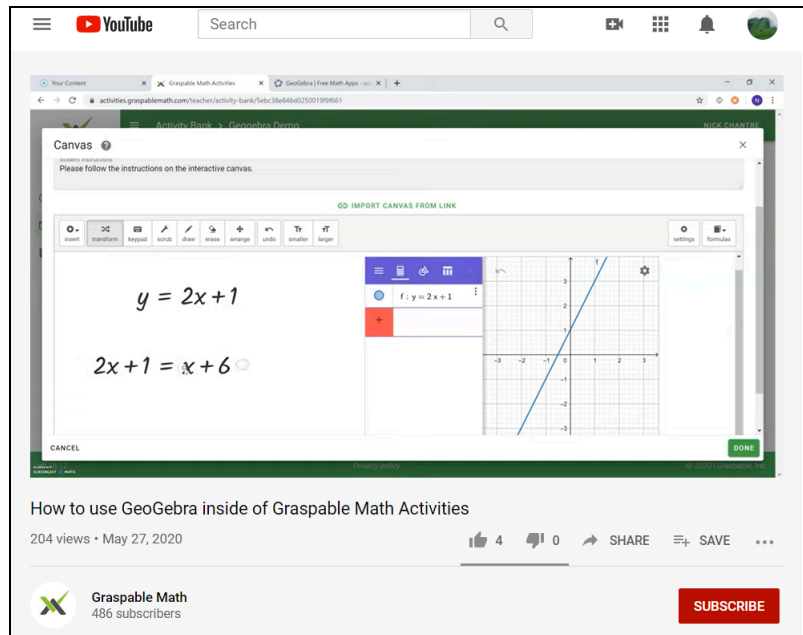


Adding a YouTube Video

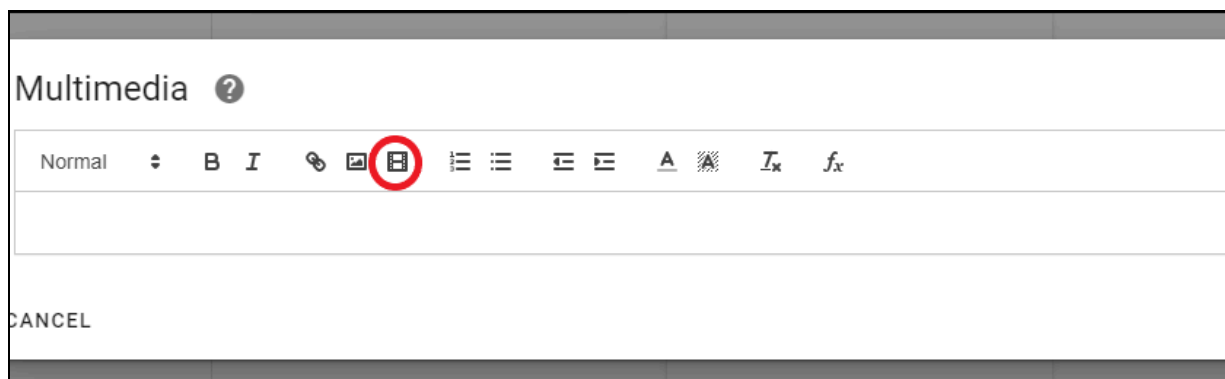
You can also add a YouTube video to your activity using the Multimedia task. This is a very good way to share resources with your student, or provide them with instructions on using GMA.

Please feel free to visit our YouTube channel [Graspable Stache](#) for plenty of videos and resources on GMA content, instructions and gestures!

1. Go to the YouTube video you want to link and copy the URL.



- After copying a YouTube link, create or edit a Multimedia task. Click the video icon in the Multimedia control bar.



- A text box will pop up, where you can paste the link. Select **“Save”** once you’re done, then the video will be loaded onto your Multimedia task.

Multimedia ?

Normal ▾ B I 🔗 📷 📺 ☰ ☷ ⏮ ⏭ A A~~X~~ T_x f_x

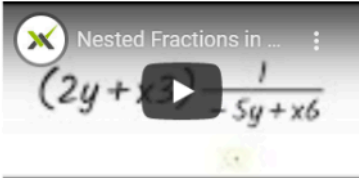
Enter video:

Save

Student's View

When the session is shared with students, they will be able to play the YouTube video directly on GMA.

Multimedia



This is a linked youtube video.

CONTINUE

Adding a Hyperlink

If you want to share online resources with your students within a GMA activity, you can do so by adding a hyperlink in a Multimedia task.

1. After typing up the description or text you want, highlight the space you want to insert the hyperlink, then select the **hyperlink icon** on the toolbar.



Multimedia ?

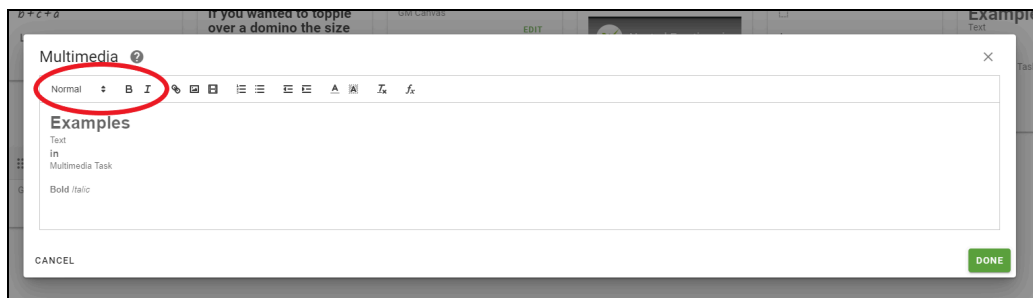
Normal $\div$ B I                       



Adding Text

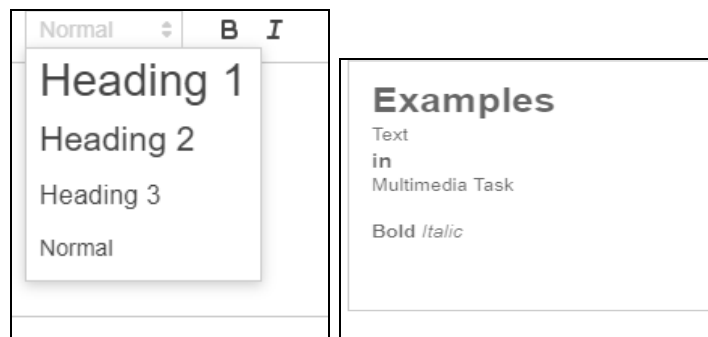
You can add text by using the Multimedia task. By adding text, you can provide instructions for your students, or any other information you would want students to pay close attention to.

1. To add text, open an existing Multimedia task or create a new one. An editing box will appear, where you can type in text as desired.
2. You can also modify text by using the left side buttons of the control bar.



For text size, there are 4 different options: Heading 1, Heading 2, Heading 3, and Normal.

You can also bold and italicize text.



INTEGRATION OF GEOGEBRA

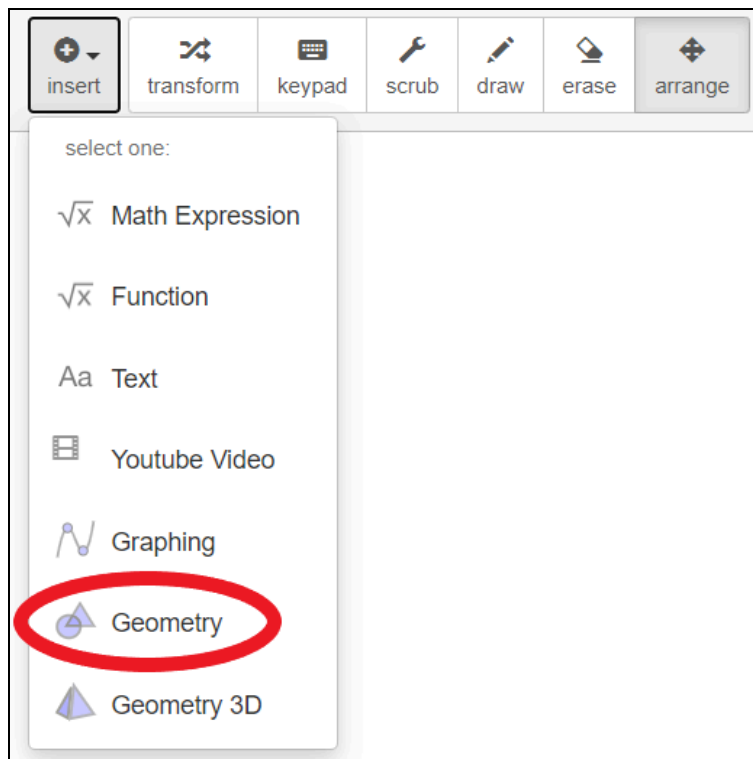


2D Algebra

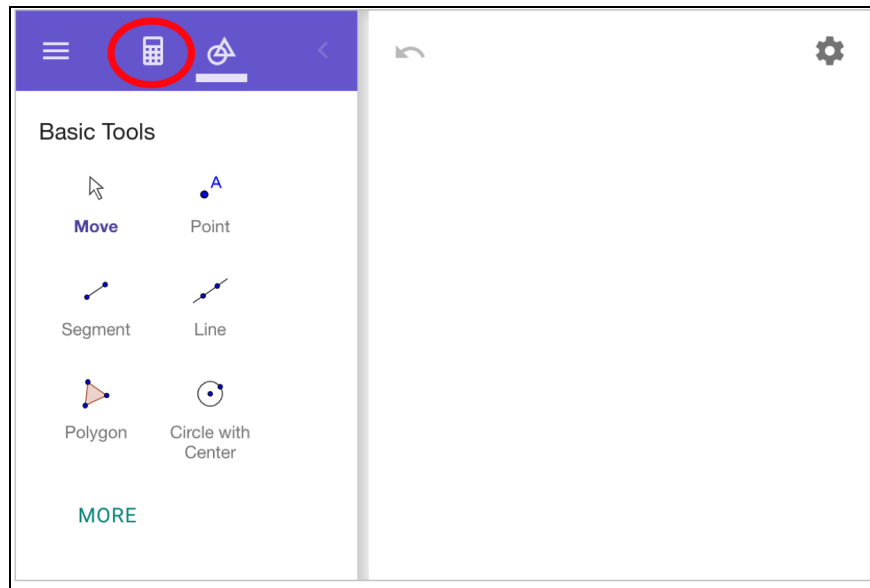
Geogebra is a very useful tool for visualizing geometric shapes. It is a very effective medium to show the relation between algebraic equations and their graphical representation. This tool is only integrated in GMA Canvas.

Integration with Geogebra 2D using Algebra

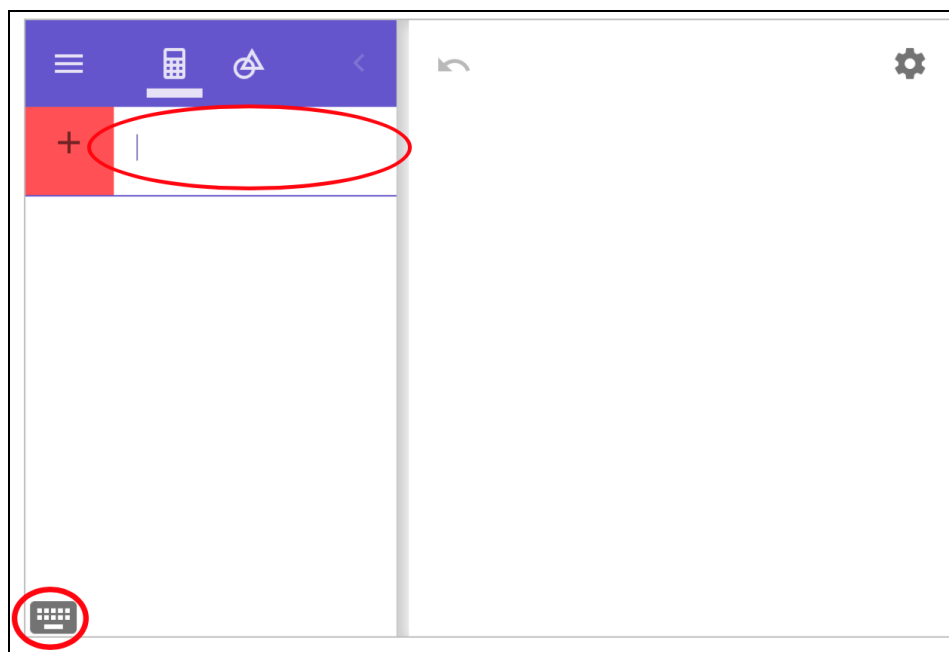
1. Select the “**Insert**” button on the toolbar, and select **Geometry**.



2. A graph box will show up on your Canvas. Click on the **Algebra** button (calculator icon).



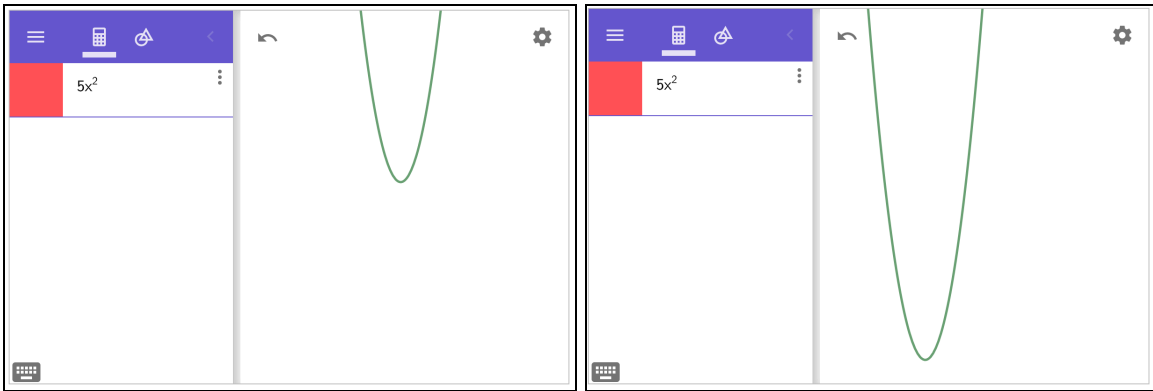
3. Select the **Input** box and type in the desired expression. You can also click on the keyboard logo in the bottom left of the graph box to get access to more algebraic symbols.



4. Once you have inserted the desired graph equation in the input box, a corresponding 2D graph will appear in the graphing space to the right. You can



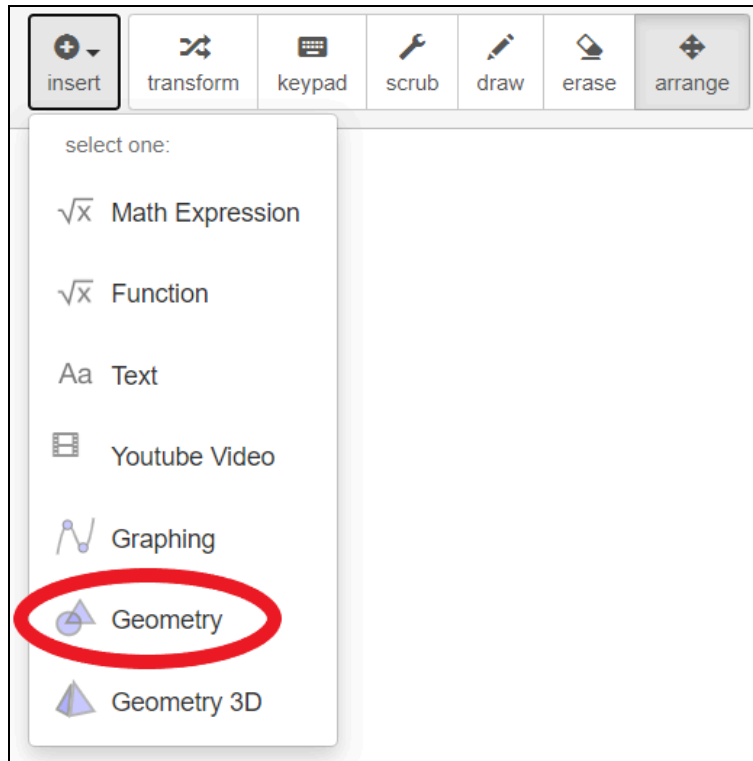
click and drag your mouse to move the 2D graph around and change its placement.



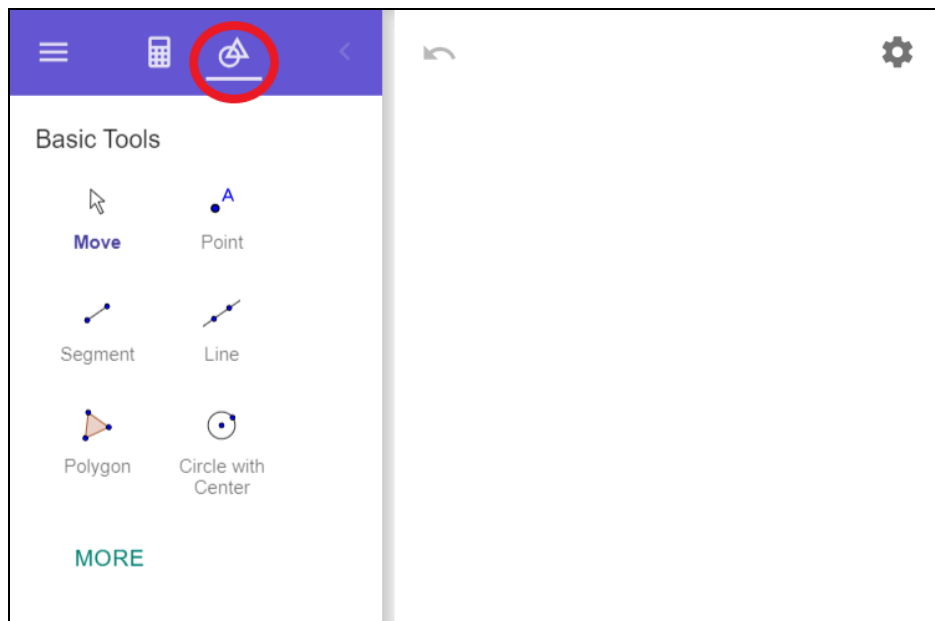
2D Tools

Tools provides a number of geometrical presets that you can insert directly into the canvas. This is different from the Algebra tool, where you have to write out the algebraic equation to get a geometrical shape.

1. Select the “**Insert**” button on the toolbar, and select **Geometry**.



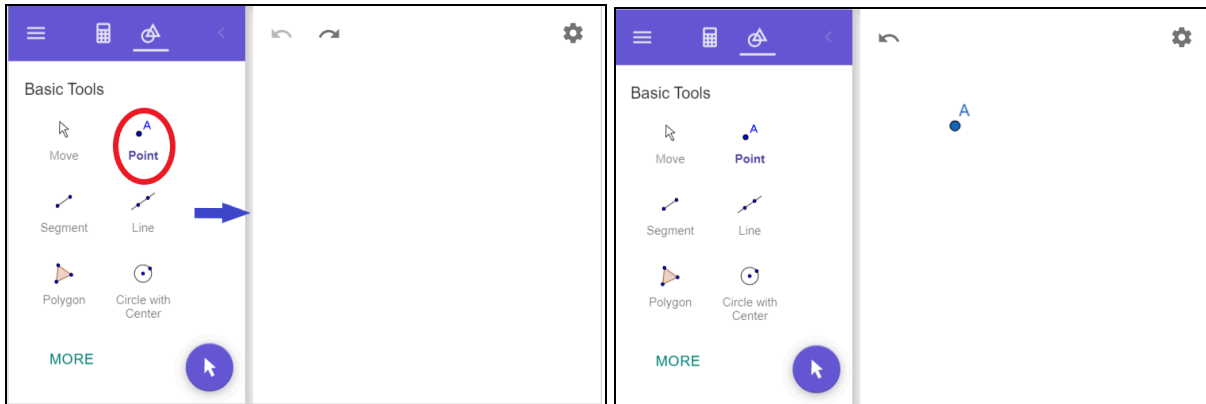
2. A graph box will show up on your Canvas. Click on the **Tools** button (circle and triangle icon).





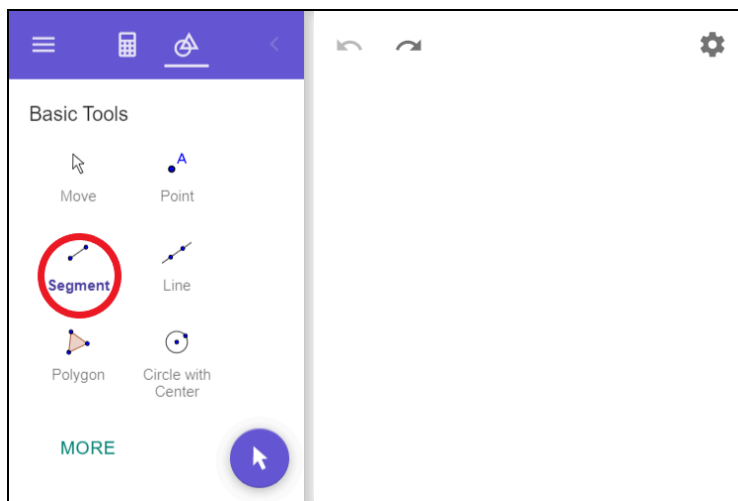
Adding a Point

1. To add a point on the graphing space, select **Point**, then click on the blank graphing area. A point will be displayed at the area you've clicked.

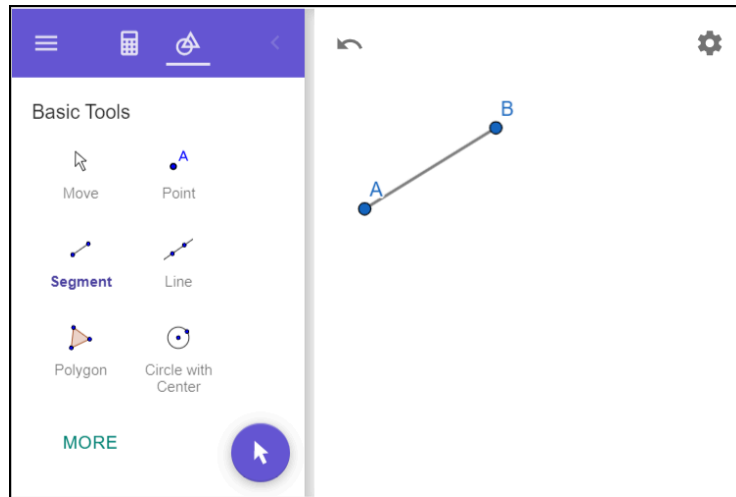


Adding a Segment

1. To add a segment on the graphing space, select **Segment**.

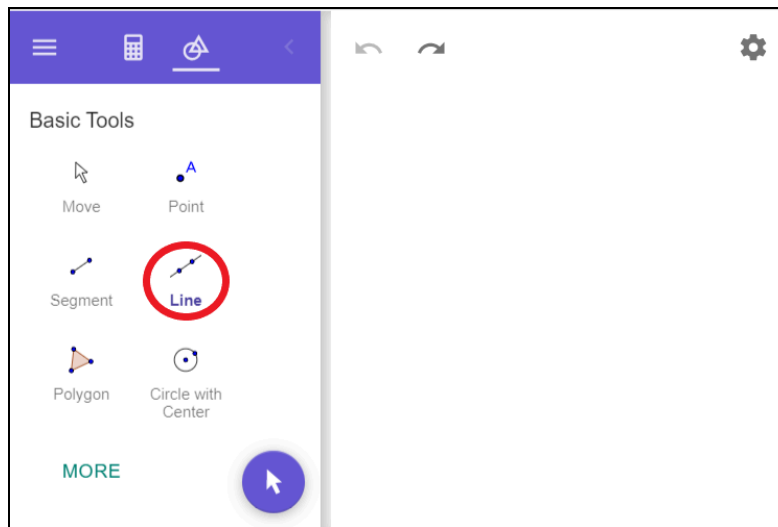


2. Click on a point on the blank graphing area where you want your segment to begin, then drag your mouse to the point where you want your segment to end. A segment will be displayed based on your dragging motion.

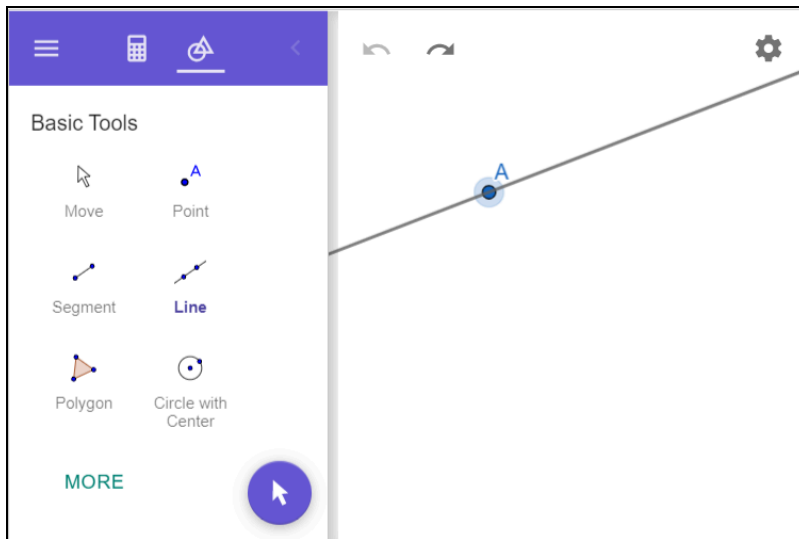


Adding a Line

1. To add a line on the graphing space, select **Line**.

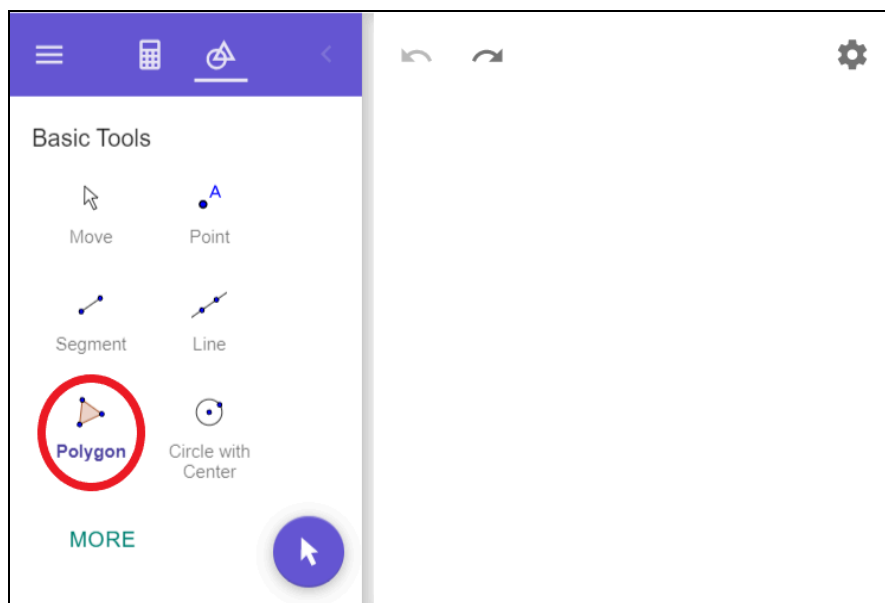


2. Click on a point on the blank graphing area where you want a point on your line to be, then move your mouse around to see the line passing that point moving in different directions. Once you've moved the line in the desired direction, click on another point on the line to solidify the line on the graphing space.

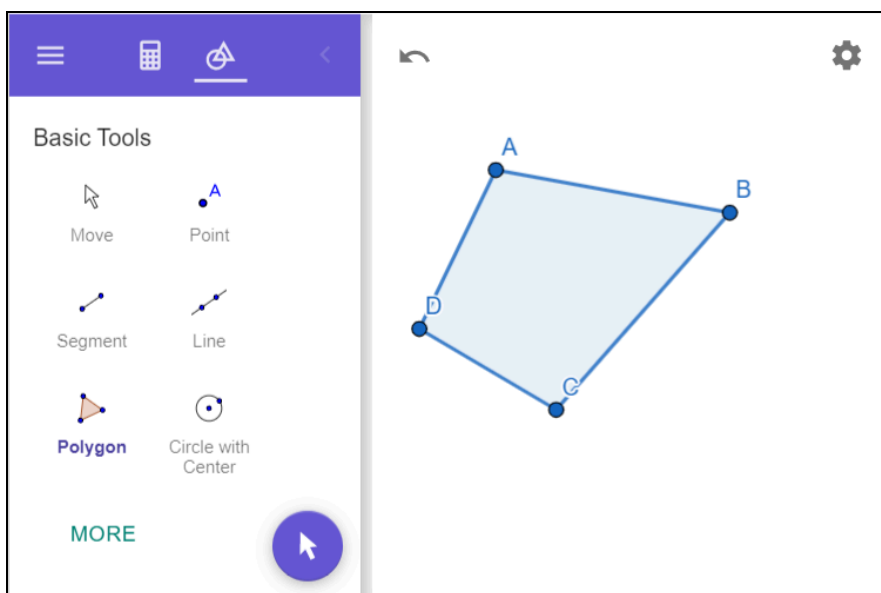


Adding Polygons

1. To add a polygon on the graphing space, select **Polygon**.

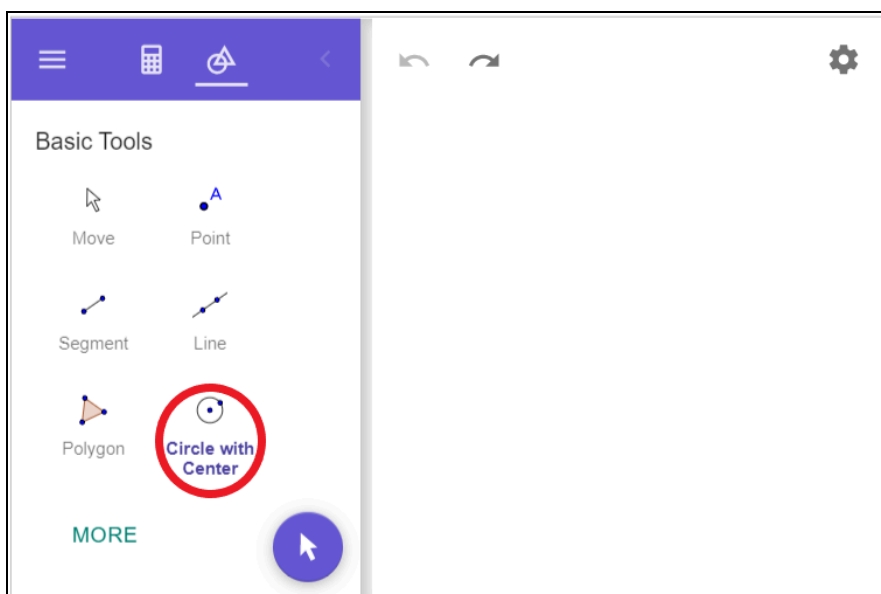


2. Click on a point on the blank graphing area where you want a point on your polygon to be, then drag your mouse to the next point of your polygon, then click again. Repeat this until the desired shape is achieved by clicking the initial point to draw the final side.



Adding Circles

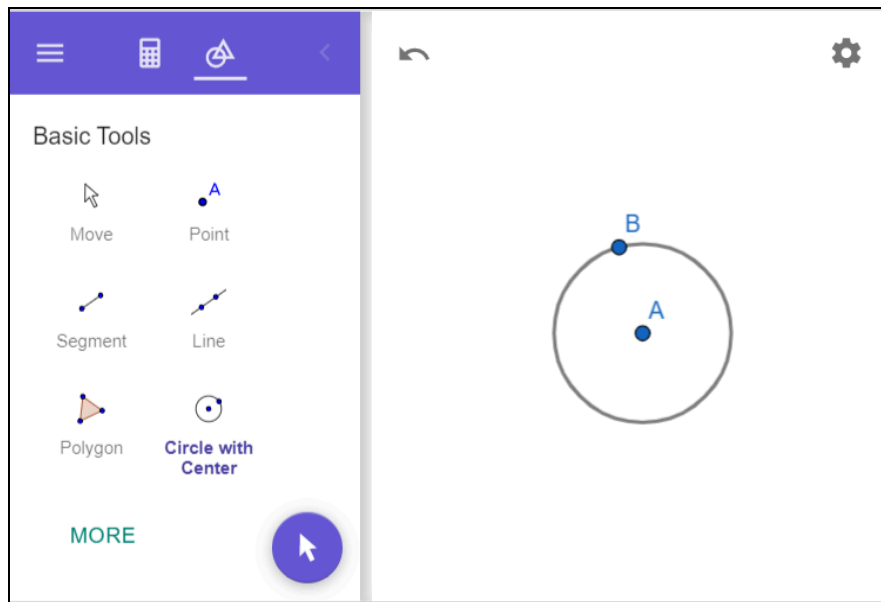
1. To add a circle on the graphing space, select **Circle with Center**.



2. Click on a point on the blank graphing area where you want the center of the circle to be, then drag your mouse further or closer to the center to adjust the

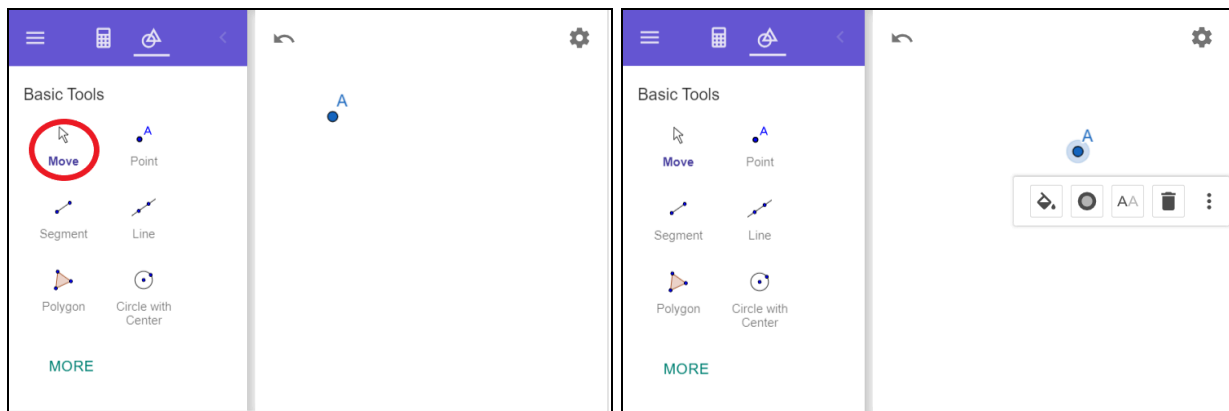


diameter of the circle. When desired shape is achieved, click anywhere on the circle's circumference to solidify the shape.



Moving Objects

1. You can move any object on the graphing space by selecting **Move**, clicking on the desired object, then moving it to the desired placement.

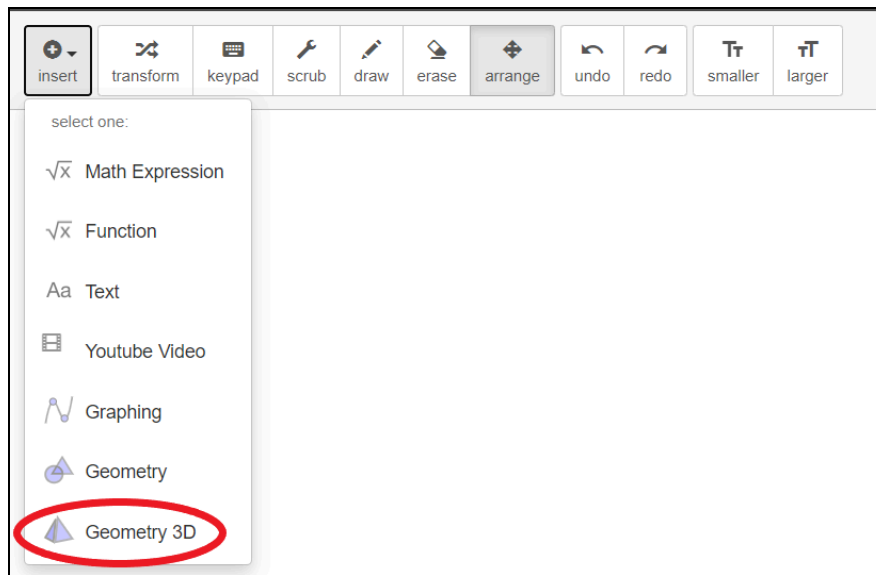




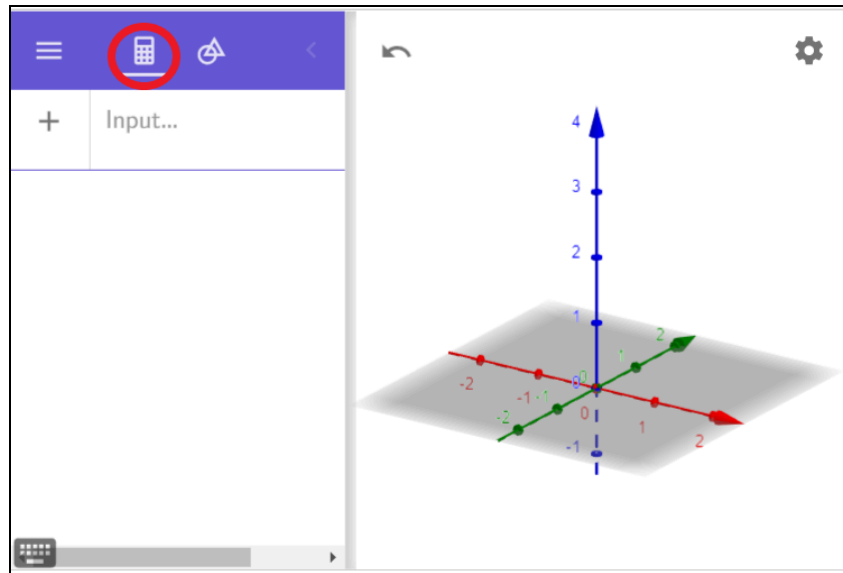
3D Algebra

Integration with Geogebra 3D using Algebra

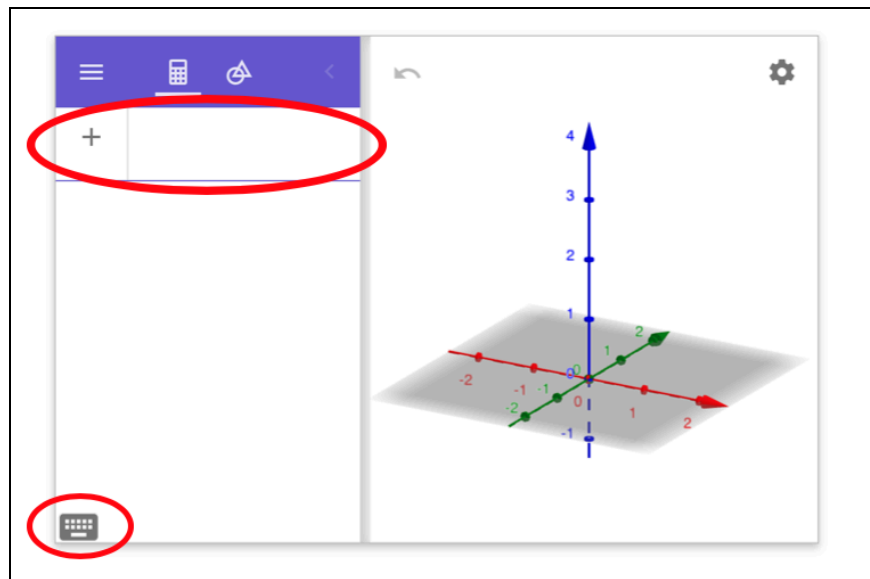
1. Select the “**Insert**” button on the toolbar and select **Geometry 3D**.



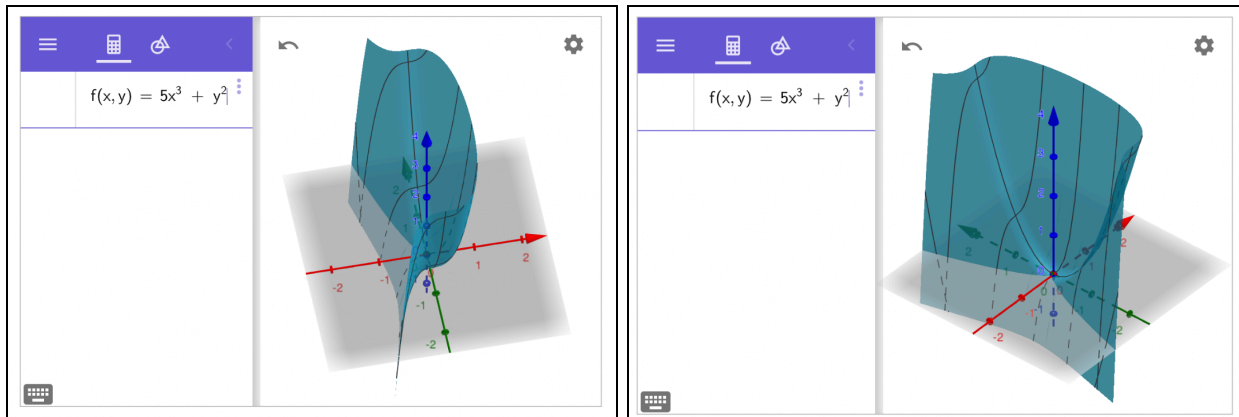
2. A graph box will show up on your Canvas. Click on the **Algebra** button (calculator icon).



3. Select the **Input** box and type in the desired expression. You can also click on the keyboard logo in the bottom left of the graph box to get access to more algebraic symbols.



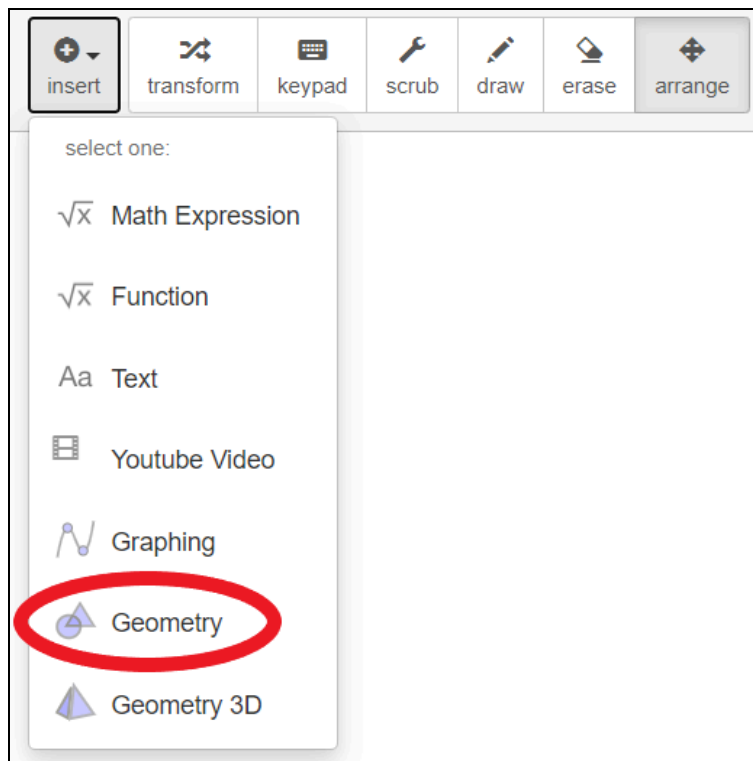
4. Once you have inserted the desired graph equation in the input box, a corresponding 3D graph will appear in the graphing space to the right. You can click and drag your mouse to move the 3D graph around and change its placement.



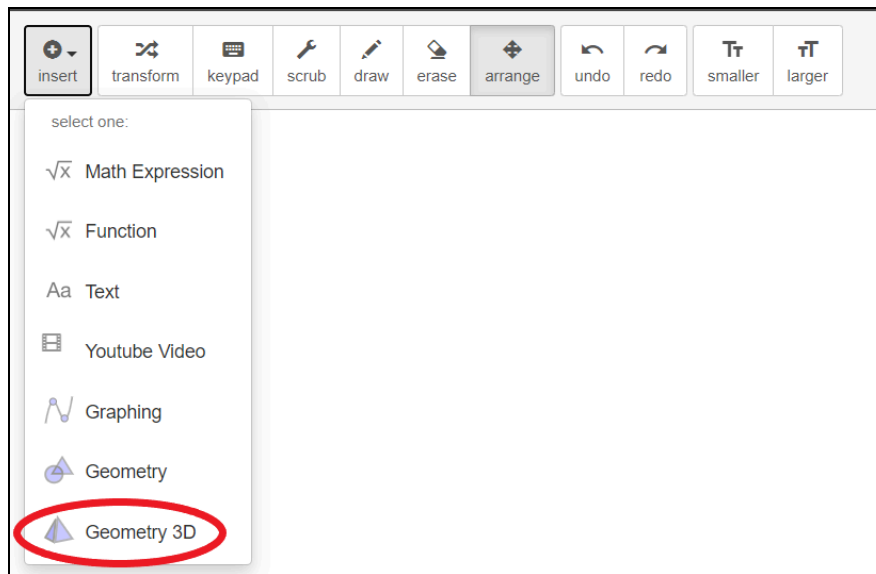
3D Tools

3D Geometry

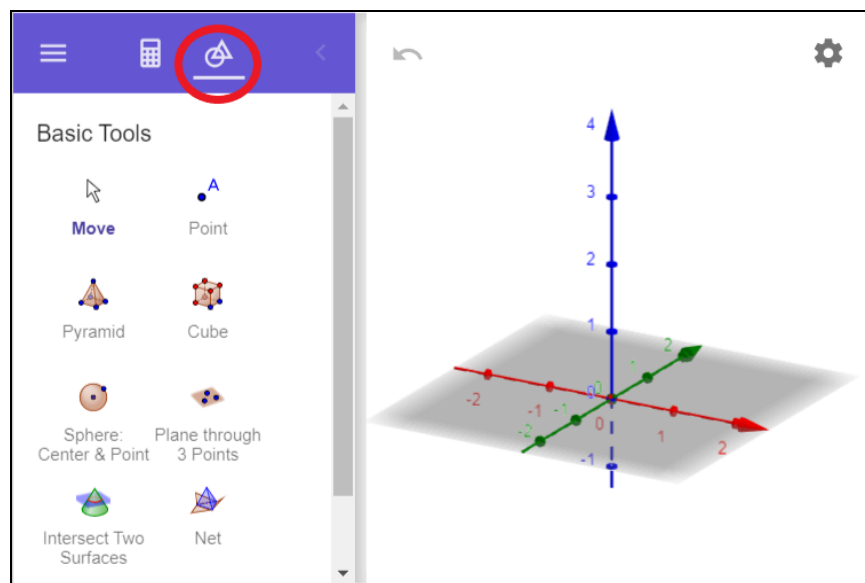
1. Select the “**Insert**” button on the toolbar, and select **Geometry**.



2. Select the “**Insert**” button on the toolbar, and select **Geometry 3D**.

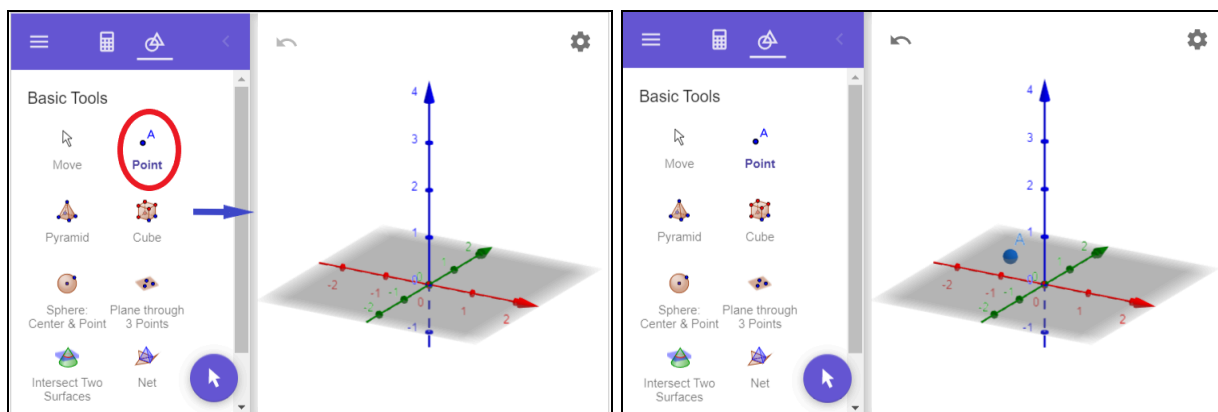


3. A graph box will show up on your Canvas. Click on the **Tools** button (circle and triangle icon).



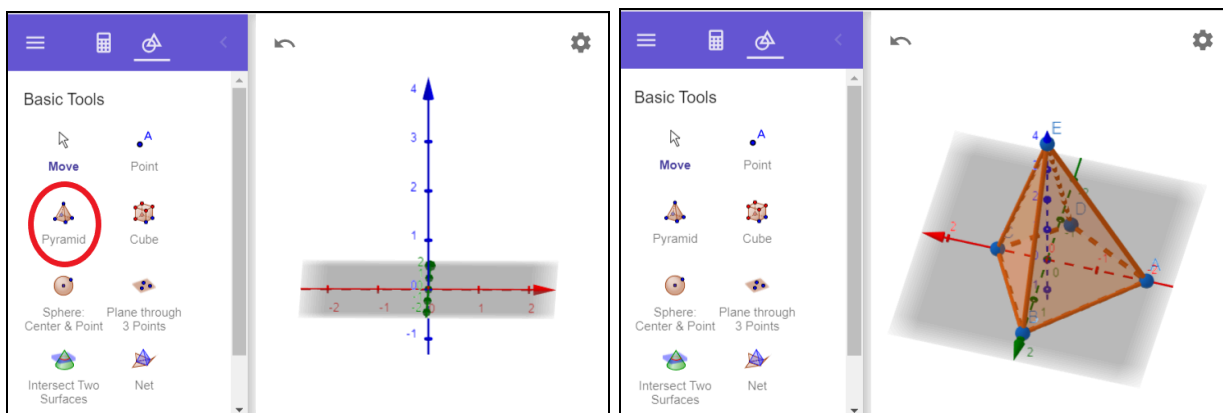
Adding a Point

1. To add a point on the graphing space, select **Point**, then click on the blank graphing area. A point will be displayed at the area you've clicked.



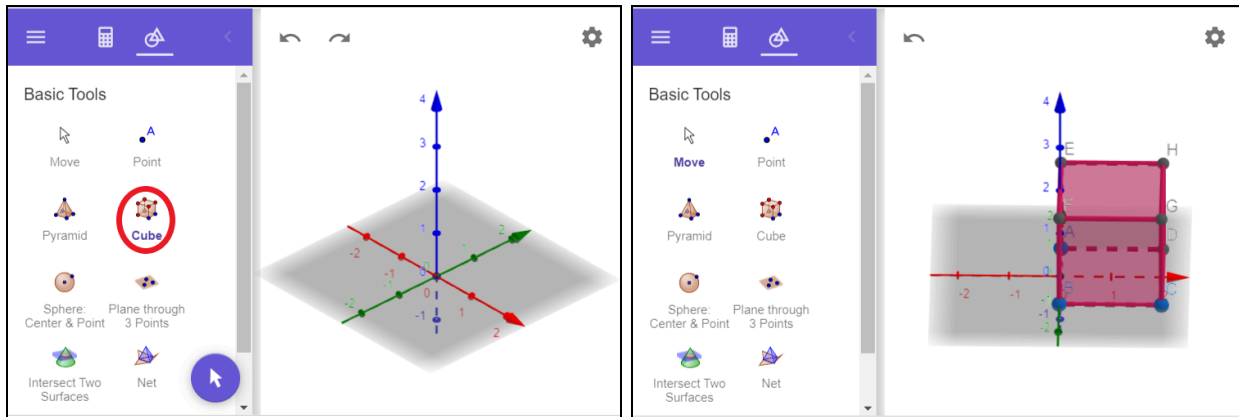
Adding a Pyramid

1. To add a pyramid on the graphing space, select **Pyramid**, then select the 3+ points you want to build your Pyramid base on, then after clicking the initial point to close the base, create a point for the top vertex (apex). A pyramid will be displayed based on the points you've selected.



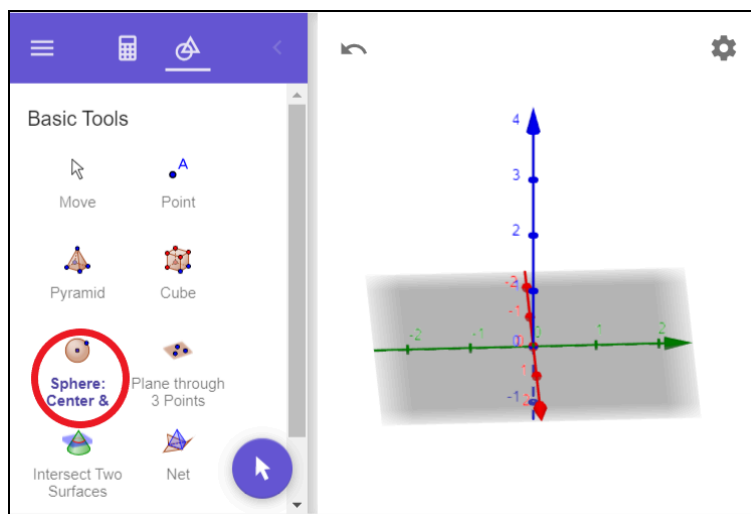
Inserting a Cube

1. To add a cube on the graphing space, select **Cube**, then select the 2 points you want to build your Cube on any 2 axes. A cube will be displayed based on the 2 points you've selected.

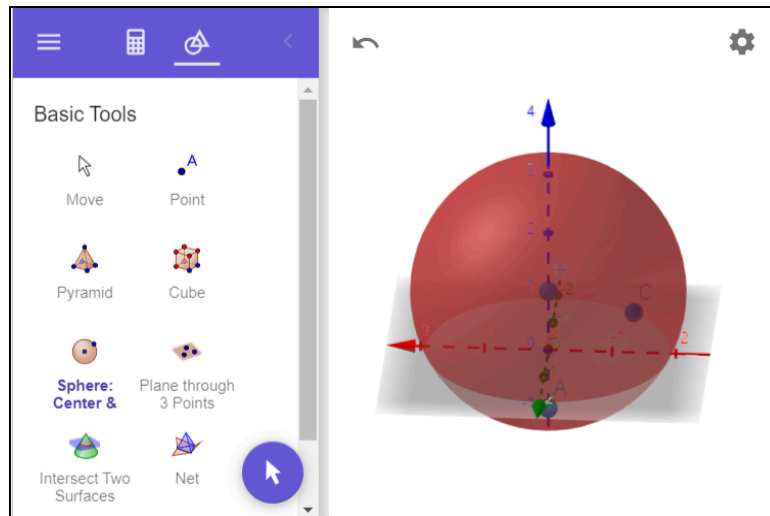


Inserting a Sphere

1. To add a sphere on the graphing space, select **Sphere: Center & Point**.

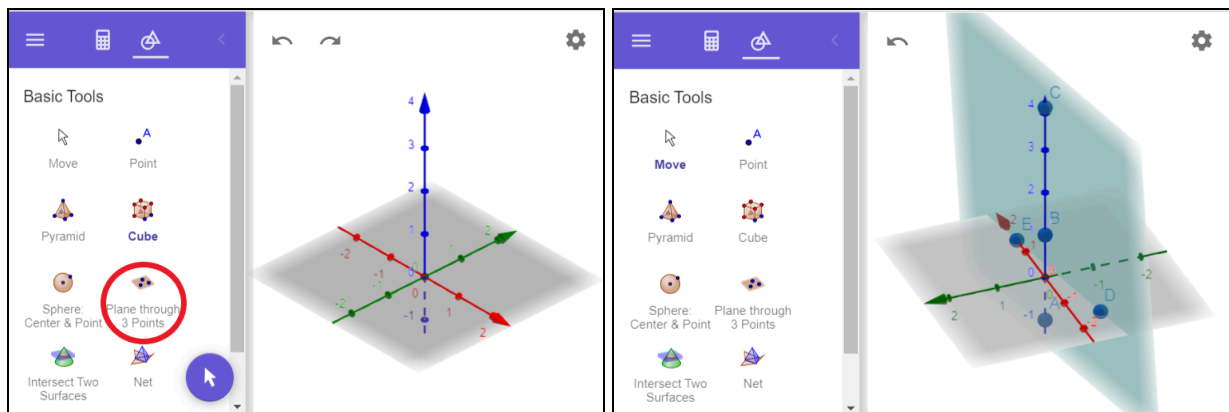


2. Click on a point on the 3D graphing area where you want the center of the sphere to be, then drag your mouse further or closer to the center to adjust the diameter of the sphere. When the desired shape is achieved, click anywhere on the sphere to solidify the shape.



Inserting a Plane

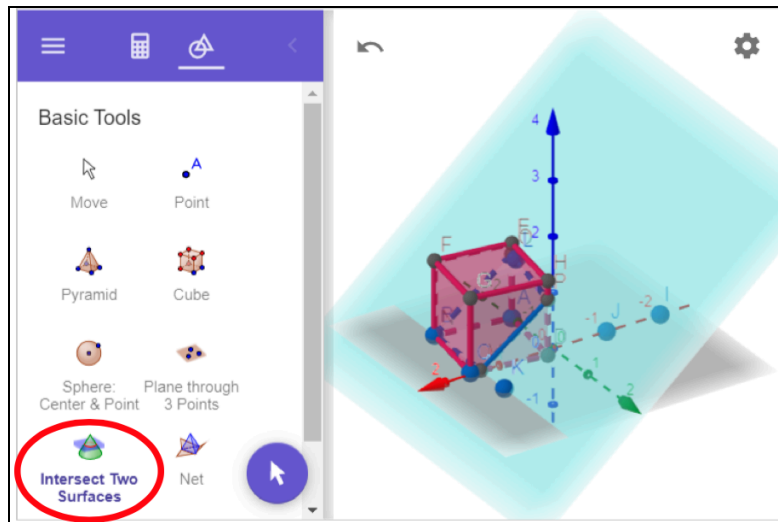
1. To add a plane on the graphing space, select **Plane through 3 Points**. Then select the 3 points you want to build your Plane on the axes. A plane will be displayed based on the 3 points you've selected.



Intersecting Two Surfaces

1. Once you have built two surfaces that are intersecting, you can see the points where the two surfaces intersect by clicking on **Intersect Two Surfaces**, selecting both surfaces, then you can see all the points where the two surfaces overlap.

To see how you can build different surfaces (e.g., pyramid, cube, plane), please see the sections above.



Moving Objects

1. You can move any object on the graphing space by selecting **Move**, clicking on the desired object, then moving it to the desired placement.

