



Because maths matters!

# Welcome to the MEI conference 2026

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A large, solid green arrow pointing to the right, positioned behind the title text.

# How technology can change the way your students think about geometry

Jemma John and Tom Button

# Using the Desmos Geometry tool



Gallery of files:

[www.desmos.com/gallery/c9c27a4f-5217-49ab-bc82-034a9da54270](https://www.desmos.com/gallery/c9c27a4f-5217-49ab-bc82-034a9da54270)



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# Getting Started

# Creating dynamic families

- Use of dynamic representations allow you to ‘see’ entire families of geometric objects
- Consider your questions as carefully as you think about your Desmos file!



# Motivating question (1)

What do the angles inside a triangle add up to?



Getting started



Transformations



Sliders & lists



Further support

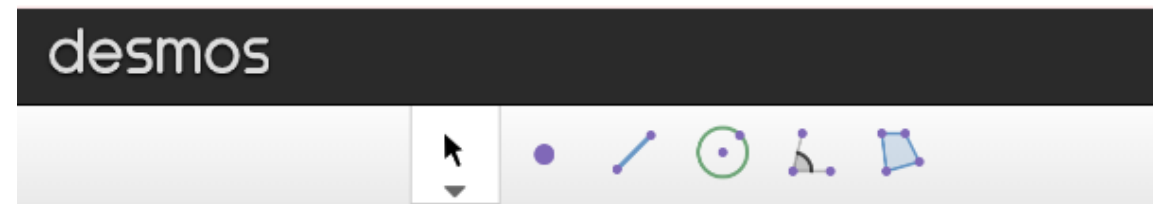
# Layout

## Tokens

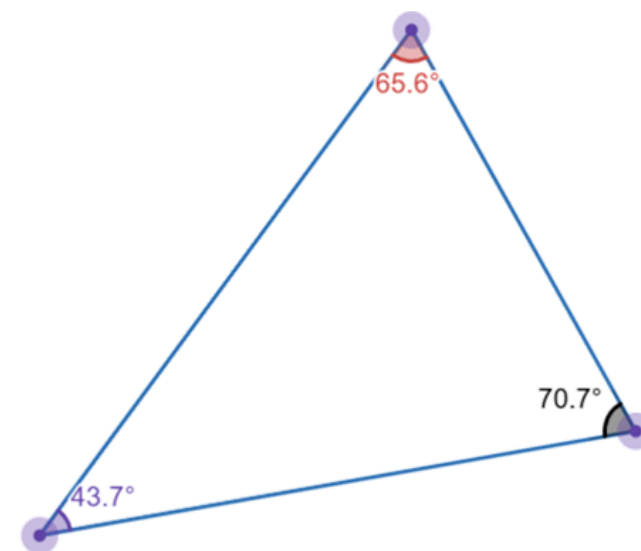


The Tokens panel in Desmos shows a list of geometric symbols. At the top, there is a '+' icon, a circle with a dot, and navigation arrows. Below this, there are three rows of icons: three purple dots, a blue triangle, and three angle symbols (purple, red, and black). At the bottom, there is a text input field with the equation  $t = \text{angle icon} + \text{angle icon} + \text{angle icon}$  and a result box showing  $= 180$ .

## Toolbar



The Desmos Toolbar features the 'desmos' logo on the left. To its right is a dropdown menu, followed by a series of icons for geometric construction: a purple point, a blue line segment, a green circle, a purple angle, and a blue quadrilateral.



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# Create your own polygons

- Work through page 1 of the handout to create your own file for finding the angle sum of a triangle.
- Repeat this process to create a similar construction for a quadrilateral.



# Design principles from Desmos

- Click to select – objects can be clicked to reference them. Hold down shift to allow selection of any object.
- Transformations as functions – drag down from the token menu to see the details
- Informal to formal





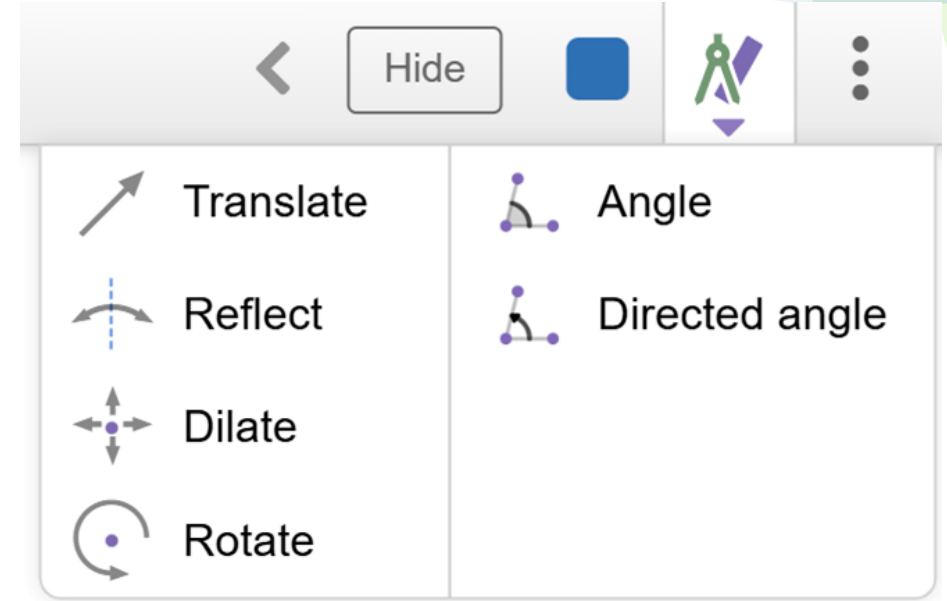
Because maths matters!



# Transformations

# Transformations

- This menu appears when you select an existing object
- Construct the 'scaffold' items first e.g.
  - for a reflection, you will need a mirror line
  - for a rotation, you need a centre
- Work through page 2 of the handout on reflecting a polygon



# Transformations as functions

- When you drag a transformation token down you can see that it is defined as a function:

$$T_1(x) = \text{reflect}(x, \text{mirror icon})$$

$$T_2(x) = \text{translate}(x, \text{arrow icon}, \text{arrow icon})$$

- This means you can create composite functions that apply multiple transformations:

$$T_3(x) = T_2(T_1(x))$$



# Motivating question (2)

- Can a rotation of  $180^\circ$  always be written as two reflections?
- Extension: Can a rotation of any size always be written as two reflections?





# Sliders & lists

# Sliders & lists

- You can use sliders to replace numerical values – this offers you the option to animate to create dynamic files
- Lists allow you to see several values at once
- These can be combined!

The screenshot shows a software interface with two panels. The top panel, labeled '3' on the left, displays the expression  $a = [0, 2 \dots n]$  followed by a list of values: 0, 2, 4, 6, 8, 10, 12, 14, 16. Each value is enclosed in a light gray box. A close button (X) is in the top right corner. The bottom panel, labeled '4' on the left, features a play button icon and the expression  $n = 16$ . Below this is a slider control with a blue dot at the current value. The slider's range is indicated by the numbers 2 and 360 at its ends. A close button (X) is also present in the top right corner of this panel.

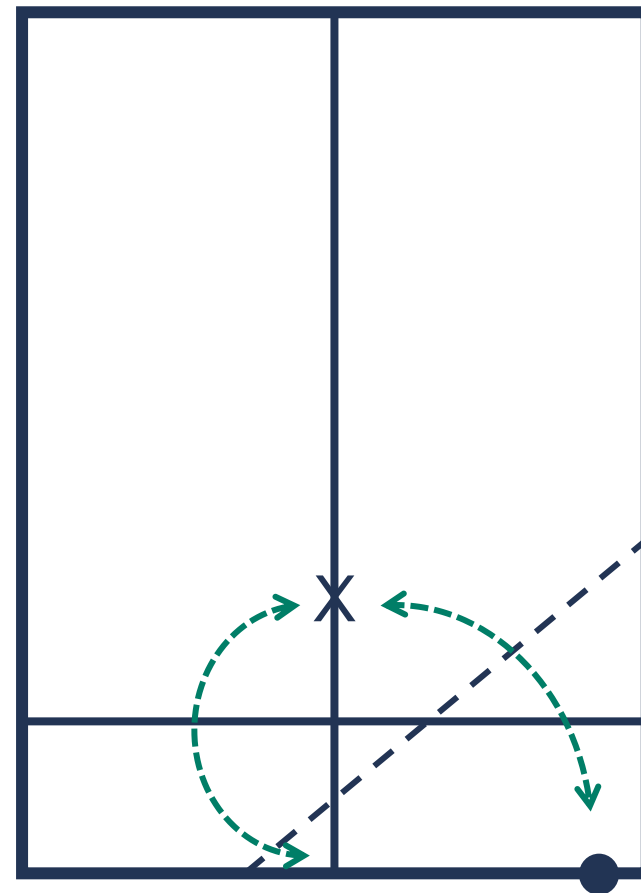
Work through page 3 of the handout on creating a trace

# Paper folding activity

Start with an A4 sheet of paper:

1. Fold it in half long-ways (to create the  $y$ -axis)
2. Mark a point on the fold a couple of inches from the bottom edge
3. Fold the bottom edge so that it goes through the point and is perpendicular to the vertical fold (to create the  $x$ -axis)
4. Make repeated folds so that the bottom edge goes through the point – at a variety of angles

What shape is created by the envelope of lines?





# Reflections and support

# Reflections



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Getting started



Transformations



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Further support

# Further support

- [AMSP Teaching with Desmos webinars](#)
- [Getting Started Desmos Geometry](#)
- [Introduction webinar from Desmos](#)

