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Equatio for Windows

Training Guide

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Everway

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Introduction

This guide is designed to help you learn how to use Equatio for Windows.

Equatio for Windows enables you to easily create equations, formulas, and much more, in Microsoft Word, PowerPoint, and your other Windows applications. Digital math is often difficult to create, so Equatio helps to make math and STEM classes more accessible and engaging for every learner.

Basic Exercises

These exercises help you learn all the core skills you need to use the different Equatio features.

Further Exercises

These exercises show additional functions/settings that you might find useful.

Other versions of Equatio

While this guide focuses on the Windows version of Equatio, it is also available for Mac (as a desktop application) and Chrome (as a browser extension). All three versions have similar toolbar buttons and features.

This guide assumes that you have a premium version of Equatio. While the free versions of Equatio can help anyone to work with math, they lack features such as prediction, Equatio Mobile integration, and the screenshot reader.

Note: Premium Equatio licenses include all platforms – you can use Equatio for Windows, Mac, or Chrome as required.

1. Getting Started

In this section, you'll learn how to:

- Start Equatio
- Understand the Equatio toolbar
- Configure Equatio's math and toolbar options

Equatio for Windows is an application that adds a toolbar to your Windows desktop. You can use this toolbar to create math which can then be inserted directly into Microsoft Word or PowerPoint, or copied to the clipboard so it can be used with other applications.

Using Equatio successfully starts with learning how to use each tool in its toolbar.

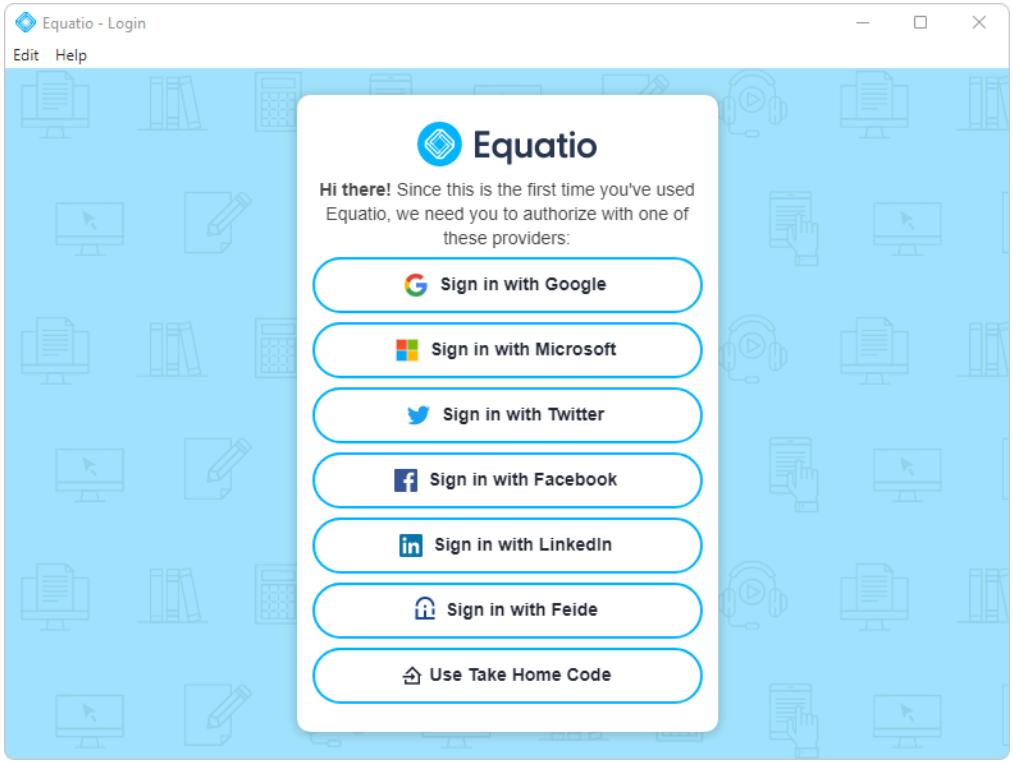
Exercise 1 Starting Equatio

In this exercise, you'll make sure that Equatio is installed and learn how to open the toolbar.

1. Start Equatio. Depending on how your system is set up, you can:
    - Click **Start** > **All apps** > **Equatio**.
      Note that you may not need the "All apps" step.
    - Double-click Equatio's icon  on your Windows desktop.
    - Start typing "Equatio" into your Start menu's search bar and click the Equatio app when it appears.

    If you have any difficulty installing or licensing Equatio, please contact your IT support or email support@texthelp.com.

2. If you are running Equatio for the first time, a login screen appears:

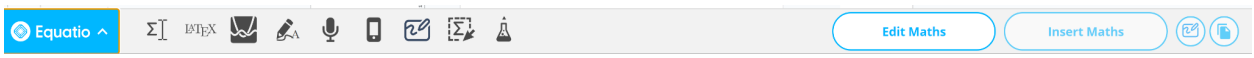


Click the appropriate **Sign in** option and follow the instructions to sign in using your chosen provider.

The provider should correspond to how your Equatio license is registered. For example, if your school uses Microsoft sign-ins and you have an Equatio license that covers the whole school, you should click **Sign in with Microsoft** and enter your usual school login details.

If your school or organization has given you a Take Home Code, click **Use Take Home Code** and then enter it. Note that you will not get access to some features, including favorites and Equatio Mobile.

3. After you have signed in, the Equatio toolbar appears at the bottom of your screen:



See the blue **Equatio** box at the left side of the toolbar? This is a menu that enables you to open Equatio's options, access the Equatio Academy, change users, and so on.

Note: If you have multiple displays, the Equatio toolbar always appears on your main display.

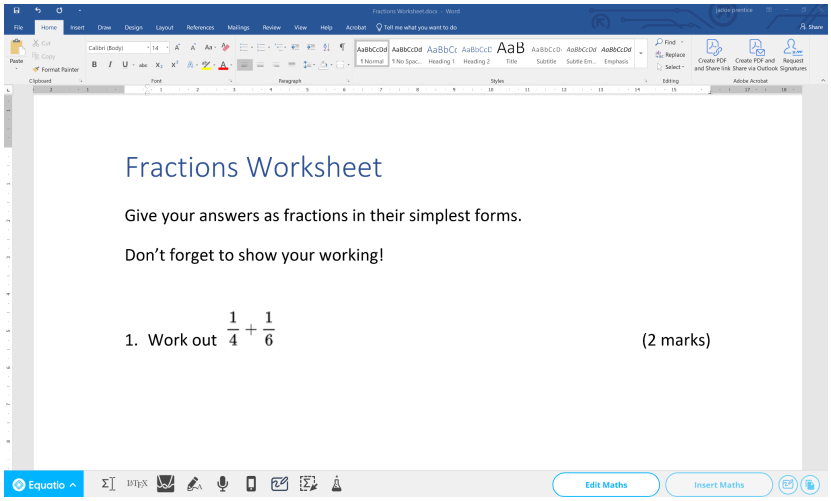
4. Look at the buttons on your Equatio toolbar. If some buttons are grayed out and marked "Premium Feature", your chosen login isn't associated with an Equatio license. Either:
    - Click **Equatio** > **Sign Out** and try again using a different sign in option or login details.
    - Click **Equatio** > **Options**, open the **Premium** page, and enter a **Product Code** to activate Equatio manually.
5. Leave the toolbar open as you'll be using it in the next exercise.

Exercise 2 Understanding the toolbar

You can access all the features of Equatio through its toolbar.

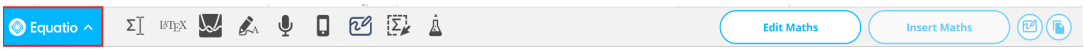
In this exercise, you'll get an introduction to Equatio's toolbar buttons and menu.

1. Open a document in Microsoft Word and make sure that the Equatio toolbar is visible at the bottom of your screen:



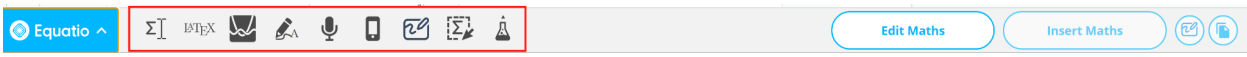
The toolbar has three sections:

- **Equatio menu** (left)



  This menu enables you to customize your experience using Equatio's options, access the Equatio Academy, hide the toolbar, and so on.

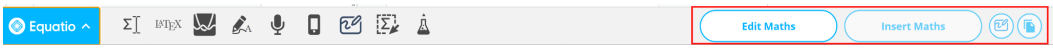
- **Equatio tools** (middle)



  These buttons are the main tools of Equatio, enabling you to create, insert, and read math, as well as accessing Equatio's STEM tools.

  When you click some of these buttons, an input area opens above the toolbar. This is the *Equation Editor*, which you can use to build your math before inserting it into your document.

- **Action buttons** (right)



  There are up to four action buttons at the right of the Equation toolbar:



  Insert Math – after you build some math in Equatio, click this button to insert it into Word or PowerPoint.

    Equatio always inserts math into your most recently used Word or PowerPoint window. If you do not have Word or PowerPoint open, it creates a new document or slideshow and inserts the math into that.

    Equatio can work with either Word or PowerPoint, but not both at once. You can specify which application to use in Equatio's Desktop Options.



Edit Math – select an Equatio math object in your document and then click this button to open it in Equatio.

Insert Math into Whiteboard – instead of using Insert Math to insert math into your document, you can use this button to insert the math into a Whiteboard.

Copy Math As... – instead of clicking Insert Math to insert math directly into your document, you can use this button to export it to the clipboard in a variety of formats, or download it as a PNG.

For many applications, the best way to use math from Equatio is to copy it to the clipboard as an image and then paste it into your application.

If you have a low resolution monitor, or use a high level of display scaling (to make all icons and text bigger), you may see compact versions of the **Insert Math** and **Edit Math** buttons.

1. You'll learn much more about these buttons later.
2. Next, we'll hide the toolbar. Open the **Equatio** menu and then click **Hide**.

   The toolbar disappears. This is useful if you need to see more of your screen. There are times when the Equatio toolbar may hide useful information at the bottom of your applications.

3. To show the toolbar again, click the minimized **Equatio** icon .

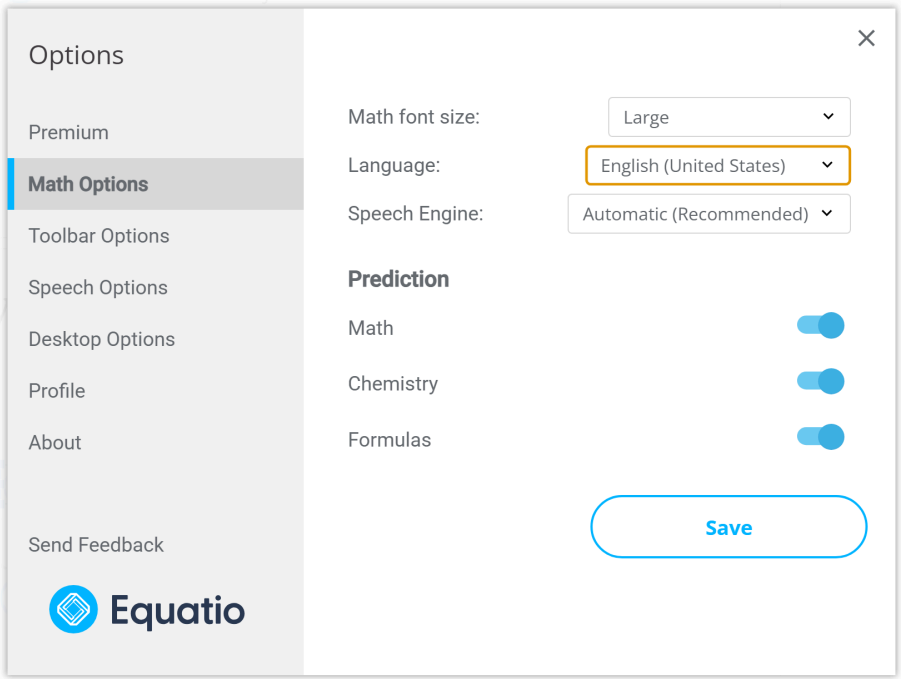
Further Exercise

Exercise 3 Setting Equatio options

In this exercise, you'll learn how to configure Equatio.

1. Click **Equatio** > **Options** to open Equatio's Options window.
2. On the left of the window, click **Math Options**.

   The Math Options page contains the following options:



   a. Select your preferred **Math font size**.

      This applies to both Equatio's editor and the size that math is inserted into your documents.

   b. Select your preferred **Language**.

   c. We recommend that you leave the **Speech Engine** set to Automatic.

      While Clearspeak generally sounds more natural, some users may prefer Mathspeak, which is a widely-used standard for braille math.

d. Deselect any **Prediction** options that you do not use.

As you type, Equatio offers the following types of suggestion:

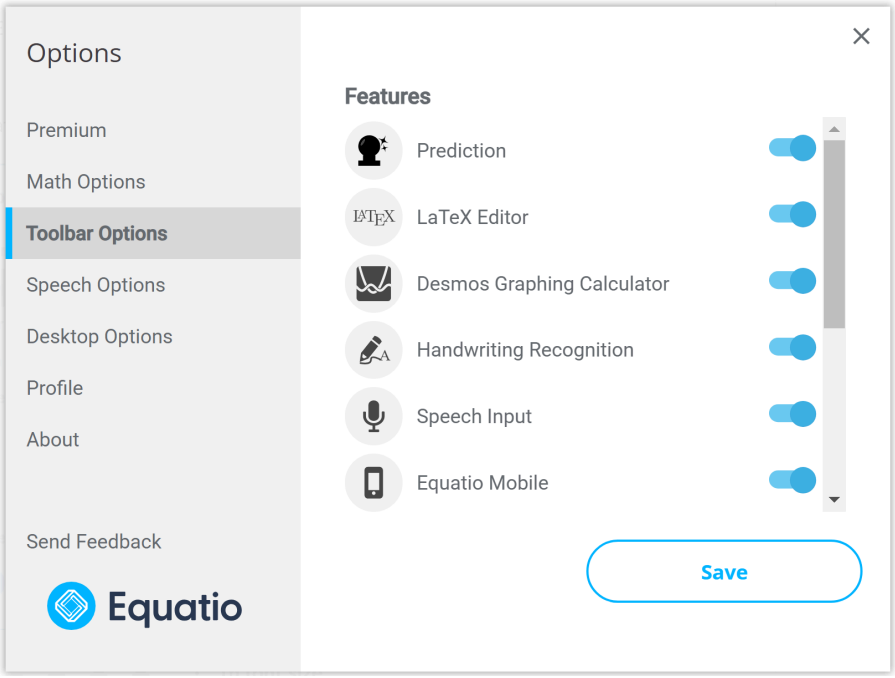
- **Math** – for example, ^{2} as you type **squa**...
- **Chemistry** – for example, *Na* as you type **sodi**...
- **Formulas** – for example, $P = \frac{F}{A}$ as you type **pres**...

If you don't use a prediction type, disabling it will make Equatio's prediction quicker and more likely to feature the suggestions that you want.

For example, if you do not study chemistry, you should disable the Chemistry prediction option. Equatio will no longer search for chemical names or formulas as you type.

3. On the left of the window, click **Toolbar Options**.

The Toolbar Options page contains entries for each toolbar button:

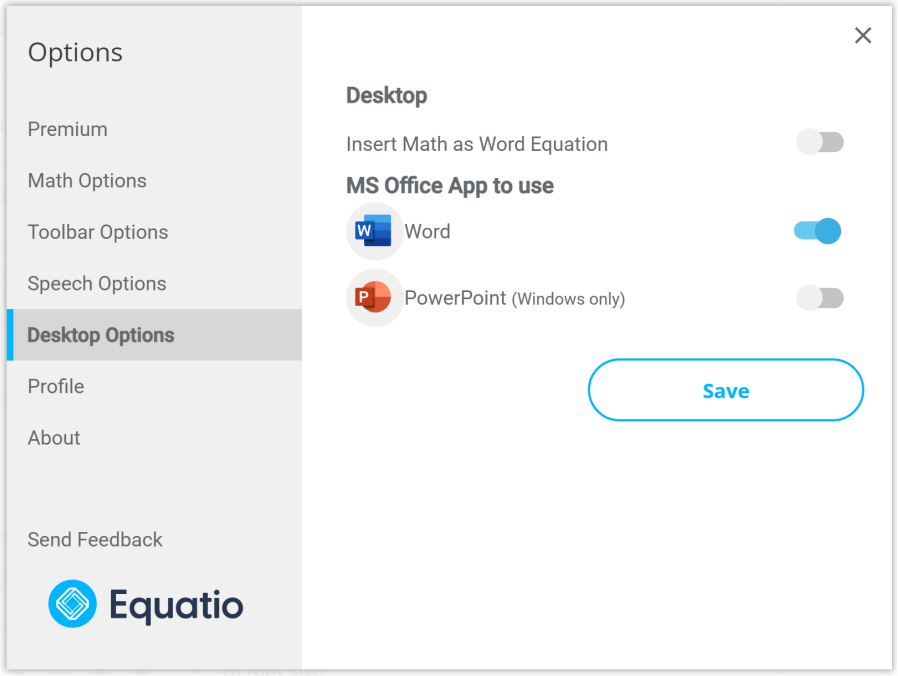


To remove a button from your toolbar, click its toggle.

Removing buttons that you don't need makes the toolbar simpler and easier to use. For example, if you do not use speech input, you should consider removing the Speech Input button.

4. If you have made any changes, click **Save** to save them. You will then need to reopen the Options window.
5. On the left of the window, click **Desktop Options**.

   The Desktop Options page contains the following options:



   a. Under **MS Office App** to use, leave **Word** enabled (and the PowerPoint option disabled).

      This is because, for this course, we will be using Equatio with Word.

      When you click Equatio's **Insert Math** button, it will insert your math into your most recently used Word window. If you do not have Word open, it creates a new document and inserts the math into that.

Note: If you want to use Equatio with PowerPoint later, you can enable the **PowerPoint** option instead. This automatically disables the Word option, so you will not be able to insert math directly into Word.

b. If you want to insert math using Word's own equation editor format, enable **Insert Math as Word Equation**.

   This option is useful if you want your equations to be editable by someone who does not use Equatio. Or you can start your math in Equatio and edit it in Word's equation editor later.

   Equatio offers features to make writing math quicker and easier – such as its prediction library, handwriting recognition, and Equatio Mobile.

c. Enable **Autoplay** if you want Equatio to read math aloud automatically when you select it using the Screenshot Reader.

d. Set Equatio's **Speech Speed** for reading math aloud.

6. Finally, click **Save** to save changes and close the Options window.

2. Equation Editor

In this section, you'll learn how to:

- Use the Equation Editor to create simple math
- Use the Equation Editor to create multi-line math
- Use the Equation Editor's prediction tool

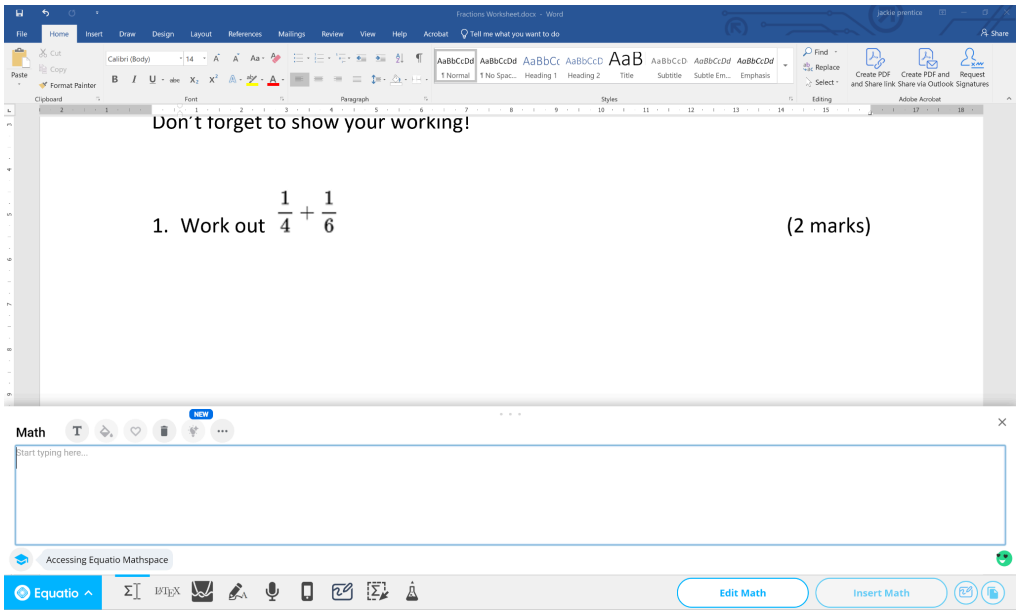
Exercise 1 Creating simple math

In this exercise, you'll learn how to use the Equation Editor to write some math and insert it into a document.

1. Open a document in Microsoft Word, make sure that the Equatio toolbar is visible, and position the cursor in a blank part of the document.

   We'll use an example class worksheet here, but you can follow the exercise using a blank document.

2. Click **Equation Editor** .
3. The Equation Editor appears above the Equatio toolbar. It contains a single Math panel, which is a space for creating your math before adding it to your document:



The Math panel's toolbar contains the following buttons:

Insert Text – insert a section for plain text (or, if math is selected, makes it into plain text). Plain text is not italicized and Equatio will not treat it as a variable, attempt to use it for prediction, and so on.

Text Color – sets the color of the selected math.

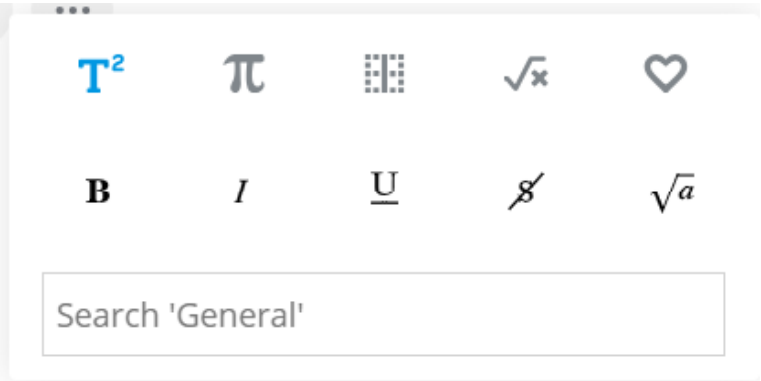
Add to Favorites – makes the entire contents of the Math panel into an entry in your Favorites list.

Clear – clear the contents of the Math panel.

Math Mentor – provides step-by-step guidance for solving math problems, helping you learn how to approach and solve each question independently.

More – opens a system of *drawers*, each of which contains a set of functions or items that you can use in your math.

Five drawers are available under the **More** button ··· :



- **General** – buttons for bold, italic, underline, and strikethrough, as well as a shortcut for inserting a square root symbol.
- **Symbols** – common symbols such as greater than and not equals. This drawer also contains most of the Greek alphabet.
- **Layout** – layout forms such as vectors, matrices, column addition, and long division.
- **Formulas** – library of scientific formulas.
- **My Favorites** – any entries that you have added to your favorites are listed here.

You can use the Search bar below a drawer to search through its contents. If you know the name of the item you want, however, it is often quicker to use Equatio's prediction – simply start typing the item's name in the Math panel and it will appear in the prediction list.

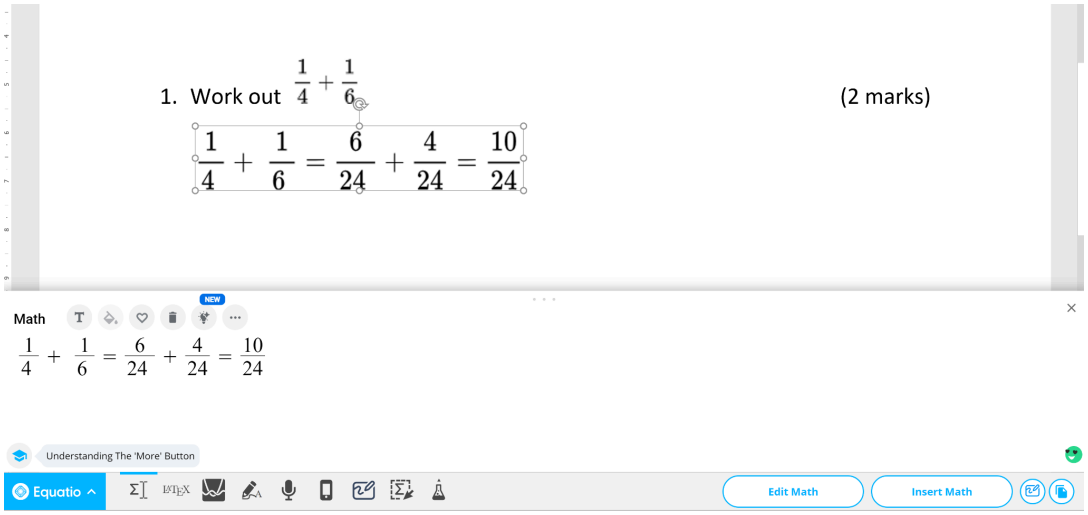
4. Click **More** ··· and have a look through the Symbols, Layout, and Formulas drawers. Are there any items that you might find useful?
5. Return to the Math panel and create the following math:

$$\frac{1}{4}+\frac{1}{6}=\frac{6}{24}+\frac{4}{24}=\frac{10}{24}$$

You can press the **/** key to create a fraction, for example **1 / 4**. After typing a denominator, press the right arrow key ➜ to move the cursor out of the the fraction.

Alternatively, you can start typing **fraction** or **over** and accept the prediction to insert the framework for a fraction.

6. Click **Insert Math** to add the contents of the Math panel to your document:



Note: Equatio always inserts math into your most recently used Word window. If you do not have Word open, it creates a new document and inserts the math into that.

7. Click **Clear**  to get the Equation Editor ready for the next sum.

8. But wait! The previous answer isn't complete. Let's edit it:

    a. Select the math that you just added to your document, and then click **Edit Math**.

    Equatio imports the math into the Math panel.

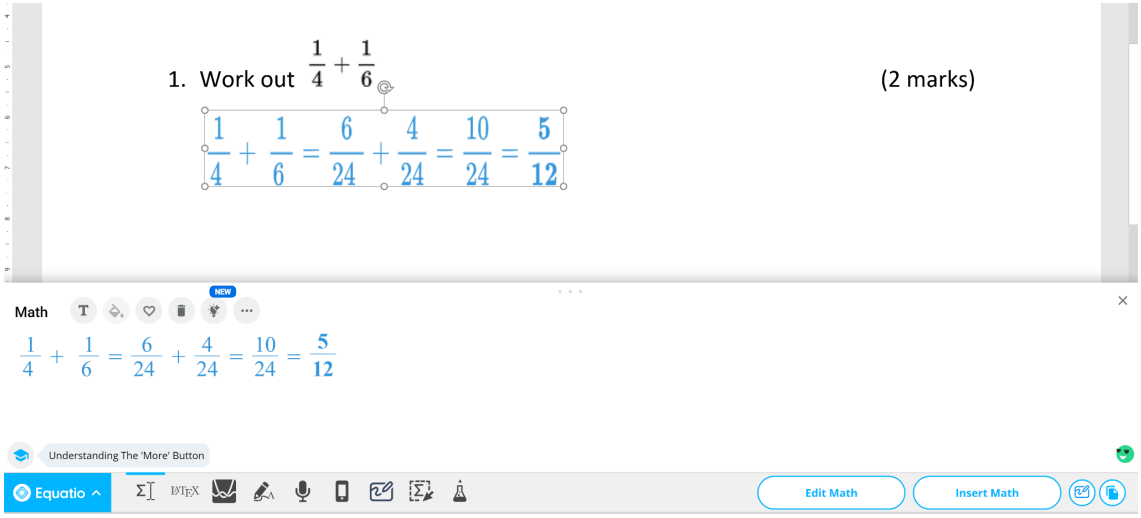
    b. Add **= 5 / 12** to the answer.

9. Next, let's apply some formatting to make the answer stand out:
    a. Select the whole answer in the Math panel.
    b. Click **Text Color** and then select dark blue.
    c. Select just the final answer.
    d. Click **More** , open the **General** drawer and click **Bold** .

    The answer in the Math panel should now look like this:

$$\frac{1}{4}+\frac{1}{6}=\frac{6}{24}+\frac{4}{24}=\frac{10}{24}=\frac{\mathbf{5}}{\mathbf{12}}$$

10. Click **Insert Math** to insert the edited answer into your document:



As the original answer is still selected, the edited answer will replace it. If you end up with two answers, just delete the old (incomplete) version.

Note: As you create math, Equatio tries to find help topics that are relevant to you and shows their titles. If you see a topic that looks interesting, click the **Academy** button to open it.

Exercise 2 Creating multi-line math

In this exercise, you'll learn how to use the Equation Editor to write a multi-line math solution and then align it.

1. Open a document in Microsoft Word, make sure that the Equatio toolbar is visible, and position the cursor in a blank part of the document.

   We'll use an example class worksheet here, but you can follow the exercise using a blank document.

2. Click **Equation Editor** .

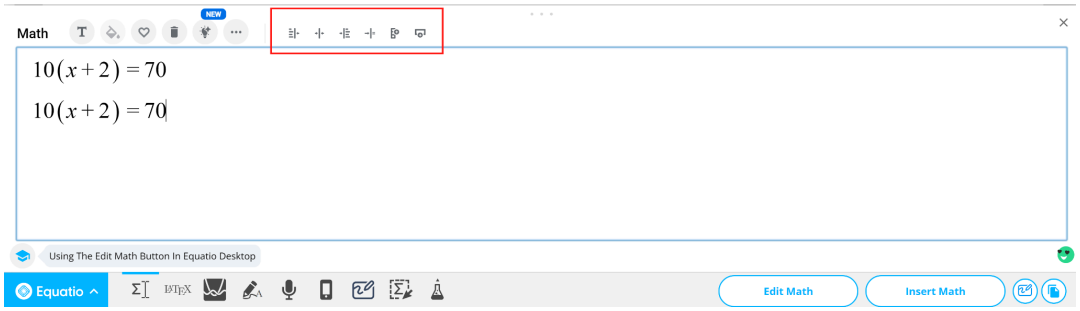
   The Equation Editor appears above the Equatio toolbar.

3. In the Math panel, write **10 (*x*+2) = 70**.

4. Press **Ctrl**+**Shift**+**Enter**.

   Equatio copies the current line to the line below. This makes it easy to work with more complex math without having to retype each line.

   You will notice that the Math panel now has a new toolbar, containing buttons to align your math and to add new columns and rows:



Note: If you want to start a new line without copying the previous line, you can simply press **Enter**.

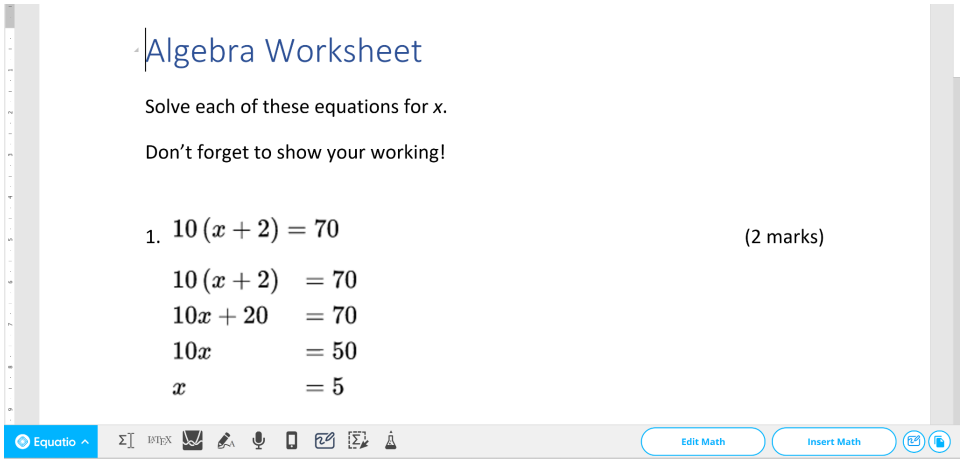
5. Complete the solution as follows:

   10 (*x*+2) = 70
   10*x* + 20 = 70
   10*x* = 50
   ***x* = 5**

6. Click **Align (Relation)**  to align the math using the equals sign on each line.

   This can often be a neat way to align a solution.

7. Click **Insert Math** to insert the solution into your document:



Exercise 3 Using prediction

In this exercise, you'll learn how to use the Equation Editor's prediction tool to help you find symbols and equations.

1. Open a document in Microsoft Word, make sure that the Equatio toolbar is visible, and position the cursor in a blank part of the document.

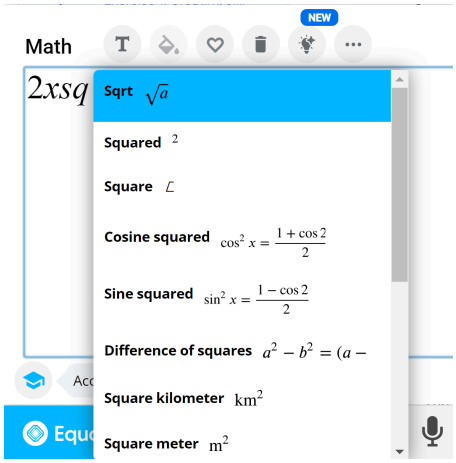
   We'll use an example class worksheet here, but you can follow the exercise using a blank document.

2. Click **Equation Editor** .

The Equation Editor appears above the Equatio toolbar.

3. In the Math panel, write **$2x^2 - 14 = 4$**.

   To write the x^2, type **xsq** and watch your screen. Does a prediction list appear, like this?



4. To insert the first item in the prediction list, you would simply press **Entr**.

   If you want one of the other items, you can either click it with the mouse or use the arrow keys to highlight it and then press **Enter**. Do this to add Squared.

   Note: Instead of using prediction, you could select the **x^a (superscript)** item from the **More** > **Symbols** drawer. This inserts an x^a, which you can use as the basis for x^2, x^3, and so on.

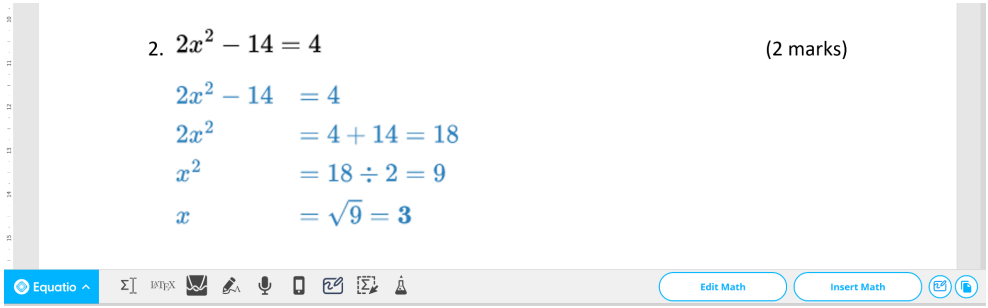
5. Complete the solution as follows:

   $2x^2 = 4 + 14 = 18$
   $x^2 = 18 \div 2 = 9$
   $x = \sqrt{9} = 3$

To write the ÷ and √ symbols, start typing **divide** and **square root** (or just **root**) until you see the symbols appear in the prediction list.

Alternatively, you can find them in the **More** > **Symbols** drawer.

6. Use the formatting and alignment tools until you are happy with the solution, and then insert it into your document:



7. Now let's try something a bit more complicated. Put the cursor into a blank section of your document, clear the Math panel, and then write **$3x^2 + 6x = 72$**.

8. Press **Enter** to add a new line, and then write **$3x^2 + 6x - 72 = 0$**.

   This is a quadratic equation in the form $ax^2 + bx + c = 0$, which means that we can use the standard quadratic formula to solve it. This is one of the many formulas that Equatio knows.

9. Press **Enter** to add a new line in the Math panel, and start typing **quadratic**. When you see the quadratic formula appear in the prediction list, insert it into the Math panel.

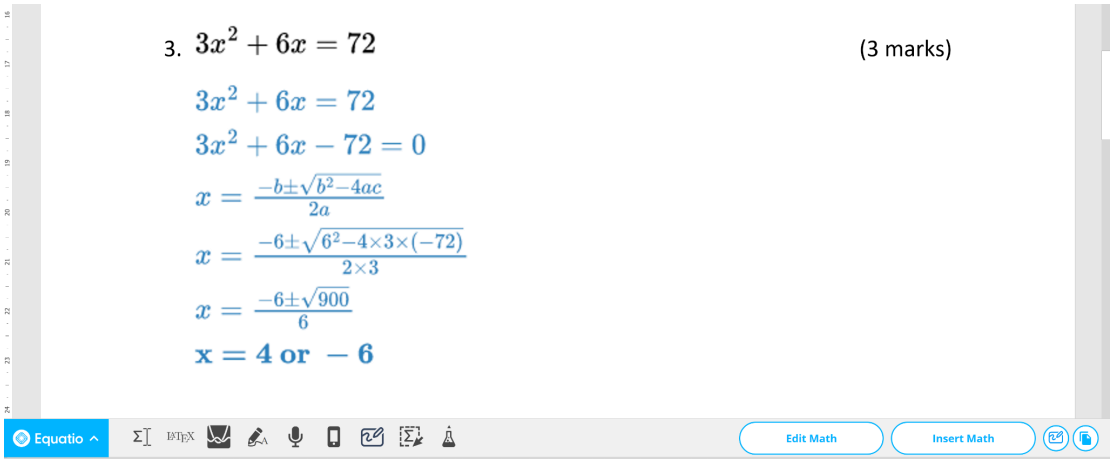
10. Use **Ctrl**+**Shift**+**Enter** to copy the equation to a new line, and then replace its *a*, *b*, and *c* placeholders with **3**, **6**, and **-72** respectively:

$$x = \frac{-6 \pm \sqrt{6^2 - 4 \times 3 \times (-72)}}{2 \times 3}$$

11. Complete the solution as follows:

$$3x^2 + 6x = 72$$
$$3x^2 + 6x - 72 = 0$$
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$
$$x = \frac{-6 \pm \sqrt{6^2 - 4 \times 3 \times (-72)}}{2 \times 3}$$
$$x = \frac{-6 \pm \sqrt{900}}{6}$$
$$x = 4 \text{ or } -6$$

12. Again, use the formatting and alignment tools until you are happy with your solution, and then insert it into your document:



13. Start typing the following into the Math panel and see what comes up in the prediction list:

    - velocity
    - avogadro
    - nitric
    - magnesium

    Equatio's prediction tool knows a huge range of equations from math, physics, and other STEM subjects. It also predicts constants, expressions, chemical formulas, and more.

    For a list of Equatio's prediction items, go to http://text.help/EquatIOSpeech.

Note: You can use the **Insert Text** button  to type text without Equatio trying to make it into something else. Remember that you can also turn off prediction for Math, Formulas, or Chemistry in Equatio's Math Options.

3. Handwriting Recognition

In this section, you'll learn how to use Equatio's handwriting recognition tool.

Equatio's handwriting recognition enables you to write math by hand and have it converted automatically into digital math. While it can be used with a mouse, this is particularly useful if you have a touchscreen or a graphics tablet.

Exercise 1 Using handwriting recognition

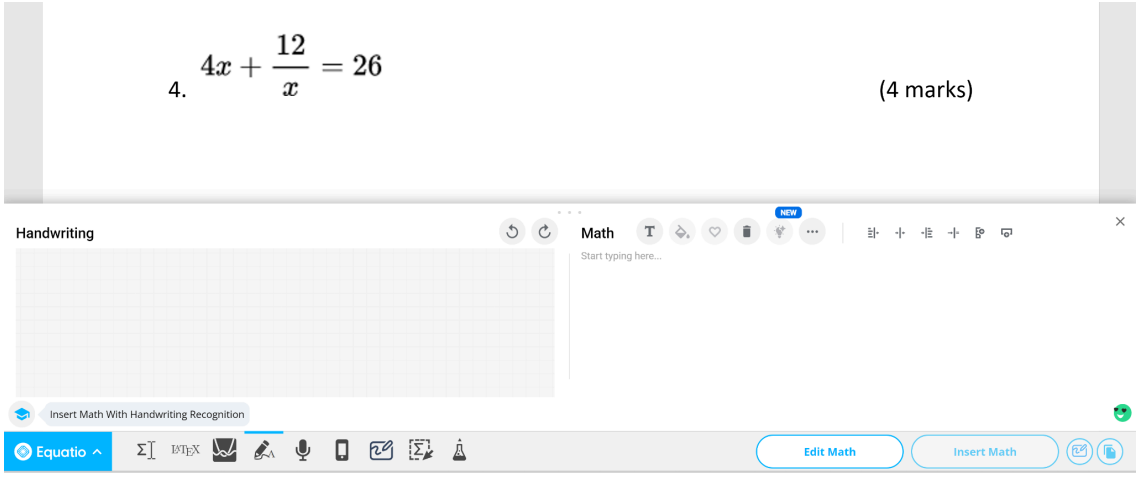
In this exercise, you'll learn how to use Equatio's handwriting recognition to write some math and insert it into a document.

1. Open a document in Microsoft Word, make sure that the Equatio toolbar is visible, and position the cursor in a blank part of the document.

   We'll use an example class worksheet here, but you can follow the exercise using a blank document.

2. Click **Handwriting Recognition** .

   The Equation Editor appears above the Equatio toolbar, containing Handwriting and Math panels next to each other:

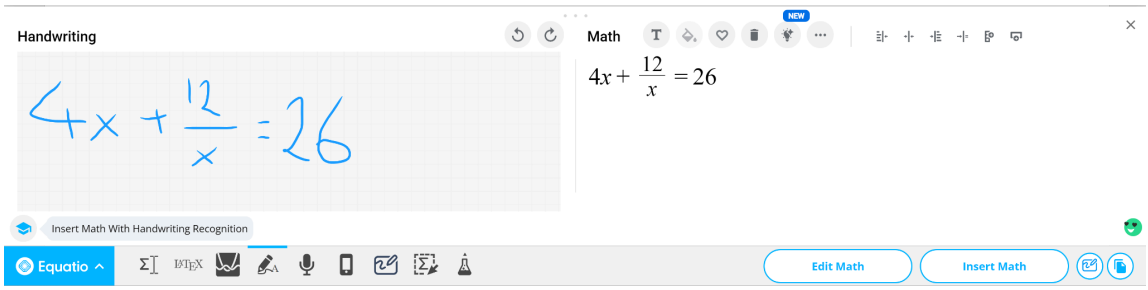


- **Handwriting panel** – this is where you write your math, using a finger or stylus to write directly on your touchscreen. You can also use your mouse, graphics tablet, etc.
- **Math panel** – as you write math in the Handwriting panel, Equatio analyzes it and shows its results as "digital math" in the Math panel. This is the same Math panel that you've learned about already, with all its usual functions remaining available.

3. Use your finger, stylus, or mouse to write the following math in the Handwriting panel:

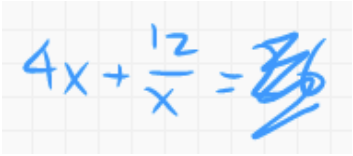
$$4x + \frac{12}{x} = 26$$

Has Equatio understood your handwriting correctly? If it has, the math should appear like this in the Math panel:



If some handwriting doesn't appear as you expect, you can use the Handwriting panel's **Undo** button  and try again.

Alternatively, you can scribble out some of your handwriting, like this:



Note: As Equatio processes your handwriting, it may zoom the Handwriting panel to fit it better. Alternatively, you can always drag out the top of the

Equation Editor (using the central three dots) to provide yourself with more working space.

4. Sometimes, it is easier to edit using the Math panel. Click in the Math panel and then use your keyboard to change the **4*x*** to **6*x***.

   See how the Handwriting panel is cleared as soon as you start editing in the Math panel? We recommend that you always finish your handwriting before doing any editing in the Math panel.

   Note: You can mix any of Equatio's input methods. For example, you could start handwriting some math (in the Handwriting panel) and then finish it using your keyboard (in the Math panel).

5. Click the Math panel's **Clear** button  to reset the Equation Editor.

6. You can use handwriting recognition for multi-line math. Write the following math in the Handwriting panel:

   $$4x + \frac{12}{x} = 26$$
   $$4x^2 + 12 = 26x$$
   $$4x^2 - 26x + 12 = 0$$

   Note: You may need to expand your window or drag out the top of the Equation Editor to give yourself enough space.

7. Use the Math panel to edit, format, and align your math as necessary, and finally click **Insert Math** to insert it into your document.

Exercise 2 Using context with handwritten math

In this exercise, you'll learn how Equatio uses context to understand your handwritten math.

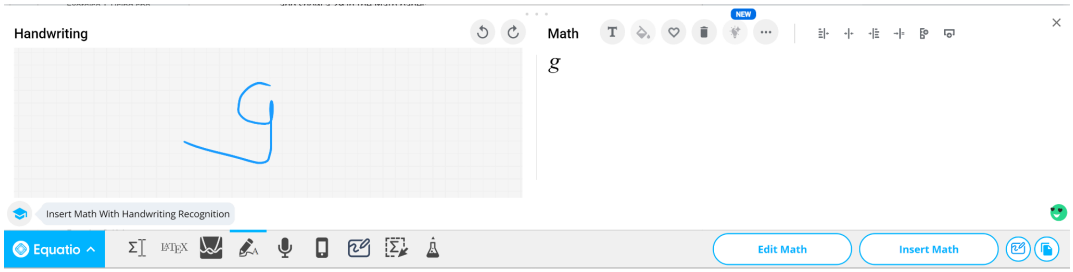
1. Open a document in Microsoft Word, make sure that the Equatio toolbar is visible, and position the cursor in a blank part of the document.

2. Click **Handwriting Recognition** .

3. In the Handwriting panel, write a **9** with a curly tail.

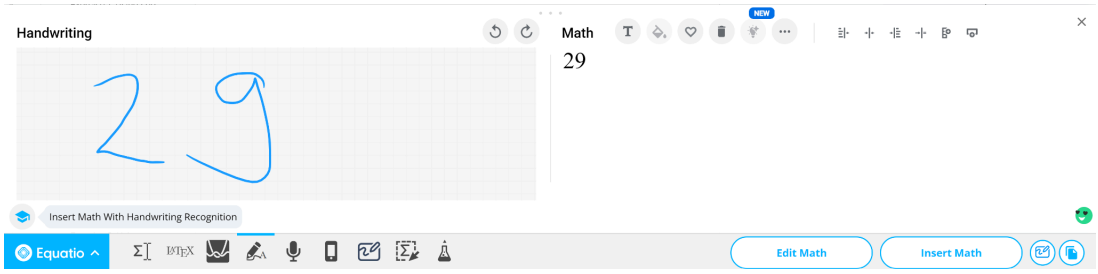
   A 9 with a curly tail or hook can look like a handwritten *g*, while a 9 with a straight tail can easily be confused with a lowercase *q*.

   How does your 9 appear in Equatio's Math panel?



4. In the Handwriting panel, write a **2** before the **9**, so that it makes a **29**.

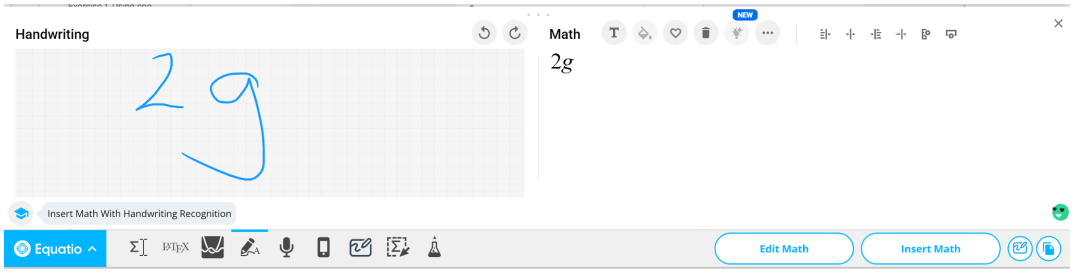
   If Equatio previously thought your 9 was a *g*, it should now realize its mistake and show a 29 in the Math panel:



5. Either click **Undo**  or scribble out the **2** in the Handwriting panel.

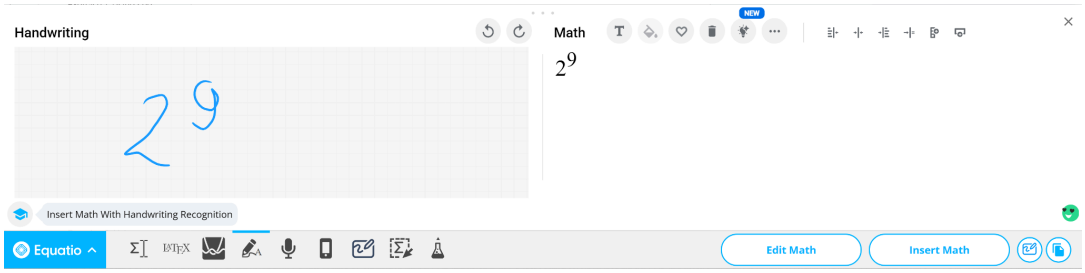
6. Next, write a **2** again, but set higher than the **9** so that it looks like **2*g***.

Equatio should recognise that the 9 should be a *g*, and update the Math panel accordingly:



7. Again, either click **Undo**  or scribble out the **2** in the Handwriting panel.

8. Write another **2**, but this time lower than the **9**, to make **2^9**:



If you want 2^g instead, you can easily make the correction in the Math panel.

9. Did Equatio recognise your handwriting as described in the above examples? It doesn't matter if it didn't – the point is that Equatio will use positions, relative sizes, and whatever other information it can find to work out what you're trying to write.

   For example, are you writing a cross or an *x*? A plus or a *t*?

   Equatio continuously analyzes possibilities as you write and attempts to choose the correct one. If it picks the wrong one, it's easy for you to correct it in the Math panel.

4. Speech Input

In this section, you'll learn how to use Equatio's speech input tool.

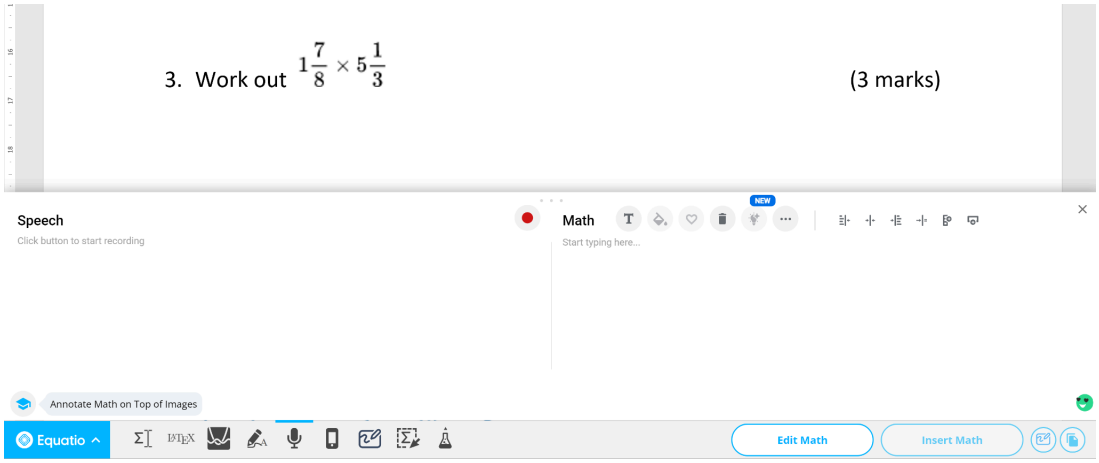
Equatio's speech input enables you to dictate math into your computer's microphone and have it converted automatically into digital math.

Exercise 1 Using speech input

In this exercise, you'll learn how to use Equatio's speech input to write some math and insert it into a document.

1. Open a document in Microsoft Word, make sure that the Equatio toolbar is visible, and position the cursor in a blank part of the document.
2. Click **Speech Input** .

   The Equation Editor appears above the Equatio toolbar, containing Speech and Math panels next to each other:



   - **Speech panel** – as you dictate math, Equatio writes what it has heard here. If Equatio is not recognising your math correctly, this helps you to understand why.

- **Math panel** – Equatio analyzes the math in the Speech panel and shows its results as "digital math" in the Math panel. This is the same Math panel that you've learned about already, with all its usual functions remaining available.

3. We will try to dictate the following math:

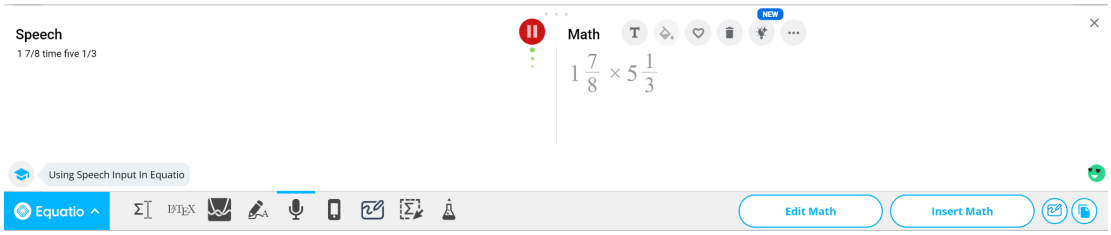
$$1\frac{7}{8} \times 5\frac{1}{3}$$

4. Click **Start Speech Input** and then dictate the following math:

   one, seven eighths, times five, one third

   Note how the button changes to indicate that Equatio is recording, with three flashing green dots below it.

5. Does your Equation Editor look like this?



   If it doesn't, click **Clear** and try again. Move closer to your computer's microphone and make sure that you are speaking clearly without rushing.

   Try saying each fraction differently, for example **five fraction, numerator one, denominator three**.

   Note that both the Speech panel and the Math panel feature dynamic content, that is, their contents will change as you continue speaking. This is because Equatio builds up more context as you speak, so it has a better understanding of the math that you are trying to dictate.

6. When you are satisfied with your dictation, click **Pause Speech Input** .

   Note how the Speech panel is cleared when you click the button, while your dictated math remains visible in the Math panel.

7. Make any corrections in the Math panel, and then click **Insert Math** to insert the expression into your document.

8. Click **Clear**  to reset the Equation Editor, and then try to dictate the following equation:

   $$4x + \frac{12}{x} = 26$$

   Did it work? If it makes any mistakes remember you can easily correct it in the Math panel.

9. Try to dictate a few more expressions or equations. Equatio will often accept math as it is spoken, but sometimes you have to think about how you are dictating your math.

   You've used **over** as a key word, and maybe **fraction** as well. Other key words include **end** (to mark the end of a fraction), **superscript** and **subscript**, while **open** and **close** add opening and closing brackets.

   You can also use **square**, **cube**, **square root**, and so on. Try it!

   Go to http://text.help/EquatIOSpeech for more of Equatio's speech input commands.

10. Have you noticed the traffic light icons at the bottom right corner of the Equation Editor?

    When you are using Equatio's speech input or handwriting recognition, these indicate how well Equatio can recognise your math:

     **Green** – Equatio can read and edit the math you are creating. No further action is required.



Yellow – Equatio can read the math that you are creating, but you may need to fine tune it using the LaTeX or Math panel.



Red – Equatio found an error in your math that is preventing it from rendering correctly. You need to fix it using the LaTeX or Math panel.

Hover your pointer over the icon to see more information.

5. LaTeX Editor

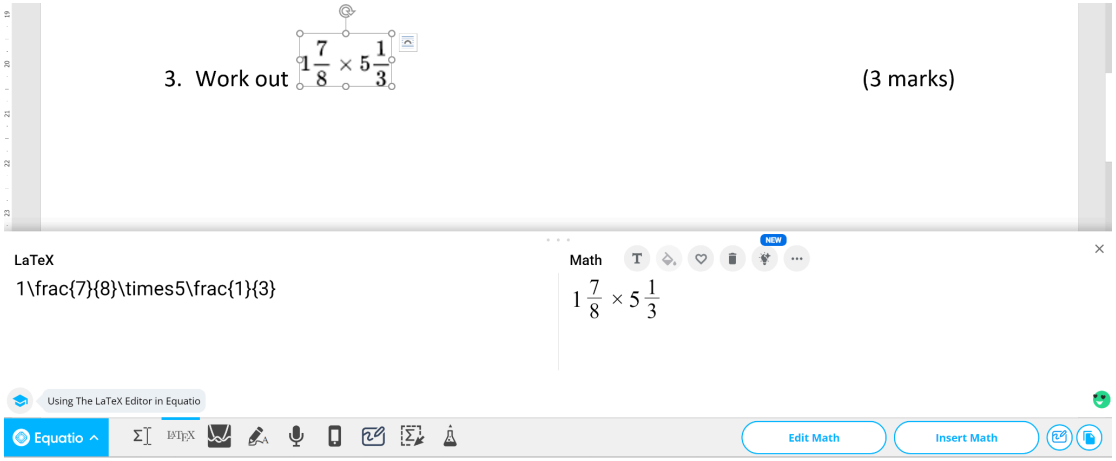
In this section, you'll learn about Equatio's LaTeX editor.

LaTeX is a system that uses tags and markup to produce structured documents. It is widely used in academia for scientific documents and includes a powerful engine for writing math. Many students (and teachers) learn LaTeX as part of their math, science, or engineering studies. Equatio includes a LaTeX editor so you can easily write and edit your math in LaTeX, with the results shown in real time.

Exercise 1 Using LaTeX to edit math

In this exercise, you'll learn how to use Equatio's LaTeX editor to edit some math.

1. Open Microsoft Word, select one of the expressions or equations you produced in a previous exercise, and make sure that the Equatio toolbar is visible.
2. Click **Edit Math** to bring the math into Equatio. If you do not have any suitable math, simply create some using Equatio's Math panel, speech input, or handwriting recognition.
3. Click **LaTeX Editor** .
4. The Equation Editor appears above the Equatio toolbar, containing LaTeX and Math panels next to each other:



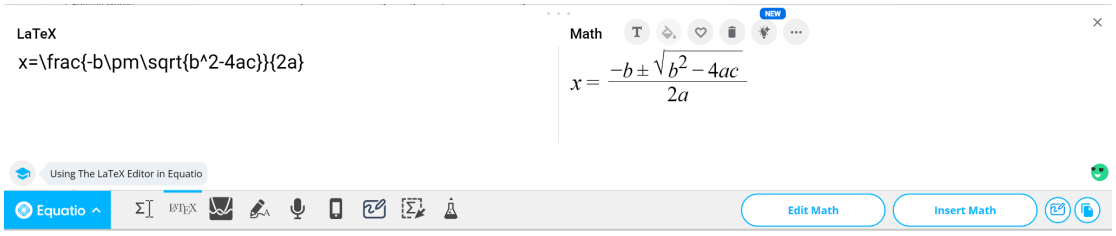
- **LaTeX panel** – this panel shows the LaTeX version of the selected math. You can use the LaTeX panel to edit any math created in Equatio.
- **Math panel** – Equatio analyzes the math in the LaTeX panel and shows its results as "digital math" in the Math panel. This is the same Math panel that you've learned about already, with all its usual functions remaining available.

Note: See how math is written in LaTeX? If you use speech input to produce your math, try structuring it in a similar way.

5. Edit the math in the LaTeX panel. Can you change some of the numbers? How about introducing new operators or even entire expressions?

6. Click **Clear**  to reset the Equation Editor, start typing **quadratic** in the Math panel, and accept the prediction for the quadratic formula.

   See how the LaTeX panel updates to show the LaTeX version of the formula?



You can write your math in the LaTeX panel, the Math panel, or a combination of the two – whichever is easier for you. You can even start your math using speech input or handwriting recognition, then edit it using LaTeX.

6. Screenshot Reader

In this section, you'll learn how to use Equatio's Screenshot Reader to handle inaccessible math.

If you want to copy math that wasn't created in Equatio, for example from a PDF worksheet or video, you can use the Screenshot Reader to "grab" it, read it aloud, and copy it into Equatio.

The Screenshot Reader works well for any source where the math is encoded as a picture or video, as long as it can be opened on the same screen as Equatio.

Exercise 1 Using the Screenshot Reader

In this exercise, you'll learn how to use the Screenshot Reader to import some math into Equatio.

1. Open a document in Microsoft Word and make sure that the Equatio toolbar is visible. This is your *target document*.
2. In a different application, open a document containing some math. This is your *source document*.

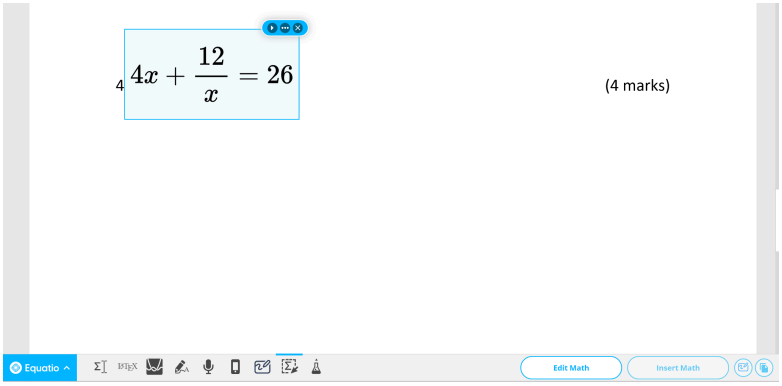
   The source document can be another Word document, a website in Chrome, a PDF in Adobe Acrobat, or any other source that you can open. You can even capture math from a video – as long as you pause it first!

   If you don't have anything of your own, you can use some of the math you created in a previous exercise.

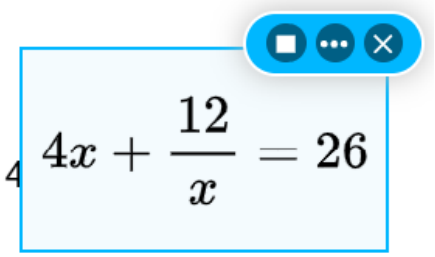
   Note: If you have multiple displays, the source document must be open on the same display as Equatio.
3. Click **Screenshot Reader** .

   The pointer changes to a crosshair +.

4. Click and hold your left mouse button at the top left corner of your math, and then drag out a rectangle to its bottom right corner, like this:



After a moment, Equatio reads the math aloud and some buttons appear at the top right of the rectangle:



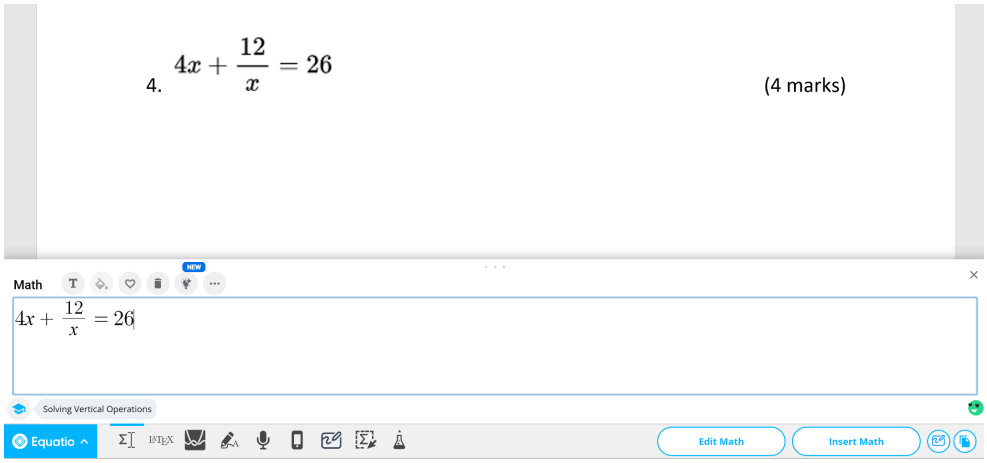
Note: If Equatio does not read the math aloud automatically, click **Play** . You may have **Autoplay** disabled in Equatio's Desktop Options.

5. Was the math read aloud correctly? If not, zoom in and try again. The bigger the text, the easier it is for the Screenshot Reader to read.

   To read the math aloud again, click **Play** .

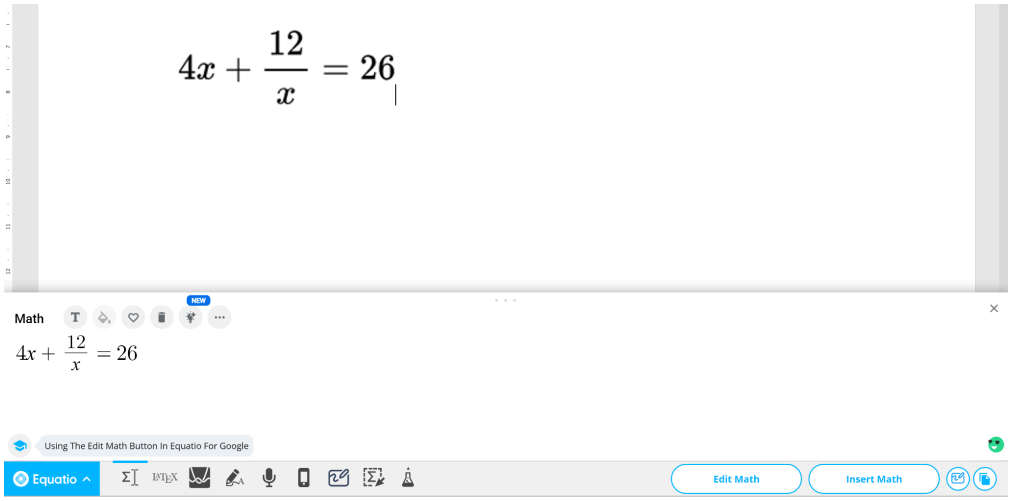
6. Once you are happy that Equatio has understood your math correctly, click **More Options** and then **Edit in Equatio**.

7. The math is copied into Equatio and shown in the Equation Editor:



8. Return to your target document, position the cursor where you want the math to be inserted, and then click **Insert Math**.

9. Equatio inserts your math into the target document:



Note: The Screenshot Reader's **More Options** button also contains options like **Copy LaTeX**, which you can use to copy your math to other applications via the clipboard, without having to open it in the Equation Editor.

7. Equatio Mobile

In this section, you'll learn how to use Equatio Mobile to:

- Insert math using your mobile device's camera and OCR.
- Insert math by drawing on your mobile device's touchscreen.
- Insert math by dictating into your mobile device's microphone.

Equatio Mobile enables you to use your mobile device as an input tool for writing math. You may not have a touchscreen or camera on your laptop or desktop computer, but you'll almost certainly have them on your phone or tablet.

Note: Your mobile device and computer you are using must be on the same network.

Exercise 1 Using mobile OCR

In this exercise, you'll learn how to use Equatio Mobile's OCR to insert math into a document using your mobile device's camera.

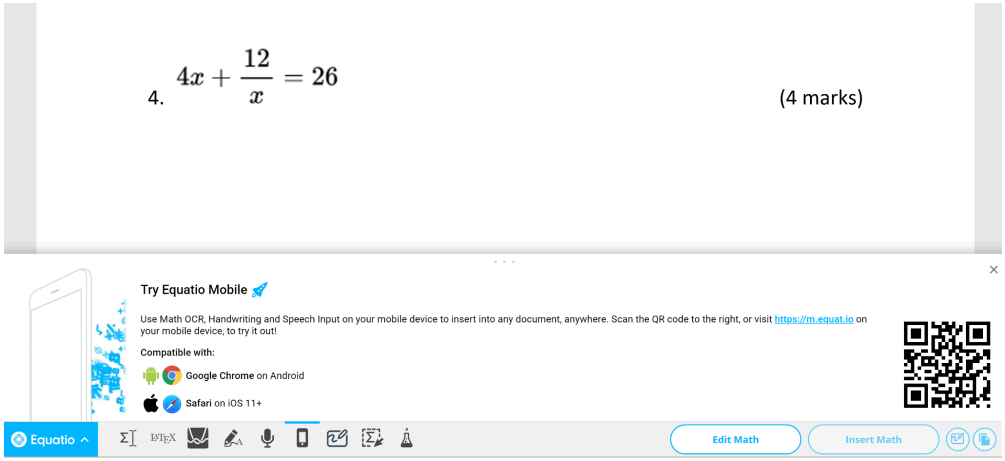
1. On a sheet of paper, use a pen or pencil to write the following equation:

   $$4x + \frac{12}{x} = 26$$

2. Open a document in Microsoft Word, make sure that the Equatio toolbar is visible, and position the cursor in a blank part of the document.

3. Click **Equatio Mobile** .

A QR code appears above the Equatio toolbar:



4. Either:

   - Scan the QR code with your mobile device's camera (or any other app that supports QR codes).
   - Open Chrome (Android) or Safari (iOS) and navigate directly to https://m.equat.io

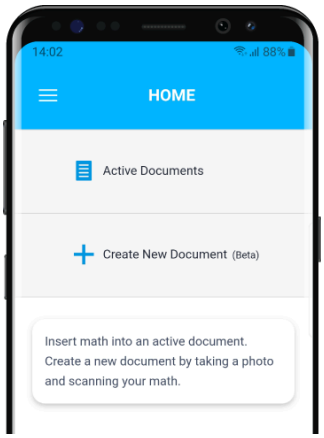
   Equatio Mobile opens in your mobile device's browser.

5. When prompted for an account, select the same user account that you are using with Microsoft Office *and* Equatio on your computer.

   You may be prompted to sign into the account, for example if you are using Equatio Mobile for the first time, or if you haven't used that account before on your mobile device.

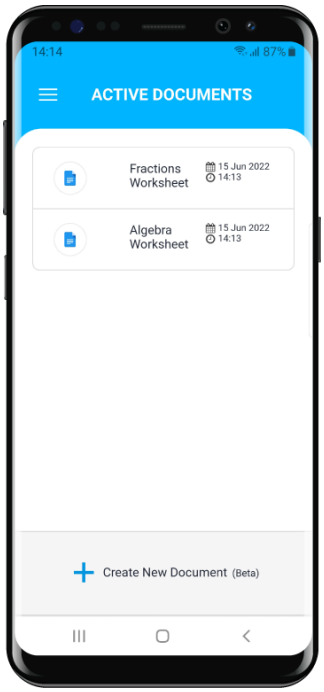
   Note: You must have Microsoft Office and OneDrive set up to sync documents between your computer and the cloud – if your Word document isn't visible online, Equatio Mobile will not be able to work with it.

   Equatio Mobile's Home screen appears:



6. Tap **Active Documents**.

   The Active Documents screen lists all your documents that are currently using Equatio:

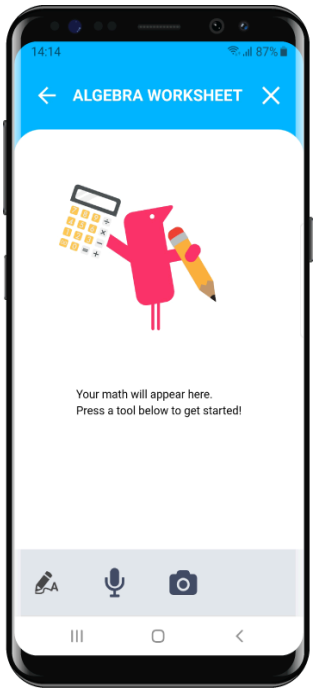


   For a document to appear in the list, you must be editing it (on your computer) using the same account that you're using for Equatio Mobile, with the Equatio toolbar open.

Note: If you prefer, you can use the **Create New Document** option to create a new *Equatio mathspace* instead of inserting your math into an existing document. We'll learn more about mathspaces later.

7. Select the document that you opened in step 2, which will be listed as "Microsoft Word Document".

   Equatio Mobile shows icons for its three input tools:



8. Click **Math OCR** . If prompted, click **Allow** to give Equatio Mobile access to your mobile device's camera.

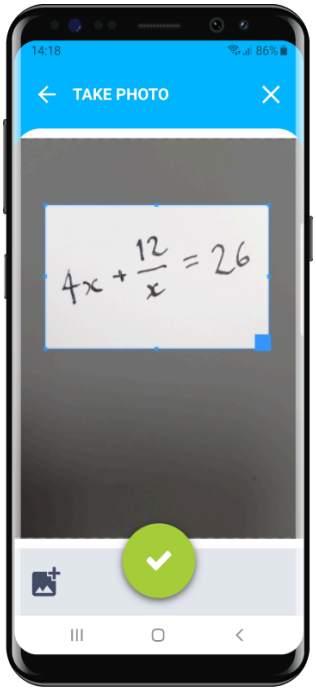
   Equatio Mobile takes control of your mobile device's camera.

9. Point the camera at the equation that you wrote in step 1 and then tap the screen (or tap the round shutter button).

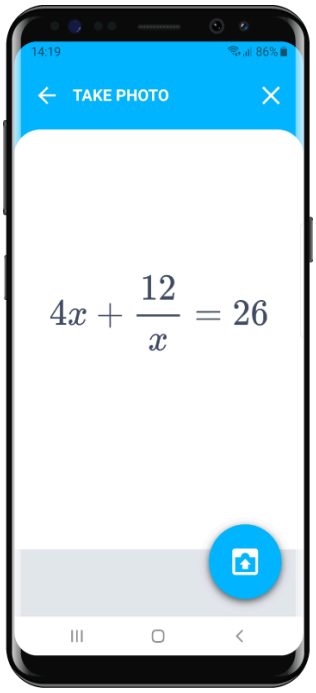
   Equatio Mobile takes a photo and shows it on your mobile device's screen.

Note: Instead of taking a photo now, you can tap **Upload Photo** to use a photo that's already saved on your mobile device. This may be useful if you're writing a lot of math – you can take photos of it all and upload each one in turn.

10. Drag or resize the blue rectangle so that it shows the equation that you want to add to your document:



11. Tap and then select **Save as math**.
12. Equatio Mobile processes your image and shows it as digital math:



Note: Instead of saving your image as digital math, you can select **Save as image** to insert your math as a picture, without any processing. You can use the Screenshot Reader to turn it into digital math later.

13. Check that the math matches what you originally wrote down. If it doesn't, either try again or make a note to correct it later using Equatio's Math or LaTeX panel.

14. When you are happy with the math, click **Upload** .

    Equatio inserts the math into your document and shows a confirmation message on your mobile device.

15. Return to the Microsoft Word document on your computer. Has Equatio inserted the math as you expected?

    Like any other Equatio math, you can use the **Edit Math** button to open it in Equatio's Math panel.

    Equatio Mobile's OCR is a great tool for copying math from a worksheet, textbook, or whiteboard.

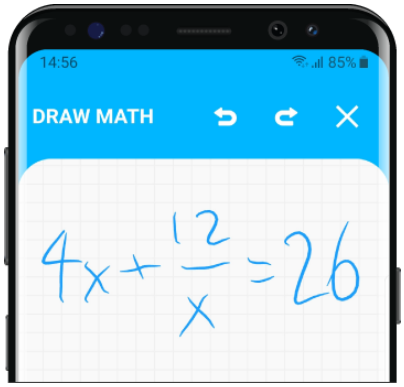
Further Exercises

Exercise 2 Using mobile handwriting recognition

In this exercise, you'll learn how to use Equatio Mobile's handwriting recognition to insert math into a document.

1. Repeat Exercise 1 but, after selecting your document in Equatio Mobile (step 7),

   tap the **Handwriting Recognition** button  and then draw the math on your mobile device.

   Note that the Draw Math screen includes **Undo**  and **Redo**  buttons in case you make a mistake.

2. After you have drawn the math, continue with Equatio Mobile until it has been processed and inserted into your document.

3. Did it work? Try a couple more expressions or equations.

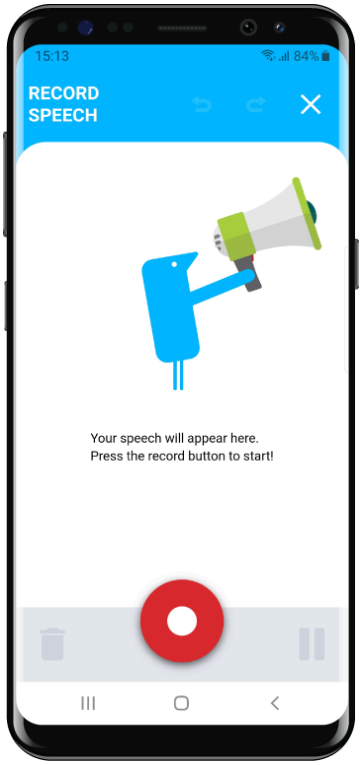
   This is a great way to quickly get the basics of an equation into your document quickly, especially if your mobile device supports a stylus.

   Remember that you can always edit any mistakes later.

Exercise 3 Using mobile speech input

In this exercise, you'll learn how to use Equatio Mobile's speech input to insert math into a document.

1. Repeat Exercise 1 but, after selecting your document in Equatio Mobile (step 7), tap the **Speech Input** button  and then dictate the math into your mobile device.



   Note that you may have to allow Equatio Mobile access to your mobile device's microphone.

2. After you have dictated the math, continue with Equatio Mobile until it has been processed and inserted into your document.

3. Did it work? If not, try a simpler equation, like this one:

   $3a^2 - 2b = 3$

Speech input can be tricky, as you have to formulate math in your head and then dictate it without pausing for too long. It can be useful for simple math, however, especially if you have it written down in front of you but cannot use OCR.

8. Graph Editor

In this section, you'll learn how to use Equatio's Graph Editor to:

- Create a graph and insert it into a document.
- Import a saved graph and insert it into a document.

The Graph Editor is powered by the Desmos Graphing Calculator, a leading graphing calculator with a simple interface that makes it easy to set up graphs and investigate them in real time.

This section does not give you in-depth knowledge of creating and working with graphs. Instead, the Desmos Help Center contains comprehensive instructions and tutorials.

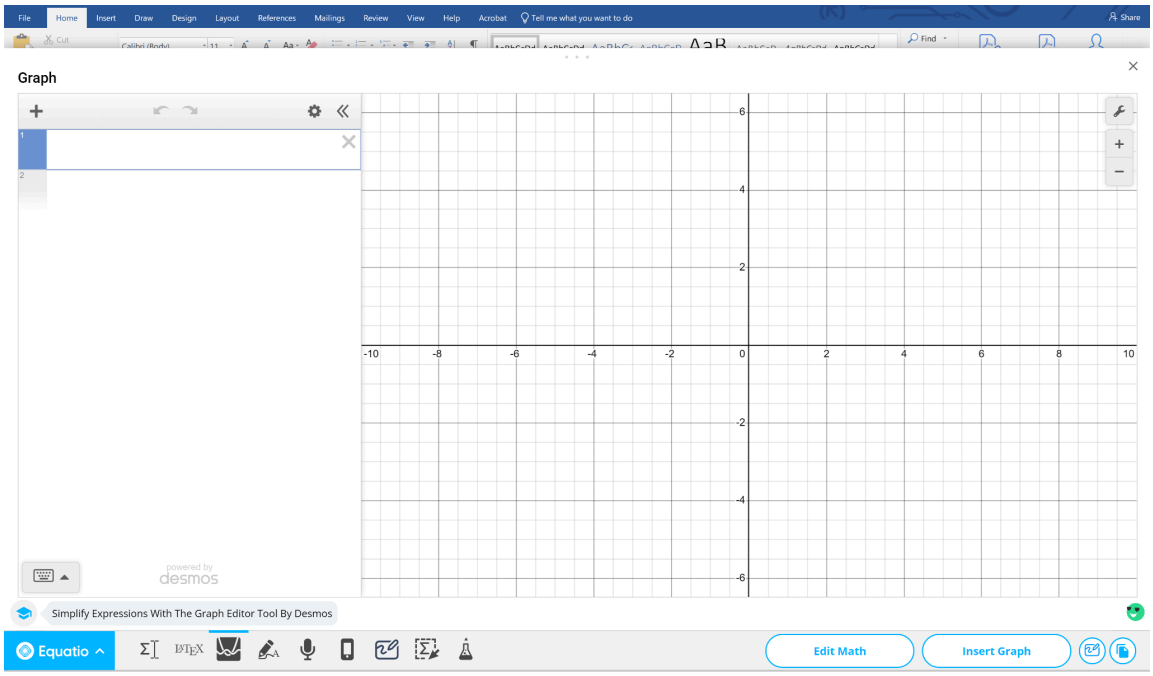
If you are likely to use graphs regularly, we recommend that you take some time to visit the Desmos Help Center and look through the *User Guide* for the Graphing Calculator. You will also find useful articles in the *Getting Started* section.

Exercise 1 Creating graphs

In this exercise, you'll learn how to create a graph in the Graph Editor and insert it into a document.

1. Open a document in Microsoft Word, make sure that the Equatio toolbar is visible, and position the cursor in a blank part of the document.
2. Click **Graph Editor** .

   The Graph Editor appears above the Equatio toolbar:



The Graph Editor is an embedded version of the Desmos Graphing Calculator. The interface is deceptively simple – start typing an expression in one of the boxes at the left side of the Graph Editor and Equatio will help you to build your graph.

You can click **Add Item**  to add new expressions, notes, tables, and images, as well as folders to keep them organized. You can use multiple items to build complex graphs.

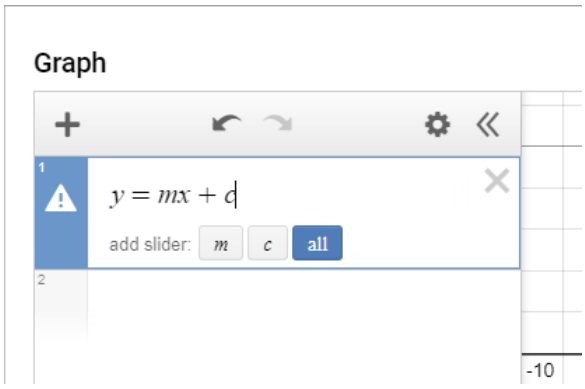
Anything you add on the left side of the Graph Editor is shown in the graph area (on the right side of the Graph Editor) immediately.

3. Click in the 1st expression box, and then type the following expression:

   y = mx + c

   This is a standard expression for a straight line. Before it can be graphed, however, the variables *m* and *c* need to be defined.

4. Is Equatio prompting you to add sliders below the expression?

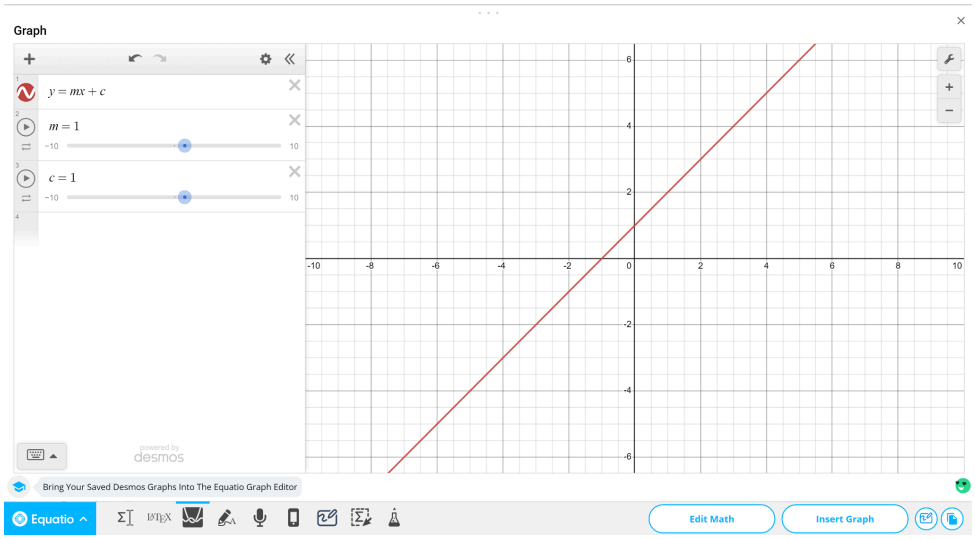


Whenever you need to define variables, Equatio prompts you for them.

Note: You can use the same variables for multiple expressions – if you wanted to create another completely different line, for example, you should choose letters other than *m* and *c* for its variables.

5. Click **all** to add sliders for *m* and *c*.

   Equatio adds sliders, sets them both to 1 by default, and draws the resulting line on the graph:



Note: Entering *m = 1* and *c = 1* as new expressions would have done exactly the same thing. However, it is often easier to follow Equatio's suggestions.

6. Use the sliders and see how the line changes.

You can use a slider's **Play** button  to animate the line by automatically moving each slider. Try it!

If you want to see a different range, click on one of a slider's endpoints (the small -10 or 10 in the above example). You can then specify minimum and maximum values for the slider, as well as its step size.

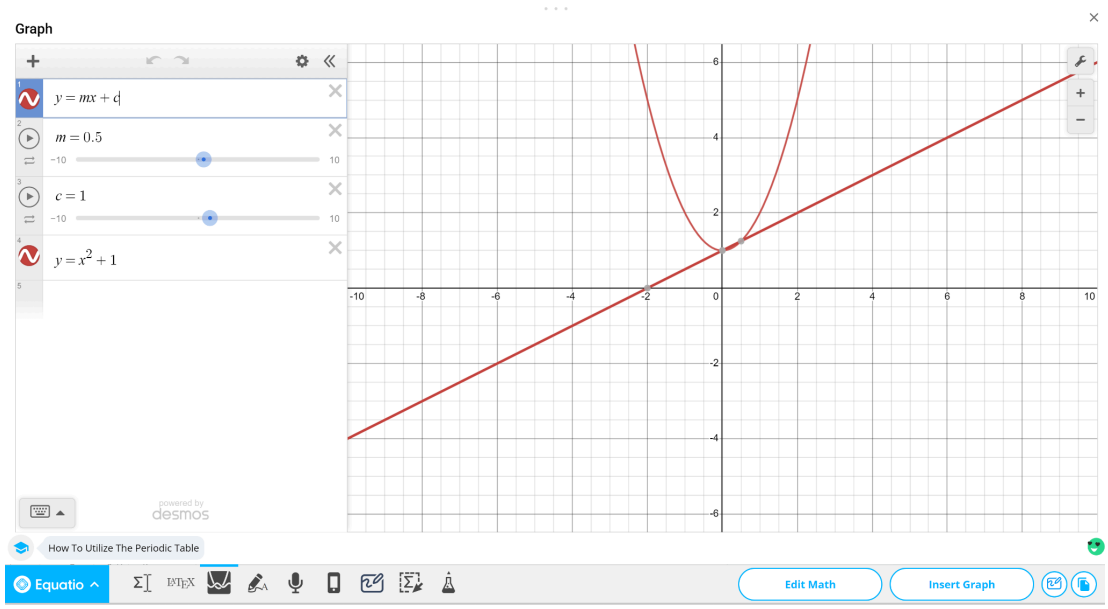
7. Set *m* to **0.5** and *c* to **1**.

8. Let's add a second line to the graph. Click in the 4th expression box and then enter the following expression:

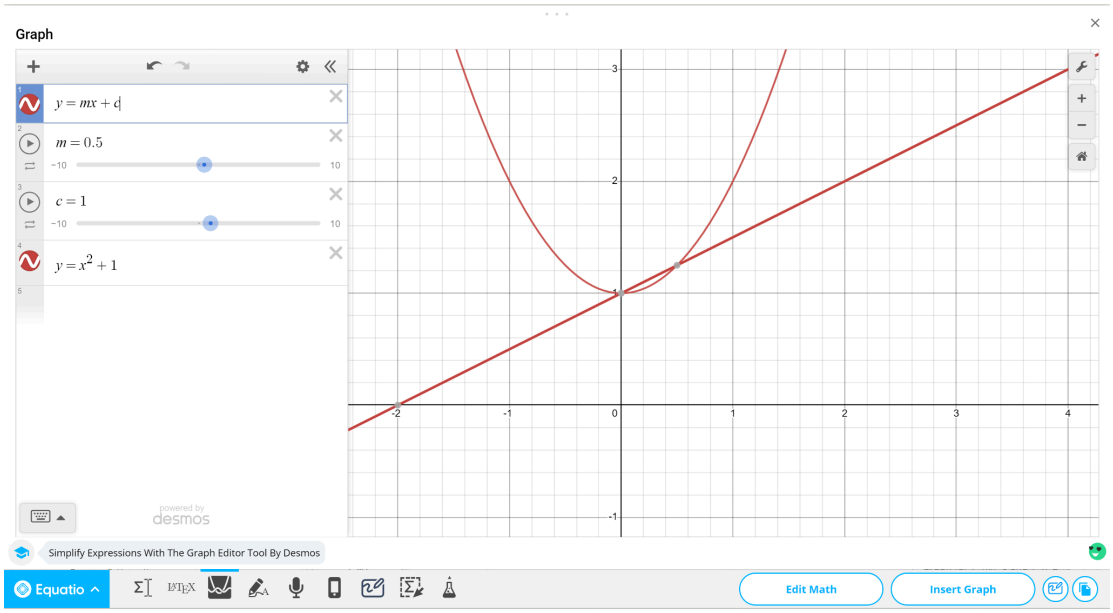
   y = x²+1

   To get the x^2, start typing **squar**... and accept Equatio's prediction for **Squared** when it appears.

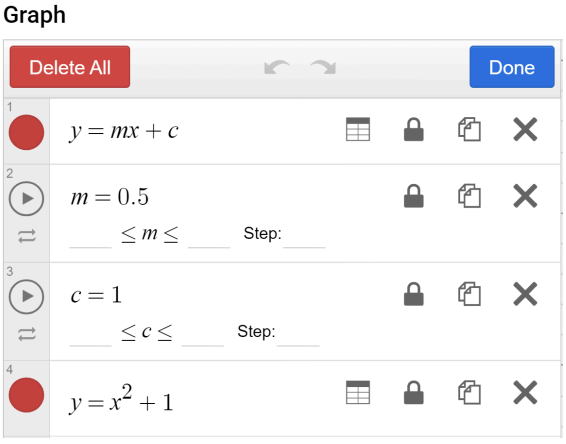
   Equatio draws the second line on the graph:



9. The interesting part of our graph is where the lines intersect. Click  (or use your mouse's scroll wheel) to zoom in, and then click-and-drag the graph area with your left mouse button to move its position so that it looks something like this:



10. Let's change the color of your second line. Click on **Edit List**  to open the list of options available:



Notice here there are options to lock, duplicate, or delete each item.

11. Click on the black colored circle to the left of $y = x^2 + 1$ to open the Lines options:



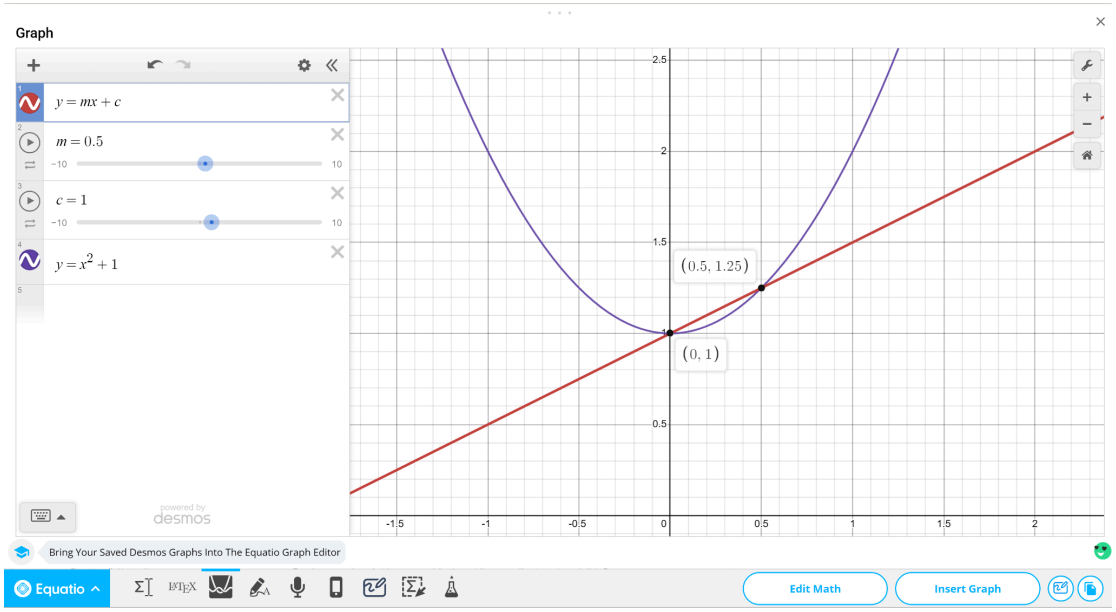
You can use these options to change line color, opacity, thickness, and type. Similar options are available for points, inequalities, and other features.

12. Change the $y = x^2 + 1$ line's color to **purple**.
13. Click on the red line in the graph area. See how Equatio highlights any interesting points on the line?

    At the moment, the points are just highlighted as gray dots.

14. Hover with your mouse pointer over one of the gray dots. See how Equatio shows its coordinates?
15. Click on the two intersection points between the two lines.

See how each point becomes black and its coordinates stay visible?



The graph area's interactivity can help you to solve problems, such as checking answers that you have found algebraically.

Unfortunately, these points are still temporary – they won't be included when you insert the graph into your document, and they will disappear when you select another part of your graph.

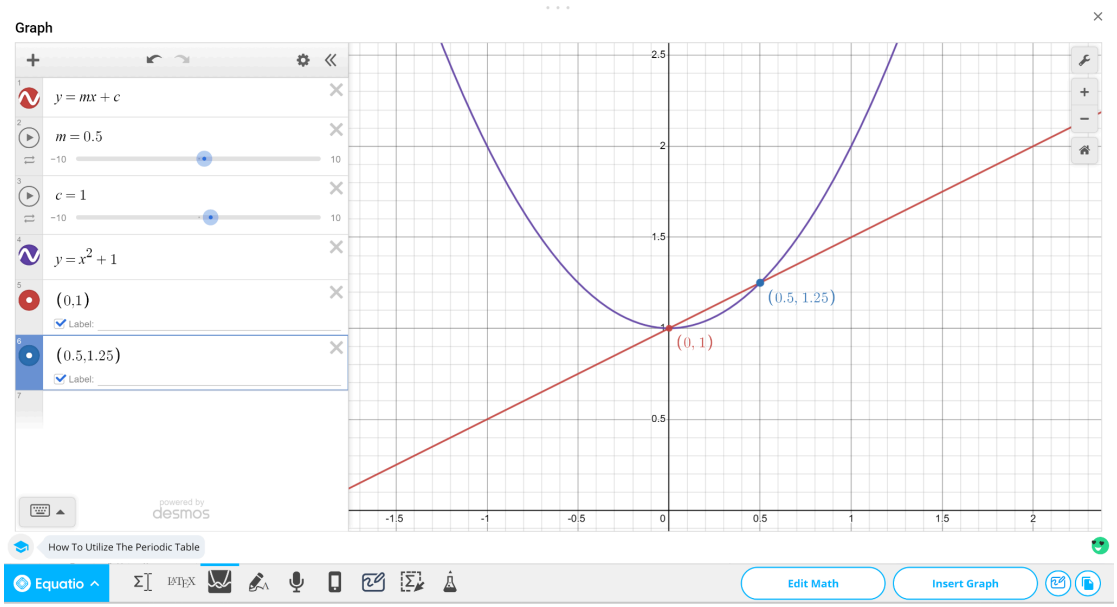
16. Next, let's add the two intersection points to your graph permanently:

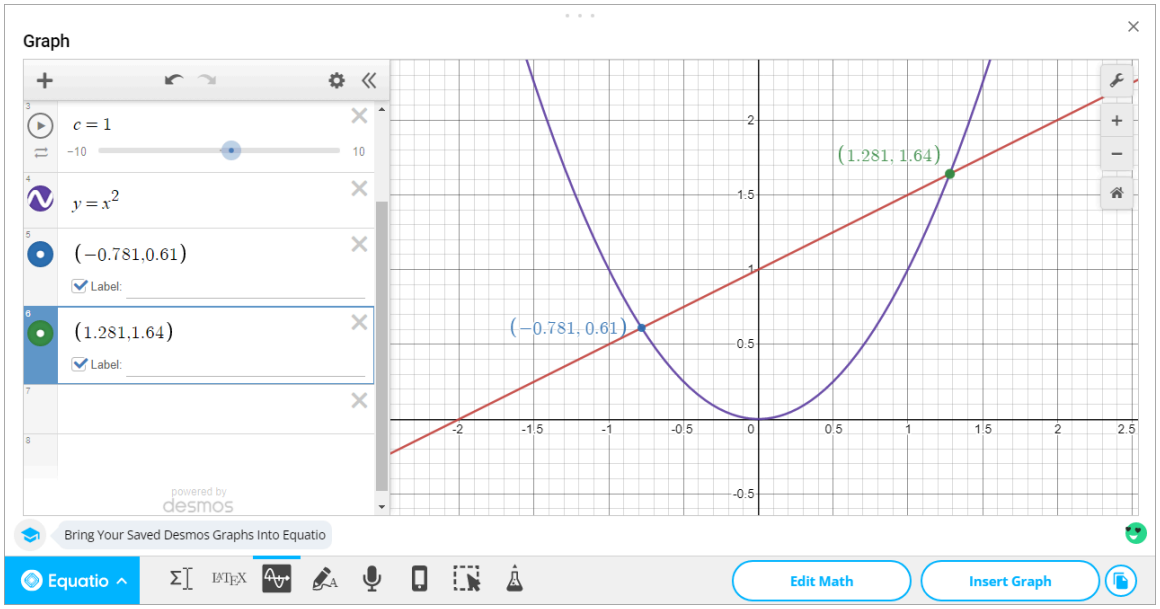
    a. Enter **(0,1)** as a new expression, selecting its **Label** check box when it appears. Don't forget to include the brackets.

       By default, Equatio uses a point's coordinates as its label. To use a different label, type it into the space next to the Label check box.

    b. Enter **(0.5,1.25)** as a new expression, again selecting its **Label** check box.

Your graph should now look something like this:





You can use commas to add multiple data points as a single expression, for example **(0,1),(1,2)**. Try it!

To add a whole table of data points, you can either:

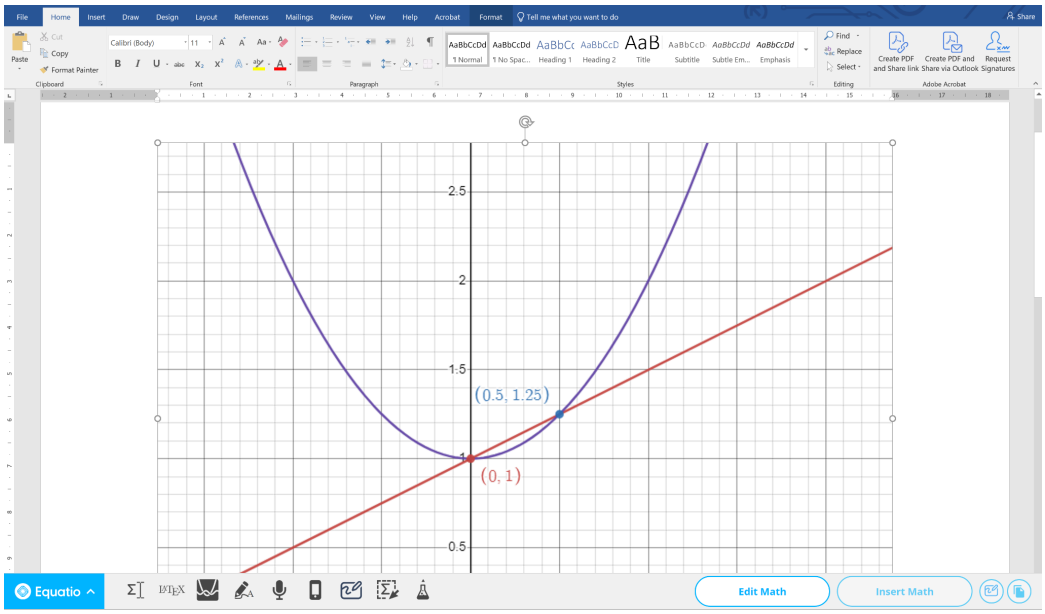
- Click  and then select **table**.

- Type **table** into a new expression box.
- Copy data from Google Sheets (or any other spreadsheet) and paste it directly into a new expression box.

When you have lots of data, it's much easier to put it into a table than it is to use brackets and commas for each data point.

17. Finally, click the Equatio toolbar's **Insert Graph** button.

    Equatio inserts the graph into your document:



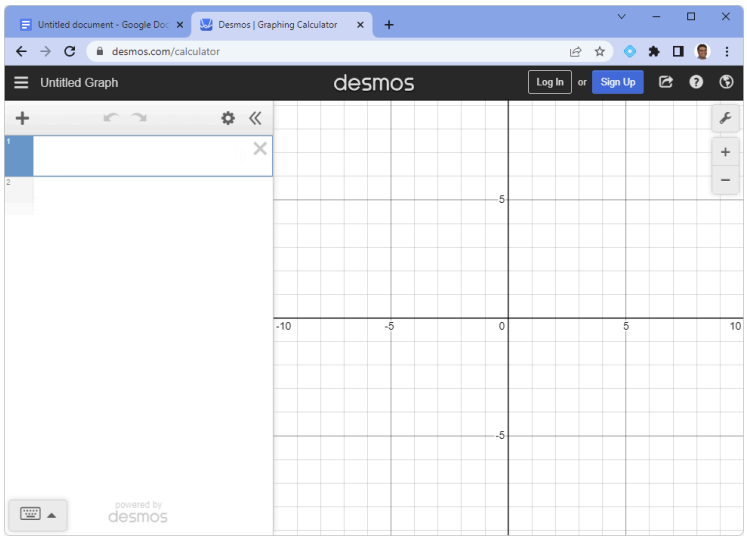
Further Exercise

Exercise 2 Importing saved graphs

In this exercise, you'll learn how to import a saved Desmos graph into the Graph Editor and then insert it into a document.

When using the full online version of the Desmos Graphing Calculator, you can save a graph under your Desmos account and export it using a simple URL. You then can paste that URL into Equatio's Graph Editor.

1. Open Google Chrome and go to the Desmos Graphing Calculator website:



   See how similar the Desmos Graphing Calculator is to Equatio's Graph Editor?

   It has the same expression list on the left and graph area on the right. The main exception is the black menu bar at the top of the screen.

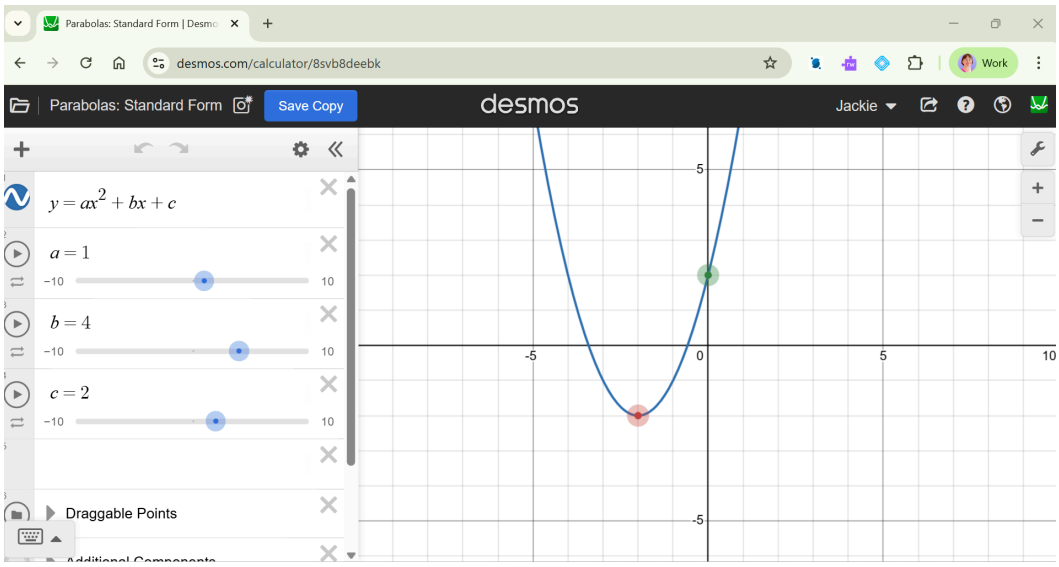
2. Click **Log In** (top right) and log into your Desmos account.

   Note: If you do not have a Desmos account, you can create one now for free. Alternatively, you can continue without an account, using an example graph rather than one of your own saved graphs.

3. Click  (top left) to open the Graphing Calculator's menu, and then select one of your saved graphs.

   Note: If you do not have any saved graphs, you can either use one of the example graphs, or create a new graph instead.

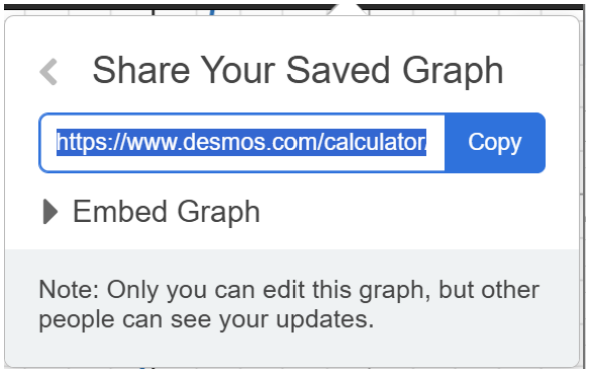
4. The Graphing Calculator shows the graph:



   If you want, you can edit the graph now – adjust the sliders, for example, or add an image.

5. When you are happy with the graph, click **Share Graph**  (top right). Choose **Save and Share this Graph** and click **Save**.

   The Share Your Graph box appears:



6. Click **Copy** to copy the graph's URL to the clipboard.

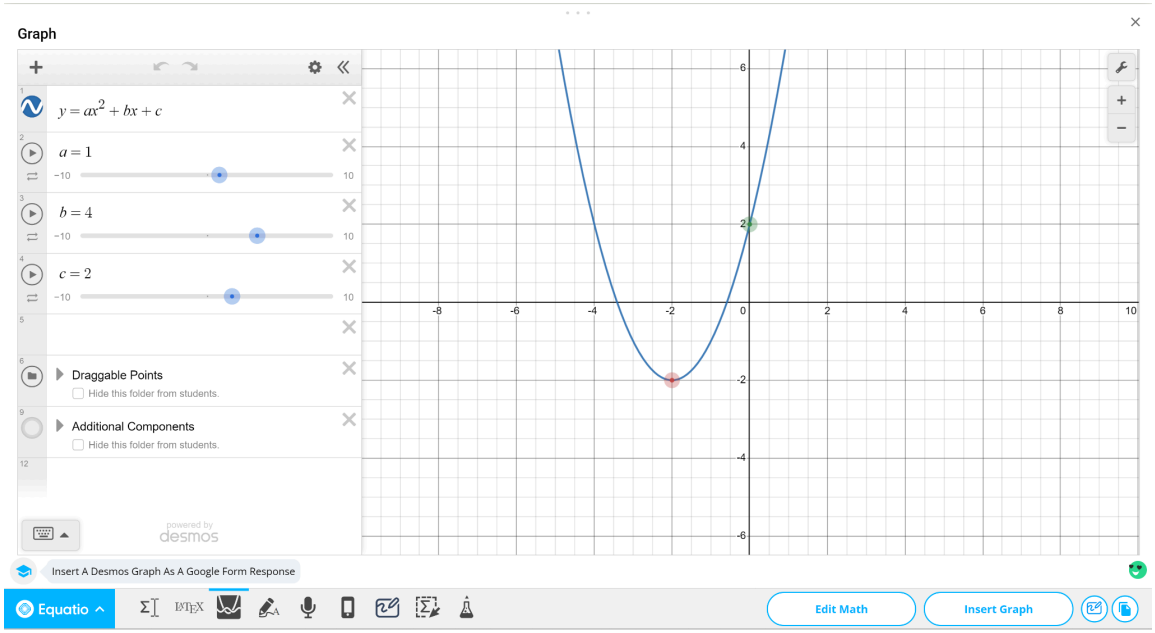
   Next, we will import this graph into Equatio.

7. Open a document in Microsoft Word, make sure that the Equatio toolbar is visible, and position the cursor in a blank part of the document.

8. Click **Graph Editor** .

9. Click in one of the Graph Editor's expression boxes, and then press **Ctrl**+**V**.

   Equatio copies the entire graph into the Graph Editor, replacing any previous content:



   Again, you can edit the graph here if you want.

10. Finally, click the Equatio toolbar's **Insert Graph** button to insert the finished graph into your document.

9. Equatio Mathspace

In this section, you'll learn how to use Equatio mathspace to:

- Create standalone mathspaces
- Create diagrams in your documents
- Use mathspaces for assignments

At its simplest, Equatio mathspace is a digital whiteboard tool that helps you add diagrams alongside your math.

However, it's much more than just a whiteboard. Mathspaces are flexible collaborative workspaces that teachers can use to:

- Work on math with their students
- Create and send out assignments
- Collate and grade assignments
- Send feedback to their students

Mathspaces make it easy for students to complete their assignments. Having all their assignments in one place, complete with feedback, makes it easy for them to review and keep track of their work.

This training course can only give you a quick introduction to Equatio mathspace. For more information, including a *Quick Reference Guide* and mathspace lesson templates, we recommend that you look at our Equatio mathspace learning resources web page.

Exercise 1 Creating standalone mathspaces

In this exercise, you'll learn about the Equatio dashboard and how you can use it to create standalone mathspaces.

Teachers can use standalone mathspaces to create worksheets and assignments, either printed or online. If you're using online worksheets, you can make them interactive and easy for your students to complete. Note that we'll learn more about using Equatio mathspace to *manage* your assignments later.

Students can use standalone mathspaces to complete their assignments – whether those assignments have started out as Equatio mathspaces or not.

1. You can create standalone mathspaces from the Equatio dashboard. To access your dashboard, either:

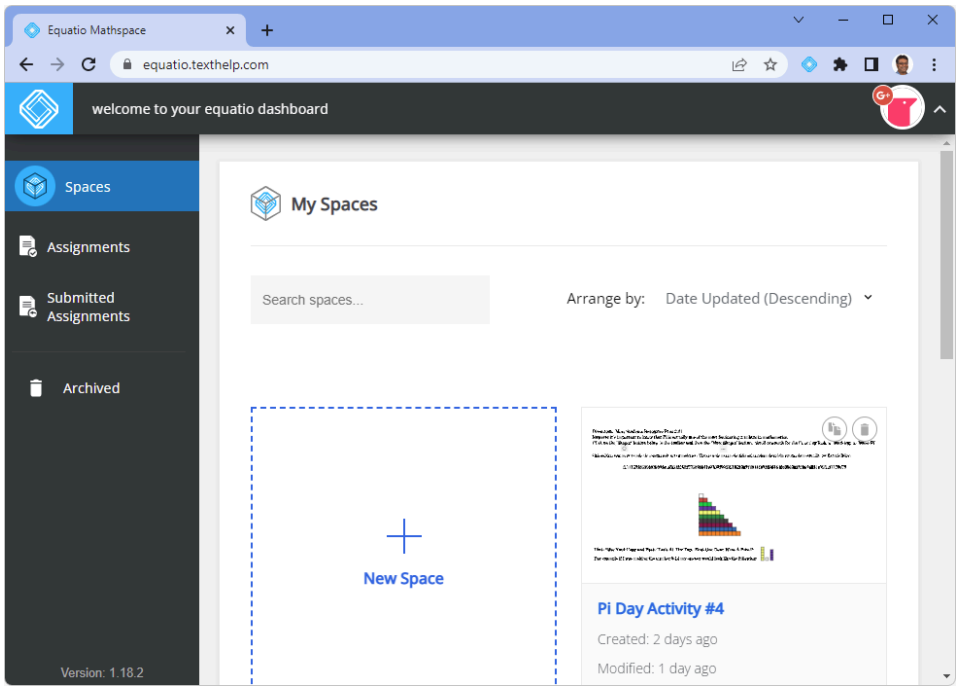
    - From the Equatio toolbar, click **Equatio** and then select **Try Equatio Mathspace**.
    - Navigate directly to https://equatio.texthelp.com. If you are prompted to sign in, click the button for your account type and follow the instructions.

    The dashboard contains four pages:

    - **My Spaces** – the standalone mathspaces that you have created. You can click a mathspace to edit it, or use the buttons at its top right to duplicate or archive it.
    - **Assignments** – mathspaces that you have sent to other people as assignments. You can click a mathspace to see the status of its responses. At the top right of each mathspace is a button to share it and the number of responses you've had for it.
    - **Submitted Assignments** – mathspaces that you have completed and sent back to the person who created them (typically a teacher or colleague).

You can click a mathspace to see your responses and, if necessary, to edit them and re-submit the assignment.

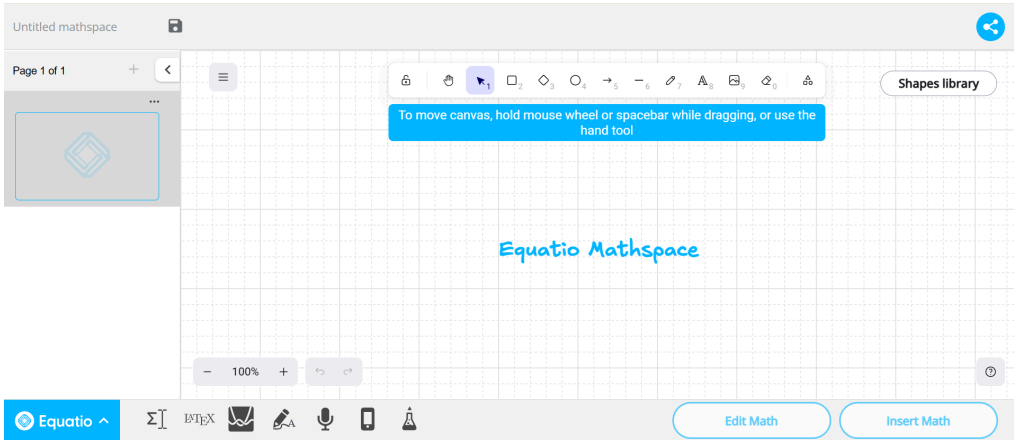
- **Archived** – mathspaces that you have archived. You can still click a mathspace to edit it, or click the button at its top right to restore it to the My Spaces page.



We'll create a new mathspace for a class assignment.

1. On the My Spaces page, click the **New Space** box.

   Equatio creates a blank mathspace in a new Chrome tab:



Within the mathspace there this a toolbar running across the top:



Lock/unlock selected tool – keeps selected tool active after drawing.

Hand (panning tool) – use to move your mathspace canvas around.

Selection – draw lines or sketches, write freehand math, or otherwise mark up your mathspace. This tool is best used with a touchscreen or stylus.

Rectangle, Diamond, Ellipse – insert your choice of shape. When selected you will be able to choose the color, background/fill etc.

Arrow, Line – insert your choice of line. When selected you will be able to choose the color, width, background/fill etc.

Draw– freehand draw. When selected you will be able to choose the color, background/fill etc.

Text – insert text. When selected you will be able to choose the color, size, etc.

Insert Image – insert an image. When selected you will be able to drag and drop or upload an image (maximum 2mb).

Easer – select and click on any added item to remove.

More tools - opens additional options to add a Frame tool, Web Embed or Laser pointer.

Beside the toolbar, to the right, is a button labelled **Shapes Library** - click this to open:

Shapes – insert a shape from the Shape libray. This tool includes a huge range of shapes and icons, including number lines, coins, Venn diagrams, and so on.

Smart Shapes – insert a smart shape. This tool includes a range of dynamic shapes to support younger students or visual learners, such as a protractor, fraction bar, and clock. Each smart shape has its own special properties – when inserting a clock, for example, you can set the time and decide whether you want to include a second hand.

Running across the very top of the mathspace area is:

- **Mathspace name** – click at the top left of the mathspace (where it says "Untitled mathspace") to change its name.



Save – saves changes to the mathspace.



Share – shares the mathspace with other people via a range of services (including Google Classroom) or as a shareable web link.
We'll learn more about sharing mathspaces later.

Down the left is:

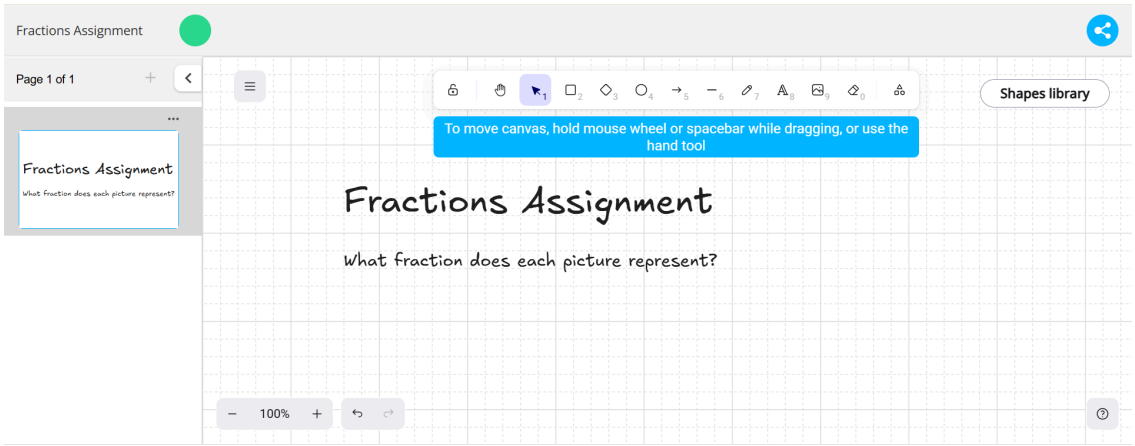
- **Pages panel** – a standalone mathspace can have multiple pages. You can use this panel, on the left of the mathspace, to add, remove, and organize pages.

2. Click the mathspace's name and rename it **Fractions Assignment**.

3. Next, we'll add a heading. Use **Text**  to insert **Fractions Assignment** as text.
4. Drag the text to the top of the mathspace, and then click-and-drag its bottom right corner to resize it. Make it a bit larger.

5. Add a line of instruction below the heading: **What fraction does each picture represent?**

Your mathspace should look something like this:



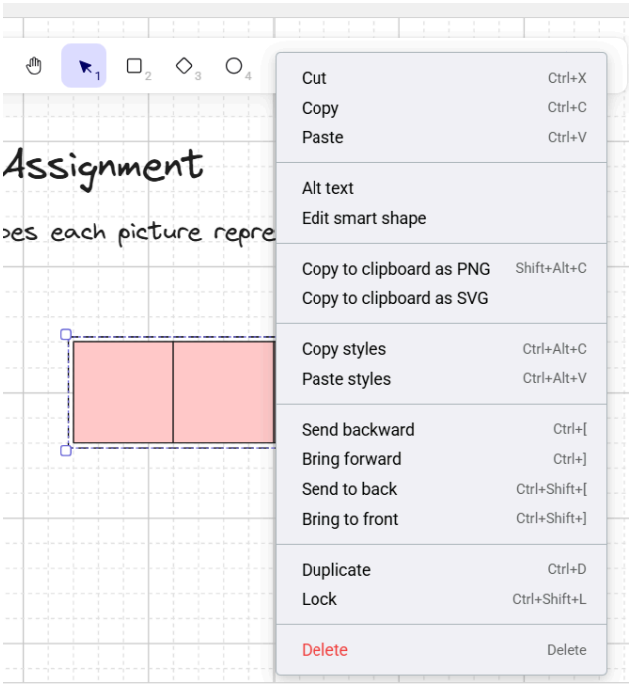
6. Click **Shapes Library**, then **Smart Shapes** and then **Fraction Bar**.

7. A fraction bar will be added to the mathspace.

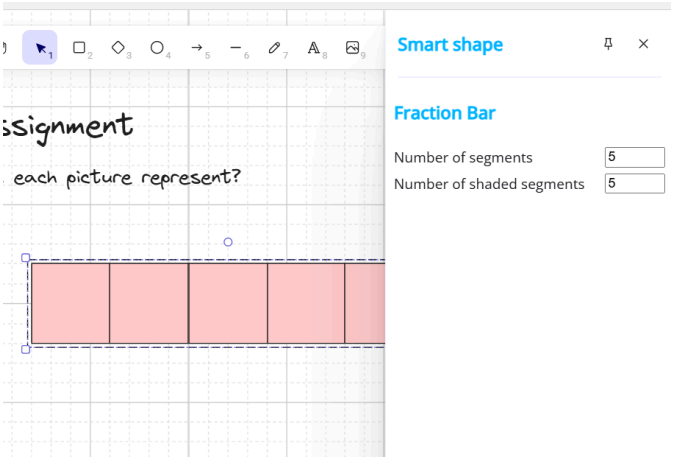
8. Click **Selection**  and then click and drag on one of the fraction bar size handles to draw out the size of the fraction bar

9. Click-and-drag with the left mouse button to draw out a fraction bar.

10. Right click on the fraction bar to see the edit menu:



11. Click on **Edit smart shape**



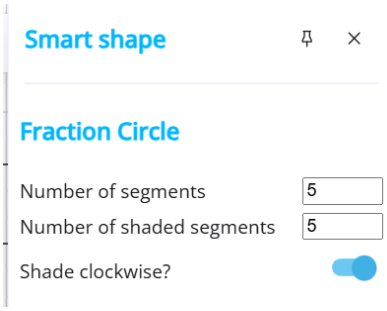
12. Leave **Number of segments** set to **5**, but change **Number of shaded segments** to **3**. See how you now have a fraction bar for $\frac{3}{5}$?

13. Select the fraction bar and right click to bring up the edit menu again. Use **Copy** and **Paste** buttons to create a copy of it. **Note**: you may be asked by Chrome to give permission to do this.

14. Edit its properties to make it show $\frac{2}{7}$, and then use the **Background** option to change its color to yellow.

15. Next, we'll add a different shape. Click **Sharpes Library**, then **Smart Shapes** and then **Fraction Circle**.

16. Click-and-drag with the left mouse button to move and draw out a fraction *circle*, and then find the **Edit smart shape** option:

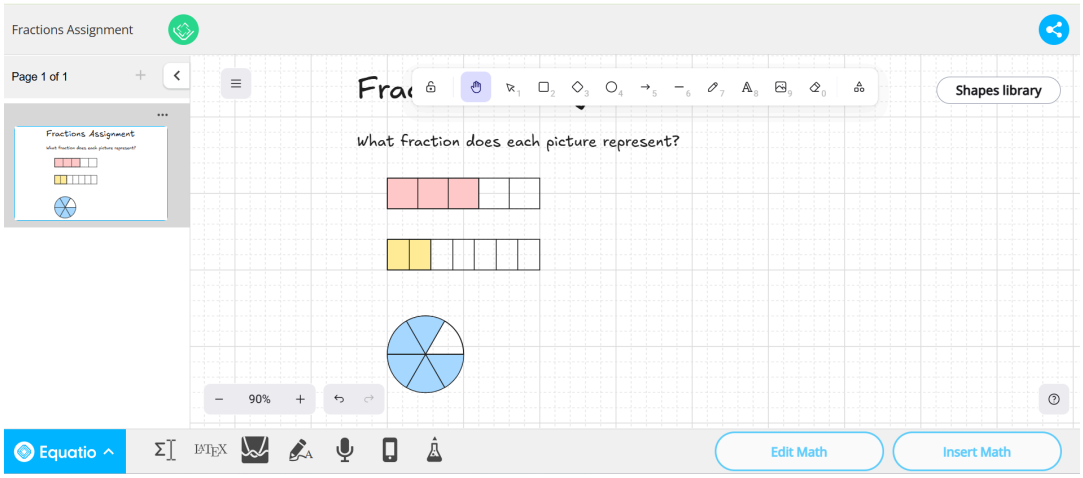


These are similar to the **Fraction Bar** properties, but note how there's an additional **Shade clockwise?** Setting.

Each smart shape has its own special properties. A clock's properties include the time and whether to show a second hand, for example, while an angle measure's properties are where you set its angles and whether you want it labeled in degrees or radians.

17. Edit the fraction circle's properties to make it show $\frac{5}{6}$, and then change its color to blue.

Your mathspace should now look something like this:



18. Click **Save** to save your mathspace.

You could now click **Share** to send the mathspace to your students or colleagues. However, we'll find out more about that in the next exercise.

19. Instead, let's export the mathspace. Click **Equatio** at the bottom left of the mathspace's Chrome tab, and then select **Download as PDF**.

Equatio exports your assignment as a PDF and downloads it to your Downloads folder.

20. Click the PDF to open it in your default PDF viewer. You can now print it out for use as a class worksheet, for example. Alternatively, you (or your students) could use OrbitNote , if available, to complete the assignment as a PDF.

While you created a simple single-page mathspace in this exercise, you can have as many pages as you want in a mathspace, either by creating them manually or all at once when photographing pages with Equatio Mobile.

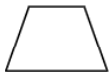
See the page display at the left hand side of your standalone mathspace? You can click a page's **...** button to duplicate, delete, or move it. You can also click-and-drag pages to change their order within the current mathspace.

Exercise 2 Creating diagrams

In this exercise, you'll learn how to use Equatio mathspace to create a simple diagram and insert it into a document.

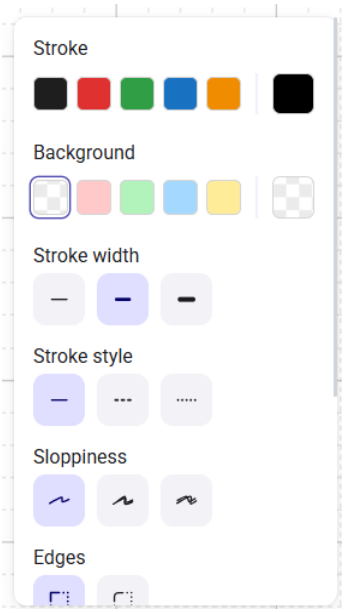
1. Open Google Chrome, navigate to https://equatio.texthelp.com, and then create a new standalone mathspace.

   You should be familiar with the mathspace toolbars and working space from the previous exercise.

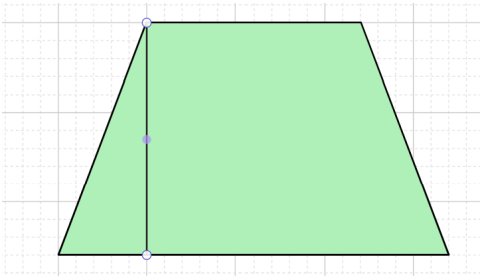
2. Click **Shapes Library** and then in the **Shapes** click on **Trapezoid** .

   A trapezoid shape will be added to the mathspace. Close the **Shapes library**.

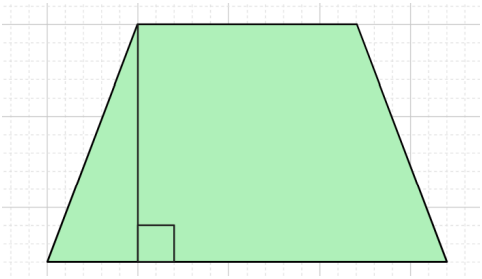
3. Use the shape handles to increase the size of the trapezoid.
4. Click on the trapezoid to open the editing options and select one of the background colors:



5. Click the Line button and draw a vertical line from the top left corner of the trapezoid down to its base, like this:

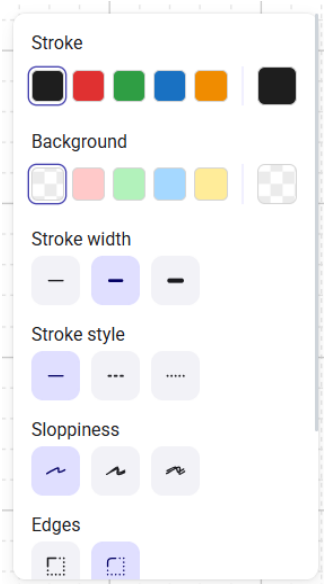


6. Click **Rectangle**  .
7. In the options that appear on the left, scroll down till you see **Edges**. Currently it is set to rounded - change to square.
8. Draw a small square at the base of the line, to indicate that it is at right angles to the trapezoid's base line:



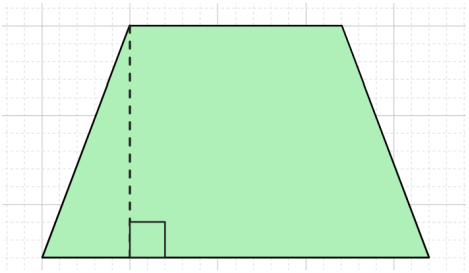
9. Click **Selection**  .
10. Click the vertical line you drew earlier.

    After you have selected the line the options appear to the left of the screen:

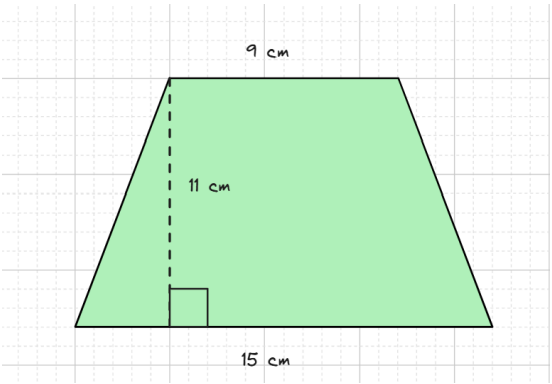


11. Find the **Stroke style** and change it to a **dashed** line.

    Your diagram should now look something like this:



12. Next, we will add some measurements. Click **Text** insert **9 cm**, **11 cm** and **15 cm** so it looks something like this:



Note: you can drag the text around by clicking the **Selection** , then left clicking and dragging the text.

13. When you are happy with your diagram, click **Insert** , at the top right corner of the screen.

    Equatio inserts the diagram into your document and closes the mathspace tab.

14. You now have a diagram in a mathspace, but how can you get it into Microsoft Word (or any other application)? The best way is to save it as a PNG image.

    Click **Equatio** at the bottom left of the mathspace's Chrome tab, and then select **Download as PNG**.

    Equatio saves the mathspace as "untitled.png" in your Downloads folder – it should also appear at the bottom of your Chrome window:

15. Open a document in Microsoft Word, and then insert your PNG into it.

    There are several ways to insert a PNG into a Word document. You can use **Insert** > **Pictures**, for example, or open your Downloads folder in File Explorer and simply drag the PNG into your document.

16. If required, resize the diagram to make it fit with the rest of your document.

    You can use this method to add diagrams to many applications – not just Word and PowerPoint. Don't forget that you can also use mathspaces for math!

    Note: Equatio for Google Chrome can create mathspaces from the Equatio toolbar, and then insert them directly into web applications such as Gmail, Google Docs and Microsoft Office Online. If you have access to Word Online, this can be an easier way to insert diagrams.

Exercise 3 Using mathspaces for assignments

In this exercise, we'll use videos to show you how Equatio mathspace can be used to create and manage student-friendly assignments that can be shared via Google Classroom, social media, or as a simple URL.

Sending assignments and sharing feedback

This video shows how you can send assignments to your students, receive their answers, and send feedback back to them:

https://academy.texthelp.com/equatio/mathspace-assignments/

Using a mathspace in Google Classroom

This video expands on the previous one, showing how you can use a mathspace in Google Classroom:

https://youtu.be/mqKc9i5jWw0

Using the Rapid Reviewer

This video shows how you can use Equatio mathspace's Rapid Reviewer tool to quickly navigate between your students' responses, scoring assignments and recording feedback:

https://academy.texthelp.com/equatio/rapid-reviewer/

The Rapid Reviewer is really useful for working with large classes.

Making assignments more student friendly

Using a standalone mathspace for an assignment gives you interactive options that simply aren't possible with paper worksheets.

Your students can move items around in the mathspace – for example, you could provide a set of answers and ask students to drag them to the corresponding

questions. Or you could include a stack of coins in the mathspace and ask students to put a certain amount into a piggy bank.

This video shows how you can use Equatio mathspace's Infinite Cloner tool to make it easy for students to use pre-set items in their answers:

https://academy.texthelp.com/equatio/infinite-cloner/

This video shows how you can lock items that you don't want your students to be able to move:

https://youtu.be/LRnSnCAVMio

10. Equatio Whiteboard

In this section, you'll learn how to use Equatio whiteboard to:

- Quickly create a visual math concept

At its simplest, Equatio whiteboard is a tool that helps you jot down ideas, visualize concepts, and solve equations creatively – all within Equatio. No more switching between apps, losing track of work, or wasting valuable class time.

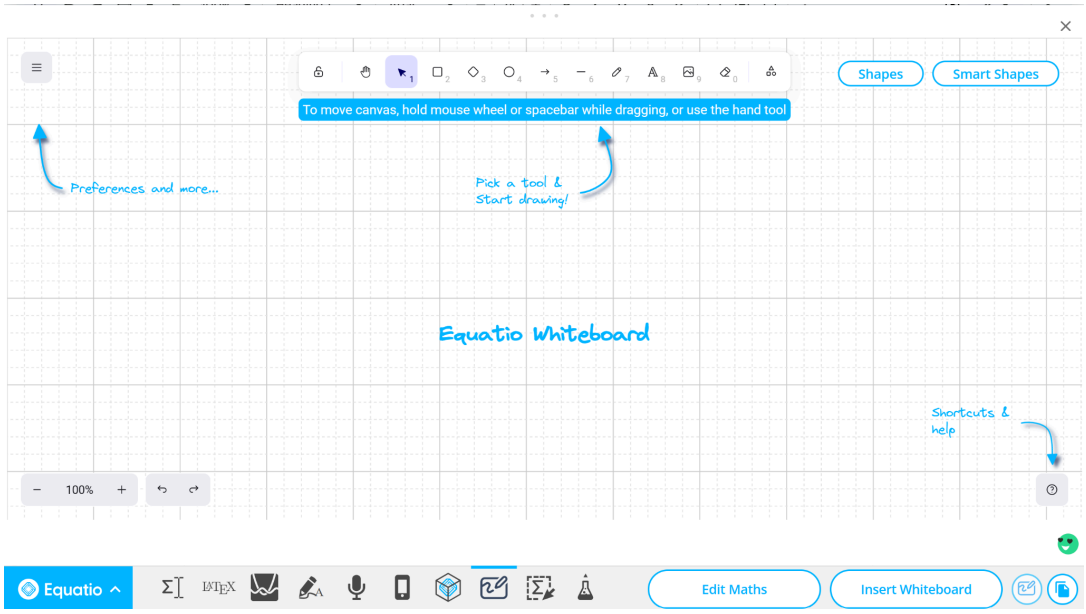
It is designed to help you work side-by-side with students in real-time. Explain concepts visually, annotate on equations, and guide them through complex problems together.

Create a dynamic learning environment where students can brainstorm freely, explore solutions visually, and explain their thought process using familiar math language and symbols.

Exercise 1. Using the whiteboard

In this exercise, you'll learn how to use Equatio whiteboard to create a simple diagram and insert it into a document.

1. Open a document in Google Docs, make sure that the Equatio toolbar is visible, and position the cursor in a blank part of the document.
2. Click **Whiteboard** .
3. A blank whiteboard will open on top of the doc. You can resize this area if you wish by clicking and dragging the 3 dots that appear at the top middle of the panel:



4. Within the Whiteboard there this a toolbar running across the top:

5. 

Lock/unlock selected tool – keeps selected tool active after drawing.

Hand (panning tool) – use to move your whiteboard canvas around.

Selection – draw lines or sketches, write freehand math, or otherwise mark up your whiteboard. This tool is best used with a touchscreen or stylus.

Rectangle, Diamond, Ellipse – insert your choice of shape. When selected you will be able to choose the color, background/fill etc.

Arrow, Line – insert your choice of line. When selected you will be able to choose the color, width, background/fill etc.

Draw– freehand draw. When selected you will be able to choose the color, background/fill etc.

Text – insert text. When selected you will be able to choose the color, size, etc.

Insert Image – insert an image. When selected you will be able to drag and drop or upload an image (maximum 2mb).

Easer – select and click on any added item to remove.

More tools - opens additional options to add a Frame tool, Web Embed or Laser pointer.

Shapes – insert a shape from the Shape libray. This tool includes a huge range of shapes and icons, including number lines, coins, Venn diagrams, and so on.

Smart Shapes – insert a smart shape. This tool includes a range of dynamic shapes to support younger students or visual learners, such as a protractor, fraction bar, and clock. Each smart shape has its own special properties – when inserting a clock, for example, you can set the time and decide whether you want to include a second hand.

6. Let's quickly create a shape to explain a fraction - 2/8.
7. First let's create the math. Click on the Equation Editor and create 2/8.
8. Click **Insert Math into Whiteboard** .
9. The math is placed within the whiteboard.
10. Next, insert a **Fraction Circle** from the **Smart shapes library**.

11. Right click on the fraction circle and select **Edit smart shape**.
12. Increase the number of segments to 8 and change the number of shaded segments to 2.
13. So with the whiteboard you can quickly explain concepts visually to students how to work on a problem, or explain a math concept.
14. Finally, click **Insert Whiteboard**.
15. The whiteboard you have just created will be inserted into the doc.

10. STEM Tools

In this section, you'll learn about Equatio's STEM tools:

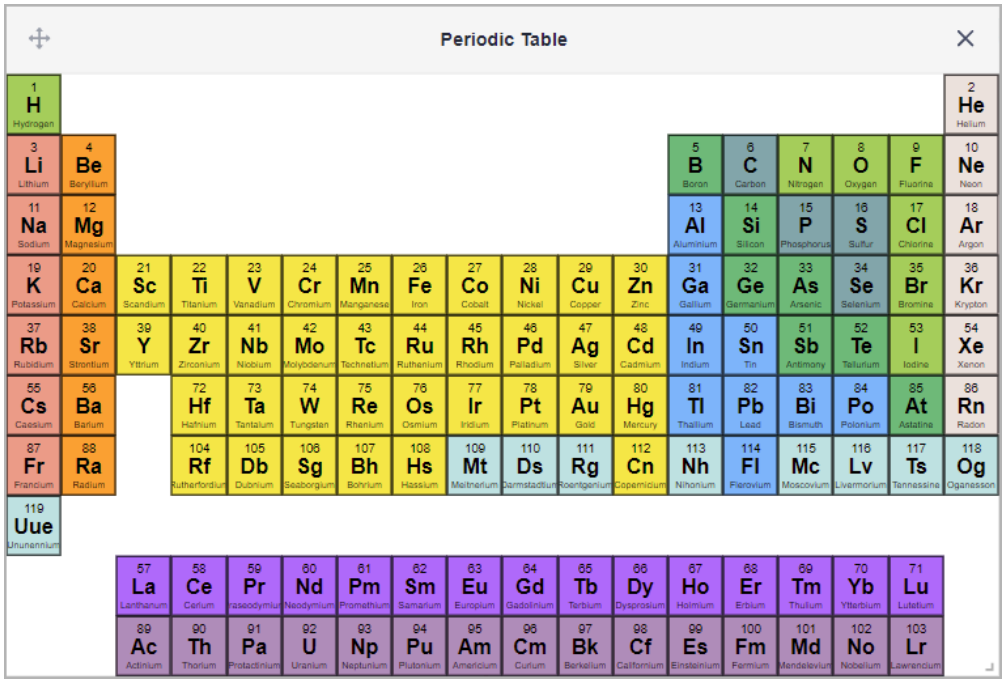
- Periodic Table
- Scientific Calculator
- Molecular Viewer

Exercise 1 Using the Periodic Table

In this exercise, you'll learn about Equatio's Periodic Table tool.

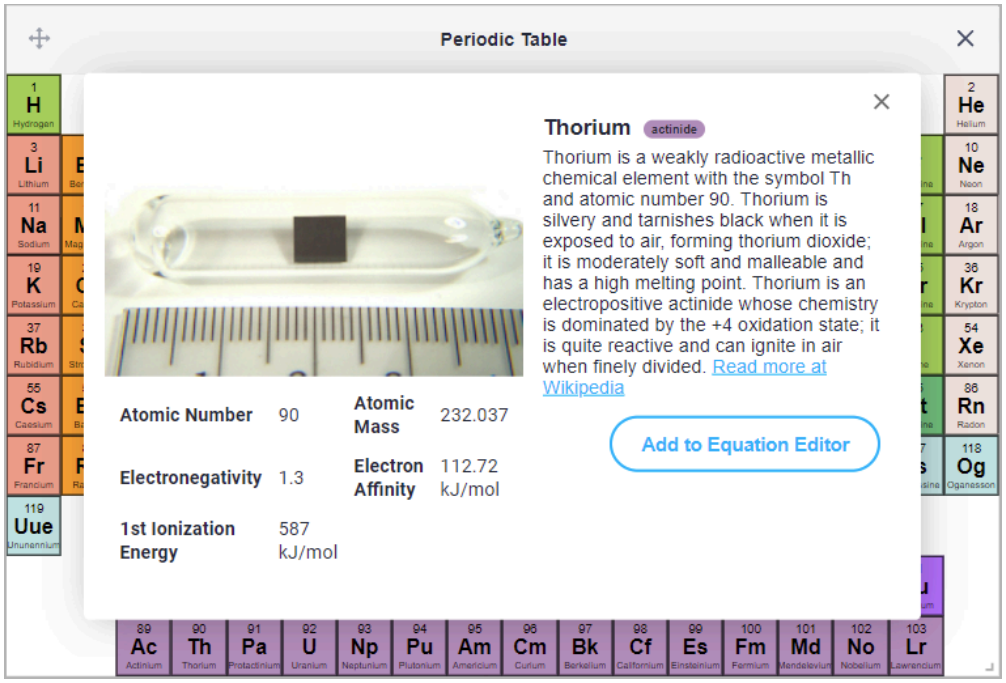
1. Open the Equatio toolbar, if it is not already running.
2. Click **STEM Tools**  and then **Periodic Table** .

   The Periodic Table appears:



Each element is displayed with its symbol and atomic number, as well as its full name if your window is large enough. You can resize the Periodic Table window by clicking and dragging its bottom right corner.

3. Hover your mouse pointer over an element to see its name.
4. Click one of the elements to show more information about it:



The information window includes a picture (or diagram) of the element, its properties, and a description, with a link to the element's Wikipedia page.

5. Click **Add to Equation Editor**, near the bottom right of the element's information window.
6. See how the element's chemical symbol is added to the Math panel, just above the Equatio toolbar?

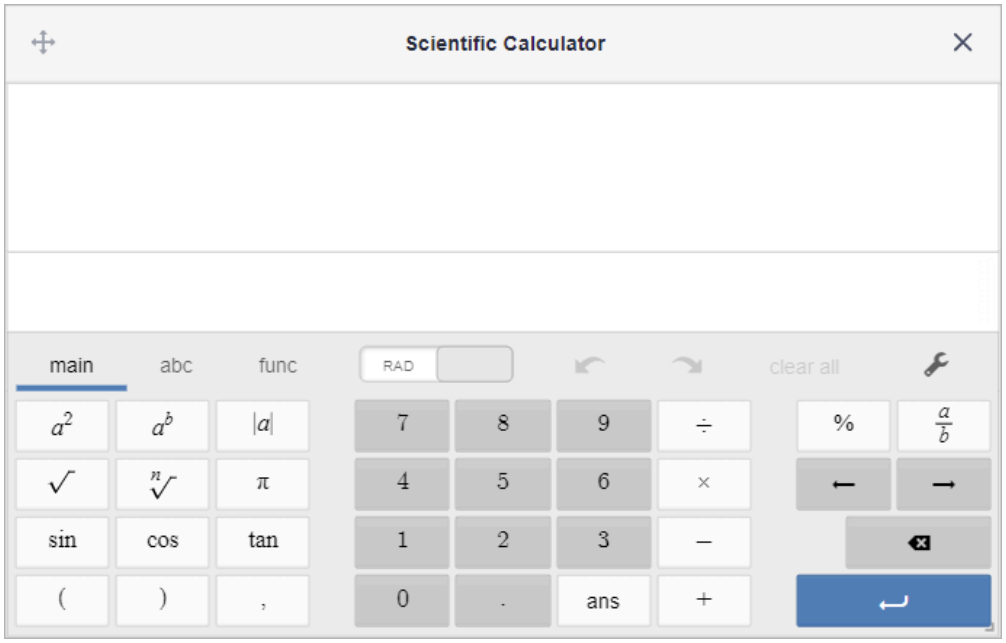
   You can leave the Periodic Table open while using Equatio with Microsoft Word (or whatever application you are working in).
7. Close the information window and the Periodic Table.

Exercise 2 Using the Scientific Calculator

In this exercise, you'll learn about Equatio's Scientific Calculator. This is the Desmos Scientific Calculator, which is used widely in US exams.

1. Open the Equatio toolbar, if it is not already running.
2. Click **STEM Tools**  and then **Scientific Calculator** .

   The Desmos Scientific Calculator appears:



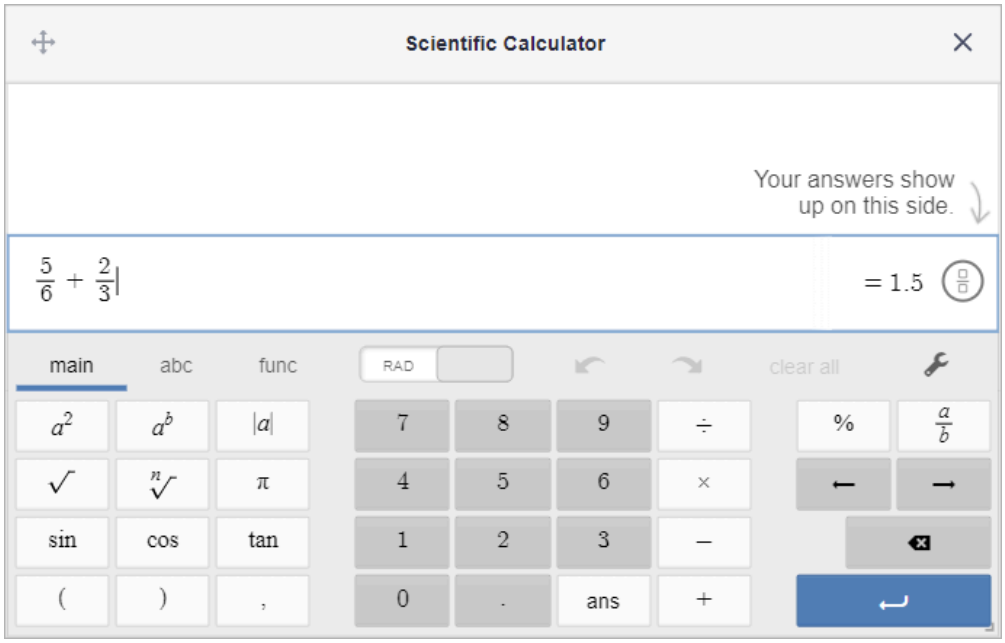
   The Scientific Calculator enables you to build complex calculations using scientific operators and functions. It supports fractions and can show answers as either decimals or fractions.

3. Using your keyboard or the Scientific Calculator itself, press the following sequence of keys:

   5 ÷ 6 ➜ + 2 ÷ 3

   Note how pressing ÷ builds a fraction. The right arrow is important as it moves the cursor out of the fraction's denominator.

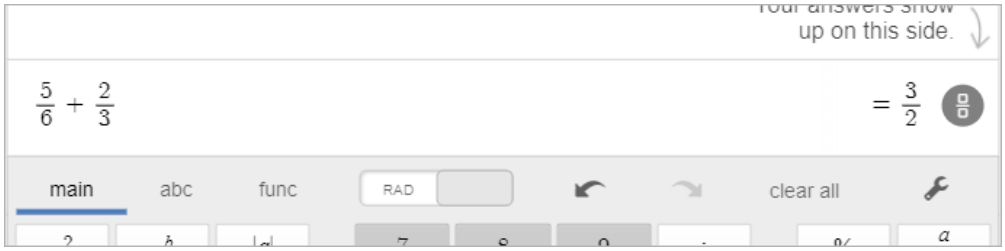
4. Does the sum appear as follows?



5. See how the Scientific Calculator shows the answer as you type? This is a decimal value by default.

6. Click the **Convert to fraction** button , to the right of the answer.

7. See how the answer changes from 1.5 to $\frac{3}{2}$?



8. Try a few sums of your own. Do they work as expected?

   It may take a few tries to get used to how the Scientific Calculator builds fractions and other functions. Remember to use the left and right arrows to move the cursor.

Note that you can use the **ans** button to insert the previous answer, while the $\frac{a}{b}$ button helps you to build complex fractions.

9. At any point, you can copy a sum from the Scientific Calculator and paste it into Equatio:

    a. Select the sum in the left side of the Scientific Calculator display and then press **Ctrl**+**C** to copy it to your clipboard.

    b. Click where you want the sum to appear in the Equation Editor and then press **Ctrl**+**V** to paste it.

    This can be a convenient way to build sums. However, note that fractional *answers* (on the right side of the Scientific Calculator) may not copy correctly.

10. Close the Scientific Calculator.

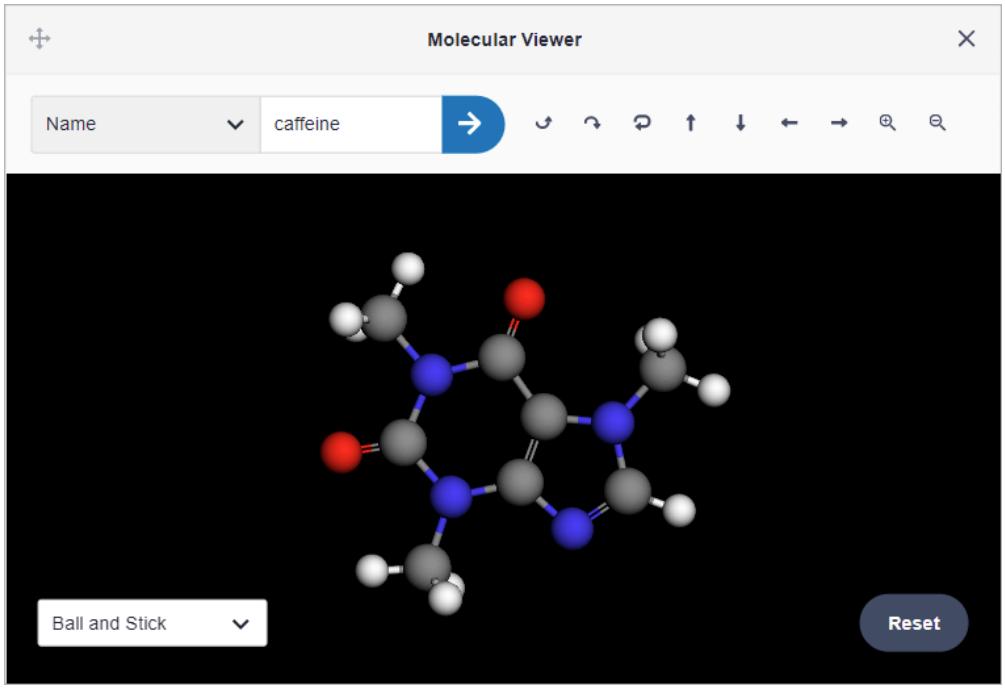
Exercise 3 Using the Molecular Viewer

In this exercise, you'll learn about Equatio's Molecular Viewer tool.

1. Open the Equatio toolbar, if it is not already running.
2. Click **STEM Tools**  and then **Molecular Viewer** .

   The Molecular Viewer appears.
3. Make sure that **Name** is selected near the top left of the window, and then enter **caffeine** in the **Search** bar.

   The Molecular Viewer shows the structure of the caffeine molecule:



4. Use the buttons at the top right of the window to rotate, move, and zoom the molecule. You can also use your mouse – click-and-drag with the left mouse button to rotate the molecule, or with the right mouse button to zoom.
5. Use the menu at the bottom left of the window to change the visualization style.

6. You can also find a molecule using its Protein Data Bank ID (PBD) or PubChem CID (CID). For example:
    a. Instead of Name at the top left of the window, select **PDB**.
    b. Enter **3E7Y** in the **Search** bar. This is the PDB ID for a version of human insulin.
    c. Select the **Cartoon** visualization style. This is useful for viewing complex protein structures.
7. Try to find a few other molecules.
8. Close the Molecular Viewer.

11. Using Equatio with your LMS

In this section, you'll learn about how Equatio can work with your *learning management system* (LMS).

If you (or your school) uses a LMS to create and manage educational content, it's important for you to be able to insert math when you are writing that content.

Many LMSs use browser-based editors that run within Google Chrome and are therefore compatible with the Chrome version of Equatio – see the *Equatio for Google Chrome Training Guide* for more details.

Note: Remember that your Equatio license includes all platforms – you can use Equatio for Windows, Mac, or Chrome as required.

For some LMSs, tighter integration is possible through *Learning Tools Interoperability* (LTI) – a framework that enables third-party systems, like Equatio, to work within your LMS's own interface.

Exercise 1 Using Equatio with your LMS

In this exercise, we'll show you how Equatio can be used with your LMS. Choose your LMS from the list below and watch the video to learn more.

Google Classroom

Google Classroom uses browser-based applications including Google Docs, Forms, and Slides. Equatio for Google Chrome adds the Equatio toolbar to Google Chrome – you can then use it to add your math (and other STEM content) directly into Google Docs, Forms, and so on.

We've already seen how Equatio mathspaces can be used in Google Classroom.

Blackboard

This video shows how you can use Equatio within Blackboard to create math and other STEM content:

https://youtu.be/VAJv70UzNUQ

D2L Brightspace

This video shows Equatio's direct LTI integration with D2L Brightspace,, which enables you to create math and other STEM content inside the Brightspace Editor:

https://youtu.be/ho704PF886Q

Canvas

This video shows Equatio's direct LTI integration with Canvas, which enables you to create math and other STEM content inside the Canvas Rich Content Editor:

https://youtu.be/Pcpj5Up4zL8

Infinite Campus

This video shows Equatio's direct LTI integration with Infinite Campus, which enables you to create math and other STEM content inside the Campus Editor:

https://youtu.be/ne1kFU1AA_k

Moodle

This video shows how you can use Equatio within Moodle to create math and other STEM content:

https://youtu.be/B2Atrd9yOJw

Schoology

This video shows Equatio's direct LTI integration with Schoology, which enables you to create math and other STEM content inside the Campus Editor:

https://youtu.be/rM7jya5R57o