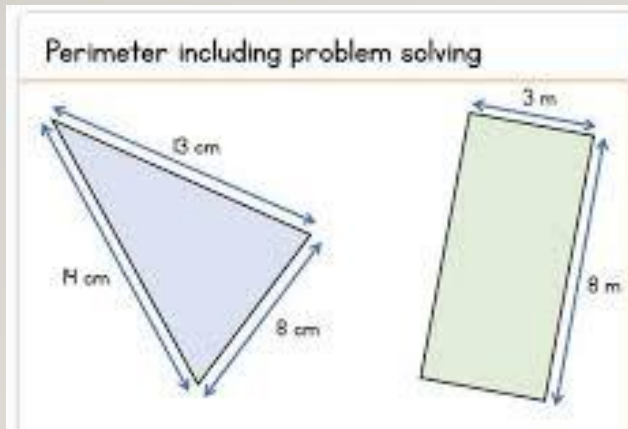


GRASPABLE MATHS WITH GEOGEBRA

$$\begin{aligned}2x + 3 &= 13 \\2x + 3 - 3 &= 13 - 3 \\2x &= 13 - 3 \\2x &= 10 \\\frac{2x}{2} &= \frac{10}{2} \\x &= \frac{10}{2} \\x &= 5\end{aligned}$$



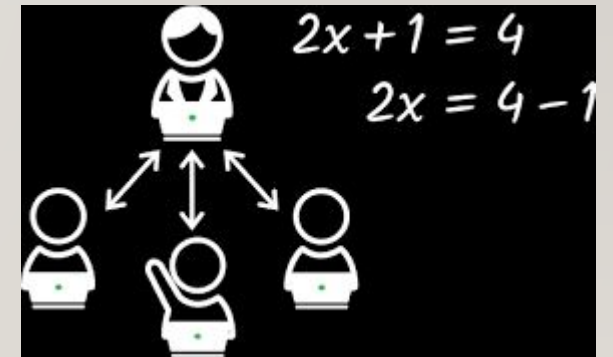
MRS.VANDANA GUPTA

PGT

S D PUBLIC SCHOOL,

EAST PUNJABI BAGH

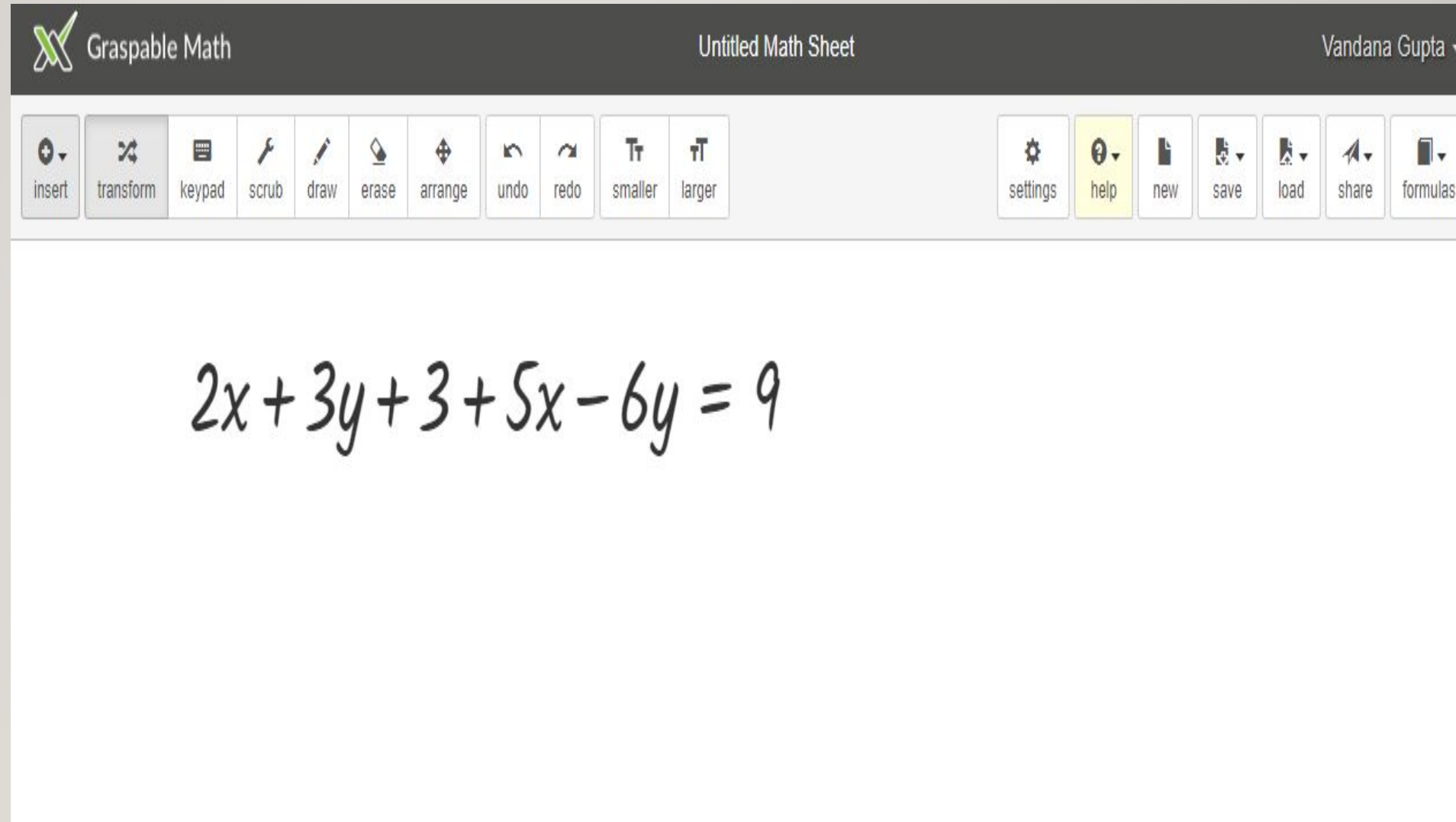
NEW DELHI



Mathematical equations and expressions.

यह उपयोगकर्ताओं को बीजगणितीय अभिव्यक्तियों में हेरफेर करने और माउस को खींचकर और छोड़ने या इशारों का उपयोग करके उनके कार्यों की तत्काल प्रतिक्रिया देखने की अनुमति देता है।

Graspable Maths



The screenshot displays the Graspable Maths application interface. At the top, the title bar shows the Graspable Math logo, the text "Graspable Math", the document name "Untitled Math Sheet", and the user name "Vandana Gupta". Below the title bar is a toolbar with various icons for editing and navigation. The main workspace contains the handwritten mathematical equation $2x + 3y + 3 + 5x - 6y = 9$.

Graspable Math
Untitled Math Sheet
Vandana Gupta

insert transform keypad scrub draw erase arrange undo redo smaller larger settings help new save load share formulas

$$2x + 3y + 3 + 5x - 6y = 9$$

Welcome to the Graspable Math Canvas!

Wikipedia

Two variables [\[edit\]](#)

A common form of a linear equation in the two v

$$y = mx + b,$$

where m and b designate constants (parameter b comes from the fact that the set of solutions of s in the plane. In this particular equation, the constant term b defines the gradient of that line, and the constant term b defines where the line crosses the y -axis, otherwise known as the y -int

Since terms of linear equations cannot contain p variables, nor any power (other than 1) or other involving terms such as xy , x^2 , $y^{1/3}$, and $\sin(x)$ a

Forms for two-dimensional linear equ

Linear equations can be rewritten using the laws

Graspable Math

insert transform scrub arrange draw erase clear all

create any math expression

or drag and drop one

1. Get Started

Create any math expression with the insert menu, or simply drag and drop most expressions from wikipedia into the sidebar.

rewrite by dragging

$$2x + 3 = 5$$
$$\Leftrightarrow 2x = 5 - 3$$

add by tapping

$$2x + 3x$$
$$\Leftrightarrow 5x$$

factor by dragging & holding

$$a^2 + 2a$$
$$\Leftrightarrow a \cdot (a + 2)$$

2. Do Algebra With Visual Gestures

Work on algebra expressions by clicking and dragging numbers and symbols. Often this is as simple as moving terms where they would "go" in the result.

To select "2x"

a) hit <space> while dragging

$$x = 2x + 1$$

spacebar

or

b) tap the x while dragging the 2

$$x = 2x + 1$$

3. Pick up Multiple Terms

There are several ways to pick up more than one term at once. You can press <space> after picking a term up, or on touch devices you can tap to select additional terms during dragging. Use the help menu to learn more.

ACTIVITY USING SCREEN SHARING

SOLVING OF EXPRESSION AND DISPLAY OF STEPS

$$2x + 3y + 3 + 5x - 6y = 9$$

$$2x + 3y + 5x - 6y = 9 - 3$$

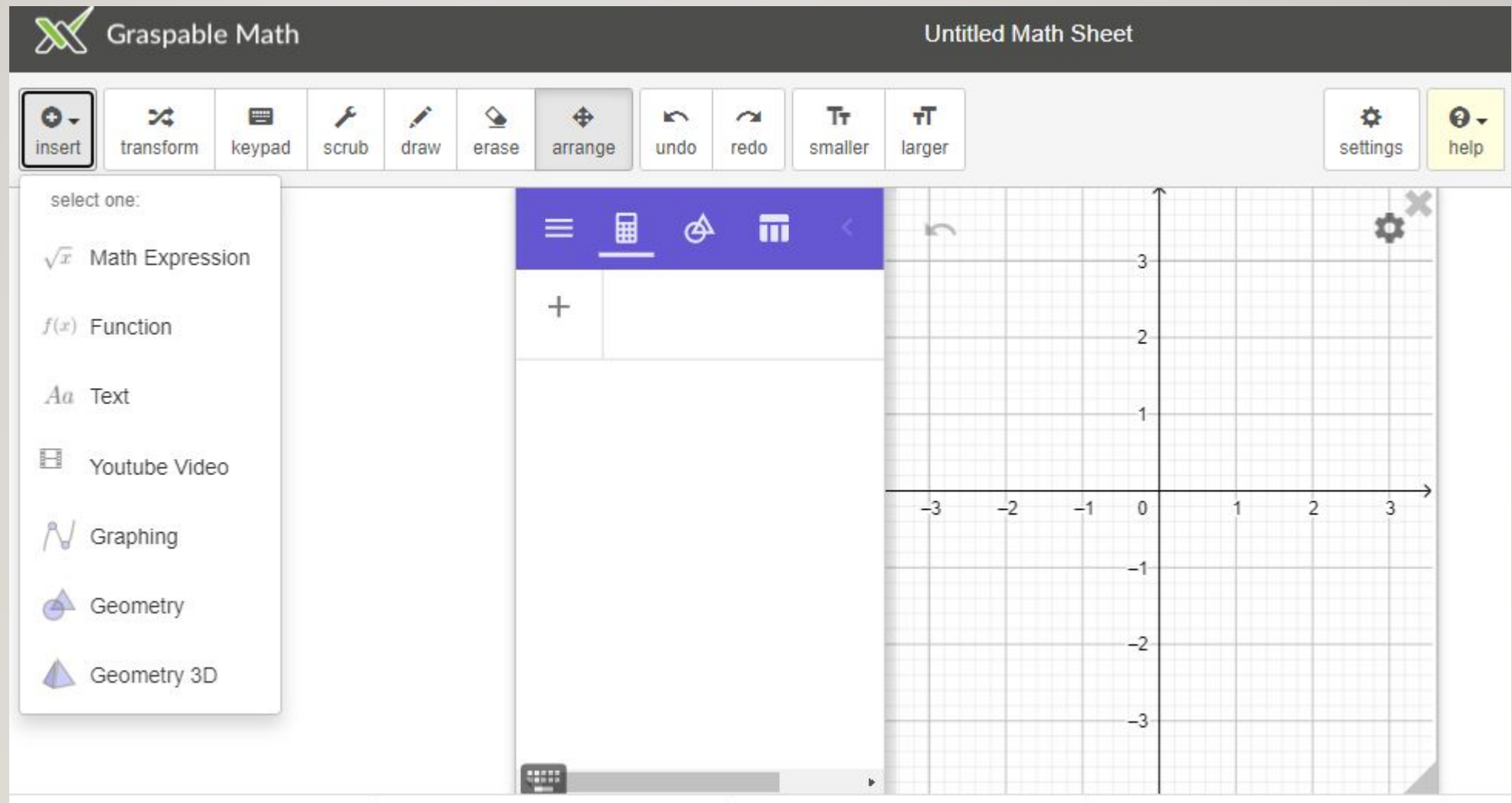
$$3y + 7x - 6y = 9 - 3$$

$$7x - 3y = 9 - 3$$

$$7x - 3y = 6$$

INTEGRATE Graspable Math with GEOGEBRA

GeoGebra
एक ओपन सोर्स
एप्लिकेशन है
जो बच्चों को
भावों की
कल्पना करने में
मदद करता है।



ACTIVITY USING SCREEN SHARING

The screenshot displays the Graspable Math application interface. At the top, the title bar shows the Graspable Math logo, the document name "Untitled Math Sheet", and the user name "Vandana". Below the title bar is a toolbar with various icons for editing and drawing, including "insert", "transform", "keypad", "scrub", "draw", "erase", "arrange", "undo", "redo", "smaller", and "larger". To the right of the toolbar are buttons for "settings", "help", "new", "save", "load", and "share".

The main workspace is divided into three sections:

- Equation Input:** On the left, there are two input boxes for equations. The top one contains $2x + 3y = 6$ and the bottom one contains $x - y - 3 = 0$. Each box has a close button (X) in the top right corner.
- Equation List:** In the center, there is a list of equations. The first entry is "eq1 : $2x + 3y = 6$ " with a green circle next to it. The second entry is "eq2 : $x - y - 3 = 0$ " with a blue circle next to it. Below these is an "Input..." option with a plus sign.
- Graph:** On the right, there is a coordinate plane with a grid. Two lines are plotted: a green line labeled "eq1" and a blue line labeled "eq2". The green line has a negative slope and passes through the y-axis at (0, 2). The blue line has a positive slope and passes through the y-axis at (0, -3). The two lines intersect at the point (3, 0).

On the far right, there are four question cards, each with a close button (X) in the top right corner:

- What is the slope of line 1?
- What is the intercept of line 1?
- What is the slope of line 2?
- What is the intercept of line 2?

EASY DRAG AND DROP FEATURE

FROM GRASPABLE MATH TO GEOGEBRA

FROM GEOGEBRA TO GRASPABLE MATH

ग्रैपेबल मैथ्स जियोजेब्रा को आसानी से आसानी से
खींचेएकीकृत कर सकते हैं

SCREEN SHARE

HOW TO INSTALL GRASPABLE MATH

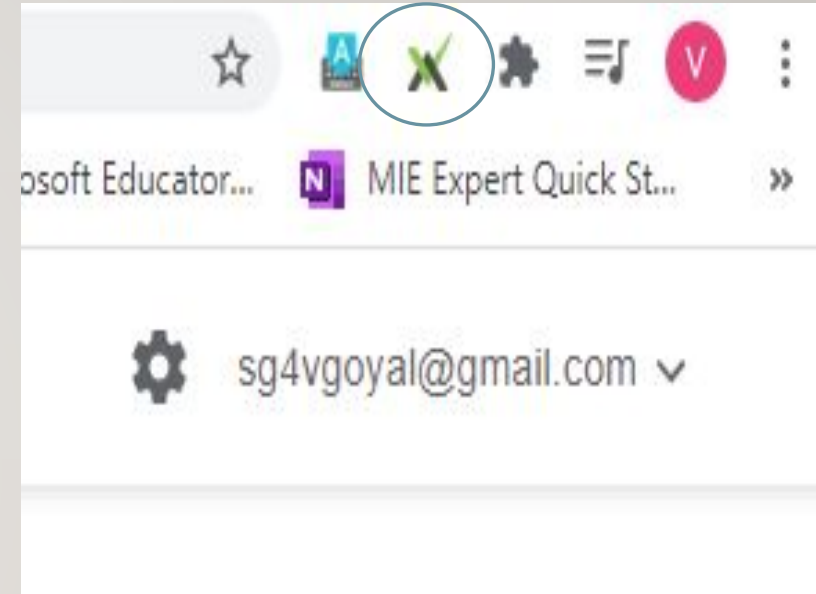
https://chrome.google.com › graspable-math-sidebar

Graspable Math Sidebar

15-Oct-2020 — To **download** to your desktop sign into Chrome and enable sync or send ...

Graspable Math lets you turn static **mathematical** expressions into dynamic objects! Use our full-size app at <https://graspablemath.com/canvas> or this sidebar ... handle to the side and dropping it on a **free** space – substitute values by ...

You visited this page on 15/5/21.



Explore algebra online.

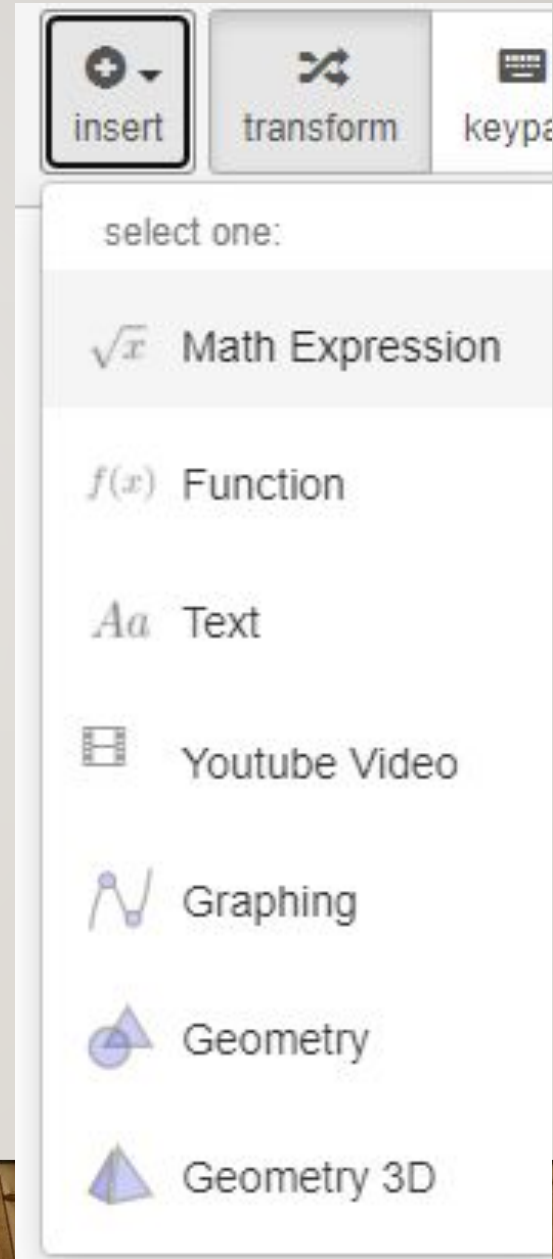
Move terms fluently to solve equations and explore the power of algebra without the frustration – for free!

$$+ 84x + 8 + 3$$

Explore Algebra!

SCREEN SHARE

DESCRIPTION OF VARIOUS TOOLS PRESENT IN THE CANVAS



GEOMETRY FEATURE

The screenshot displays the Graspable Math software interface. At the top, the logo and name "Graspable Math" are on the left, and the document title "Untitled Math Sheet" is on the right. Below this is a toolbar with icons for various functions: insert, transform, keypad, scrub, draw, erase, arrange, undo, redo, smaller, larger, settings, and help. The main workspace is divided into three vertical panels. The left panel is empty. The middle panel, titled "Basic Tools", contains a list of drawing tools: Move, Point, Segment, Line, Polygon, and Circle with Center. A "MORE" button is at the bottom of this panel. The right panel shows a geometric diagram of a circle with a center point labeled "A" and a point on the circumference labeled "B".

SCRUB FEATURE

The screenshot displays a digital workspace interface with the following components:

- Toolbar:** A horizontal row of tool buttons including 'insert', 'transform', 'keypad', 'scrub' (highlighted), 'draw', 'erase', 'arrange', 'undo', 'redo', 'smaller', 'larger', and 'settings'.
- Canvas:** A large white area containing a handwritten equation $(x - \hat{2})^2 + (y - \hat{2})^2 = \hat{4}$ and two geometric diagrams. The diagrams show a small circle with a blue point labeled 'B' on its circumference, and a larger circle labeled 'eq1'.
- Object List:** A vertical panel on the right side of the canvas listing objects:
 - Point A
 - Point B
 - c = Circle through B with
 - eq1: $(x - 2)^2 + (y - 2)^2 =$
 - Input...
- Settings Panel:** A small panel on the far right with a settings gear icon and a trash can icon.

GEOMETRY 3D FEATURE

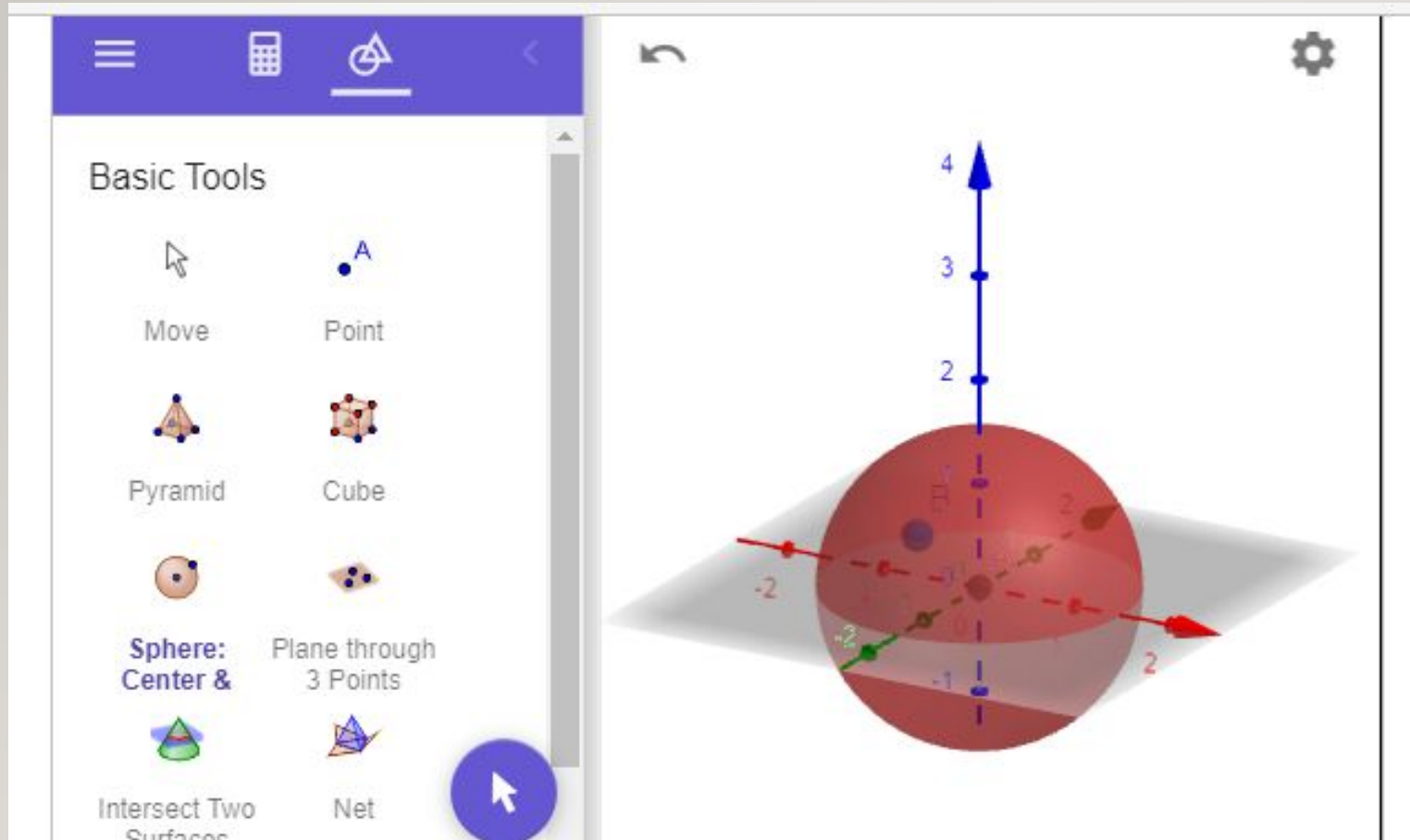
Graspable Math Untitled Math Sheet

insert transform keypad scrub draw erase arrange undo redo smaller larger settings help

Calculator interface with a blue header bar containing a menu icon, calculator icon, and a back arrow. Below the header is a large white area with a plus sign (+) in the top left corner.

3D coordinate system visualization showing a vertical z-axis and a horizontal xy-plane. The z-axis is labeled from 0 to 4. The xy-plane has x and y axes with tick marks at -2, -1, 0, 1, 2. A green line with arrows is drawn in the xy-plane, passing through the origin and the point (1, 1). A red line with arrows is also drawn in the xy-plane, passing through the origin and the point (2, -1). A grey shaded plane is shown below the xy-plane.

SPHERE: GRAPHICALLY AND EQUATION



	$A = \text{Intersect}(x\text{Axis}, z\text{Axis})$ $\rightarrow (0, 0, 0)$
	$B = (-1.17, 0.91, 0)$
	$a : \text{Sphere}(A, B)$ $\rightarrow x^2 + y^2 + z^2 = 2.2$
	Input...

INSERT EXPR

SHOW

x-axis

y-axis

z-axis

Using scrub feature

The screenshot shows a software interface with a toolbar at the top containing icons for insert, transform, keypad, scrub, draw, erase, arrange, undo, redo, smaller, larger, and settings. Below the toolbar is a list of objects:

- A = Intersect(xAxis, zAxis) → (0, 0, 0)
- B = (-1.17, 0.91, 0)
- a : Sphere(A, B) → $x^2 + y^2 + z^2 = 2.2$
- eq1: $(x + 1)^2 + (y + 1)^2 + (z + 1)^2 = 4$
- + Input...

To the right of the list is a 3D coordinate system with a red sphere. The sphere is centered at (-1, -1, -1) and has a radius of 1. The x, y, and z axes are shown with arrows. The z-axis has tick marks at 2 and 4. The sphere is intersected by a horizontal plane at z = 0, and a vertical dashed line passes through the center of the sphere.

$$(x+1)^2 + (y+1)^2 + (z+1)^2 = 4$$

USE ONLINE RESOURCE DIRECTLY

The image shows a digital workspace interface. At the top, there is a search bar with the text "solutions" and a magnifying glass icon. Below the search bar, two search results are displayed:

- Result 1:** "Sine & Cosine of a Sum: Discovery" by Tim Brzezinski. The thumbnail shows a right-angled triangle with an angle $\alpha + \beta$ and a hypotenuse of length 1. A list of trigonometric identities is visible on the right side of the thumbnail:
 - $\sin(\beta)$
 - $\sin(\alpha)\sin(\beta)$
 - $\cos(\alpha)\sin(\beta)$
 - $\sin(\alpha + \beta)$
 - $\cos(\alpha)\cos(\beta)$
 - $\sin(\alpha)\cos(\beta)$
 - $\cos(\beta)$
 - $\cos(\alpha + \beta)$
- Result 2:** "Solutions to Linear Inequalities" by Tim Brzezinski. The thumbnail shows a coordinate plane with a yellow dot at the point $(-3, 5)$ and the equation $0.5x + 1y$ written above it.

At the bottom of the workspace, there is a toolbar with various icons, including a grid, a heart, a mouse cursor, a pencil, an eraser, and a selection tool. On the right side of the workspace, there is a vertical sidebar with icons for a folder and a Google Drive logo.

To the right of the workspace, the equation $x^2 + y^2 + z^2 = 2.2$ is handwritten in black ink on a white background.

USE FORMULAS

insert transform keypad scrub draw erase arrange undo redo smaller larger settings help new save load share formulas

$$2x^2 + 5x + 10 = 0$$

$$x = \frac{-5 \pm \sqrt{5^2 - 4 \cdot 2 \cdot 10}}{2 \cdot 2}$$

Drag one side of a formula onto a highlighted expression on the canvas to apply it.

Quadratic Formula

$$ax^2 + bx + c = 0 \Leftrightarrow x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Manually Factoring a Quadratic

$$x^2 + bx + c \Rightarrow (x + \square)(x + \square)$$

Difference of Squares

$$a^2 - b^2 \Leftrightarrow (a + b)(a - b)$$

$$2x^2 + 5x + 10 = 0$$

to apply it.

Quadratic Formula

$$ax^2 + bx + c = 0 \Leftrightarrow x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Create Activity Bank and choose from

activities.graspablemath.com/teacher/activity-bank/own

Graspable Math Activities

Activity Bank

EXPLORE FEATURED MY ACTIVITIES

My Activities ?

Filter Activities

CREATE ACTIVITY

Free Activities: 0/6 UPGRADE

Title	Last Edited ↓	# Tasks
No activities...yet. Click the "Create Activity" button to create one!		

Rows per page: 25

Create Sessions and Send to students for assessment using link and session code. Review also.

Session Code
ZTY5S
Public Session

COPY INVITE LINK

Assessment Mode

STUDENT OVERVIEW

Waiting for students to join...

Sessions > ZTY5S VANDANA GUPTA

Tasks Overview

Task 1 (Canvas) GM Canvas 	Task 2 (Line it up) Goal Line $y = 1x^2 + 3$ 	Task 3 (Line it up) Goal Line $y = 4x^2 - 5$ 	Task 4 (Line it up) Goal Line $y = 5 - x^2$
Task 5 (Line it up)	Task 6 (Line it up)	Task 7 (Line it up)	Task 8 (Line it up)

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Thank you for watching