

# Keys to reduce math anxiety and build math success

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APRIL, 2018

# agenda

- How are schools reducing students' anxiety about math?
- What are schools doing to help students success in math?
- What can parents and guardians do to support their children mathematically?

What do we  
know about  
math  
anxiety?

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There has been a lot of research into what is termed math anxiety.

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Students (and many adults) have a severe negative reaction to math; they truly get nervous in mathematical situations and often cannot even show what they actually know.

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Working memory is disrupted.

Where does  
it come  
from?

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Sometimes it is the words  
of adults- particularly  
parents or teachers.

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Sometimes it is too many  
failures.

# What are schools doing?

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Many are limiting the number of timed tests.

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Situations where students might fear public embarrassment are minimized.

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Many teachers indicate to students that mistakes are totally expected and okay. [There is even a video teachers are watching called My Favourite Mistake.]

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Teachers use strategies like turn and talk.

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Teachers are encouraging more engagement through use of more interesting tasks, for example:

Which one  
doesn't belong?

121	16
9	73

Which one  
doesn't belong?

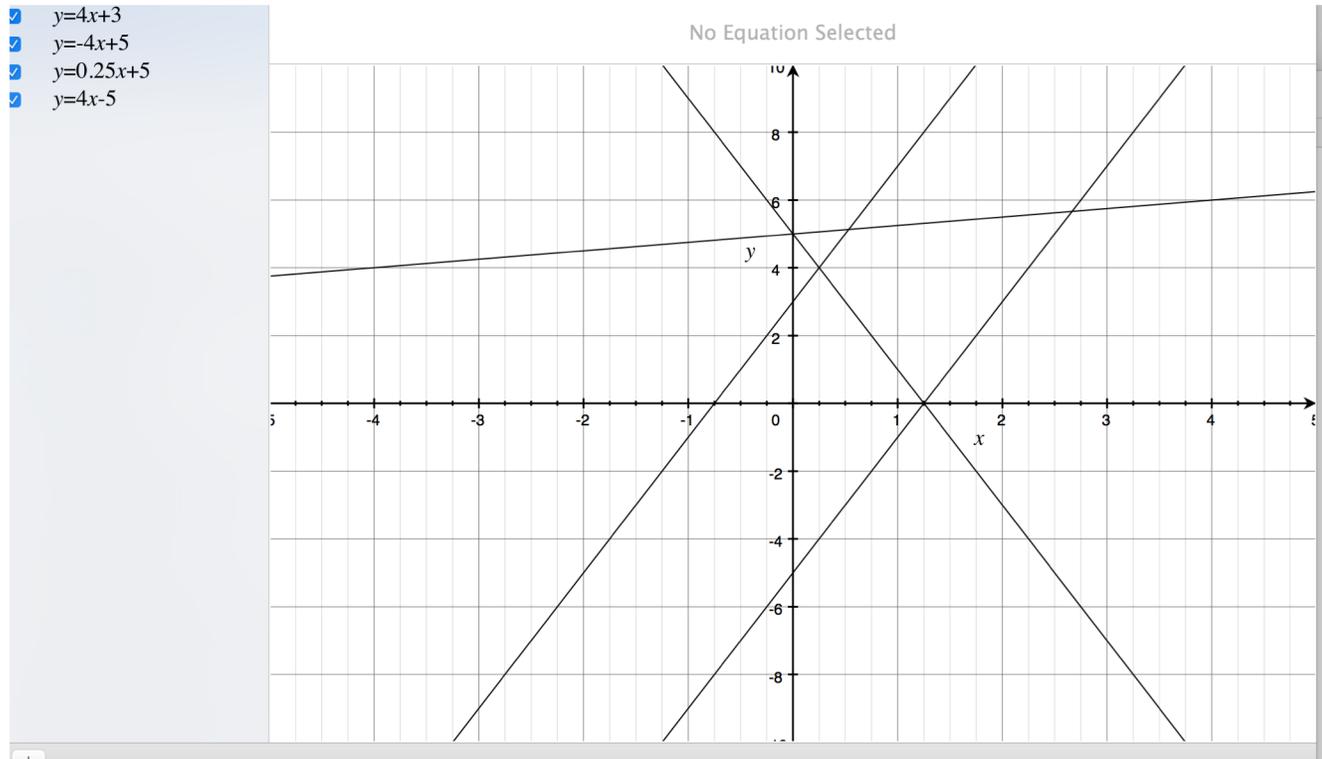
$$y = 4x + 3$$

$$y = -4x + 5$$

$$y = \frac{1}{4}x + 5$$

$$y = 4x - 5$$

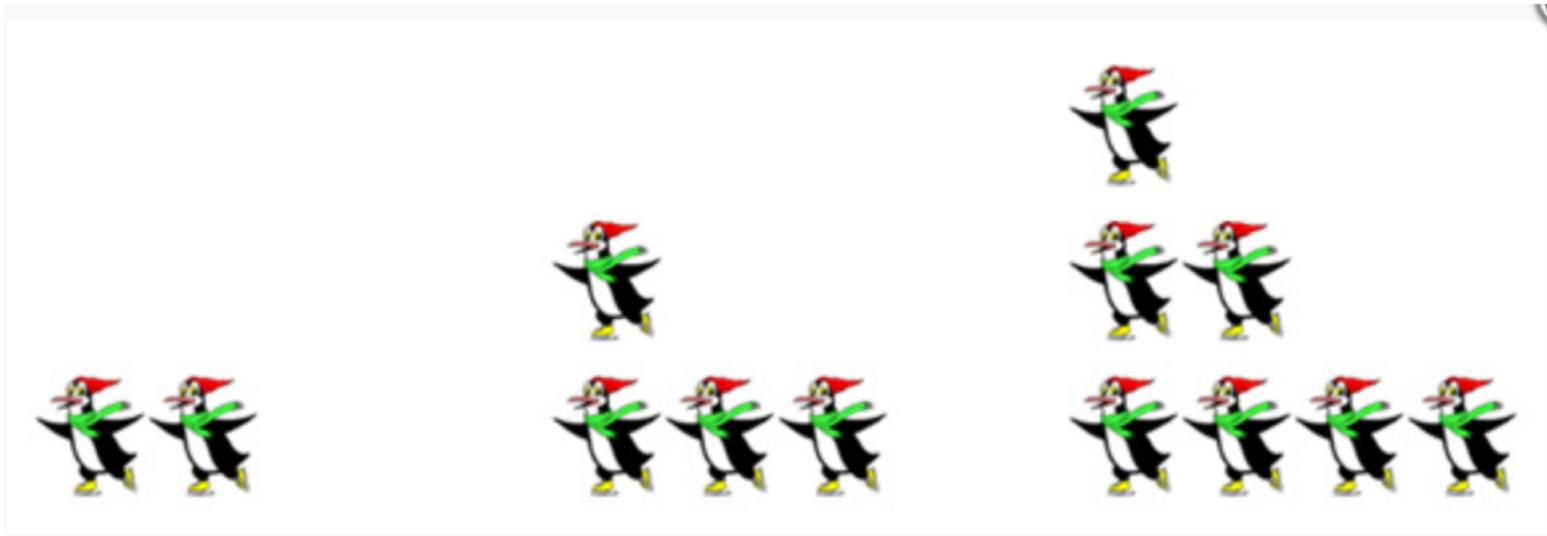
# Graphs



# Visual patterns

The image displays three triangular patterns of blue snowflake icons. The first pattern consists of 1 icon in the top row, 2 icons in the middle row, and 3 icons in the bottom row. The second pattern consists of 2 icons in the top row, 3 icons in the middle row, and 4 icons in the bottom row. The third pattern consists of 3 icons in the top row, 4 icons in the middle row, and 5 icons in the bottom row. To the right of the third pattern, there is a button labeled "Next" and a circular icon containing a right-pointing arrow.

# Visual patterns



What are  
schools  
doing?

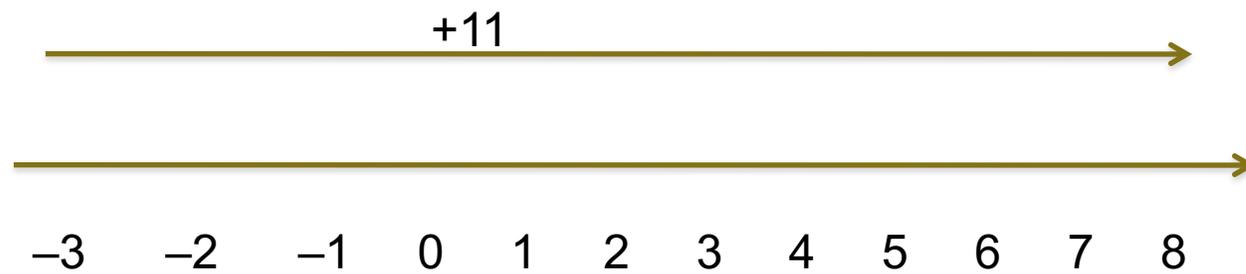
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Students work in pairs  
or groups.

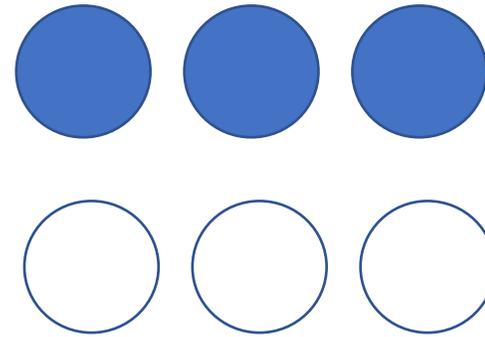
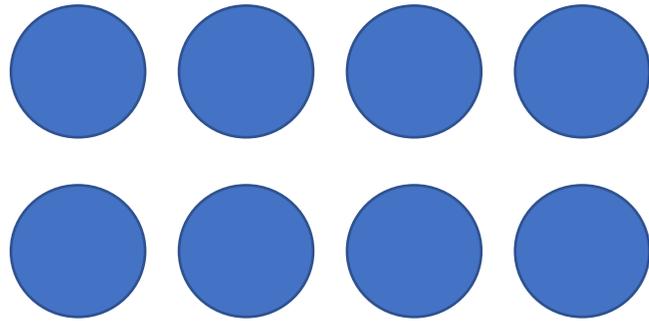
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Focusing on  
understanding and not  
just rules

$$8 - (-3)$$

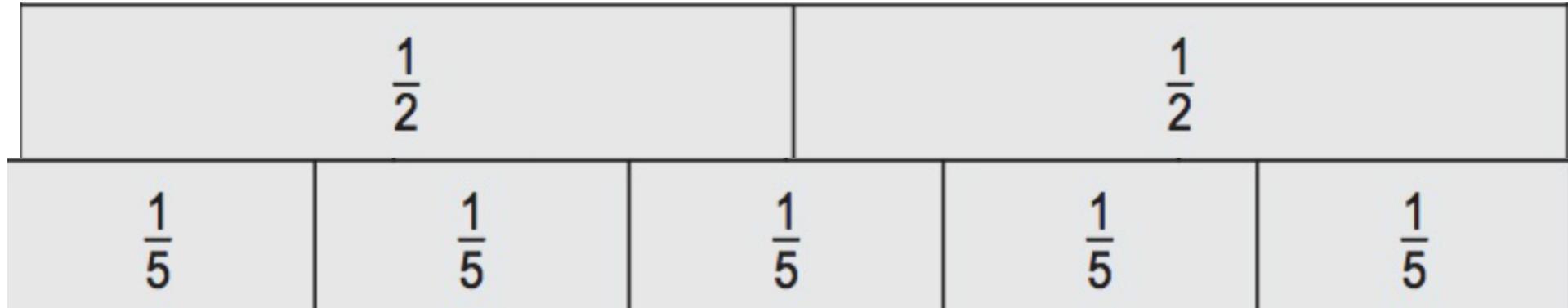


Or they learn



# Or instead of learning

- The reason that  $\frac{1}{2} \div \frac{1}{5} = \frac{5}{2}$  is not because of a “flip and multiply” rule, but because when you try to fit  $\frac{1}{5}$  into  $\frac{1}{2}$ , it fits  $2\frac{1}{2}$  ( $\frac{5}{2}$ ) times.



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How can you figure out  $2/3 + 1/5$ ?

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One way is to do what you learned about renaming this as  $10/15 + 3/15$  to get  $13/15$ .

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But there are other ways

in  
intermediate

# Maybe

- You use a grid to show  $2/3$ .

<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>x</b>
X	X	X	x	x

# Then

- Add  $1/5$

<b>X</b> <b>o</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>x</b>
X 0	X	X	x	x
0				

Then rearrange

<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>x</b>
X	X	X	x	x
0	0	0		

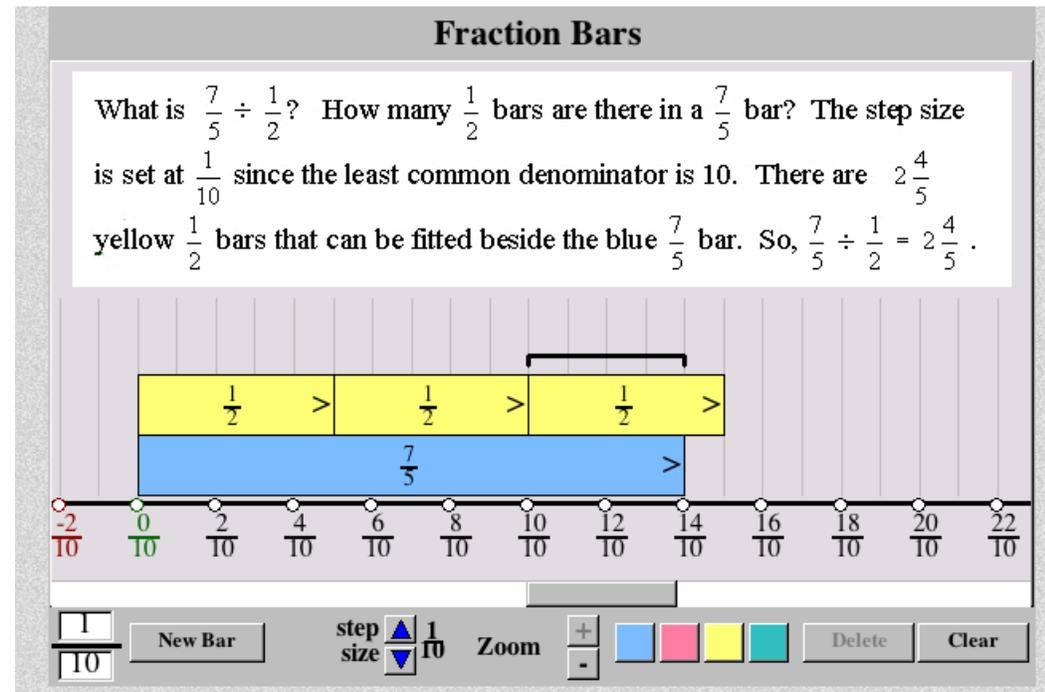
# USING VISUALS AND manipulatives

THESE HELP KEEP THESE IDEAS IN STUDENTS' BRAINS.

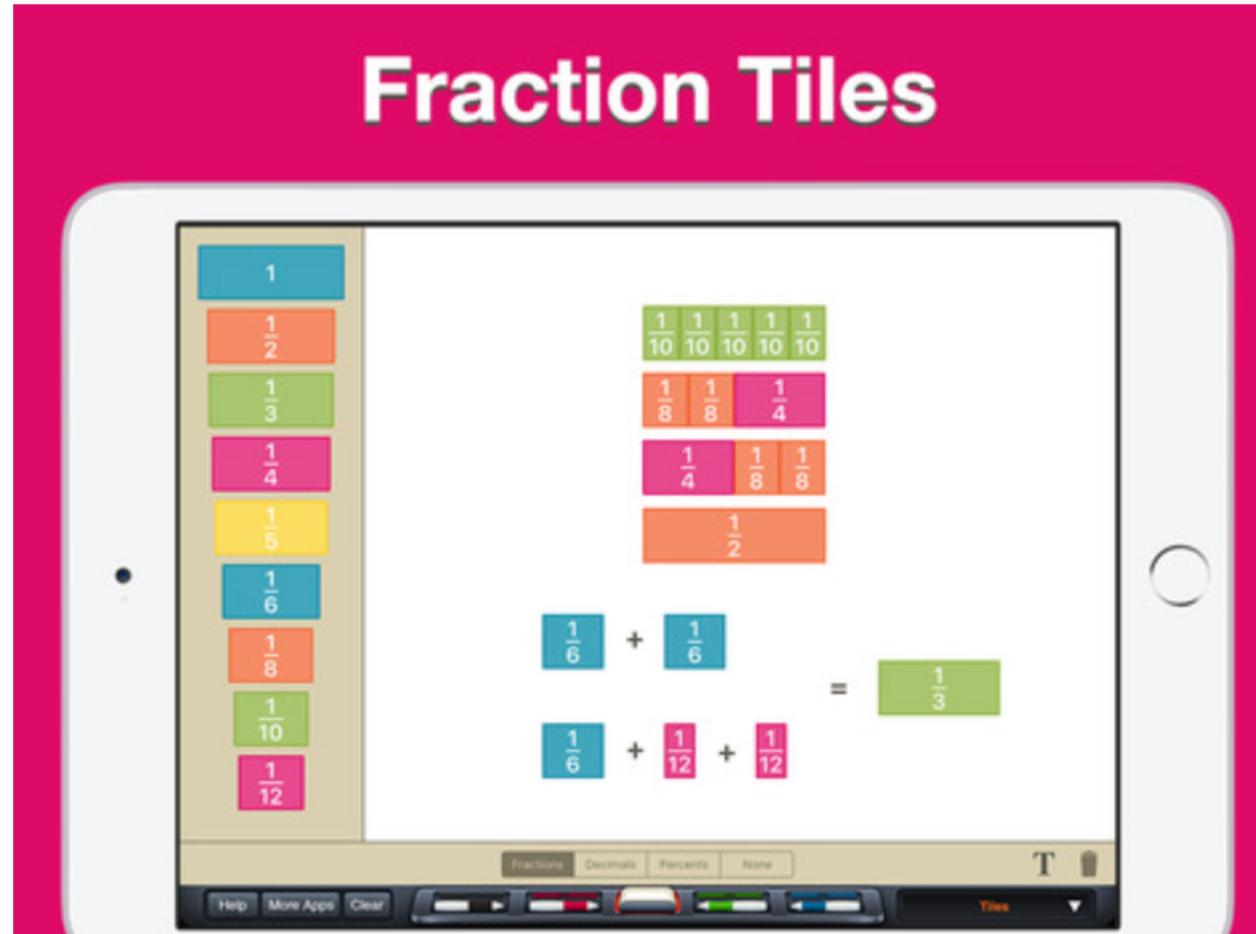
20

# Fraction bars

- [http://nlvm.usu.edu/en/nav/category\\_g\\_2\\_t\\_1.html](http://nlvm.usu.edu/en/nav/category_g_2_t_1.html)



Or



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## Colour chips for integers

[HTTP://NLVM.USU.EDU/EN/NAV/CATEGORY\\_G\\_2\\_T\\_1.HTML](http://nlvm.usu.edu/en/nav/category_g_2_t_1.html)

Click and drag enough pairs of +,- chips to the circle so that you can take away 2 plus chips. Then click the Continue button.

$(-3) - 2$  Continue

Problems:  Computer  User  Free Play New Problem

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Or

## Interactive Integers – Addition and Subtraction

By TicTapTech, LLC

Open iTunes to buy and download apps.



### Description

Interactive Integers –

This app provides two fun interactive methods for learning and u

[TicTapTech, LLC Web Site](#) ▶ [Interactive Integers – Addition ar](#)

### What's New in Version 2.1

-iOS preparation

24

- [http://nlvm.usu.edu/en/nav/frames\\_asid\\_189\\_g\\_4\\_t\\_2.html?open=activities](http://nlvm.usu.edu/en/nav/frames_asid_189_g_4_t_2.html?open=activities)

## Algebra tiles

Alge

- <http://>  
ctiviti

The image shows a digital algebra tiles interface. A large square is formed by tiles: a pink vertical tile labeled  $x$  on the left, a blue horizontal tile labeled  $y$  at the bottom, and a large blue square labeled  $y^2$  in the center. The top-right corner of the large square is filled with a green tile labeled  $y$ . A red box highlights the pink  $x$  tile and the blue  $y$  tile. Below the workspace is a toolbar with buttons for 'Clear', '1', '5', 'x', 'y', 'x<sup>2</sup>', 'y<sup>2</sup>', and 'x·y'. There are also two sliders below the toolbar, one for the pink color and one for the blue color.

open=a

Or

## Algebra Tiles

By Brainiaccamp, LLC

Open iTunes to buy and download apps.



### Description

Virtual algebra tiles for hands-on exploration of algebraic c

FEATURES

[Brainiaccamp, LLC Web Site](#) ▶ [Algebra Tiles Support](#) ▶

### What's New in Version 2.0.0

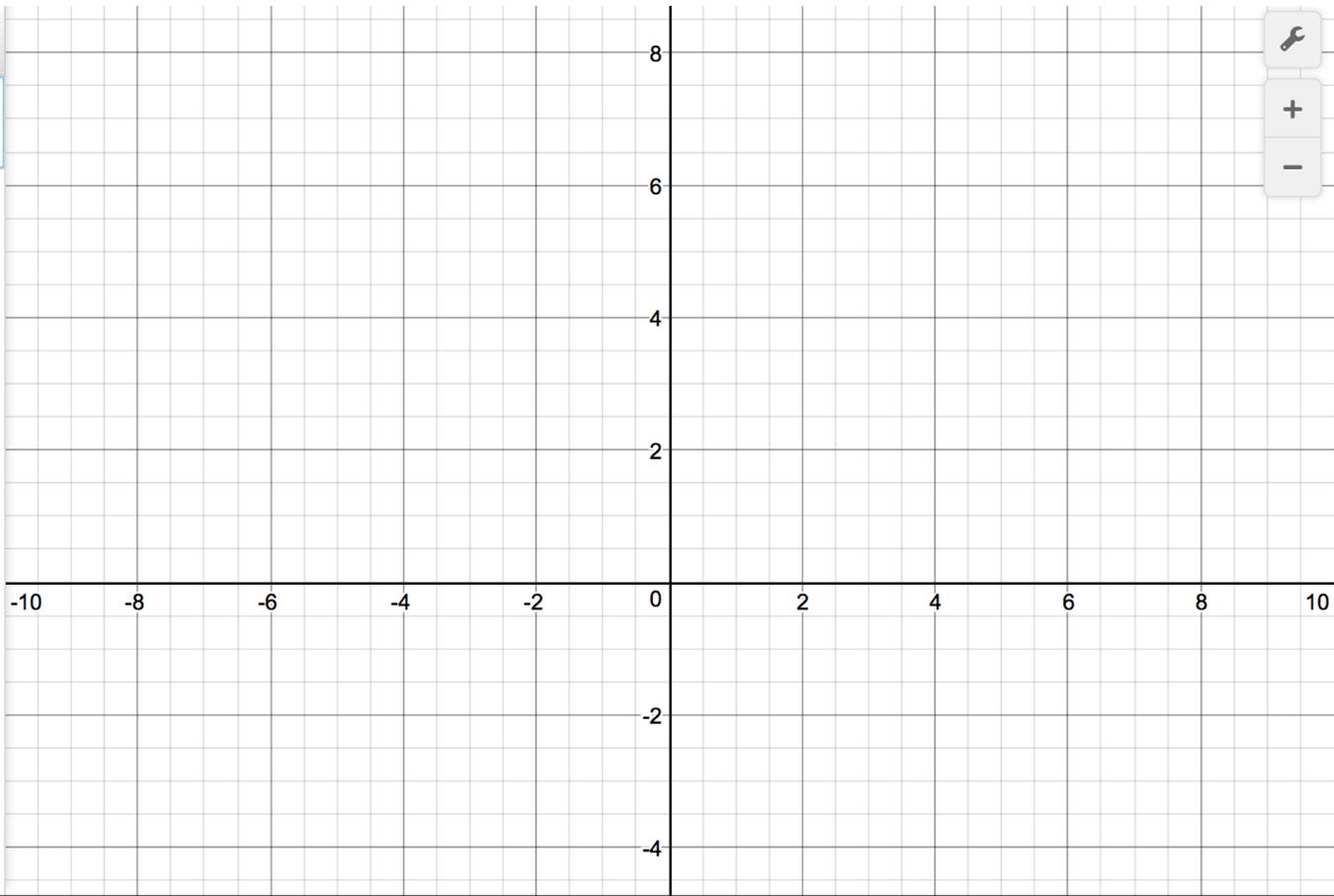
- New tiles ( $y$ ,  $y^2$ ,  $xy$ )

# Desmos

<https://www.desmos.com/calculator>

De

Calculator interface showing a window with a plus sign, undo/redo arrows, a settings gear, and a close button. Below the window are two input fields labeled 1 and 2.



Vertical toolbar with three buttons: a wrench icon, a plus sign, and a minus sign.

Calculator keypad interface with various mathematical symbols and numbers. The keypad includes:

- Row 1:  $x$ ,  $y$ ,  $a^2$ ,  $a^b$ , 7, 8, 9,  $\div$ , functions
- Row 2: (, ),  $<$ ,  $>$ , 4, 5, 6,  $\times$ ,  $\leftarrow$ ,  $\rightarrow$
- Row 3:  $|a|$ ,  $,$ ,  $\leq$ ,  $\geq$ , 1, 2, 3,  $-$ ,  $\times$
- Row 4: ABC,  $\sqrt{\quad}$ ,  $\pi$ , 0,  $.$ ,  $=$ ,  $+$ ,  $\hookrightarrow$

WHAT CAN YOU DO?

# Support involves...

- Not showing, but probing.
- Asking why this or why that...
- Building connections

## 31 You might

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Encourage kids to “teach you”  
what they learned or explain their  
thinking to you.

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Not worry about your kid’s “rank”  
but more about their own success  
with the math they are learning

# What is success?

- Not just a mark
- Enjoying the math
- Making sense of the world using math
- Building connections

# You need to...

- Encourage kids to “teach you” what they learned or explain their thinking to you.

# You need to...

- Show that you enjoy math too.
- Show confidence- believe that they can if you give them the time.
- Emphasize good thinking, not speed.
- Emphasize the good thinking, not the mistakes.

[www.onetwoinfinity.ca](http://www.onetwoinfinity.ca)  
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