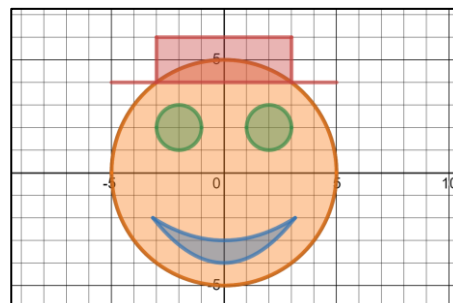


Creating Maths Art in Desmos (using lines and curves)

You can create pictures in Desmos (www.desmos.com) using the graphs of equations and inequalities.

The instructions for creating the picture shown are given as an introduction:



Creating the face and eyes

1. To create the outline for the face add the equation: $x^2 + y^2 = 25$
2. To shade the face add the inequality: $x^2 + y^2 \leq 25$
3. To create the eyes add the inequalities: $(x - 2)^2 + (y - 2)^2 \leq 1$ and $(x + 2)^2 + (y - 2)^2 \leq 1$
4. To change the colour of the eyes click-and-hold on the colour circles next to their equations.

Use the a^2 button on the onscreen keyboard to get the squared symbol

Type \leq to get the \leq symbol

Creating the mouth

5. To create the outline of the mouth add the equations: $y_1 = 0.2x^2 - 4$ and $y_2 = 0.1x^2 - 3$
6. Hide the curves by clicking the colour circle next to their equations.
7. To create the mouth add the inequality: $y_1 \leq y \leq y_2$

Just type $y_1=$ and Desmos will format it for you

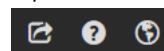
Creating the hat

8. To create the brim and the top of the hat add the equations: $y = 4\{-5 < x < 5\}$ and $y = 6\{-3 < x < 3\}$
9. To fill in the hat add the inequality: $-3 \leq x \leq 3\{4 < y < 6\}$

Saving and sharing your file

1. Create an account or sign-in.
2. Press **Untitled Graph** (top-left) to name and save your art.
3. Click on the **Share Graph** icon (top-right) to get a link.

Share Graph



- To view a completed version of this online see: www.desmos.com/calculator/xfzup7mfk
- Video instructions can be seen at: youtu.be/Ei3mKlbrz-E
- Lots more examples of Desmos art can be seen at: www.desmos.com/art

MEI Desmos Maths Art Competition 2020 Rules

Maths Week England will run from 9th-14th November 2020. As part of Maths Week England MEI is running a Desmos Maths Art competition. For more details see: mei.org.uk/competitions.

Theme and judging criteria

The theme of the MEI Desmos Art Competition is “*The Environment*”.

Entries will be judged on the following criteria:

- Quality of the art.
- Use of Mathematics.
- Interpretation of the theme: “*The Environment*”.

Prizes

There will be two prizes in each of three age categories:

- School years 7-9.
- School years 10-11.
- School years 12-13.

Our kind friends at Desmos are providing the following prizes for each of the six winners:

- Desmos swag-bag including a T-shirt for the student
- Desmos T-shirt and socks for the teacher

Competition details:

- Entries are open to all schools/colleges in England.
- Students will be judged in one of three age categories: years 7-9, years 10-11 and years 12-13.
- The judging panel will consist of staff from MEI.
- By submitting an entry to the competition students are giving permission for the art to be published on the MEI website.
- MEI will contact schools/colleges prior to publishing art online to ask how the student should be credited. No student or school/college names will appear online without permission. Our full privacy notice can be viewed at: mei.org.uk/privacy-notice.
- Teachers are expected to ensure that each entry is the student’s own work.
- We cannot accept images that are **similar to copyrighted material**. For example, the art should not depict cartoon characters whose image is copyrighted.

How to enter:

- The list of entries from a school/college must be submitted from a **school/college email address**.
- Entries must be submitted **by teachers**, listing each student’s name, year group, the name of the school/college and a link to the student’s art on the Desmos website.
- A maximum of one entry per student is permitted.
- Entries should be emailed to competitions@mei.org.uk with the subject line: *MEI Desmos Maths Art Competition*.
- Closing date for submissions is 4pm on **Thursday 19th November 2020**.