

CC ALGEBRA 2 ETOOLS

Table of Contents

General eTools	5
Algebra Tiles (CPM)	6
Data Representations (CPM).....	9
3D Plotter (CPM).....	11
Desmos Graphing Calculator	13
Chapter 1	16
CCA2 1.1.2: 1-10 Student eTool (Desmos).....	17
Chapter 2	18
CCA2 2.1.2: 2-12 Student eTool (Desmos).....	19
CCA2 2.1.3: 2-30 Transforming Parabolas (Desmos)	20
CCA2 2.1.4: 2-43 Student eTool (CPM).....	22
CCA2 2.1.5: 2-65 Student eTool (Desmos).....	24
CCA2 2.2.1: 2-79 Student eTool (Desmos).....	26
CCA2 2.2.2: 2-104 Student eTool (Desmos).....	28
CCA2 2.2.3: 2-121 Student eTool (Desmos).....	29
CCA2 2.2.3: 2-122 Student eTool (Desmos).....	30
CCA2 2.2.5: 2-156 Student eTool (Desmos).....	31
Chapter 3	32
CCA2 3.2.1: 3-57 Student eTools (Desmos).....	33
CCA2 3.2.2: 3-73 Student eTool (Desmos).....	42
CCA2 3.2.5: 3-111 Student eTool (Desmos).....	43
Chapter 4	44
CCA2 4.1.1: 4-1 Student eTool (Desmos).....	45
CCA2 4.2.1: 4-58 Student eTool (Desmos).....	46
CCA2 4.2.1: 4-63 Student eTool (Desmos).....	47
Chapter 5	49
CCA2 5.1.2: 5-19 Student eTool (Desmos).....	50
CCA2 5.2.4: 5-94 Student eTool (Desmos).....	51
Chapter 6	53
CCA2 6.1.2: 3D Point Plotter and Graphing Linear Equations in Three Variables (CPM) ...	54

CCA2 6.1.5: 6-61 Student eTool (Desmos).....	57
Chapter 7	58
CCA2 7.1.2: 7-12 Student eTools (Desmos).....	59
CCA2 7.1.3: 7-33 & 7-34 Student eTools (Desmos).....	61
CCA2 7.1.3: 7-34 Unit Circle Showing Sine Curve (Desmos).....	63
CCA2 7.1.4: 7-52 Student eTool: The Cosine Calculator eTool (Desmos)	64
CCA2 7.1.4: 7-52 Student eTool and Unit Circle Showing Bases and Cosine Curve (Desmos)	65
CCA2 7.1.5: 7-73 Teacher eTool (Desmos)	67
CCA2 7.1.6: Unit Circle with Reference Triangles (Desmos).....	68
CCA2 7.2.1: Transforming Sine and Cosine Functions (Desmos)	70
CCA2 7.2.4: General Form of the Sine Function with Sliders (Desmos).....	72
Chapter 8	74
CCA2 8.3.1: Polynomial Division with and without a remainder Videos	75
CCA2 8.2.3: 3D Complex Plane Model	77
Chapter 9	81
CCA2 9.1.2: RNG Online.....	82
CCA2 9.3.1: 9-71 Student eTool (Desmos).....	83
Chapter 10	84
CCA2 10.3.1: 10-133 Student eTool (Desmos)	85
CCA2 10.3.1: Pascal's Triangle (Desmos).....	86
Chapter 11	87
CCA2 11.1.1: 11-1 Student eTool (CPM).....	88
CCA2 11.1.1: 11-2 Student eTool (CPM)	89
CCA2 11.1 & 11.2: Random Number Generator online.....	90
CCA2 11.2.1: Random.org online & 11-37 eTool (CPM) & Data Representations (CPM)	91
CCA2 11.2.4 7-73 & 7-74 Student eTools (Desmos)	93
Chapter 12	95
CCA2 12.1.4: 12-61 ($1/\sin x$) Student eTool (Desmos).....	96
CCA2 12.1.4: 12-65 ($1/\cos x$ and $1/\tan x$) Student eTool (Desmos).....	97
Appendix A.....	98
CCA2 A.1.1: A-4 Student eTool (Desmos)	99



CCA2 A.2.1: A-42 Student eTool (Desmos)	100
CCA2 A.3.1: A-84 Student eTool (Desmos)	102
Appendix B	103
CCA2 B.1.1: B-2 Student eTool (Desmos)	104
CCA2 B.1.2: B-20 Student eTool (Desmos)	105
CCA2 B.1.4: B-40 & B-41 Student eTool (Desmos)	106

General eTools

Algebra Tiles (CPM)

This tutorial describes how to use the Algebra Tiles including additional features.

Click on the link below to access eTool.

[Algebra Tiles \(CPM\)](#)

1. The top bar has three main parts: Pen & Paper Icon, '?' Icon, and the Arrow Icon.

1. Select the Pen & Paper Icon to:

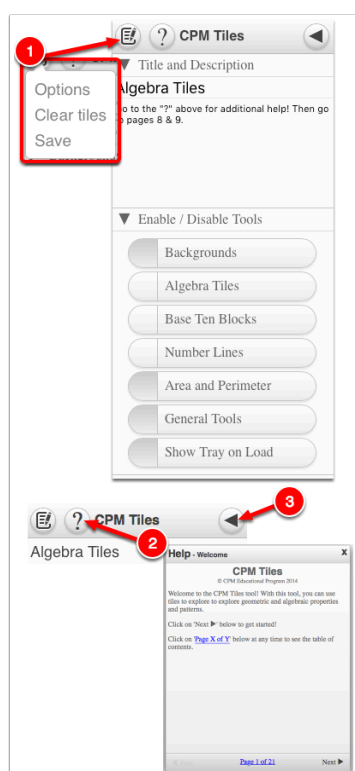
Options - Add Title and Description and Enable/Disable Tools.

Clear Tiles - This will remove all the tiles that are in the tile area.

Save - This will save all the changes made.

2. Select the '?' icon for directions.

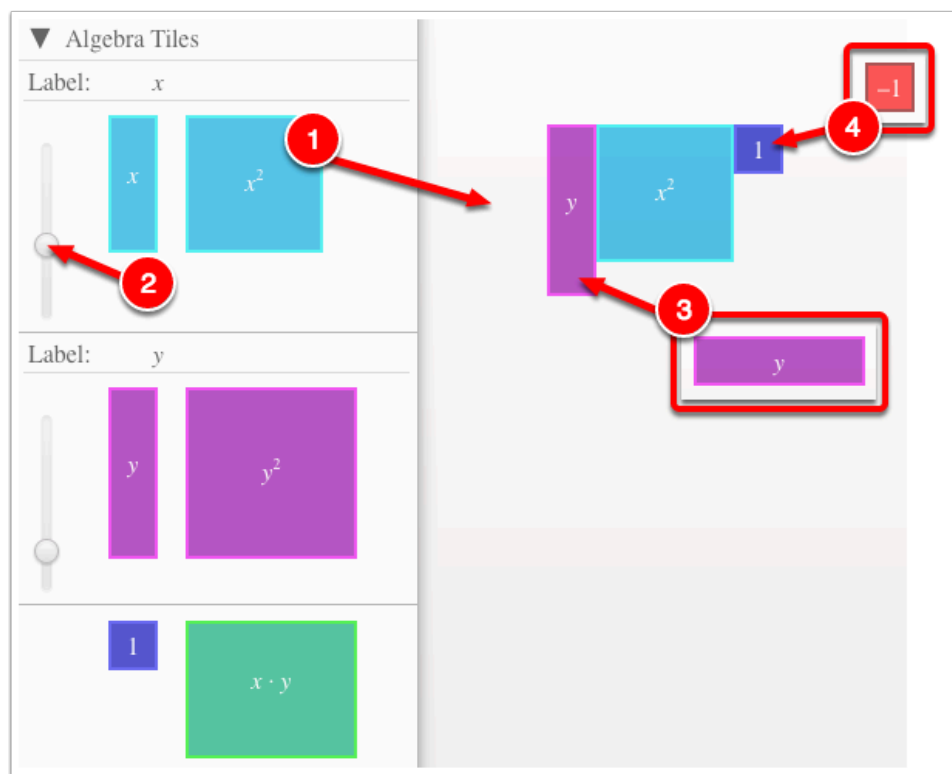
3. Select the Arrow Icon at the right to open and close the tray.



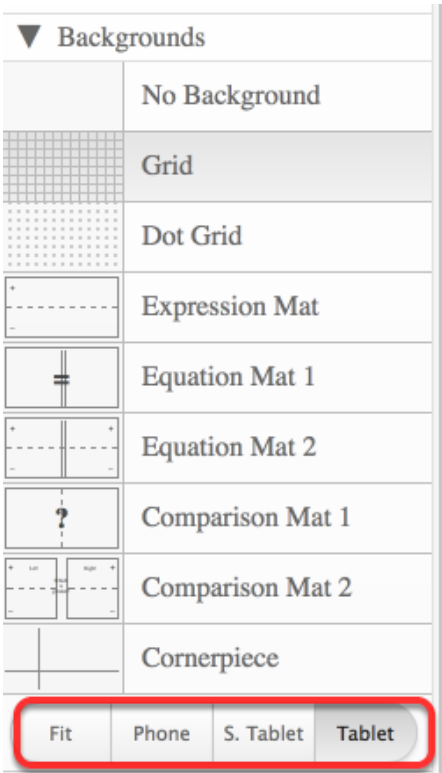
2. Drag tiles from the tray at the left to the display area at the right.

1. Select one of the tiles and drag it to the tile area.

2. Use the sliders in the tray to change the size of the tiles.
 3. Double click tiles to change orientation (horizontal/vertical).
 4. Click on a tile once to change the sign (+ -).
- Note: The color of the tile will turn to red for negative sign.

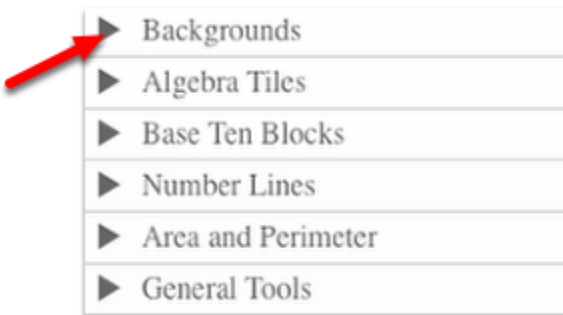


3. Choose from a variety of different mats. Also choose from a variety of sizes to fit on various devices.



4. Choose from a variety of different tiles:

- Click the arrow next to the tool to view/hide the options for each tool.



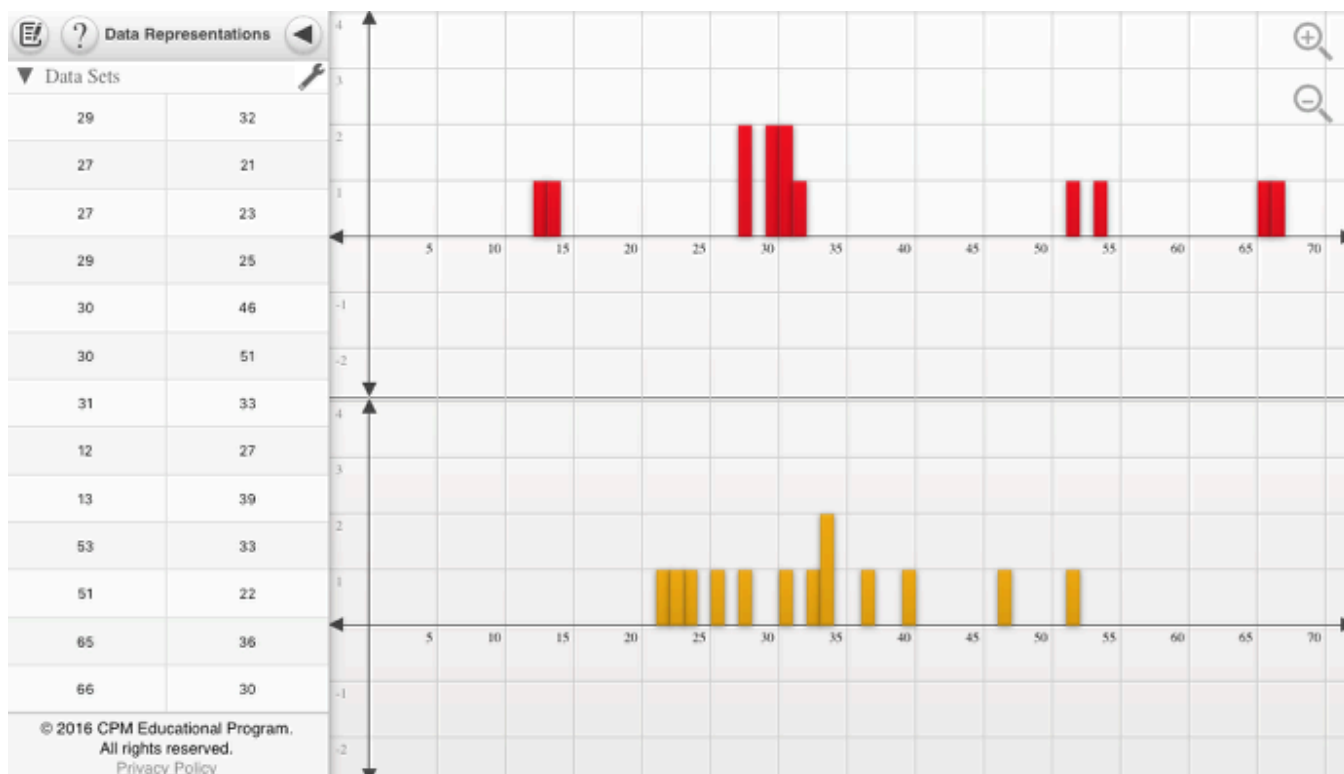
Data Representations (CPM)

Click the link below for “CPM Data Representations”

[CPM Data Representations](#)

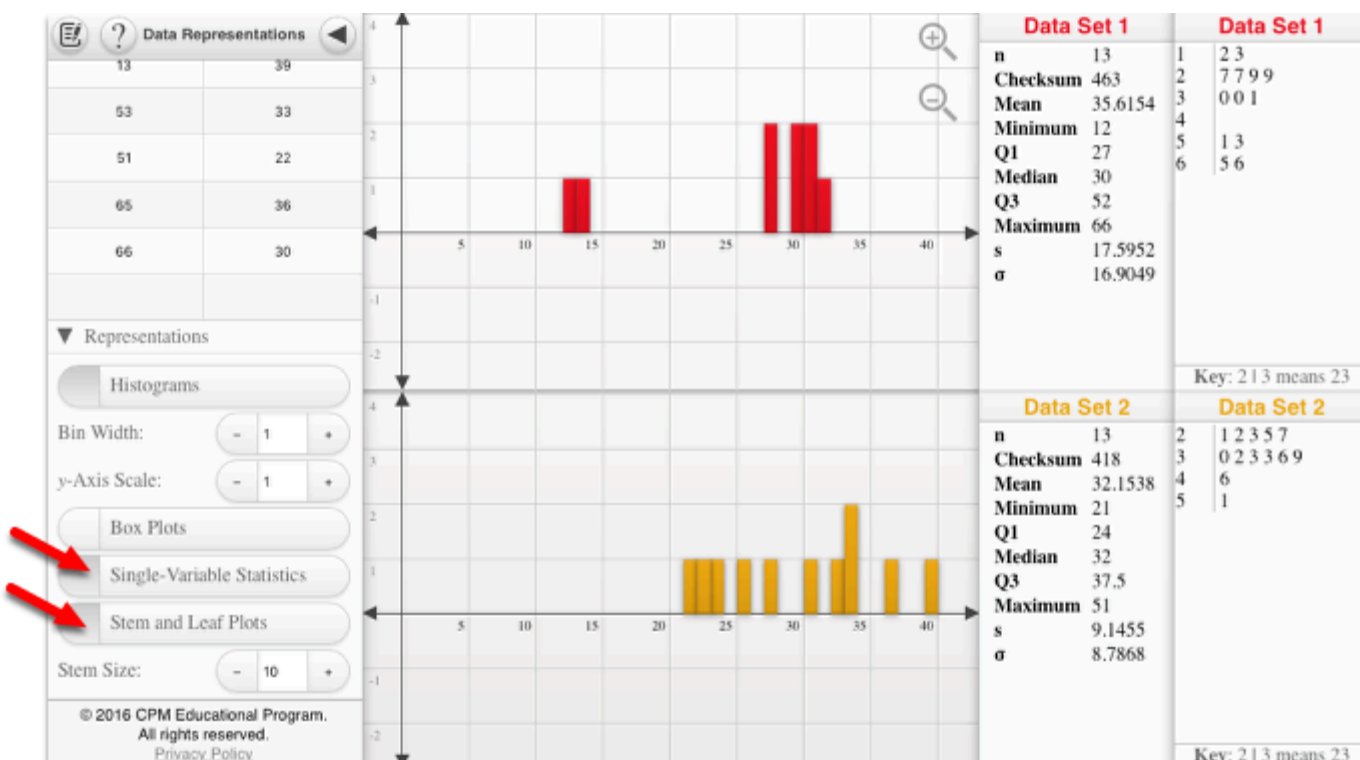
1. CPM Data Representations:

Type in up to two sets of data into the columns under the Data Sets tab. Click the wrench to sort or change the graph color. Click the Data Sets arrow to hide the data.



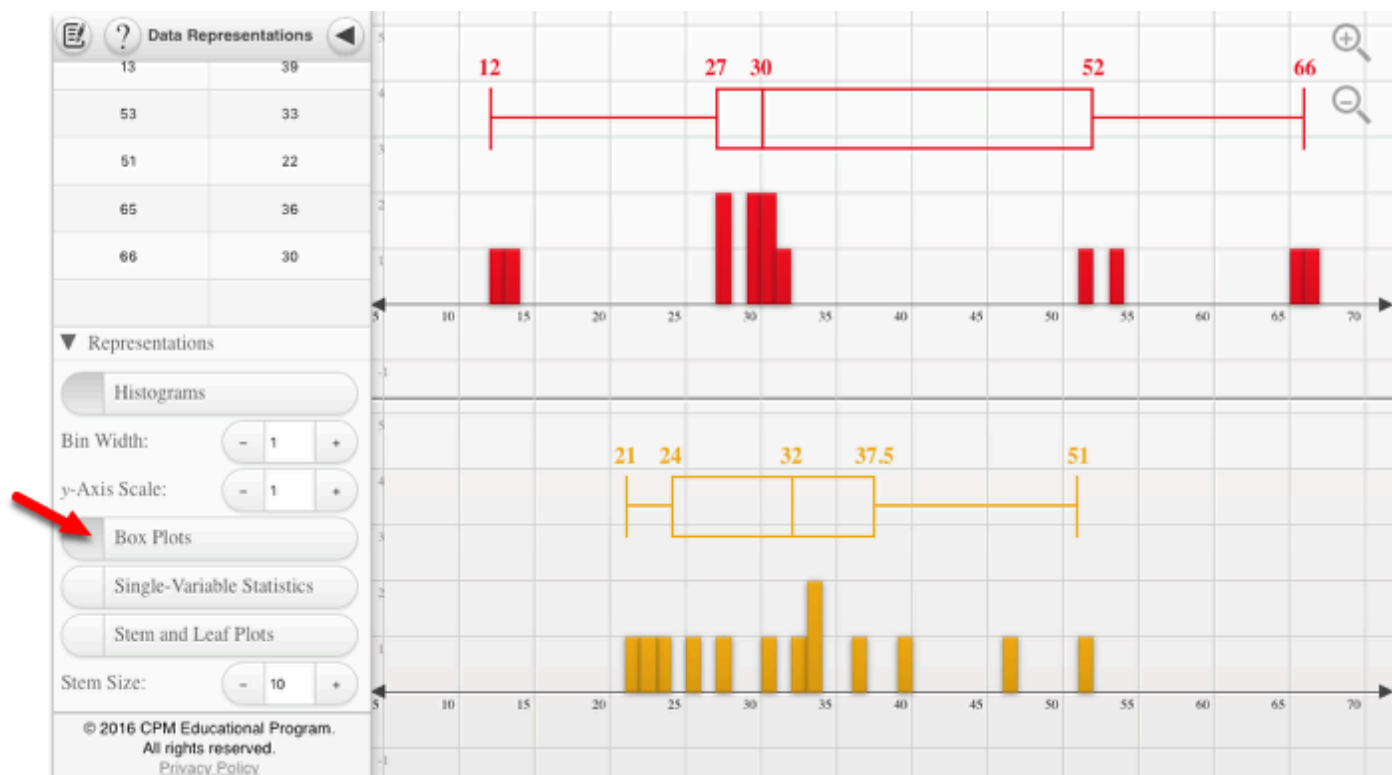
2. Single-Variable Statistics or the Stem and leaf Plots:

When choosing Single-Variable Statistics or the Stem and Leaf Plots from the left tray, the data/plot(s) show from the right. Unclick from the left to close the trays at right.



3. Box Plots

Note: Use the zoom in and out buttons at the upper right to position the histograms in a friendly window. On a computer, you can use the mouse wheel. On a tablet, use two fingers to pinch or spread data.



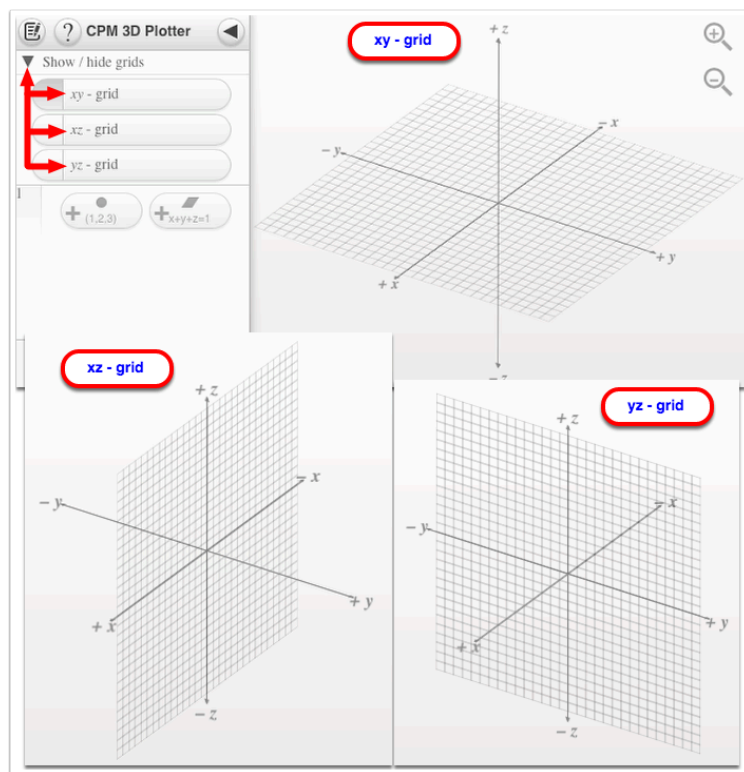
3D Plotter (CPM)

Click on the link below.

[3D Plotter \(CPM\)](#)

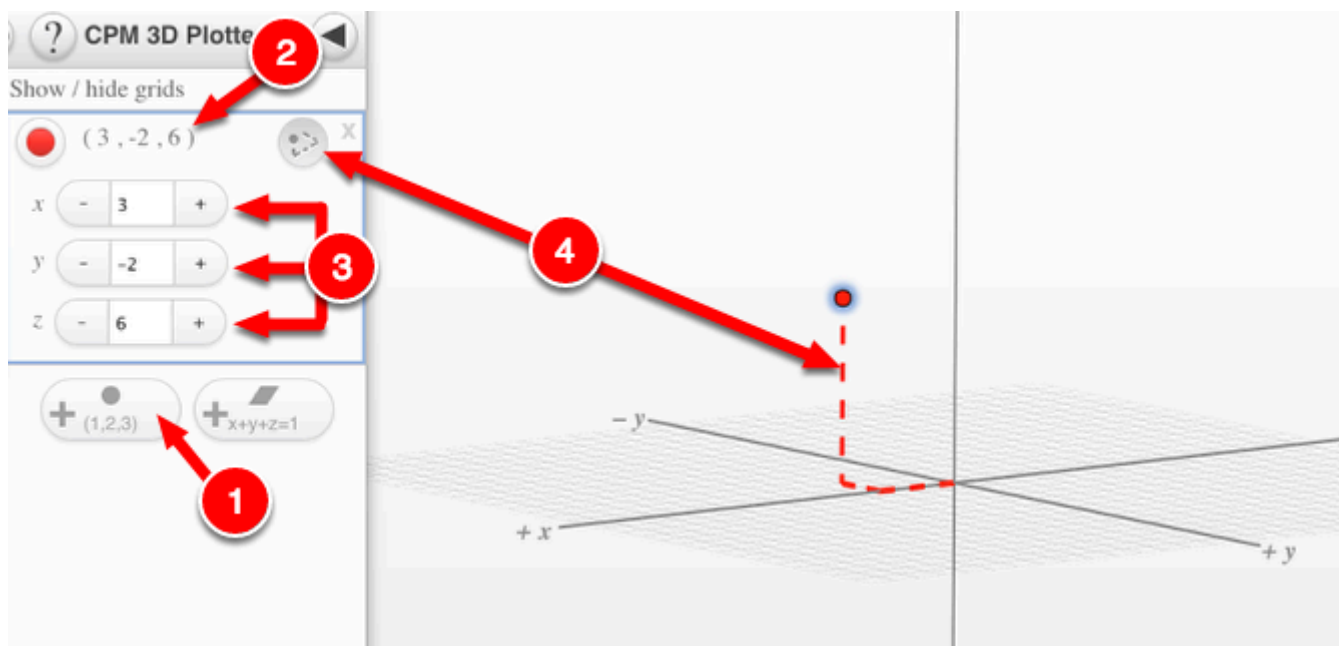
1. Grids:

- Click on the 'Show/hide grids' arrow and select the grid to be used.



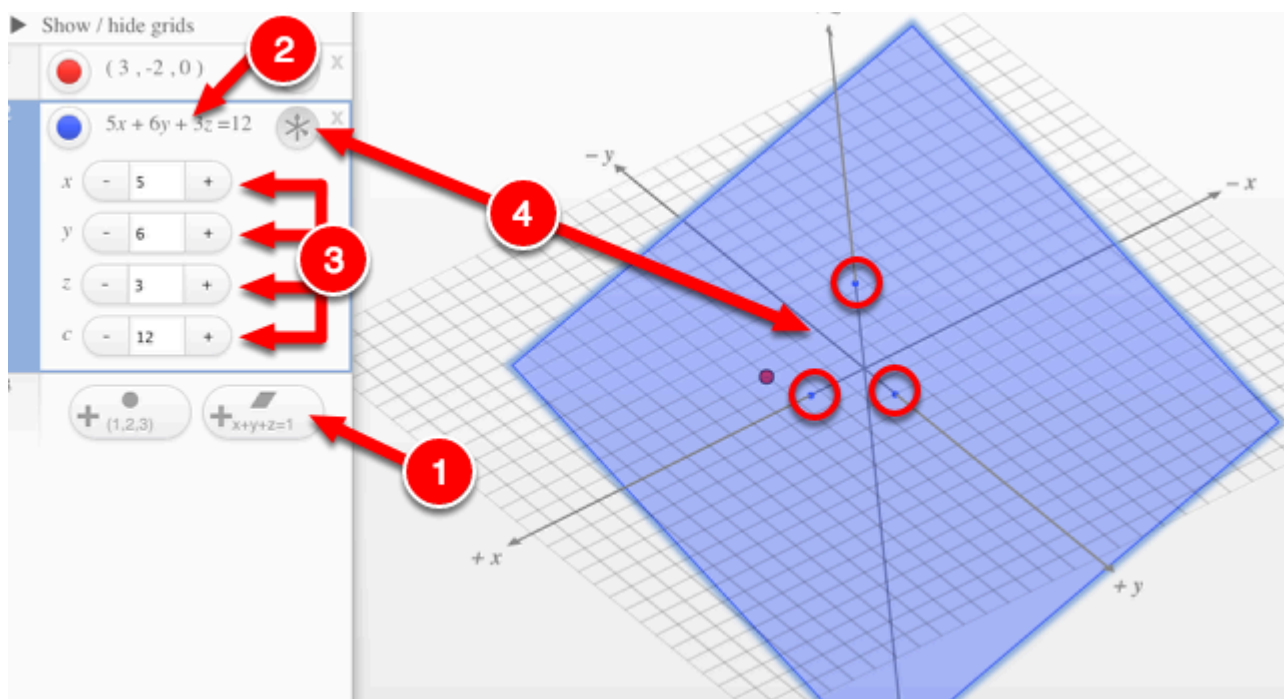
2. Point Plotter:

- Click on the point plotter button to add a point.
- Click on the (x, y, z) coordinates.
- Type or click the '-' and '+' to modify the coordinates.
- Click the trace button to view the path.



3. Plane plotter:

1. Click on the plane plotter button to add a plane.
2. Click on the equation to view the variables and constant.
3. Type or click the '-' and '+' to modify the coordinates for the variables and constant.
4. Click the intersect button to view the point the plane crosses the x,y, & z axes.



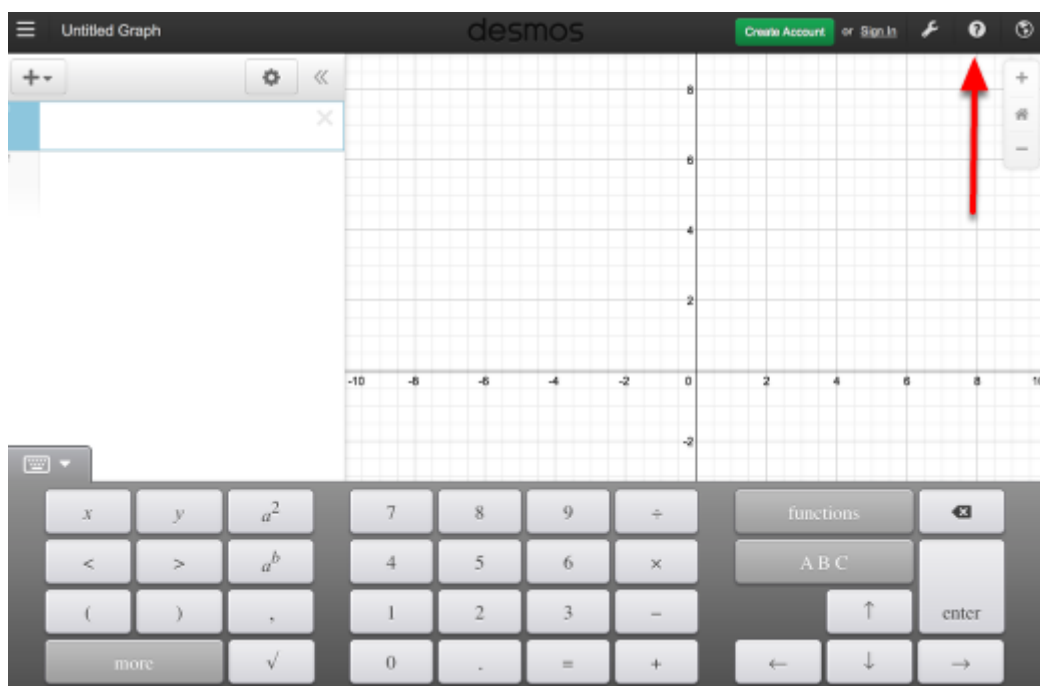
Desmos Graphing Calculator

This free graphing calculator allows students to create a free account to save all of their graphs, animations, and projects created.

Click on the "Desmos Graphing Calculator" link below.

[Desmos Graphing Calculator](#)

1. Click on all of the buttons. Try it out! For extra help, click the "?".



2. Click on the interactive tours below for help to create:

[Sliders](#)

[Tables](#)

[Advanced Tables](#)

[Restrictions](#)

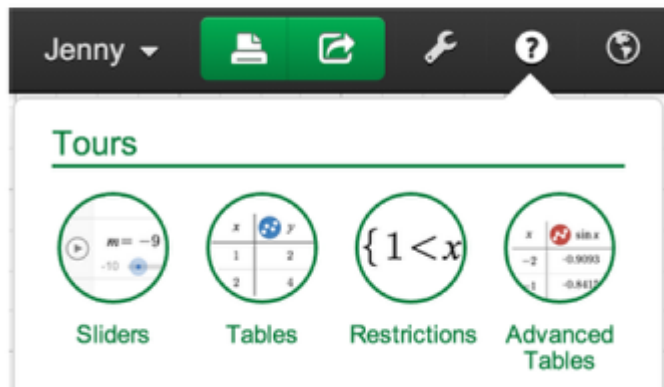
3. The interactive tours will NOT let you make a mistake! Try the links above!

Interactive Tours



Team Desmos
posted this on December 29, 2013 22:13

Try one (or all!) of the interactive tours to learn more about sliders, tables, restrictions, and more:



4. Need additional help? Watch these very short excellent videos!

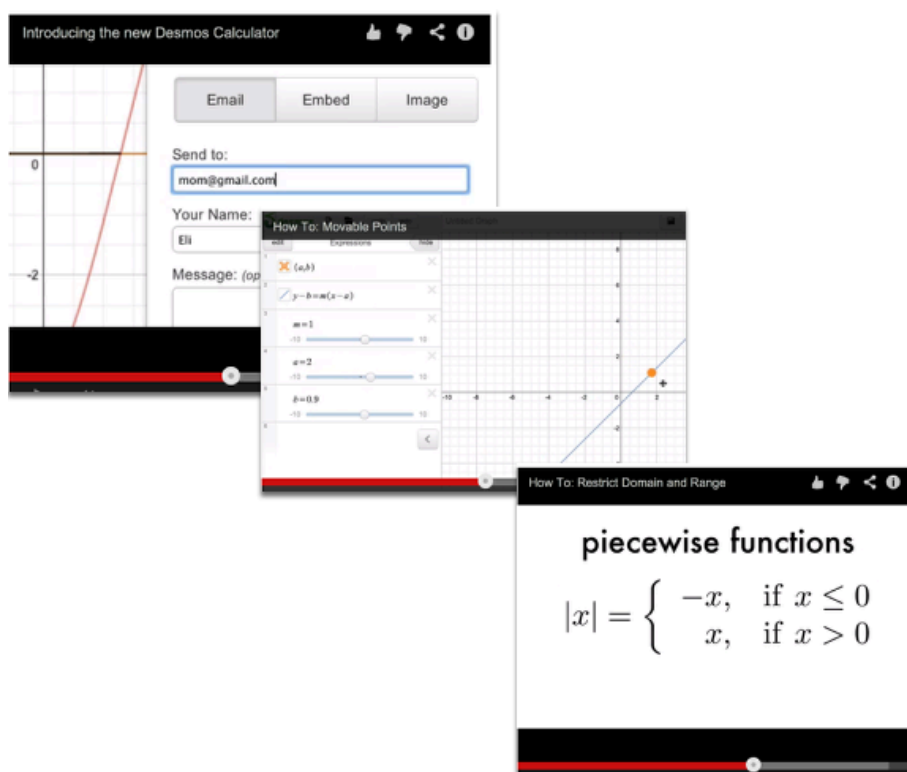
[Desmos Introduction](#)

[Moveable Points](#)

[Graph Inequalities](#)

[Piece-Wise Function](#)

5. The video links will help you with many of your graphing projects!



6. If you still need help, check out Desmos "Knowledge Base"

[Desmos Knowledge Base](#)

Chapter 1

CCA2 1.1.2: 1-10 Student eTool (Desmos)

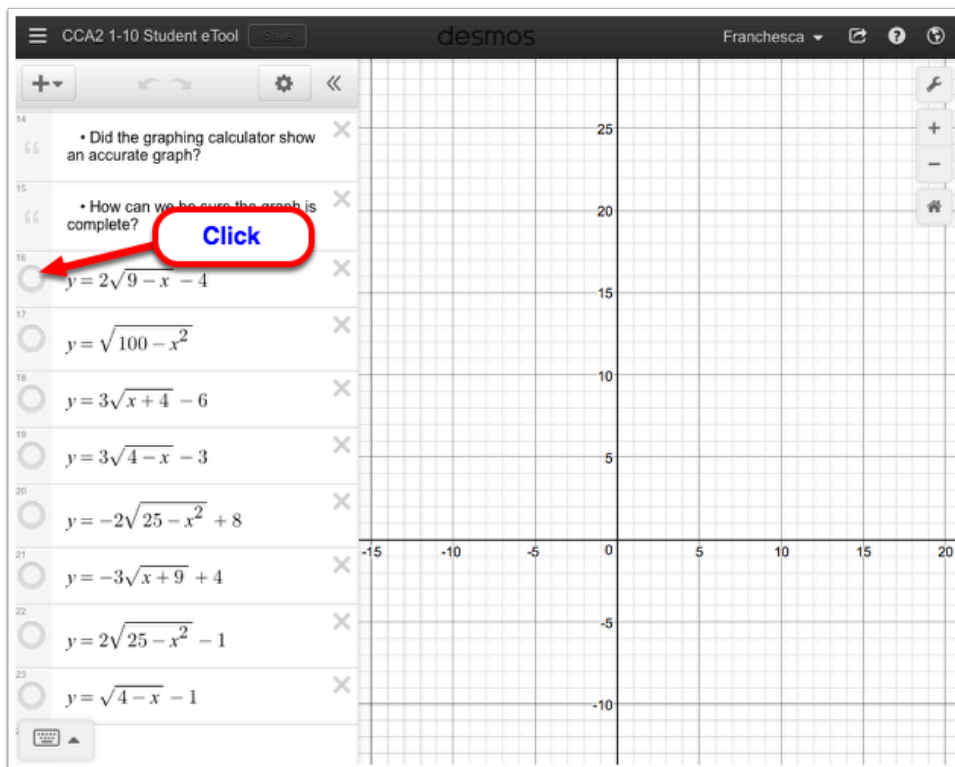
Click on the link below to access eTool.

[1-10 Student eTool \(Desmos\)](#)

Use this eTool to learn about one of the following functions.

- i. $y = 2\sqrt{9-x} - 4$
- ii. $y = \sqrt{100-x^2}$
- iii. $y = 3\sqrt{x+4} - 6$
- iv. $y = 3\sqrt{4-x} - 3$
- v. $y = -2\sqrt{25-x^2} + 8$
- vi. $y = -3\sqrt{x+9} + 4$
- vii. $y = 2\sqrt{25-x^2} - 1$
- viii. $y = \sqrt{4-x} - 1$

Click the circle icon before each functions to view the graph.



Chapter 2

CCA2 2.1.2: 2-12 Student eTool (Desmos)

Click on the link below.

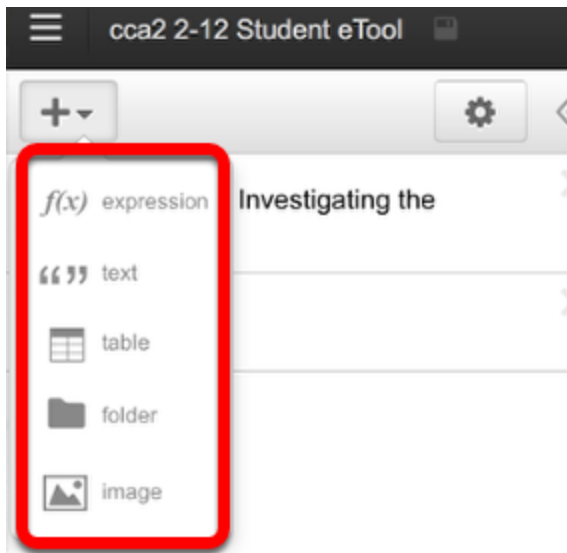
[2-12 Student eTool \(Desmos\)](#)

1. Customize this tool for your project by:

- Adding text for your title, team names, and explanations.
- Add images for labels on the graph.
- Hide your work in folders clicking on the circle in front of it when you want the contents viewed.



2. Add various tools to your project.



CCA2 2.1.3: 2-30 Transforming Parabolas (Desmos)

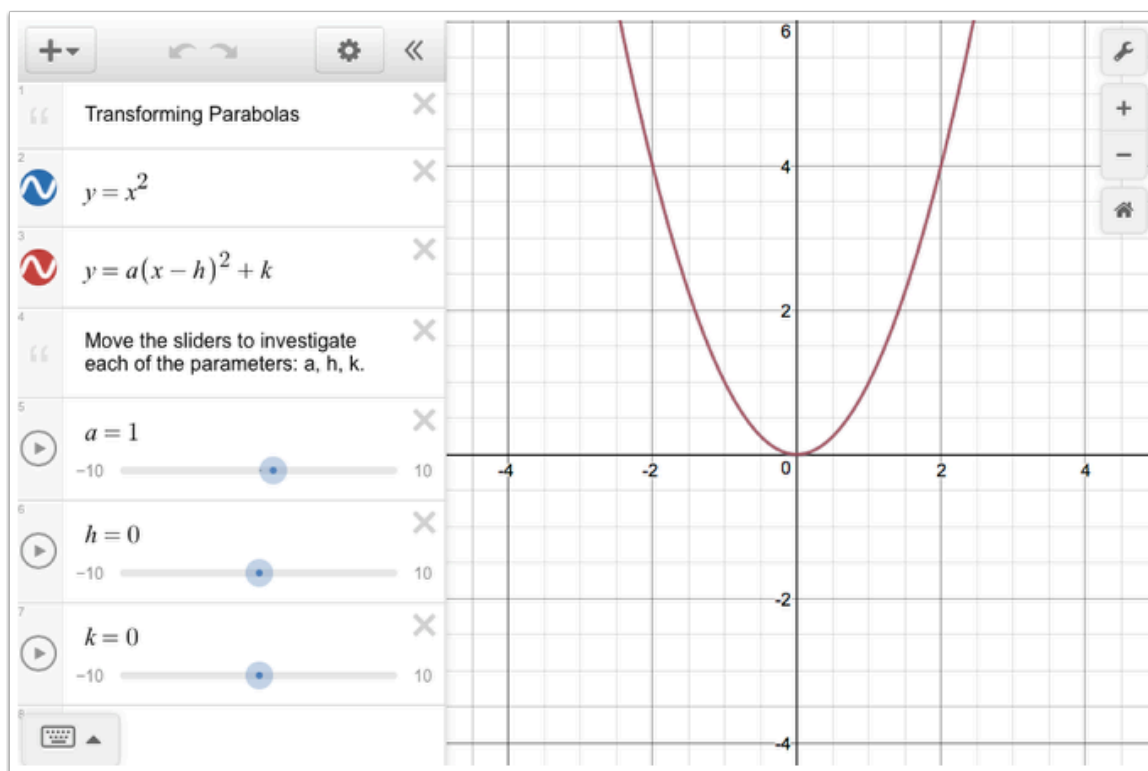
Click on the link below.

[CCA2 2-30 Transforming Parabolas \(Desmos\)](#)

Transforming Parabolas

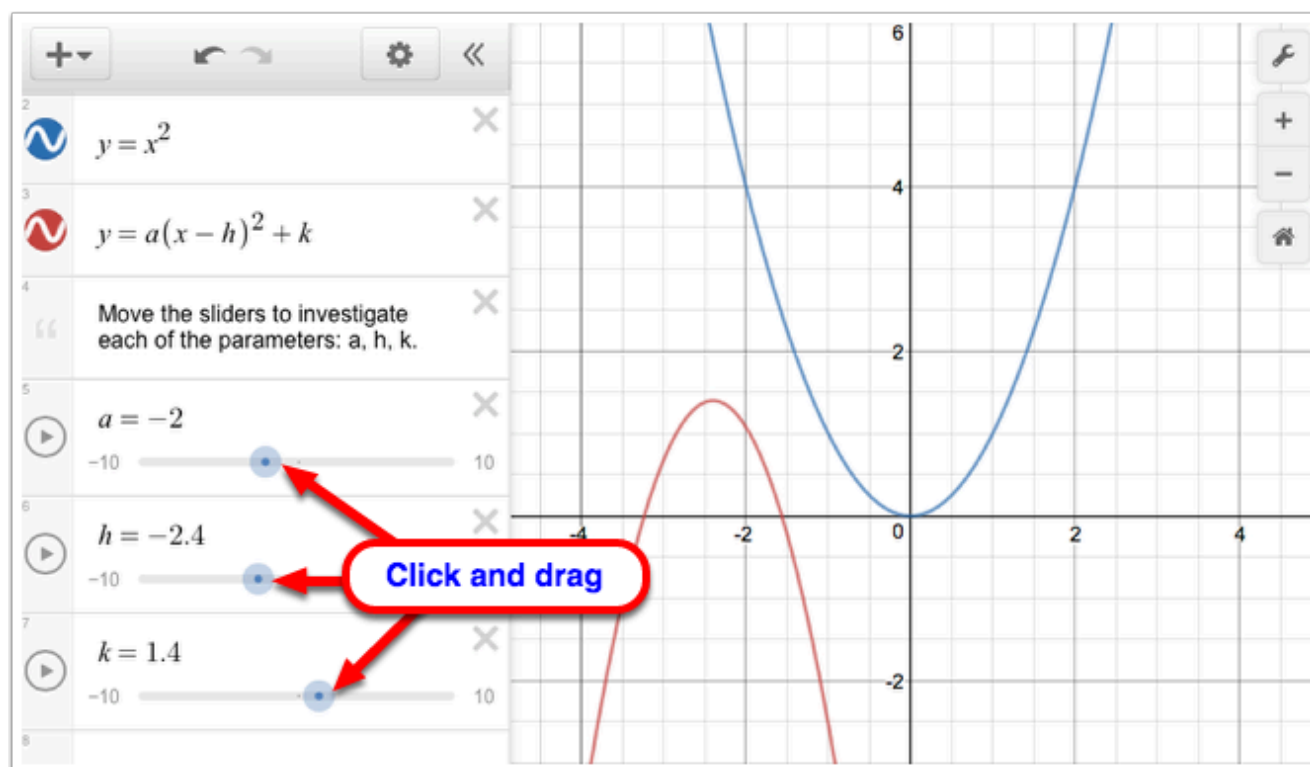
Use this eTool to support a class discussion about the equation $y = a(x - h)^2 + k$.

- Identify which **parameter** (a , h , or k) affects the orientation, vertical shift, horizontal shift, vertical stretch, and vertical compression of the graph compared to the graph of the parent function $y = x^2$.
- What values stretch the graph vertically? Compress the graph vertically? Why do those values have these impacts?
- What values cause the graph to flip vertically?
- What values cause the graph to shift to the left? To the right? Why?
- What values cause the graph to shift up or down? Why?
- Are there points on your graph that connect to specific parameters in the equation? Explain.



Use the sliders to change the parameters.

Click the blue points on the sliders and drag (horizontally) to change the parameters.



CCA2 2.1.4: 2-43 Student eTool (CPM)

Click on the link below.

[2-43 Student eTool \(CPM\)](#)

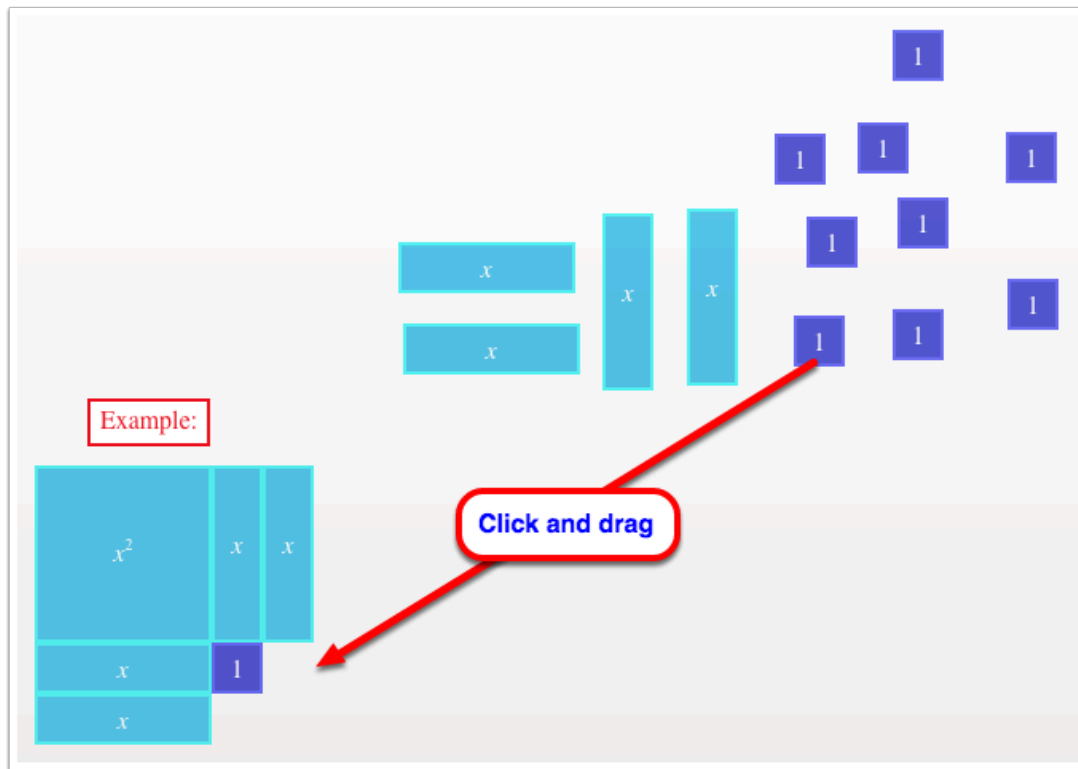
Use the Algebra tiles to multiply and factor binomials.

- Use the algebra tiles to make squares.
- Use the ideas to learn how to "Complete the Square".



Move tiles to complete the figure.

Click each tile and drag it to the desired location to complete the square.

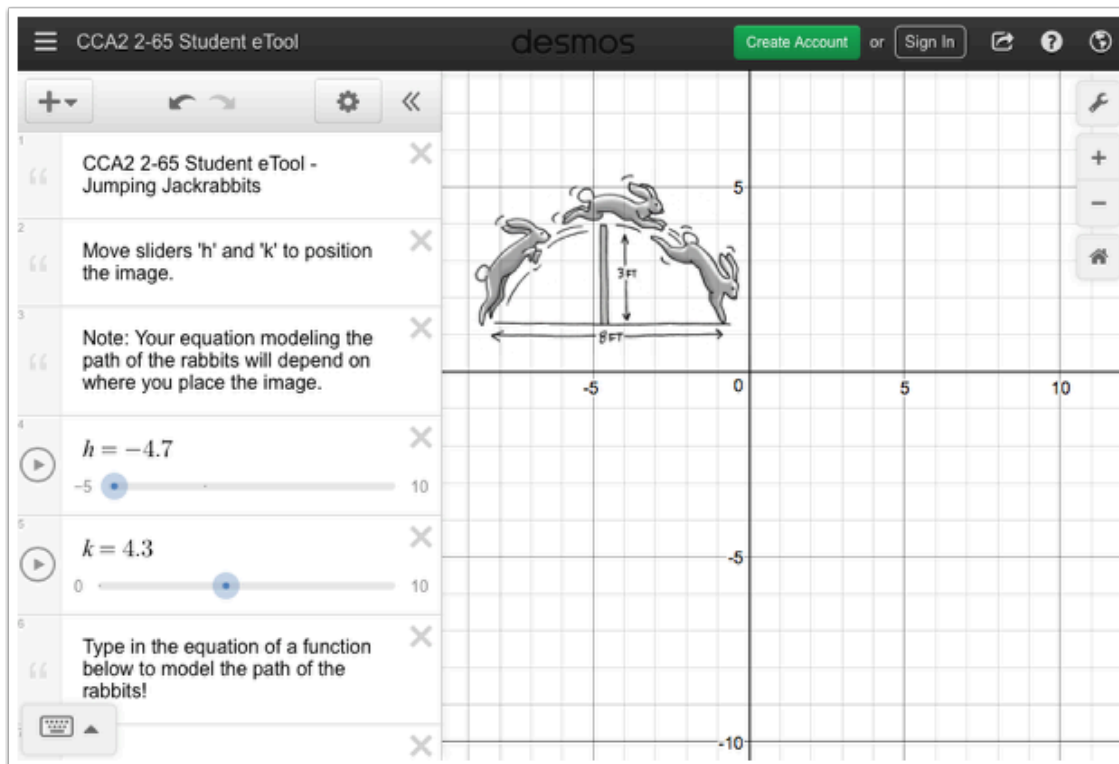


CCA2 2.1.5: 2-65 Student eTool (Desmos)

Click on the link below to access eTool.

[2-65 Student eTool \(Desmos\)](#)

Decide in your team how to write a function that models the path of the rabbits.



1. Move the image of the jackrabbits.

- Click the blue points on each sliders and drag (horizontally) to move the image of the jackrabbits.

2. Enter the equation

The screenshot shows the Desmos CCA2 2-65 Student eTool interface. On the left, there is a sidebar with instructions and sliders. The main area is a coordinate plane with a grid. A rabbit is shown in three positions, forming a parabolic path. The path starts at approximately (-4, 0), reaches a peak at (0, 3), and ends at approximately (4, 0). The x-axis is labeled from -5 to 10, and the y-axis is labeled from -10 to 5. A vertical line segment labeled '3 FT' indicates the height of the rabbit at the peak. A horizontal line segment labeled '8 FT' indicates the total distance of the jump.

Instructions in the sidebar:

- 1. CCA2 2-65 Student eTool - Jumping Jackrabbits
- 2. Move sliders 'h' and 'k' to position the image.
- 3. Note: Your equation modeling the path of the rabbits will depend on where you place the image.
- 4. $h = -0.1$
- 5. $k = 1.5$
- 6. Type in the equation of a function below to model the path of the rabbits!

Annotations:

- 1. Click and drag:** A red arrow points from this text to the slider for h .
- 2. Enter your equation:** A red arrow points from this text to the input field for the function equation.

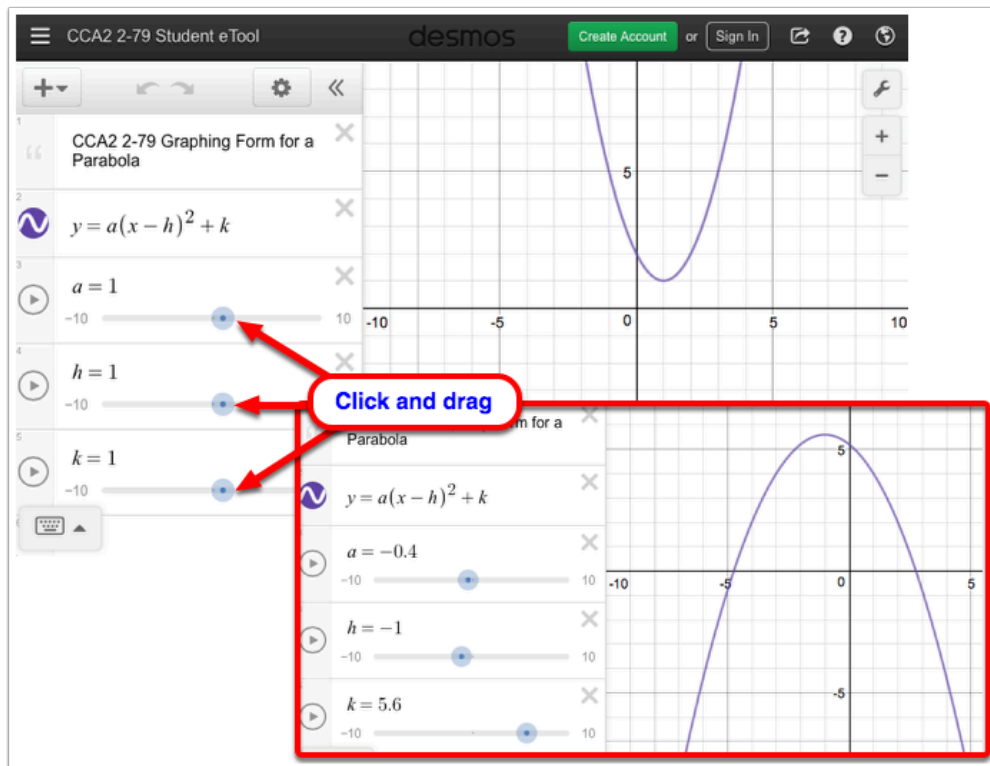
CCA2 2.2.1: 2-79 Student eTool (Desmos)

Click on the link below to access eTool.

[2-79 Student eTool \(Desmos\)](#)

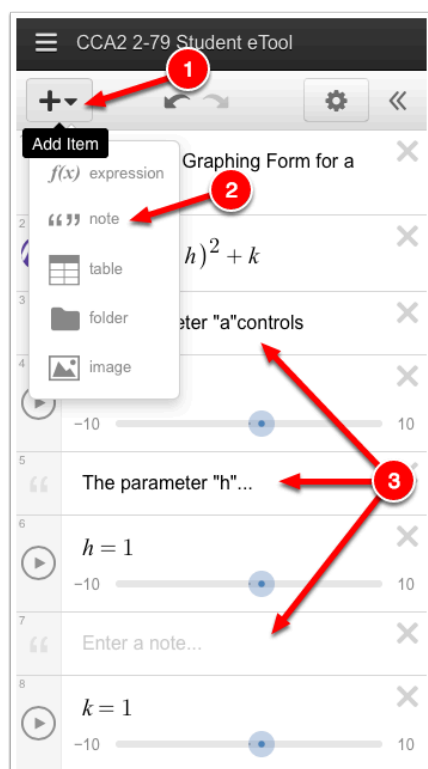
Move sliders to test your ideas.

- Click the blue points on each sliders and drag (horizontally).



Customize your project by adding text fields explaining each of the parameters.

1. Click the 'Add Item' icon.
2. Select 'note' in the menu.
3. Type the text you want to add in the text field/s.



CCA2 2.2.2: 2-104 Student eTool (Desmos)

Click on the link below to access eTool.

[2-104 Student eTool \(Desmos\)](#)

Use this eTool to create toolkit entry for each of the parent graphs.

- Use the text fields to enter your expressions and explanations.
- Enter the x and y-values in the table.

x_1	y_1
-3	
-2	
-1	
0	
1	
2	
3	

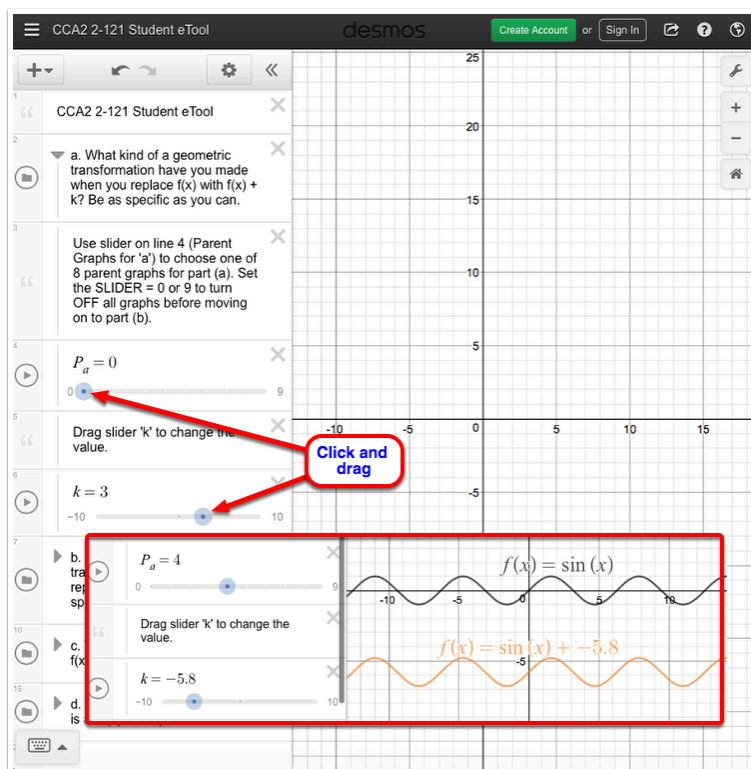
CCA2 2.2.3: 2-121 Student eTool (Desmos)

Click on the link below to access eTool

[2-121 Student eTool \(Desmos\)](#)

Use this eTool to explore the different geometric transformations.

- To view the graphs, click the blue point on the first slider (line 4) and drag (horizontally).
- To change the value, click the blue point on the second slider (line 6) and drag (horizontally).



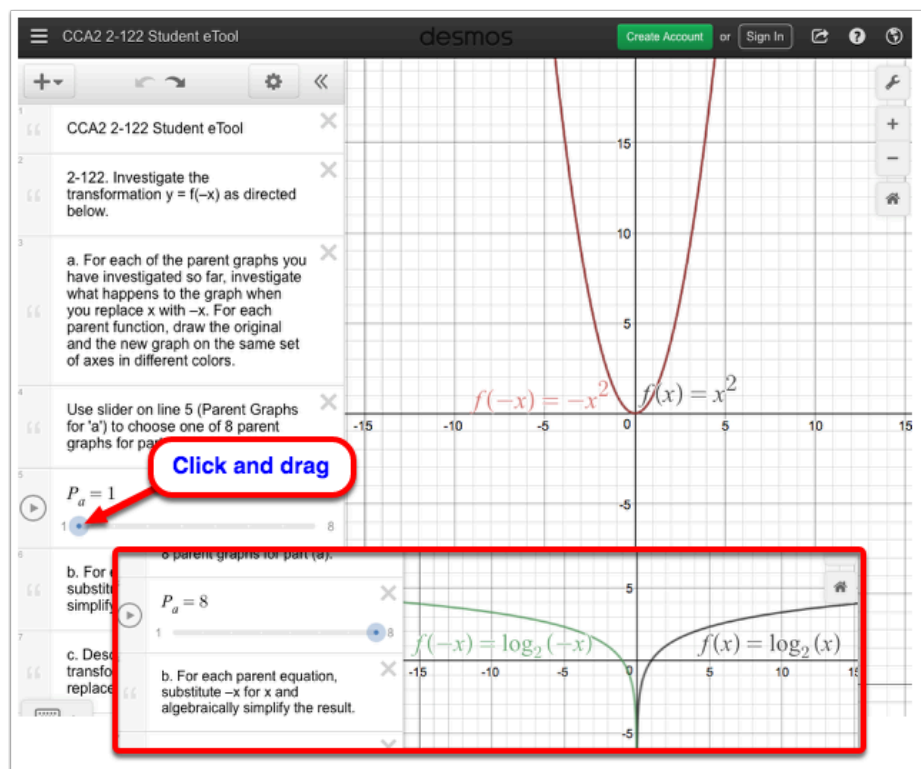
CCA2 2.2.3: 2-122 Student eTool (Desmos)

Click on the link below to access eTool.

[2-122 Student eTool \(Desmos\)](#)

Use this eTool to investigate the transformation of a given function.

- To view the graphs, click the blue point on the first slider (line 5) and drag (horizontally).



CCA2 2.2.5: 2-156 Student eTool (Desmos)

Click on the link below to access eTool.

[2-156 Student eTool \(Desmos\)](#)

Team Transformation Challenge

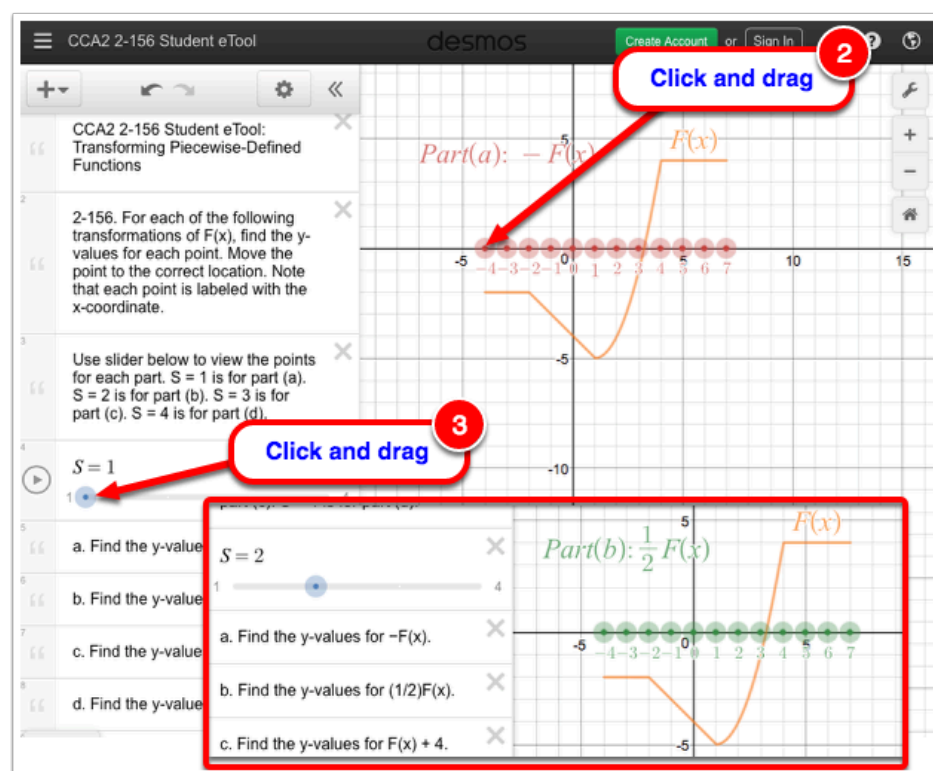
1. Find the y-values for $F(x)$ for each part.
2. Click each of the colored points on the graph and drag to the correct location.
3. Click the blue point on the slider (line 4) and drag (horizontally) to view the next graph and repeat steps 1 and 2.

S = 1: Part (a)

S = 2: Part (b)

S = 3: Part (c)

S = 4: Part (d)



Chapter 3

CCA2 3.2.1: 3-57 Student eTools (Desmos)

Click on the links below to access each eTools.

3-57 f_1 Student eTool (Desmos)	3-57 f_2 Student eTool (Desmos)	3-57 f_3 Student eTool (Desmos)
3-57 f_4 Student eTool (Desmos)	3-57 f_5 Student eTool (Desmos)	3-57 f_6 Student eTool (Desmos)
3-57 f_7 Student eTool (Desmos)	3-57 f_8 Student eTool (Desmos)	3-57 f_9 Student eTool (Desmos)

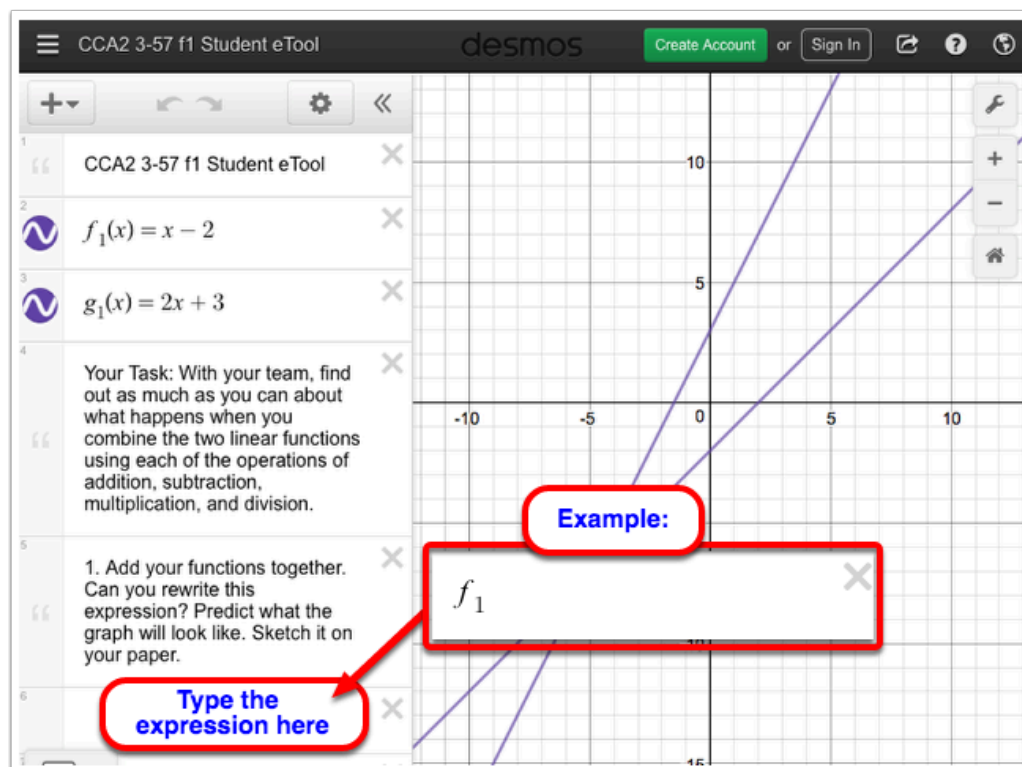
Use these eTools to investigate the relationship between the original two functions and the different results you get from adding, subtracting, multiplying, and dividing the two functions.

3-57 f_1

- Enter the expression in each expression line.

NOTE: To enter the subscript number, type " $_<\text{number}>$ ".

i.e.: type " f_1 " **Result:** f_1

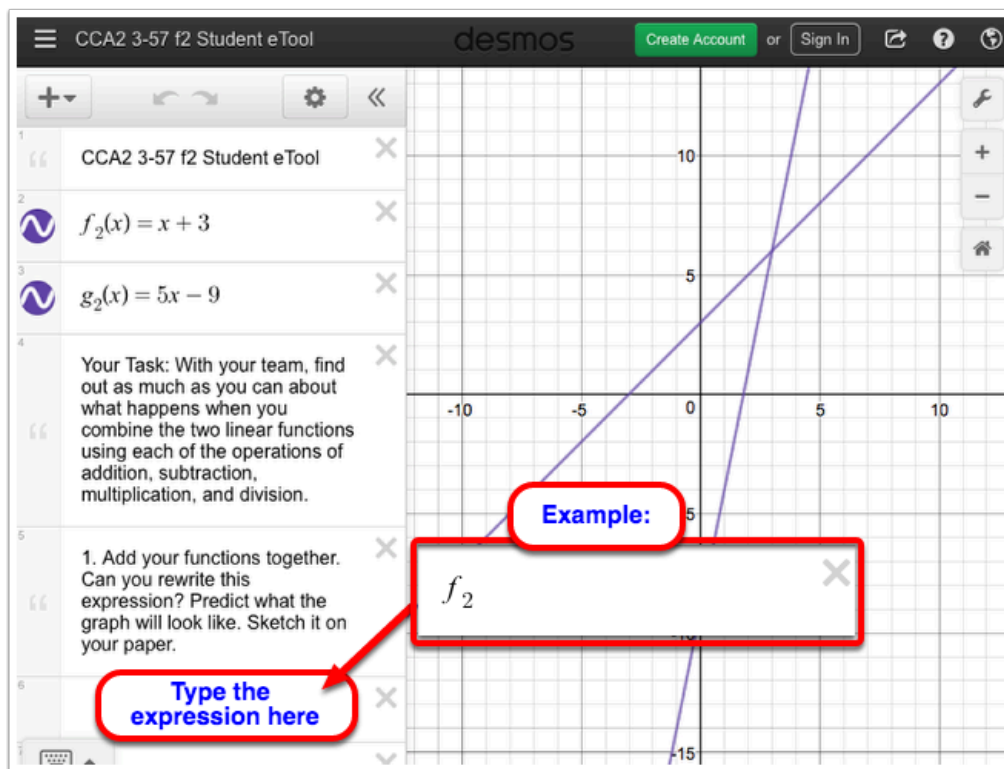


3-57 f_2

- Enter the expression in each expression line.

NOTE: To enter the subscript number, type "_{<number>}".

i.e.: type "f₂" **Result:** f_2

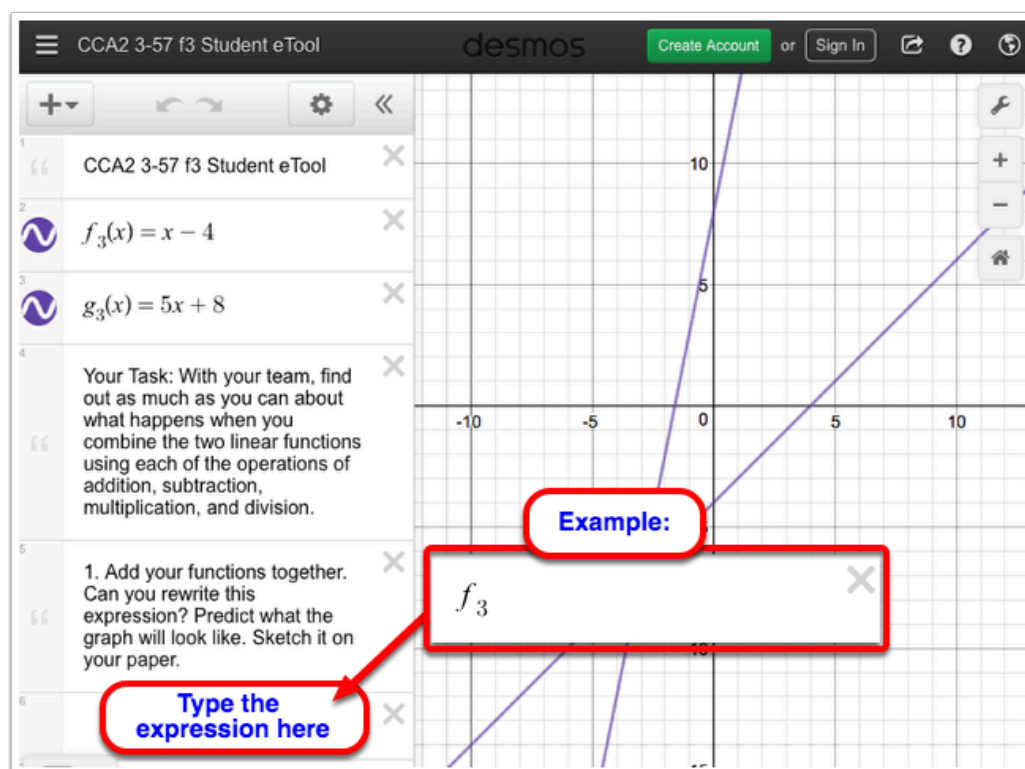


3-57 f3

- Enter the expression in each expression line.

NOTE: To enter the subscript number, type "_{<number>}".

i.e.: type "f₃" **Result:** f_3

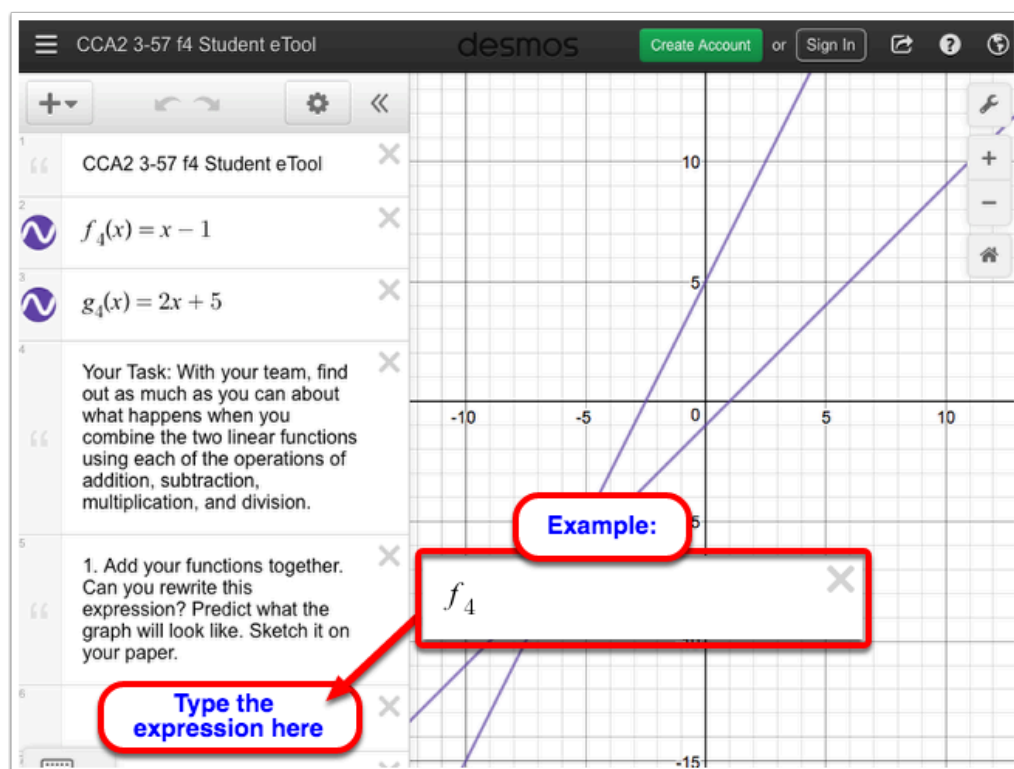


3-57 f4

- Enter the expression in each expression line.

NOTE: To enter the subscript number, type "_<number>".

i.e.: type "f_4" **Result:** f_4

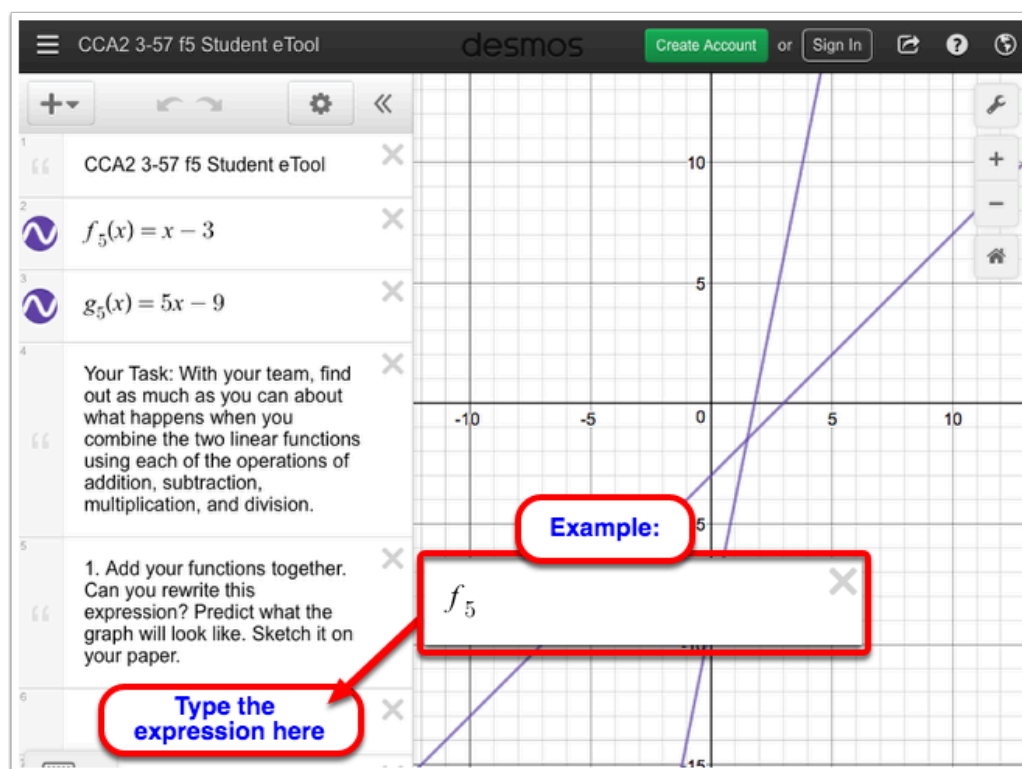


3-57 f5

- Enter the expression in each expression line.

NOTE: To enter the subscript number, type "<number>".

i.e.: type "f_5" **Result:** f_5

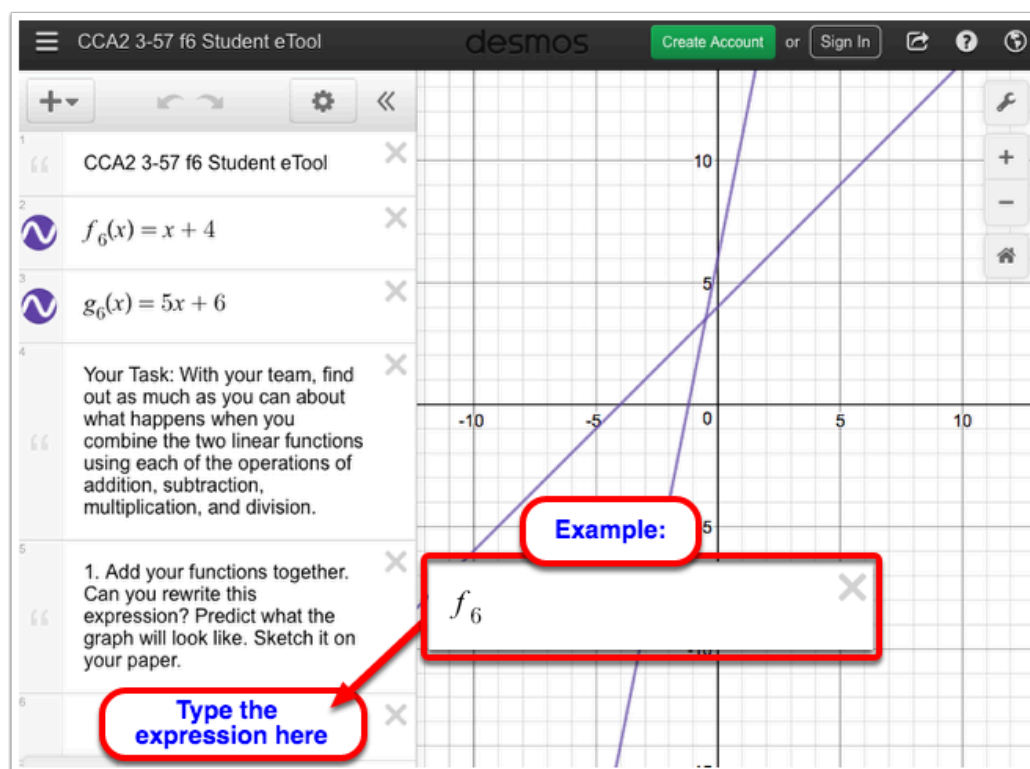


3-57 f6

- Enter the expression in each expression line.

NOTE: To enter the subscript number, type "_<number>".

i.e.: type "f_6" **Result:** f_6

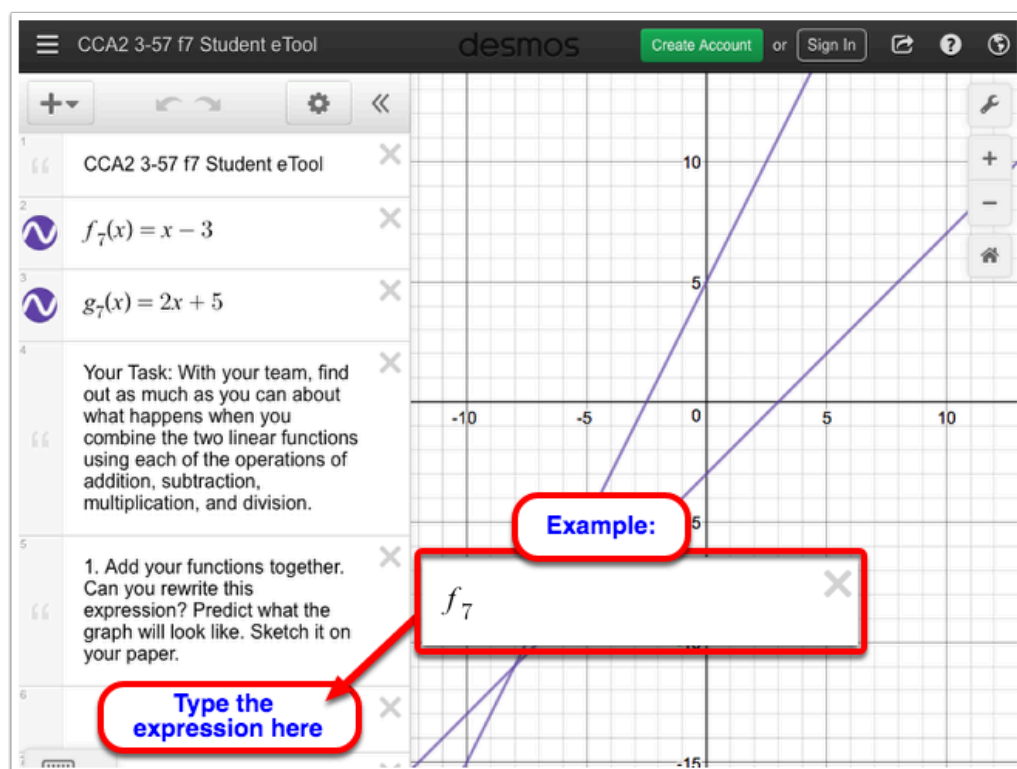


3-57 f7

- Enter the expression in each expression line.

NOTE: To enter the subscript number, type "<number>".

i.e.: type "f_7" **Result:** f_7

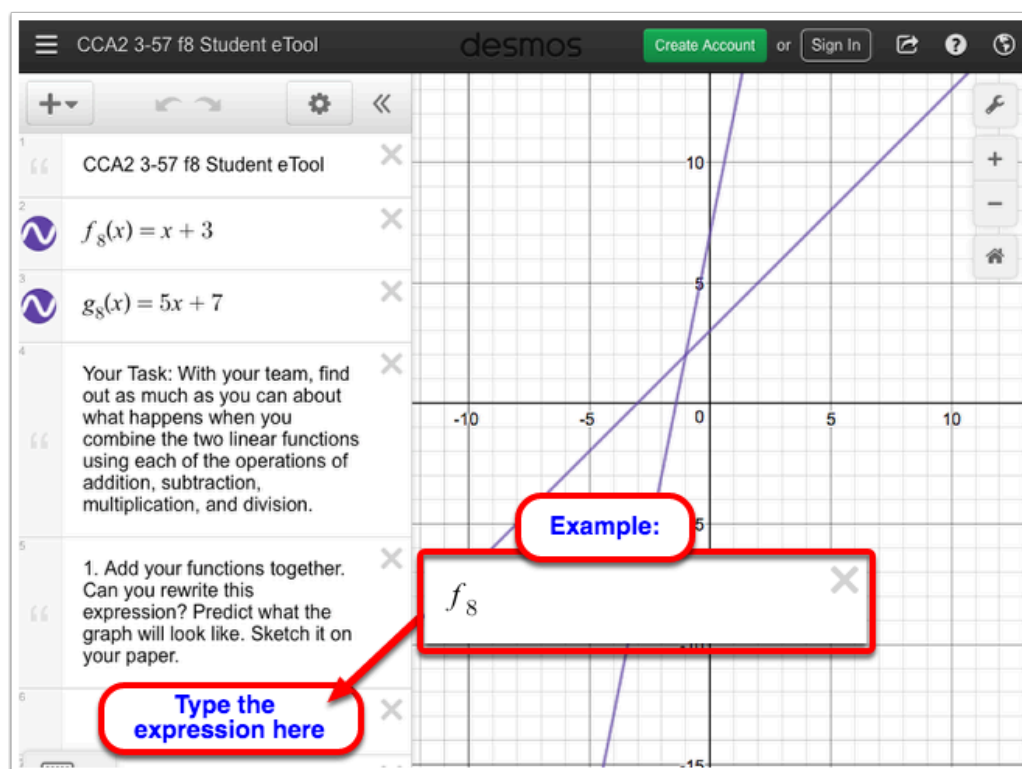


3-57 f8

- Enter the expression in each expression line.

NOTE: To enter the subscript number, type "_<number>".

i.e.: type "f_8" **Result:** f_8

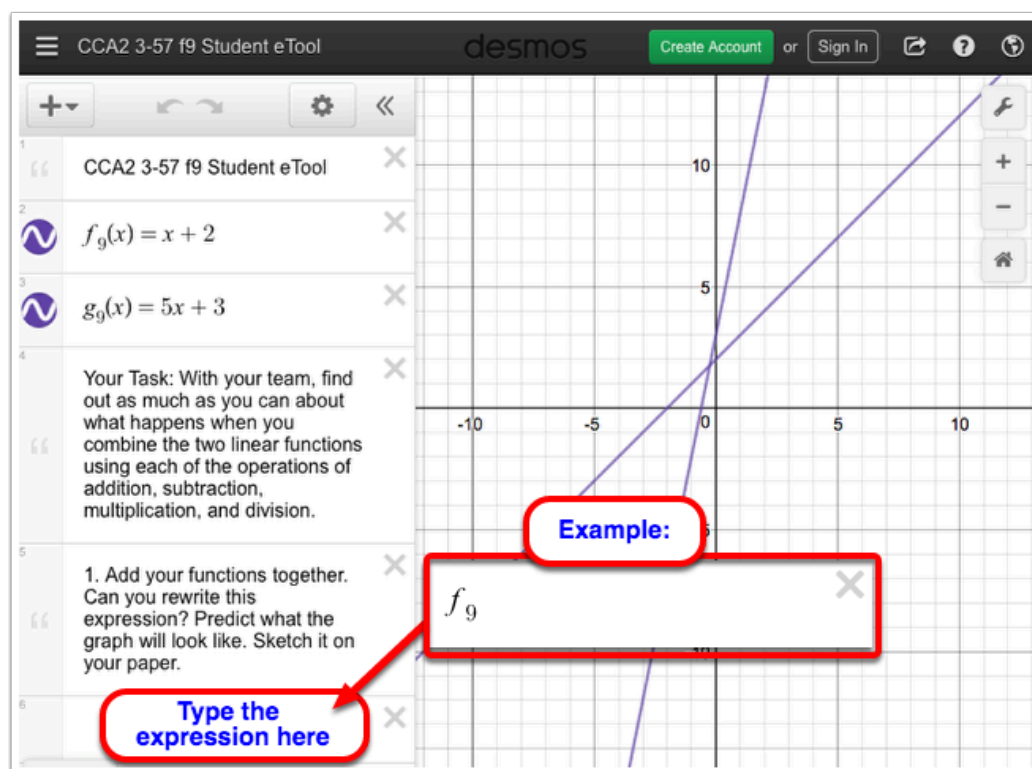


3-57 f9

- Enter the expression in each expression line.

NOTE: To enter the subscript number, type "_<number>".

i.e.: type "f_9" **Result:** f_9



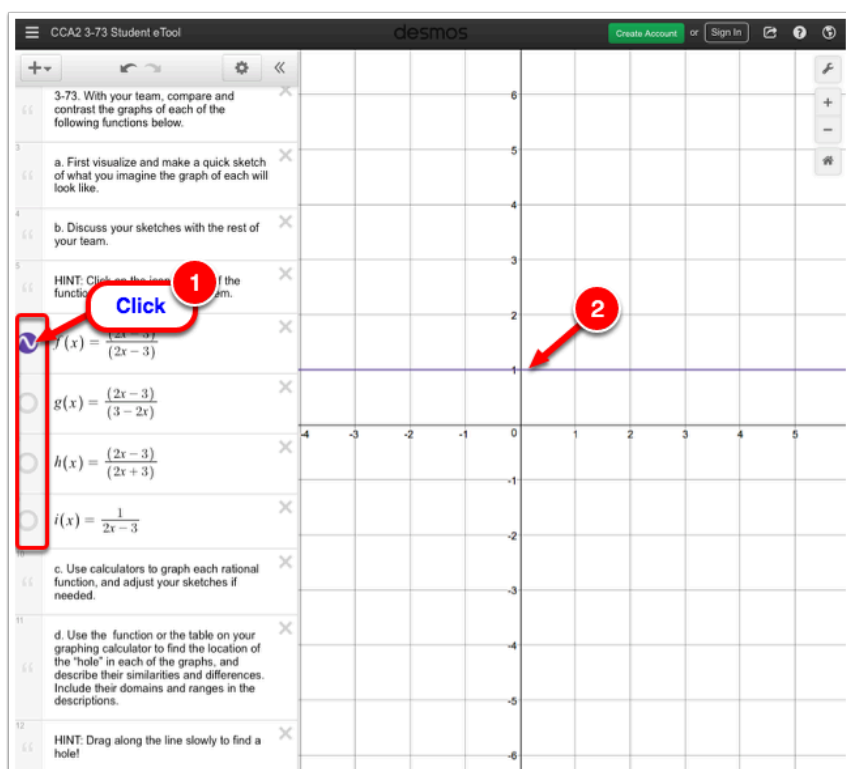
CCA2 3.2.2: 3-73 Student eTool (Desmos)

Click on the link below to access eTool.

[3-73 Student eTool \(Desmos\)](#)

Use this eTool to compare and contrast the graphs of each of the given functions.

1. Click on the icon in front of the functions below to show/hide them.
2. Click and drag along the line slowly to find a hole.



CCA2 3.2.5: 3-111 Student eTool (Desmos)

Click on the link below to access eTool.

[3-111 Student eTool \(Desmos\)](#)

Explore the operations with rational functions using the eTool.

1. Click the arrows on lines 7 and 15 to show parts (a) through (f) of problem 3-11.
2. Type your your answers on the blank expression fields provided on lines 10, 19, 21, and 23.
3. Click the circles at the left on lines 13, 19, 21, and 23 to view each graph and compare your answers.

The screenshot shows the Desmos eTool interface for CCA2 3-111. The left sidebar contains a list of problems. The main workspace shows the problem details and a graphing area. Red annotations highlight the following steps:

- 1:** An arrow points to the 'Parts (a-c)' button on line 7.
- 2:** An arrow points to a blank expression field on line 10.
- 3:** An arrow points to the circle next to the expression $f(x) \cdot g(x)$ on line 13.

Chapter 4

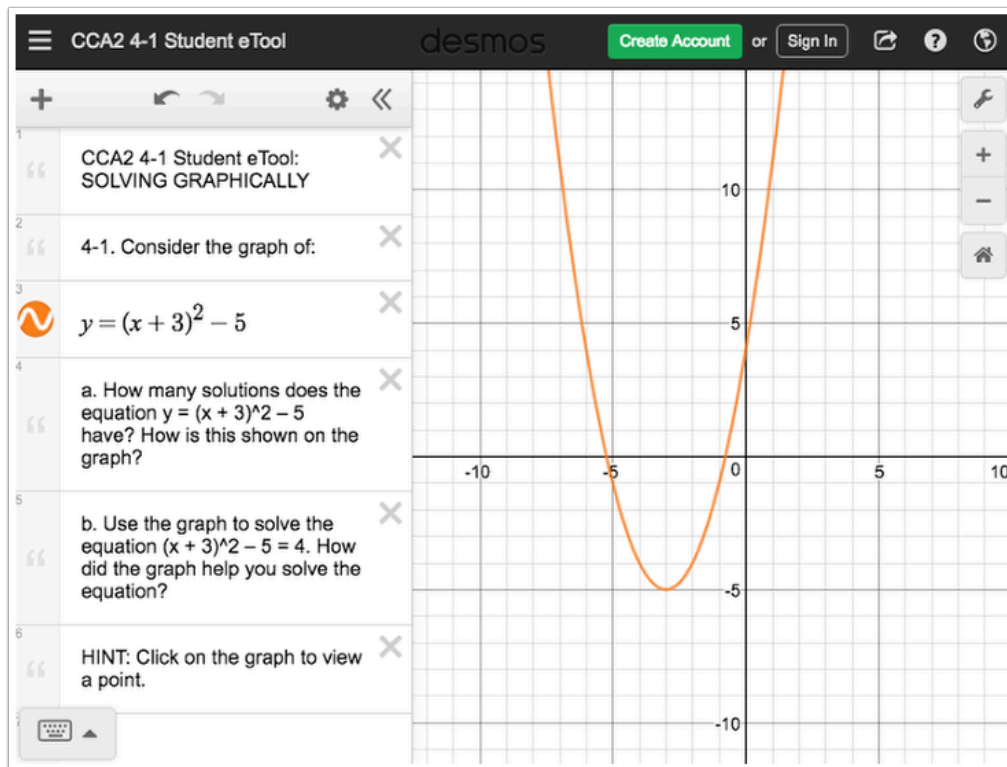
CCA2 4.1.1: 4-1 Student eTool (Desmos)

Click on the link below to access eTool.

[4-1 Student eTool \(Desmos\)](#)

Use this eTool to solve the equation:

$$(x + 3)^2 - 5 = 4$$



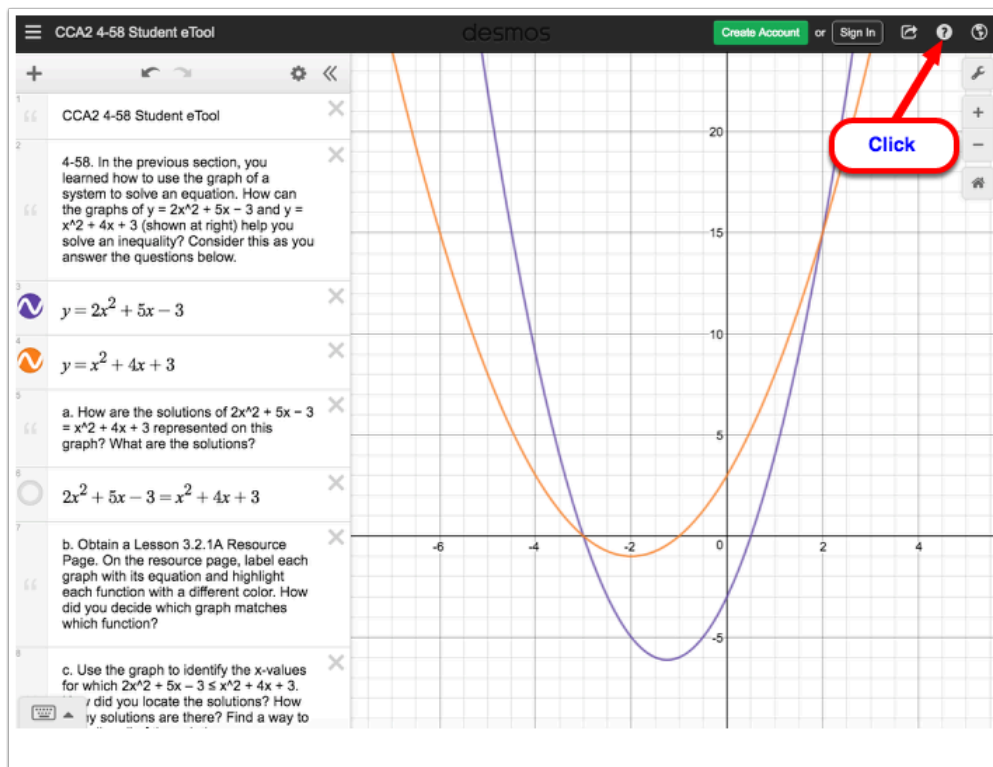
CCA2 4.2.1: 4-58 Student eTool (Desmos)

Click on the link below to access eTool

[4-58 Student eTool](#)

Use this eTool to learn more about Inequalities.

Note: For more information about Desmos and Inequalities, click "?" icon.

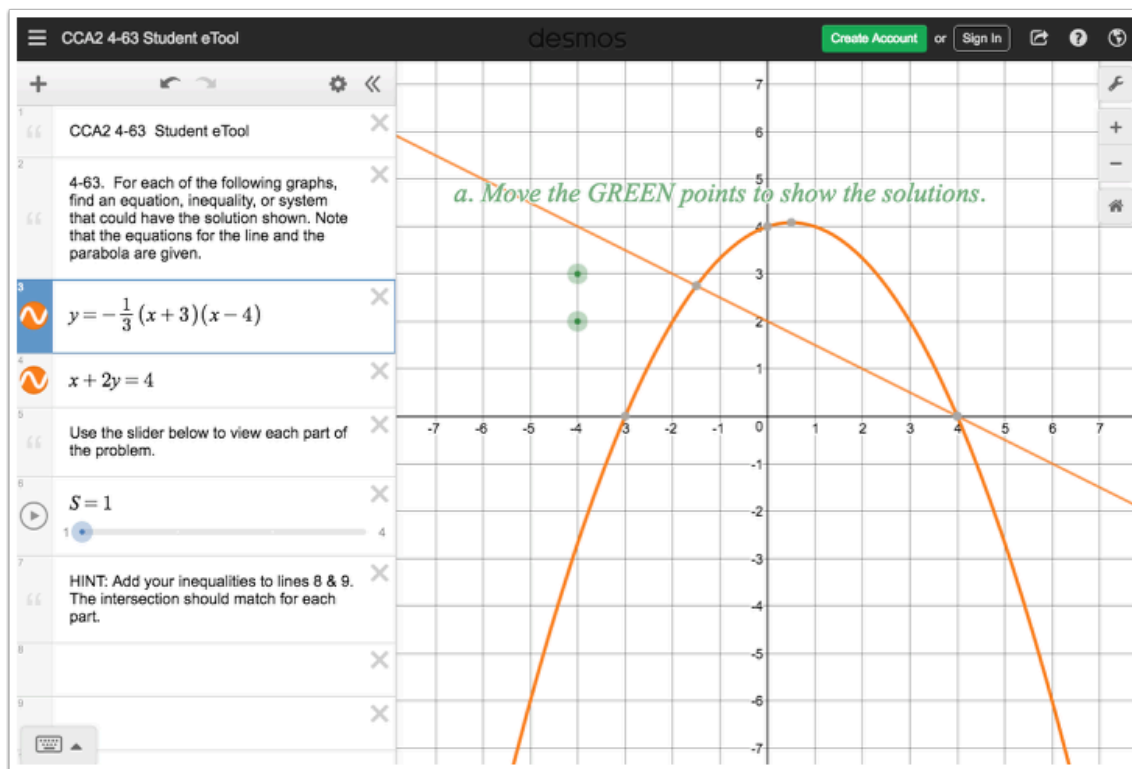


CCA2 4.2.1: 4-63 Student eTool (Desmos)

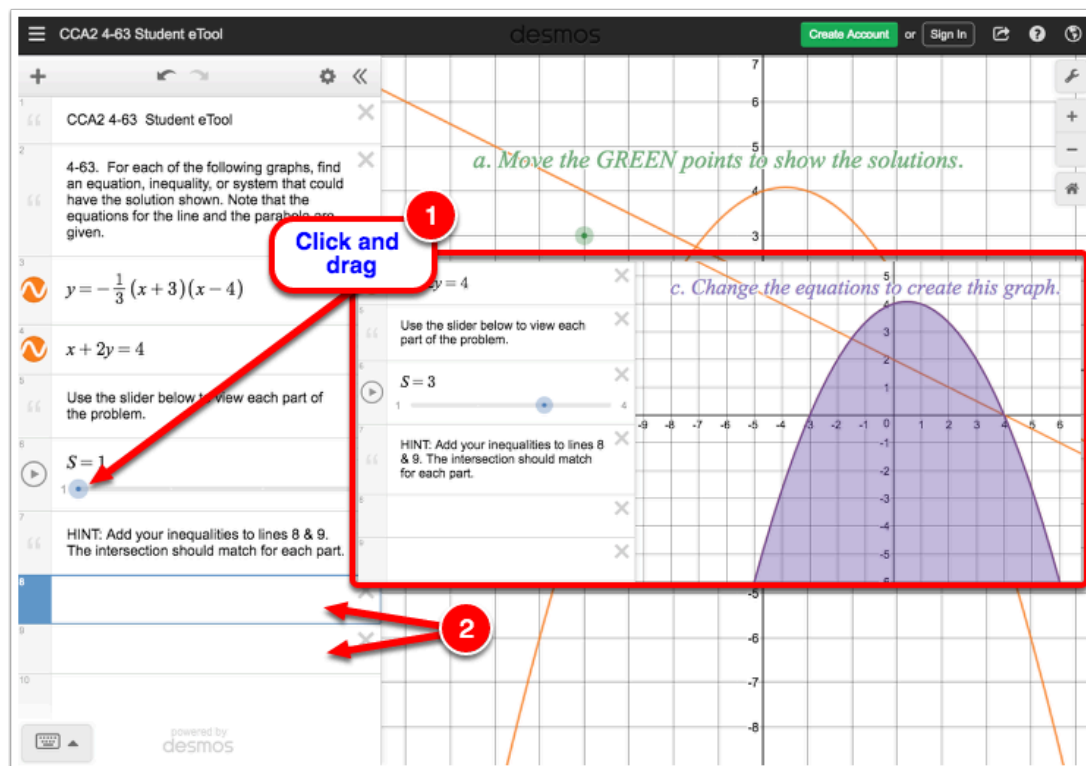
Click on the link below to access eTool.

[4-63 Student eTool \(Desmos\)](#)

Use this eTool to view the graphs for each part of problem 4-63.



1. Click and drag the blue point on the slider to view each part of the problem.
2. Enter your inequalities in lines 8 and 9.



Chapter 5

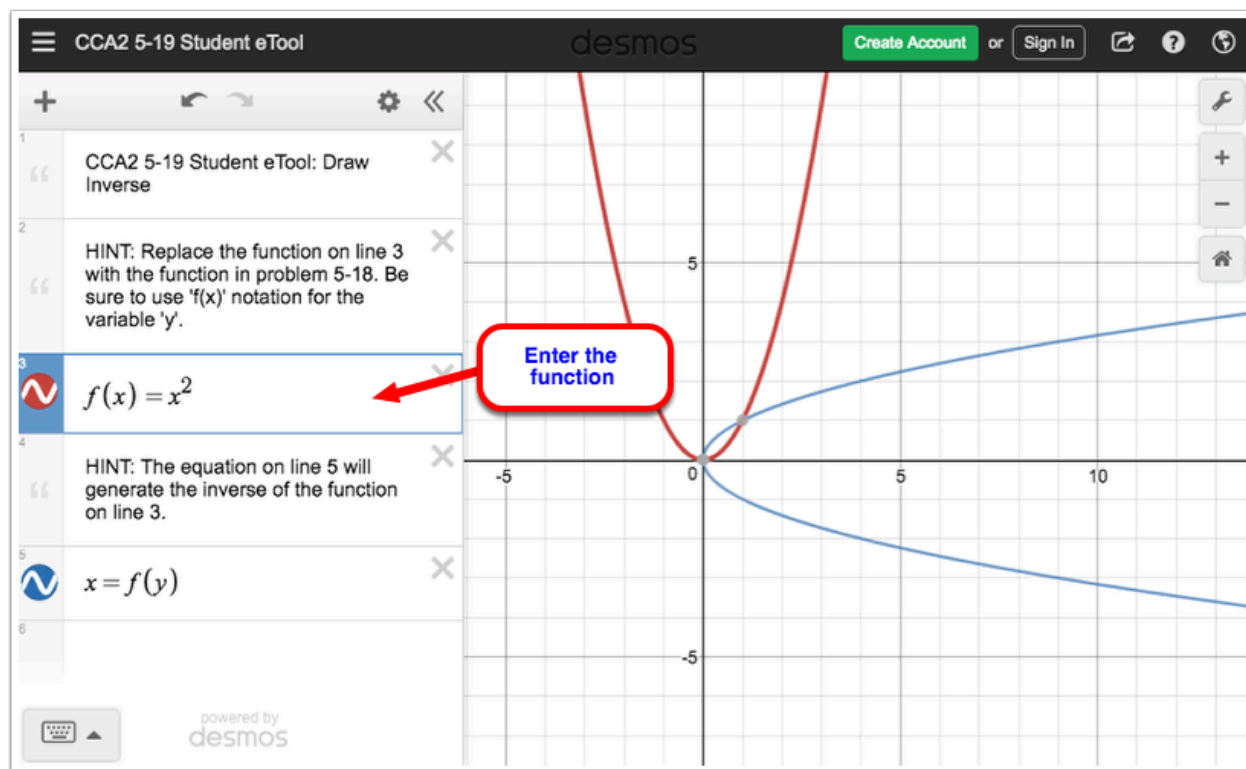
CCA2 5.1.2: 5-19 Student eTool (Desmos)

Click the link below to access eTool.

[5-19 Student eTool \(Desmos\)](#)

Draw Inverse

This eTool will help you to graph the inverse of a function. Check your inverse graph from problem 5-18 by following your teacher's instructions to use the inverse-drawing feature of your graphing calculator. Was the inverse graph that you drew correct?



CCA2 5.2.4: 5-94 Student eTool (Desmos)

Click on the link below to access eTool.

[5-94 Student eTool \(Desmos\)](#)

Use this eTool to learn more about the transformations of logarithmic functions.

1. Complete the table in line 4.

The screenshot shows the Desmos eTool interface for CCA2 5-94 Student eTool. The sidebar on the left contains instructions and a table to be completed. The main area is a coordinate plane grid.

Instructions in the sidebar:

- 5-94. Now that you know the base of $f(x) = \log x$, you are ready to use your transformation skills to write a general equation.
- a. Copy and complete the following table for $f(x) = \log x$.

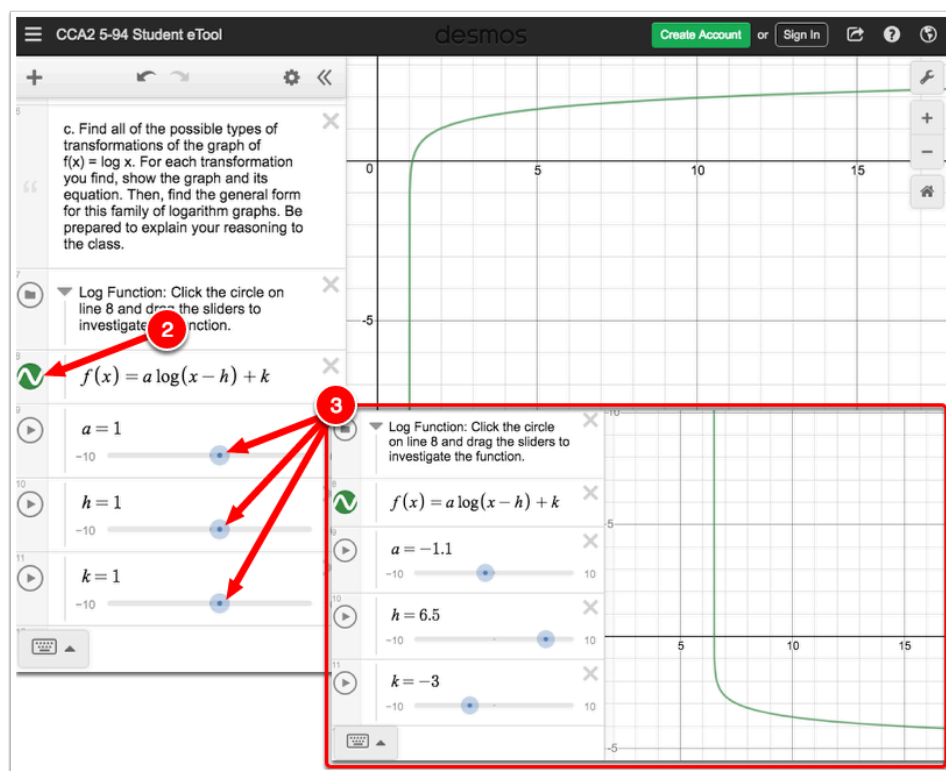
The table to be completed is:

x	y
.....	-6
.....	-5
.....	-4
.....	-3
.....	-2
.....	-1
.....	0
1
2
3
4
5
6

A red box highlights the table, and a red arrow points to it with a callout that says "Enter values".

2. Click the circle on line 8 to explore the Log Function.

3. Click on the blue points (sliders) and drag horizontally to move.



Chapter 6

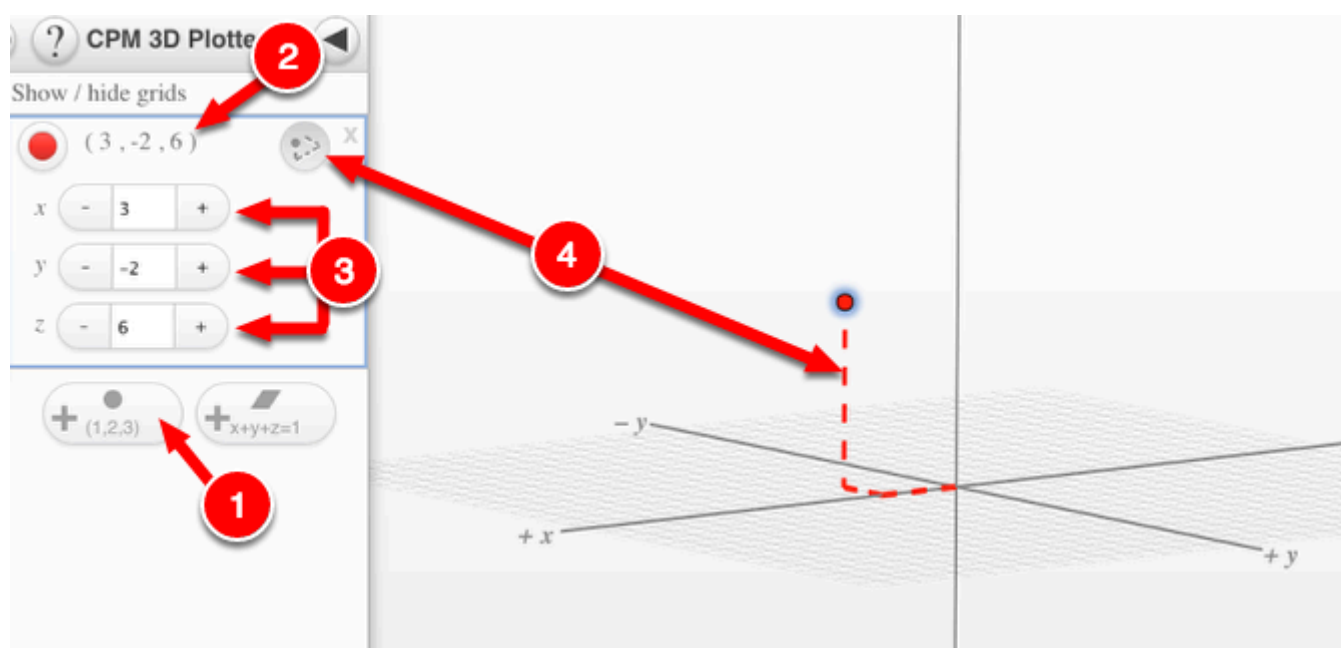
CCA2 6.1.2: 3D Point Plotter and Graphing Linear Equations in Three Variables (CPM)

Click on the link below to access eTool.

[3D Plotter \(CPM\)](#)

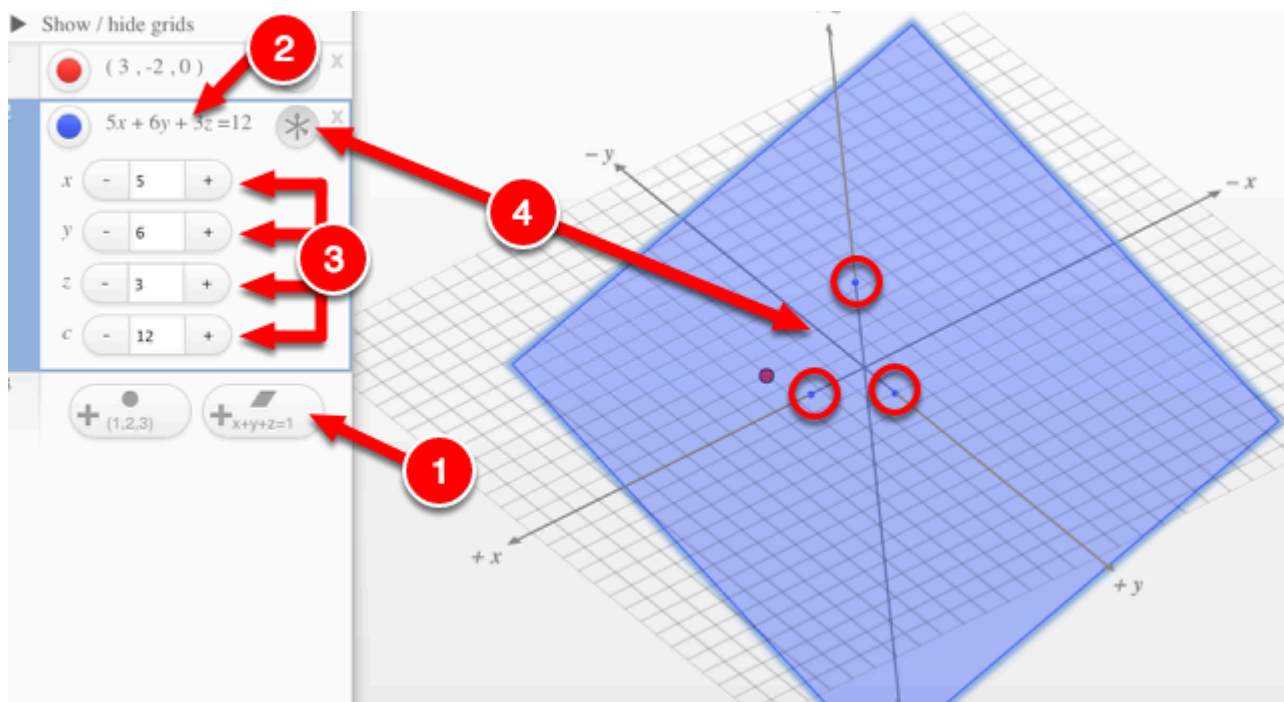
1. Enter the points (x, y, and z).

1. Click on the point plotter button to add a point.
2. Click on the (x, y, z) coordinates.
3. Type or click the '-' and '+' to modify the coordinates.
4. Click the trace button to view the path.



2. Enter the coefficients of an equations in the form: $ax + by + cz = d$.

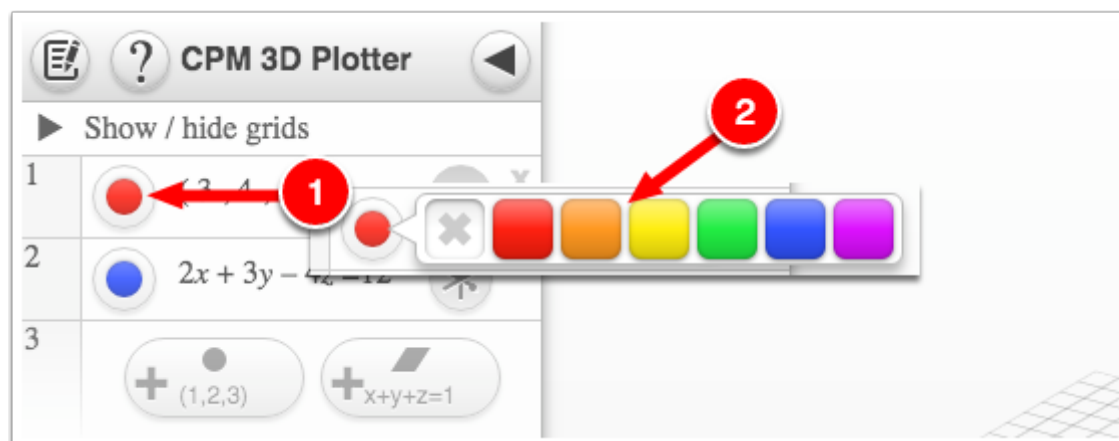
1. Click on the plane plotter button to add a plane.
2. Click on the equation to view the variables and constant.
3. Type or click the '-' and '+' to modify the coordinates for the variables and constant.
4. Click the intersect button to view the point the plane crosses the x, y, & z axes.



3. You can...

Change colors of the points and plane.

1. Click and hold on the colored buttons to view the settings.
2. Select the color you want to use.



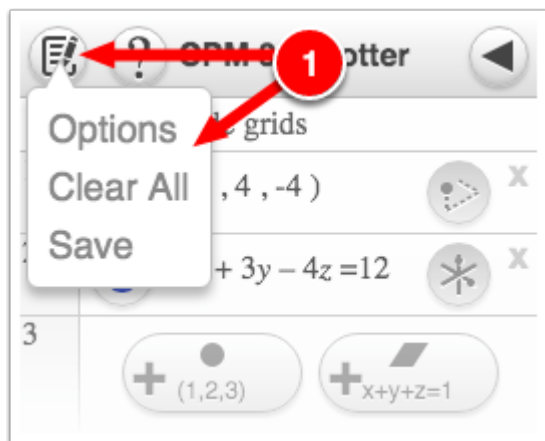
Add description, clear or save your work.

1. Click the Pen & Paper icon and select Options, Clear All or Save.

Options - Add Title and Description of your work.

Clear Tiles - This will remove all the points and plane.

Save - This will save all the changes made.



Find more information in the the help (?) button.

1. Click '?' to view Help window.



CCA2 6.1.5: 6-61 Student eTool (Desmos)

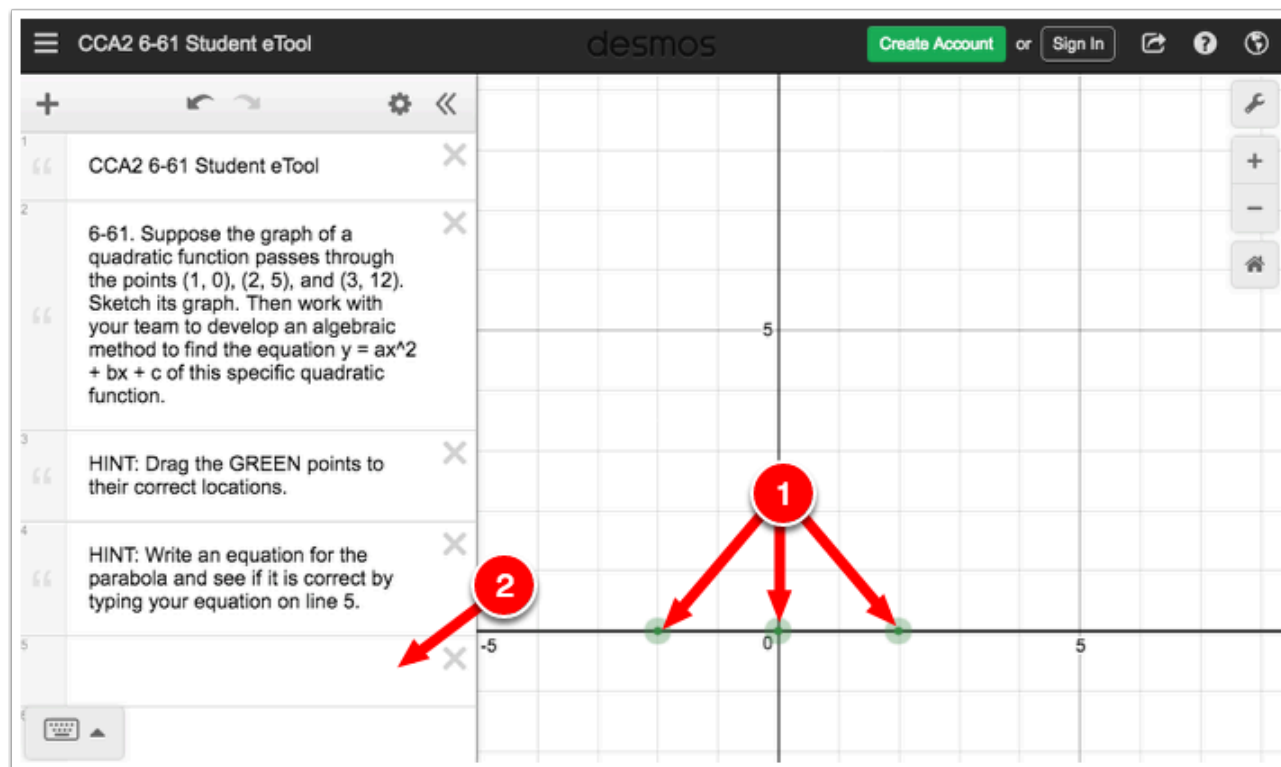
Click on the link below to access eTool.

[6-61 Student eTool \(Desmos\)](#)

Use this eTool to complete problem 6-61.

1. Click and drag the GREEN points to their correct locations.

2. Type the equation for the parabola on line 5.



Chapter 7

CCA2 7.1.2: 7-12 Student eTools (Desmos)

Click on the links below to access eTools.

[7-12a Student eTool \(Desmos\)](#)

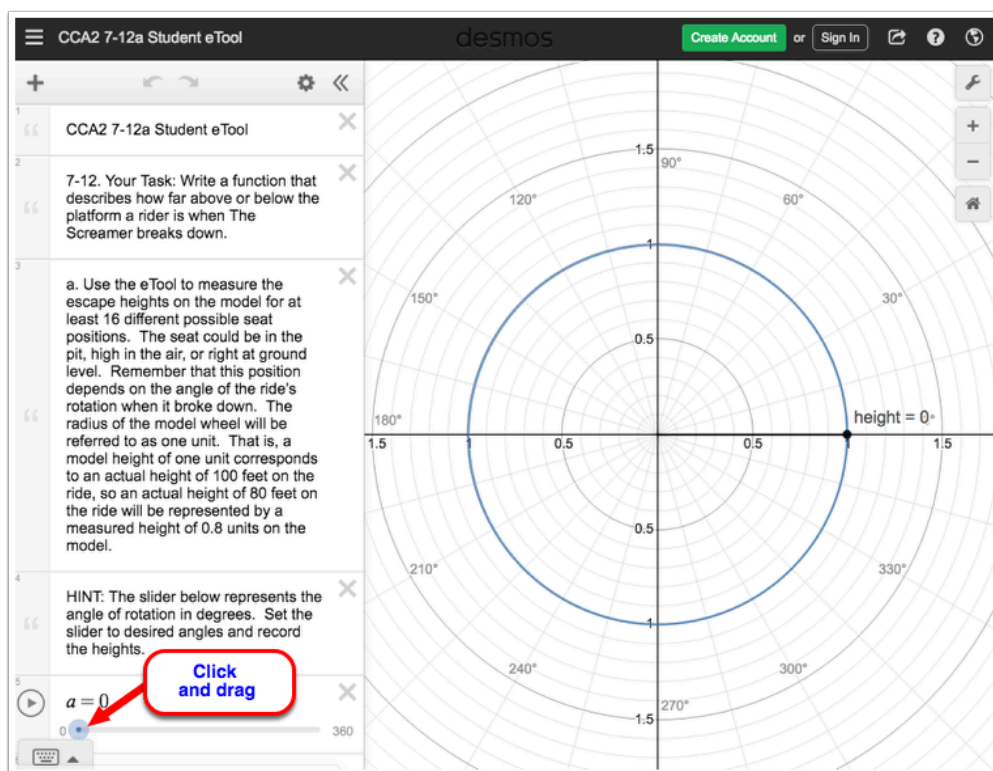
[7-12b Student eTool \(Desmos\)](#)

Use these eTools to complete the task in problem 7-12.

7-12a: Use the eTool to measure the escape heights on the model for at least 16 different possible seat positions.

The slider represents the angle of rotation in degrees. Set the slider to desired angles and record the heights.

- Click the BLUE point (slider) and drag horizontally to move.



7-12b: Graph your data.

- Enter your data in the table.

CCA2 7-12b Student eTool

desmos

Create Account or Sign In

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⚙️ ⏪

2

“ b. Graph your data on a large graph.”

×

5

“ HINT: Enter your data in the table below.”

×

5

x	y
0
15
30
45
60
75
90
105
120
135
150
165

Enter your data

1

1

0.5

0

100

200

300

400

-0.5

-1

CCA2 7.1.3: 7-33 & 7-34 Student eTools (Desmos)

Click on the links below to access eTools.

[7-33 Student eTool\(Desmos\)](#)

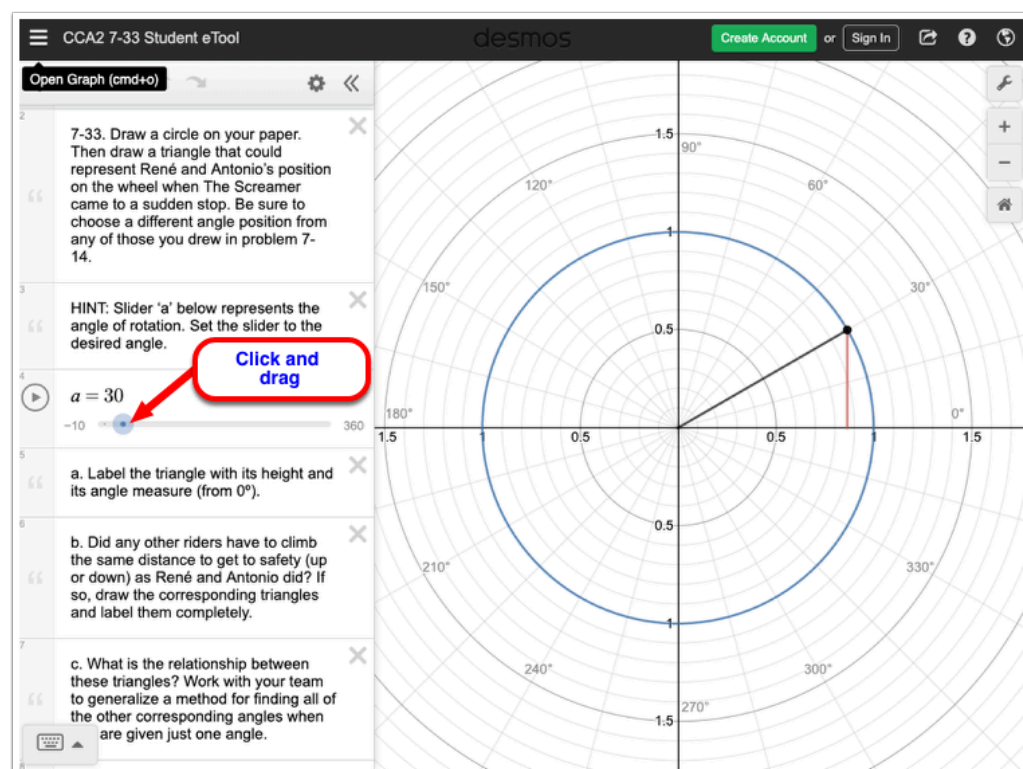
[7-34 Student eTool\(Desmos\)](#)

Investigate how are circles and sine graphs connected.

Explore these eTools to find the height of a seat on The Screamer in two different ways: unit circle and sine graph.

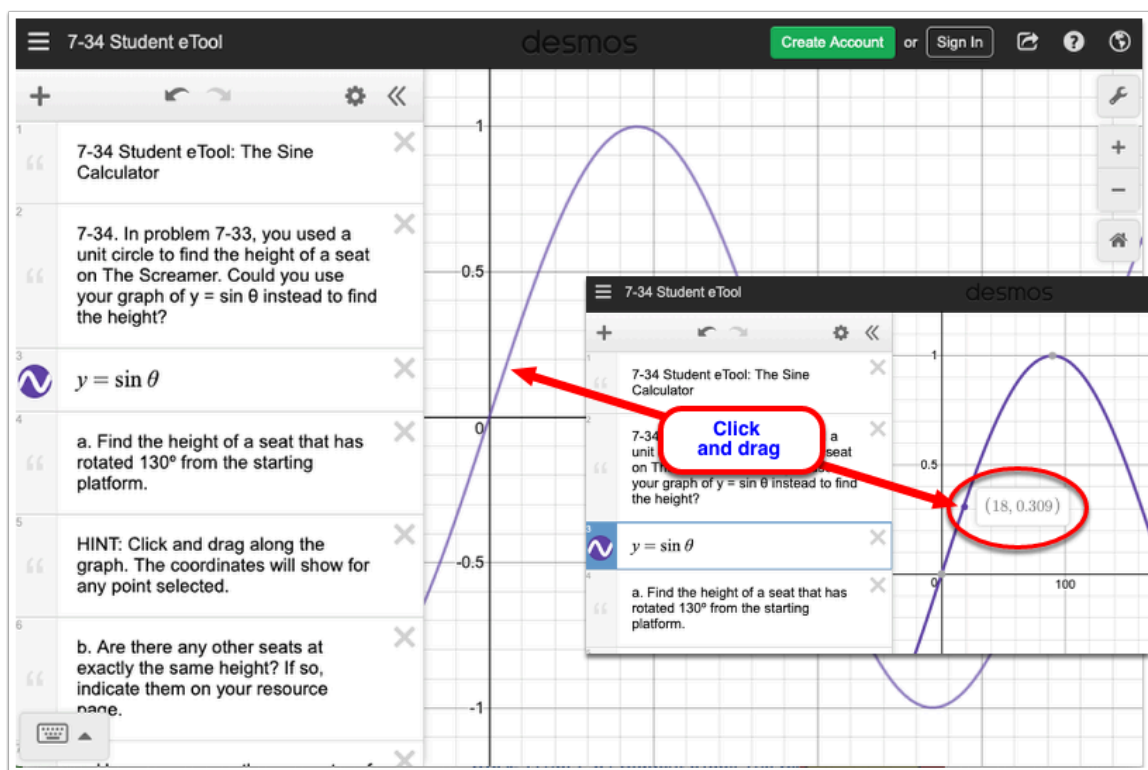
Unit Circle

1. Click on the BLUE point (slider 'a') on line 4 and drag horizontally to the desired angle.



Sine Graph

1. Click on the graph and drag along the curve to view a point and its coordinate.

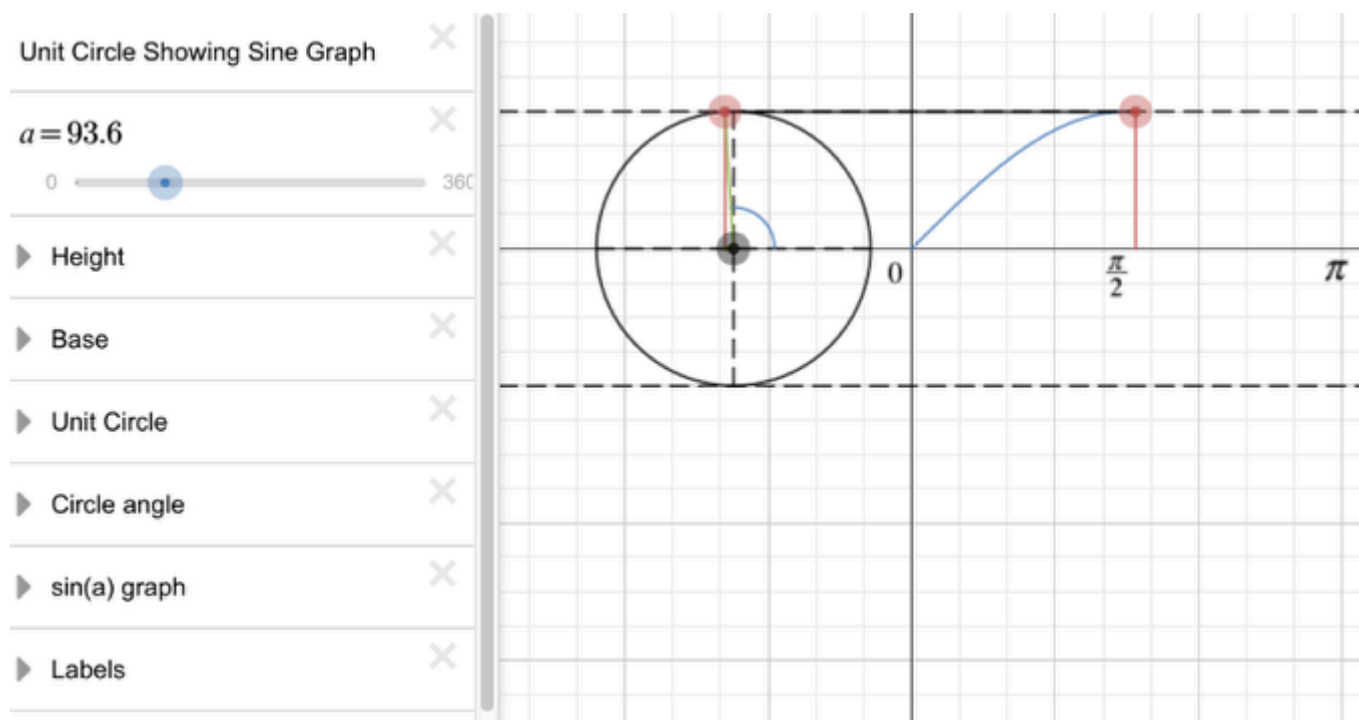


CCA2 7.1.3: 7-34 Unit Circle Showing Sine Curve (Desmos)

Click on the link below for the "7-34 Unit Circle Showing Sine Curve (Desmos)."

[Unit Circle Showing Sine Curve \(Desmos\)](#)

1. The Unit Circle and the Sine Curve

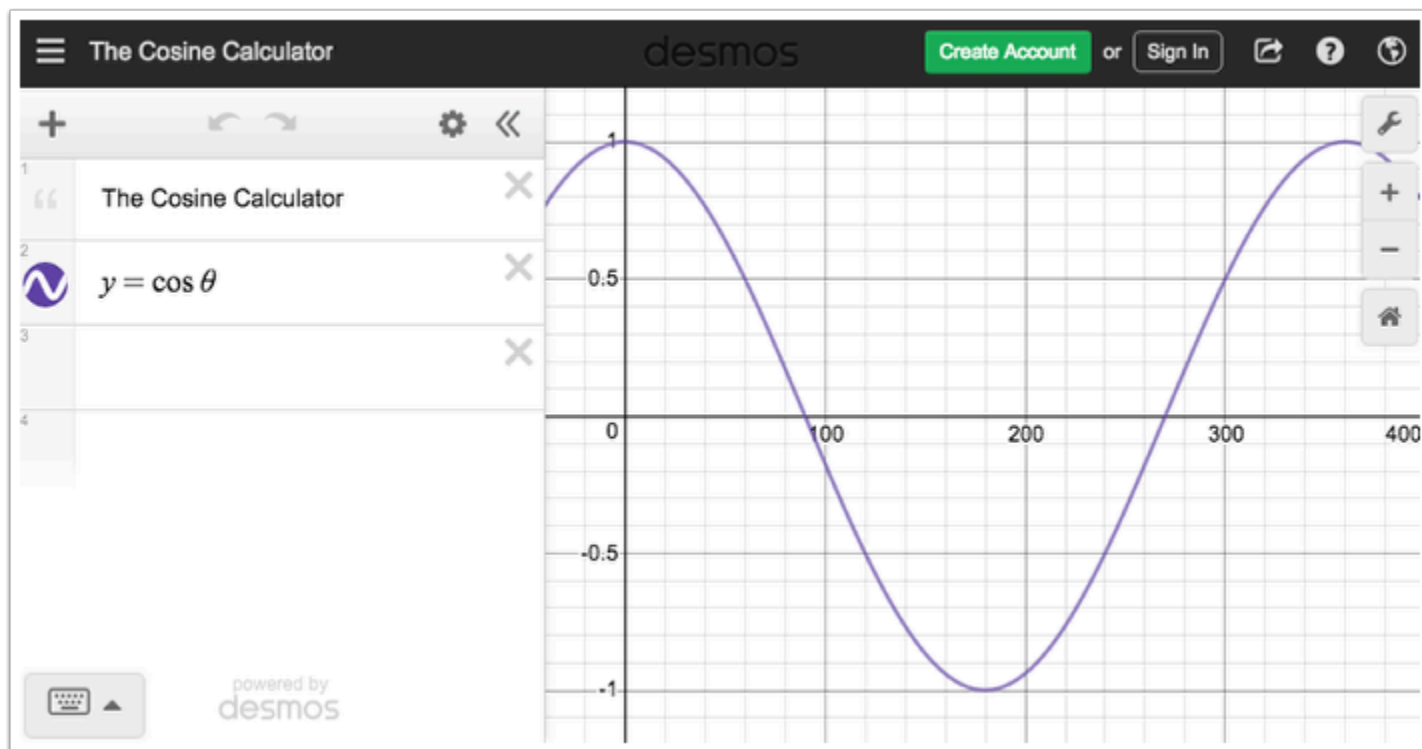


CCA2 7.1.4: 7-52 Student eTool: The Cosine Calculator eTool (Desmos)

Click on the link below to access eTool.

[The Cosine Calculator eTool \(Desmos\)](#)

Explore the Cosine function with this eTool.



CCA2 7.1.4: 7-52 Student eTool and Unit Circle Showing Bases and Cosine Curve (Desmos)

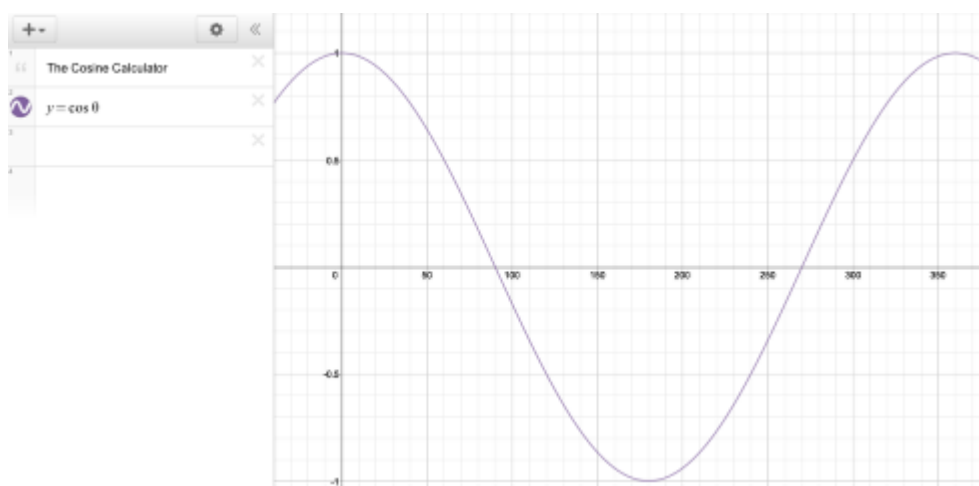
Click on the link below.

[7-52 Student eTool \(Desmos\)](#)

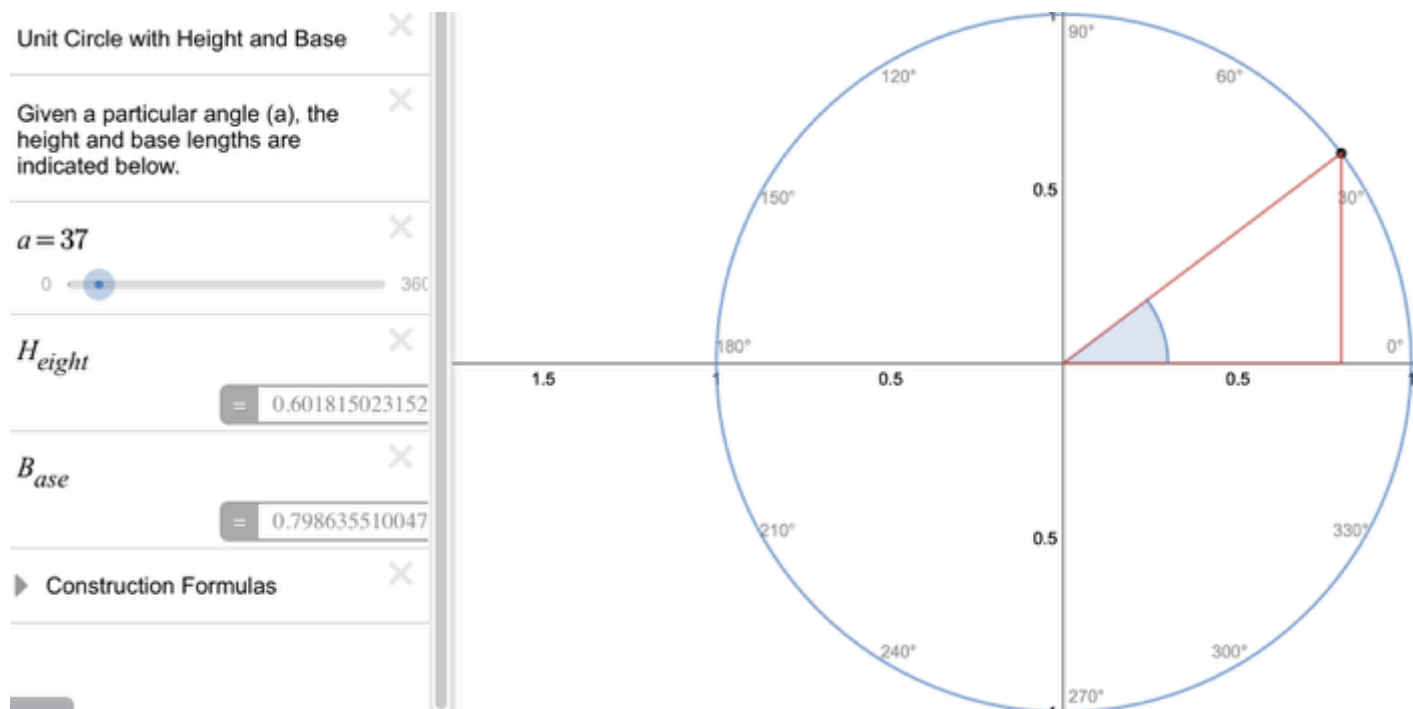
[Unit Circle Showing Bases \(Desmos\)](#)

[Unit Circle Showing Cosine Curve \(Desmos\)](#)

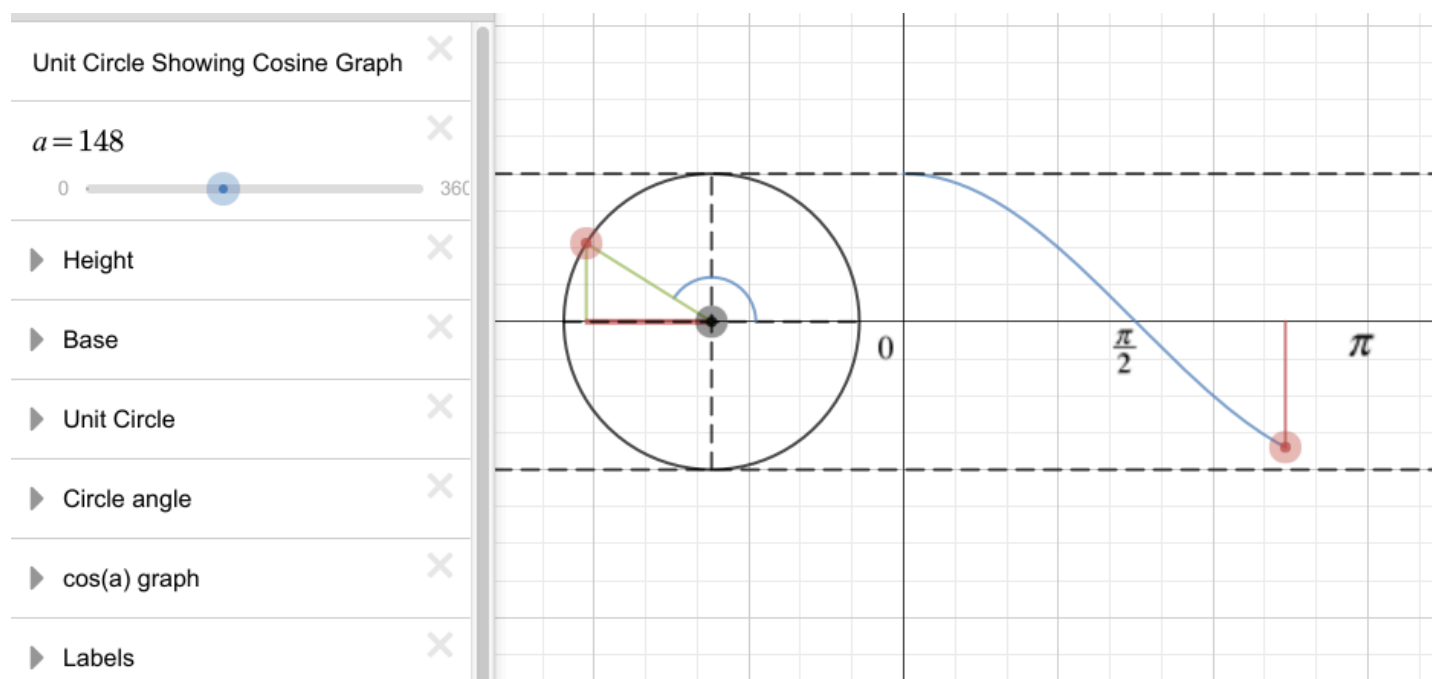
1. 7-52 Student eTool (The Cosine Calculator)



2. The Unit Circle with Height and Base



3. The Unit Circle and Cosine Graph



CCA2 7.1.5: 7-73 Teacher eTool (Desmos)

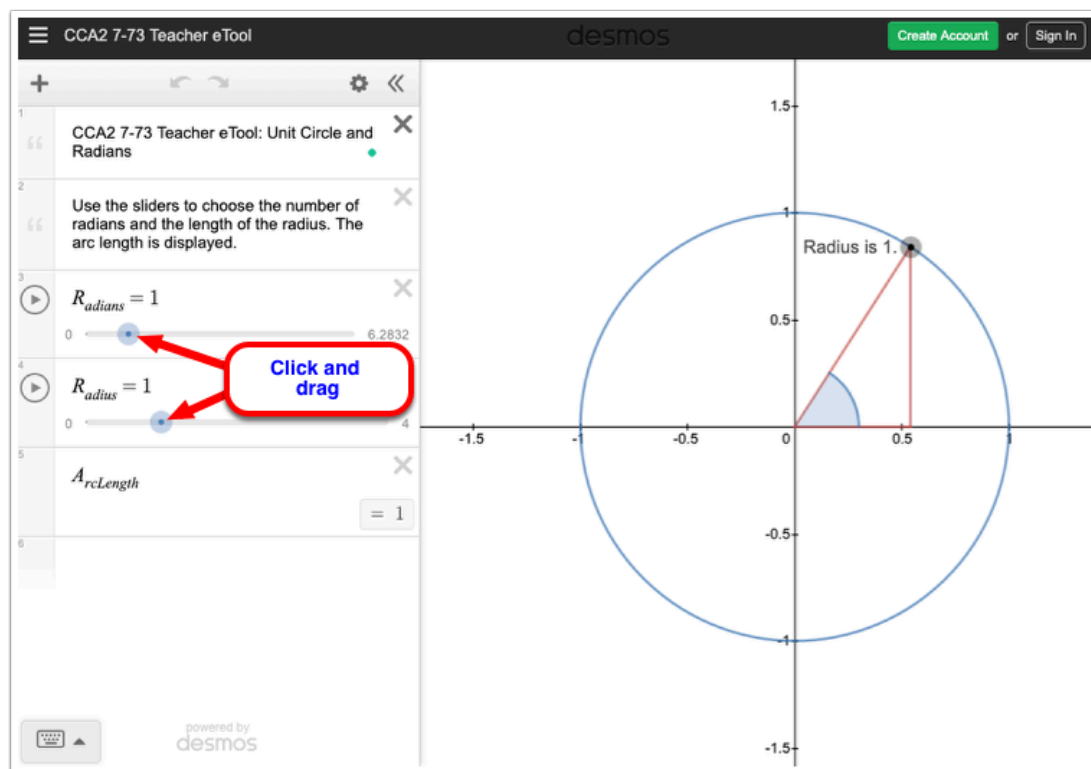
Click on the link below to access eTool.

[7-73 Teacher eTool \(Desmos\)](#)

Unit Circle and Radians

Use this eTool to demonstrate/summarize students findings concerning the relationship between the radius of a circle and radian measurement.

1. Click on the BLUE points (Radians and Radius sliders) and drag horizontally to find the arc length for a particular radius and radian measure.

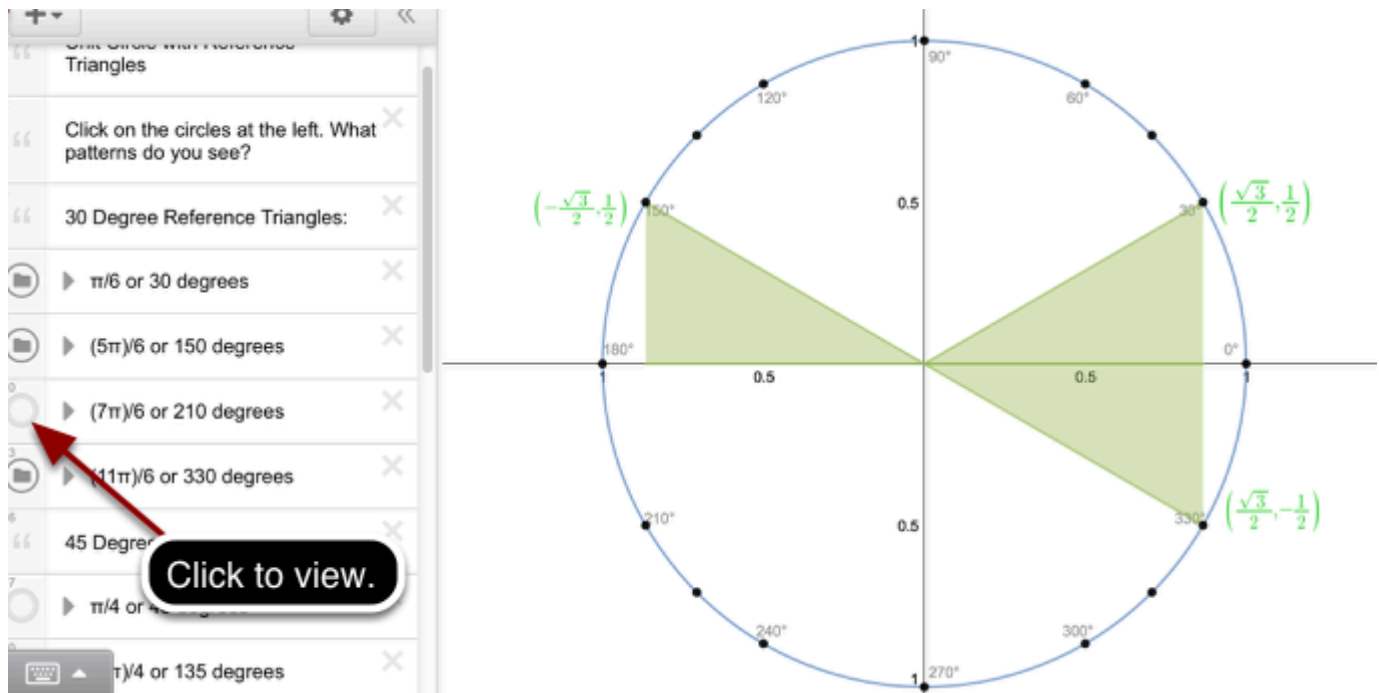


CCA2 7.1.6: Unit Circle with Reference Triangles (Desmos)

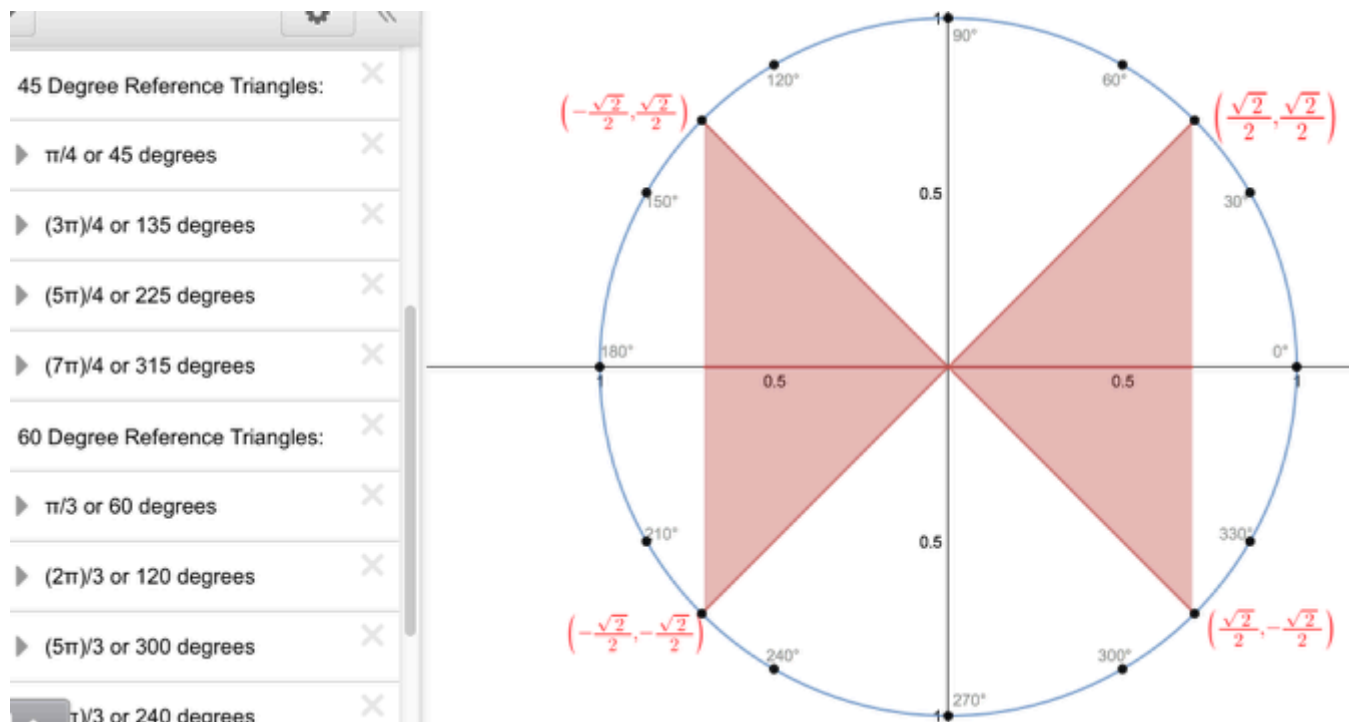
Click on the link below for the "Unit Circle (Desmos)."

[Unit Circle with Reference Triangles \(Desmos\)](#)

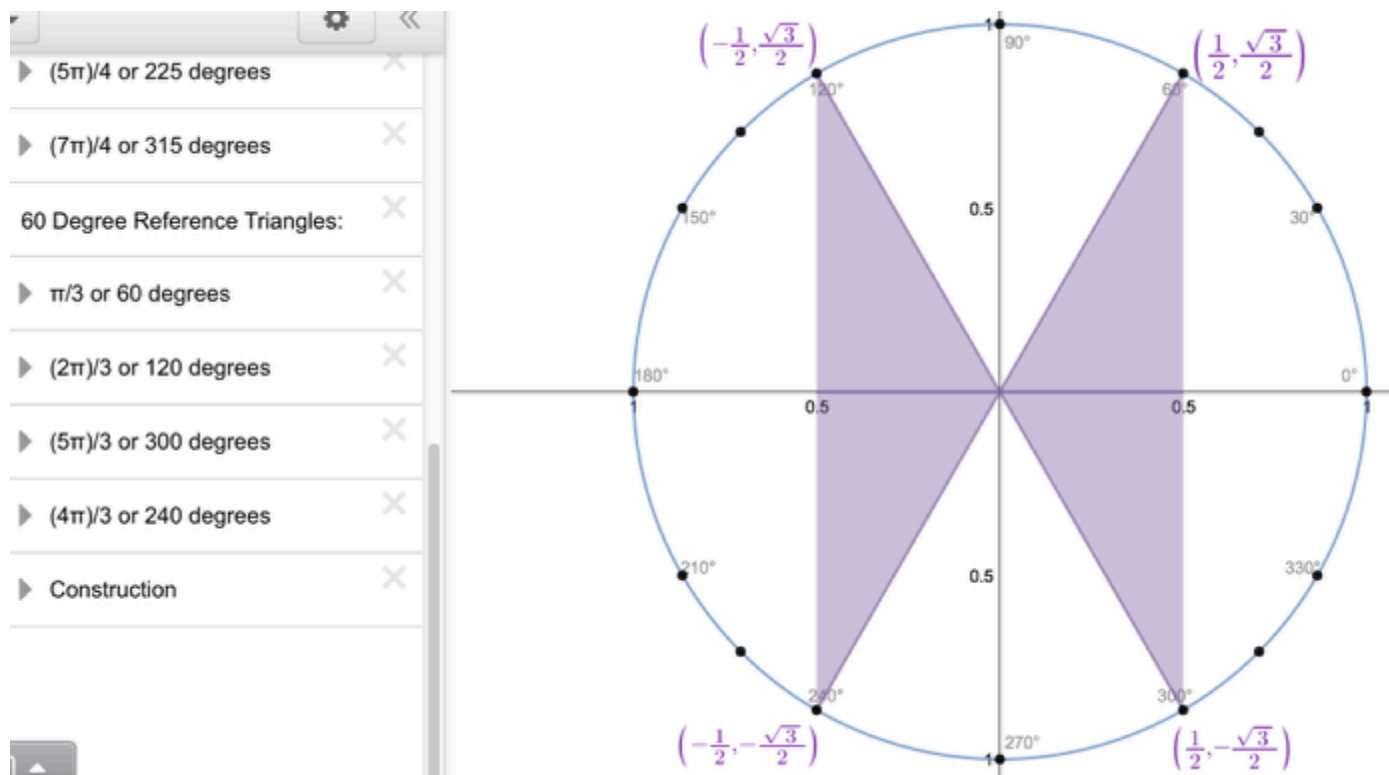
1. Unit Circle with Reference Triangles: Explore 30 Degree Reference triangles.



2. Unit Circle with Reference Triangles: Explore 45 Degree Reference triangles.



3. Unit Circle with Reference Triangles: Explore 60 Degree Reference triangles.



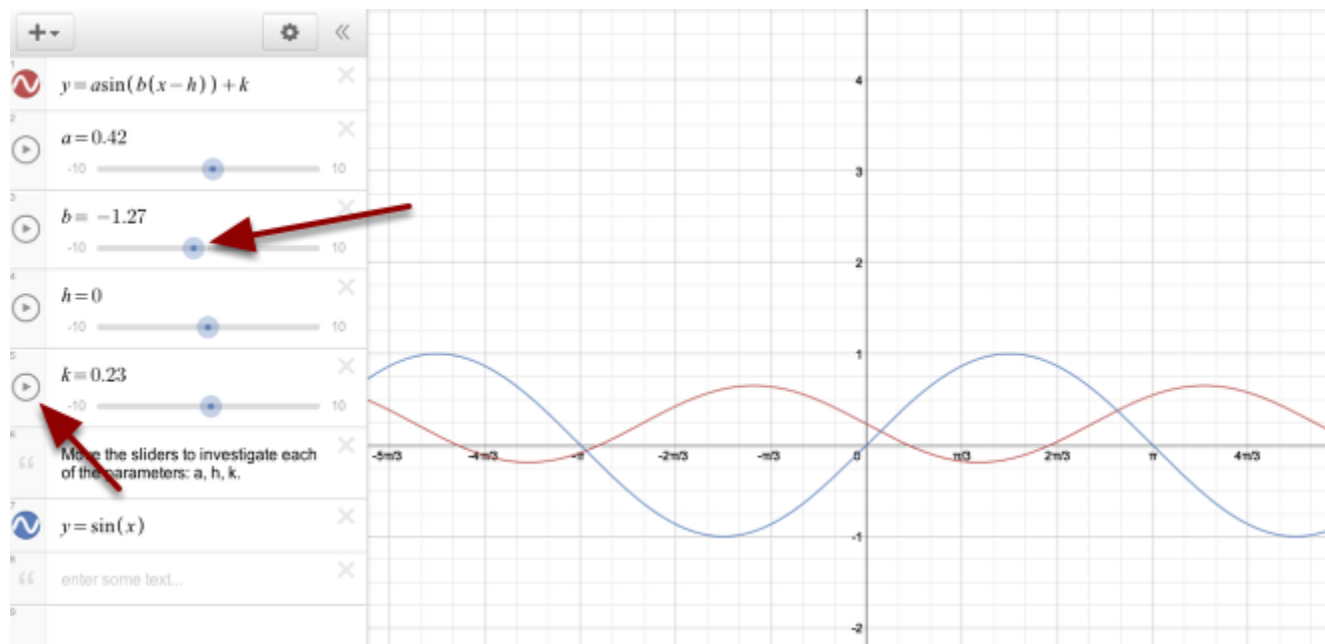
CCA2 7.2.1: Transforming Sine and Cosine Functions (Desmos)

Click on the links below.

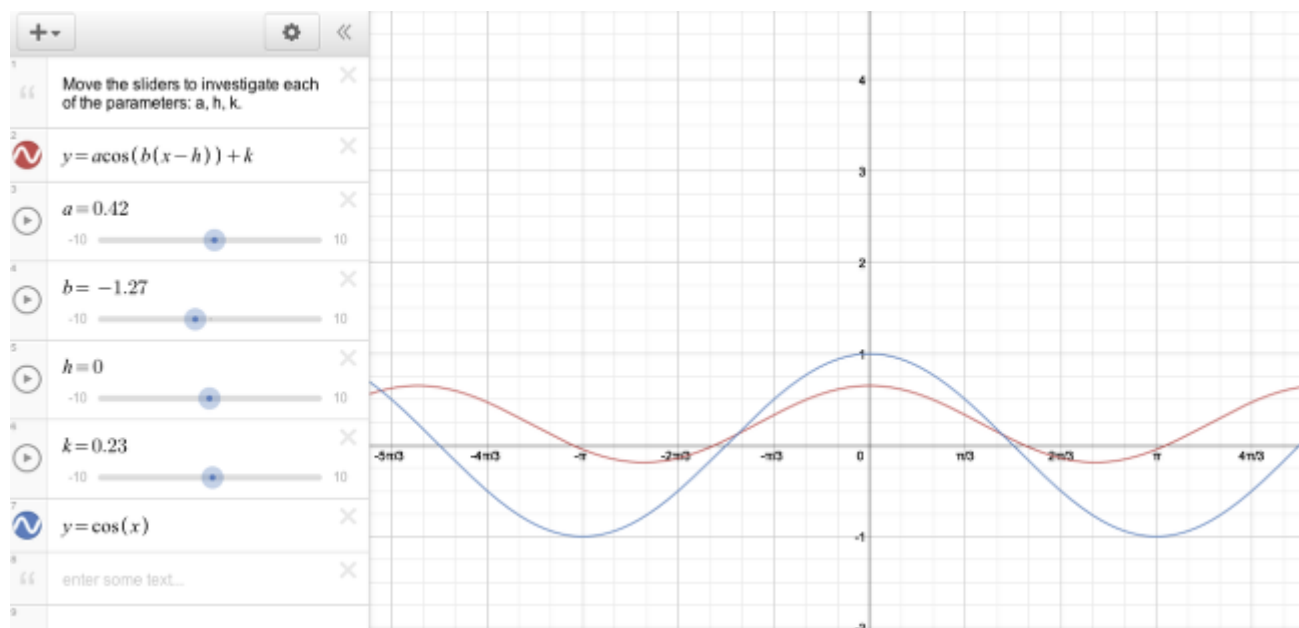
[Transforming Sine Functions \(Desmos\)](#)

[Transforming Cosine Functions \(Desmos\)](#)

1. Move sliders or the play button in front of the sliders to investigate the sine curve.



2. Move sliders or the play button in front of the sliders to investigate the cosine curve.

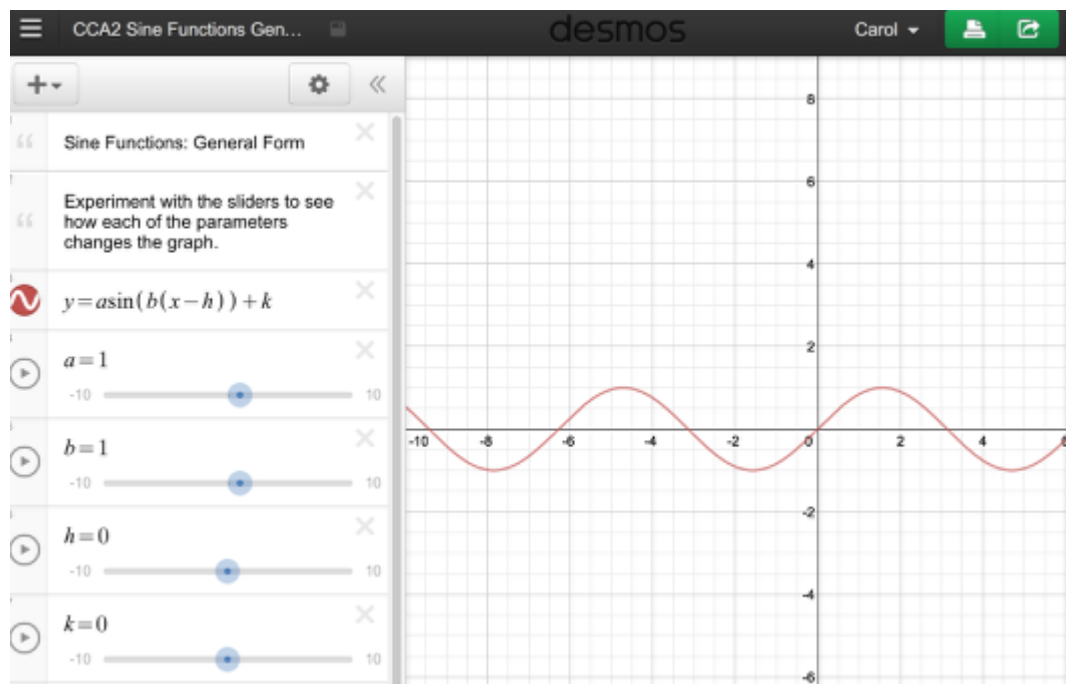


CCA2 7.2.4: General Form of the Sine Function with Sliders (Desmos)

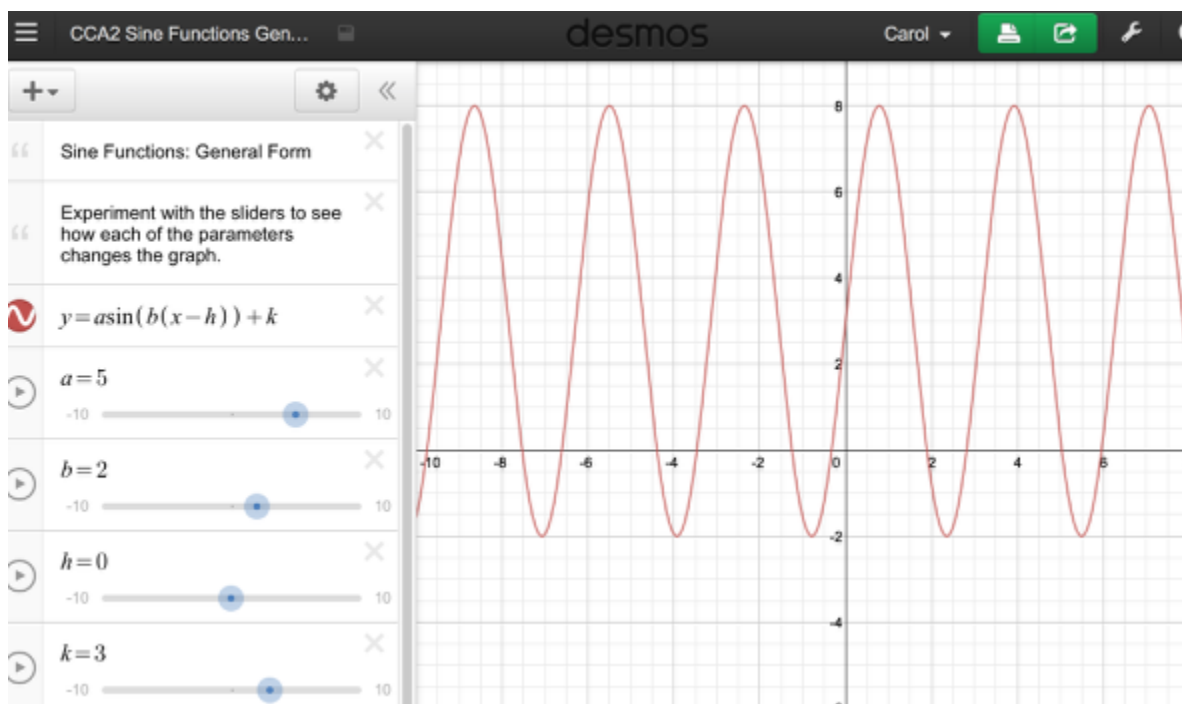
Click on the link below.

[General Form of the Sine Function with Sliders \(Desmos\)](#)

1. Move sliders to translate.



2. Translated function.



Chapter 8

CCA2 8.3.1: Polynomial Division with and without a remainder Videos

Click on the link below for the "Polynomial Division with and without a remainder Videos"

[Polynomial Division without a remainder](#) 

[Polynomial Division with a remainder](#) 

1. This video show how to use a generic rectangle for Polynomial Division without a remainder.

 Polynomial Division

$$\begin{array}{r} 6x^3 + 7x^2 - 16x + 10 \\ 2x + 5 \end{array}$$

\times	$3x^2$	$-4x$	$+2$
$2x$	$6x^3$	$-8x^2$	$4x$
$+5$	$15x^2$	$-20x$	10



2. This video show how to use a generic rectangle for Polynomial Division with a remainder.

CPM Polynomial Division

$x-3 \overline{) x^3 + x^2 - 14x + 3}$

↑ ↑ ↑

\times	x^2	$+4x$	-2	
x	x^3	$4x^2$	$-2x$	-3
-3	$-3x^2$	$-12x$	$+6$	

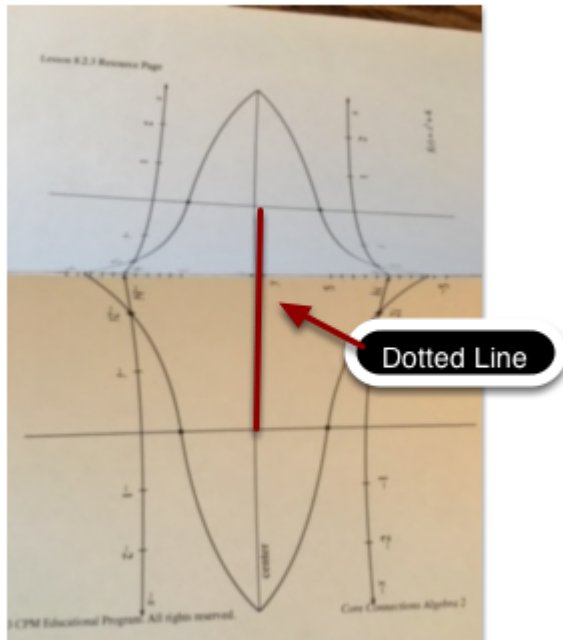
$x^3 + x^2 - 14x + 3$

$x^2 + 4x - 2 \quad \frac{3}{x-3}$

CCA2 8.2.3: 3D Complex Plane Model

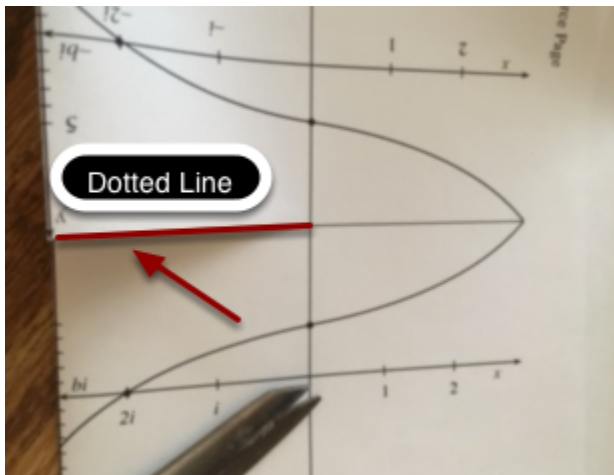
1. Fold the paper in half perpendicular to the dotted line.

Fold the paper on the line marked bi and $-bi$. This is a “mountain” fold, so the printing is on the outside.

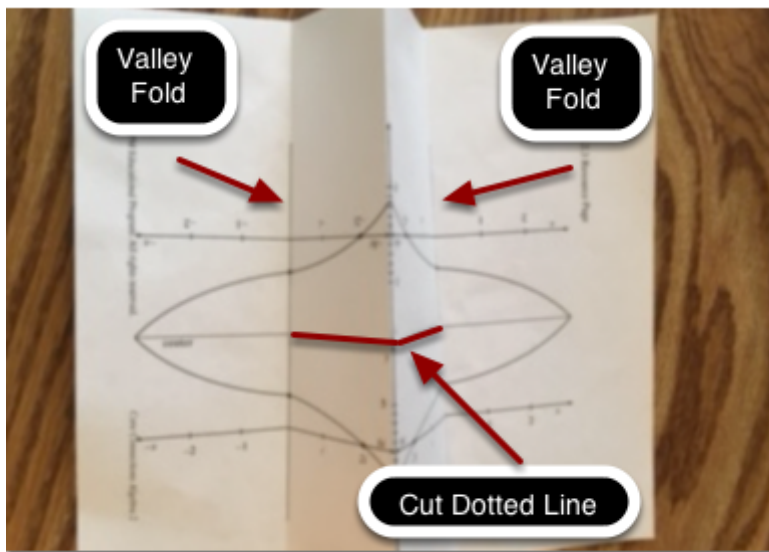


2. Cut along the dotted line.

Note: When cutting you get both sides of the dotted line because it is folded!!



3. Crease 2 valley folds.



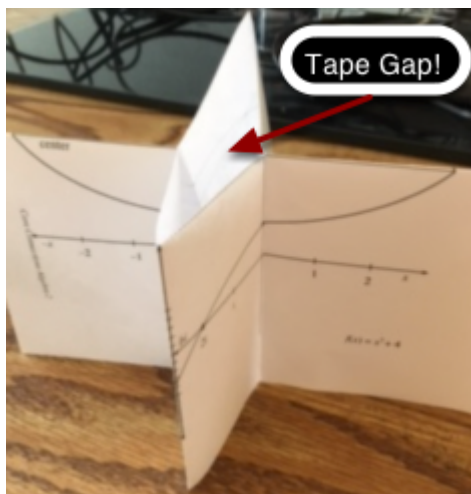
4. Fold backward along the center line:

- Hold the flaps perpendicular to the center line and push down.
- This opens the cut along the dotted line.
- Fold along the Center Line.

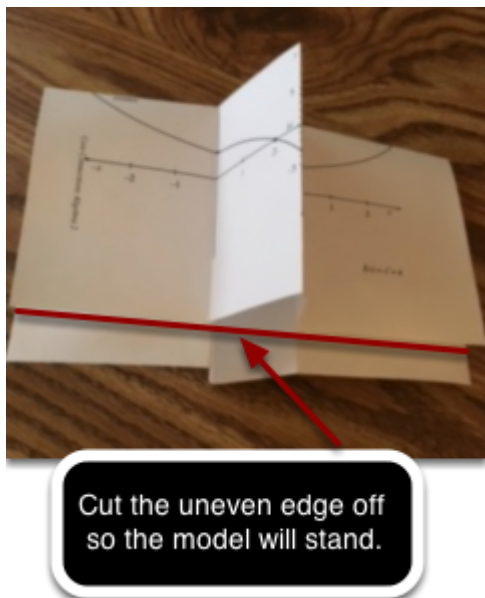


5. The Emerging Model:

- Position the model so that the equation is on the right side.
- Close any gaps with tape.
- The model will not "stand" well because the bottom is uneven.

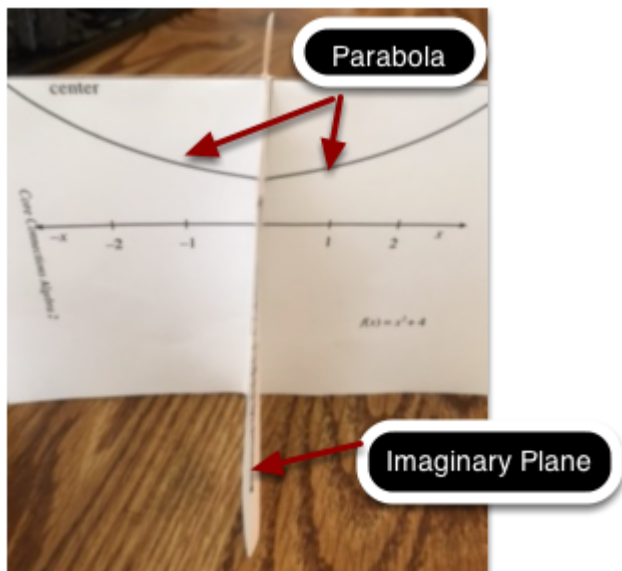


6. Cut the uneven edge off!

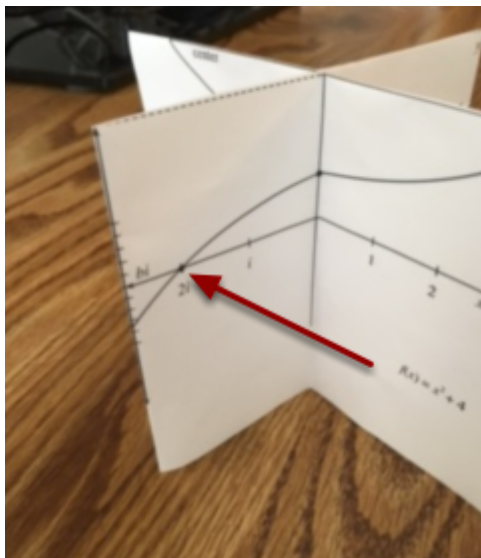


7. View Parabola.

- The imaginary plane is almost invisible coming directly at you.
- The parabola is visible!



8. Turn the model to view the complex roots



Chapter 9

CCA2 9.1.2: RNG Online

Click on the link below for the “Random Number Generator (or) RNG Online”

[RNG online](#)

1. Choose the settings below.

RANDOM.ORG Search RANDOM.ORG Google Custom Search Search True Random Number Service

Do you own an iOS or Android device? [Check out our new app!](#)

Random Integer Generator

This form allows you to generate random integers. The randomness comes from atmospheric noise, which for many purposes is better than the pseudo-random number algorithms typically used in computer programs.

Part 1: The Integers

Generate random integers (maximum).

Each integer should have a value between and (both inclusive; limits $\pm 1,000,000,000$).

Format in column(s).

Part 2: Go

Be patient! It may take a while to generate your numbers...

Note: The numbers generated with this form will be picked independently of each other (like rolls of a die) and may therefore contain duplicates. There is also the [Sequence Generator](#), which generates randomized sequences (like raffle tickets drawn from a hat) and where each number can only occur once.

2. Possible results:

RANDOM.ORG Search RANDOM.ORG Google Custom Search Search True Random Number Service

Do you own an iOS or Android device? [Check out our new app!](#)

Random Integer Generator

Here are your random numbers:

26 32 20 74 38 47 35 45 35 28

Timestamp: 2014-02-03 01:21:46 UTC

Note: The numbers are generated left to right, i.e., across columns.

CCA2 9.3.1: 9-71 Student eTool (Desmos)

Click on the link below to access eTool.

[9-71 Student eTool \(Desmos\)](#)

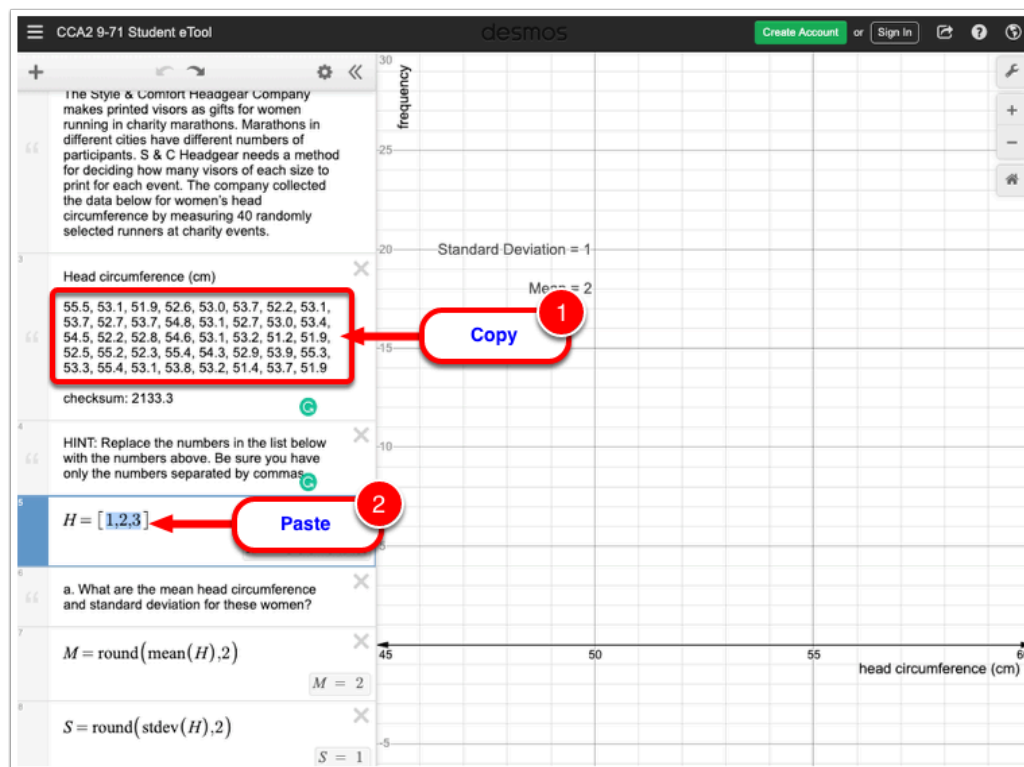
Use this eTool to create a histogram and complete problem 9-71.

Create a histogram:

1. Copy the given data set on line 3.

2. Highlight the numbers in the list on line 5 and paste the copied date set.

NOTE: Numbers must be separated by commas ','.



Chapter 10

CCA2 10.3.1: 10-133 Student eTool (Desmos)

Click on the link below to access eTool.

[10-133 Student eTool \(Desmos\)](#)

Use this eTool to complete problem 10-133.

1. Click each RED point and drag to the correct location on the table.

CCA2 10-133 Student eTool

desmos

Create Account or Sign In

CCA2 10-133 Student eTool

10-133. Work with your team to complete a table for combinations like the one at right. Discuss any patterns you notice as you are working.

HINT: Drag the RED points to their correct locations on the table.

Click and drag

		0	1	2	3	4	5	6	7	8
1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	4	4	5	5	6	6	
3	1	2	1	7	7	8	10	10	15	
4	1	3	3	1	15	20	21	21	28	
5			6			35	35	56	56	
6							70			
7										
8							28	8	1	

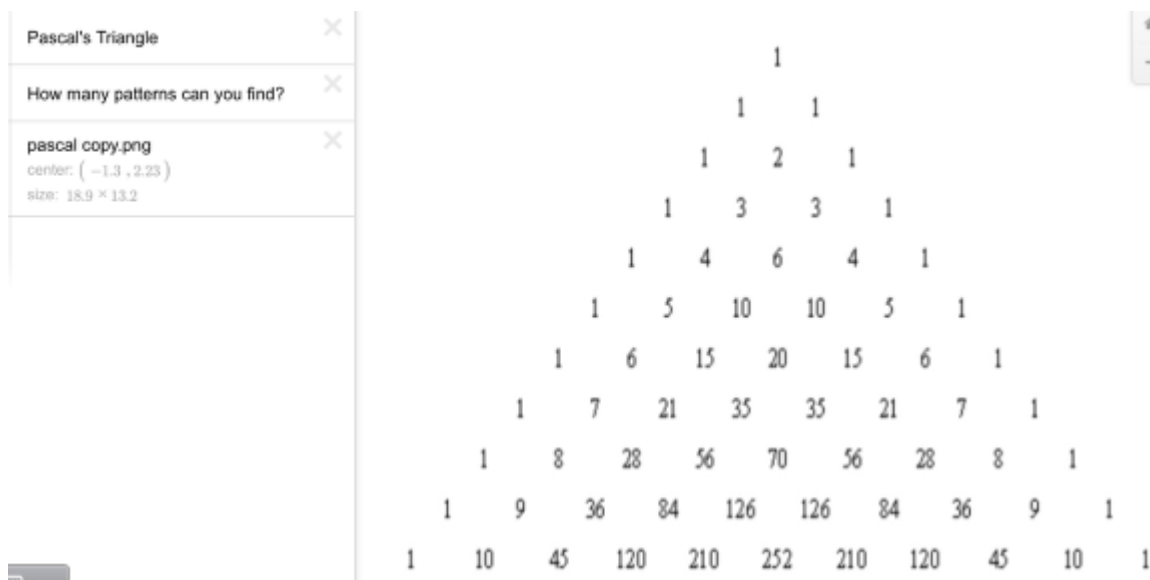
powered by desmos

CCA2 10.3.1: Pascal's Triangle (Desmos)

Click on the link below for the “Pascal's Triangle (Desmos).”

[Pascal's Triangle \(Desmos\)](#)

1. There are 11 rows of Pascal's triangle starting with the 0th row, "1" at the top.



Chapter 11

CCA2 11.1.1: 11-1 Student eTool (CPM)

Click on the link below to access eTool.

[11-1 Student eTool \(CPM\)](#)

Use this eTool to complete problem 11-1.

Flip the coins to determine the probability of a couple having a daughter.

'H' - is for heads

'T' - is for tails

1. Click the coins to flip.

CPM Probability

CCA2 11-1 Student eTool

11-1. A GIRL OR ALL BOYS?

Mr. and Mrs. Sittman want to have children and would love to have a girl, but they don't want to have more than four children. They want to figure out the chances of having a girl if they have children until they have a girl, or until they have four children, whichever comes first. Since a coin has a 50% chance of landing on "heads," a coin can be used to model the real-life probability that a girl is born.

a. Talk with your team about how you can use flipping a coin to determine the probability of a couple having a daughter if they try until the first girl or the fourth child is born, whichever comes first.

b. Once your class has planned the simulation and found a method for tallying results, run the simulation and tally the results until your team has modeled 25 possible families (25 trials).

c. Combine your results with those of the rest of the class. According to your class's simulation, what is the couple's probability of having a girl in this situation?

Click

H

H

H

H

CCA2 11.1.1: 11-2 Student eTool (CPM)

Click on the link below to access eTool.

[11-2 Student eTool \(CPM\)](#)

Use this eTool to determine the probability of having a boy or a girl.

1. Click the box to generate 4 possibilities for children.

NOTE: Click 25 times for 25 families.

'0' – represent a boy

'1' – represent a girl

CPM Probability

CCA2 11-2 Student eTool

11-2. In the simulation for problem 11-1, do you think that more trials would lead to a better estimate of the probability? Tossing coins can become tedious, but we can use a calculator or computer to complete many more trials.

a. Use your calculator to randomly generate a family of four children. You can use "0" to represent a boy, and "1" to represent a girl. Since they will stop having children after their first girl, you can ignore all the digits in the family after the first girl. For example, "0101" would represent a family with one boy and one girl, and you would mark "Girl in Family" on the tally sheet.

b. Be prepared to share your team results with the rest of the class. Use the class results to estimate the probability of a couple having a girl if they try until they have a girl, or until they have four children, whichever comes first. Do you think this result is a better estimate of the theoretical probability than the result in problem 11-1? Why or why not?

HINT: Click the box to randomly generate 4 possibilities for children.

Going from left to right, the first 1 is a girl. So, the family would not have any additional children. Ignore any data after the first 1.

HINT: Click 25 times for 25 families.

'0' is a boy. '1' is a girl.

0 1 1 0

Click



CCA2 11.1 & 11.2: Random Number Generator online

Click on the links below.

[Random.org online](#)

Choose your settings.

Random Integer Generator

This form allows you to generate random integers. The randomness comes from atmospheric noise, which for many purposes is better than the pseudo-random number algorithms typically used in computer programs.

Part 1: The Integers

Generate random integers (maximum 10,000).

Each integer should have a value between and (both inclusive; limits $\pm 1,000,000,000$).

Format in column(s).

Part 2: Go!

Be patient! It may take a little while to generate your numbers...

Note: The numbers generated with this form will be picked independently of each other (like rolls of a die) and may therefore contain duplicates. There is also the [Sequence Generator](#), which generates randomized sequences (like raffle tickets drawn from a hat) and where each number can only occur once.

CCA2 11.2.1: Random.org online & 11-37 eTool (CPM) & Data Representations (CPM)

Click on the links below.

[Data Representations \(CPM\)](#)

[11-37 Student eTool \(CPM\)](#)

[Random Number Generator online](#)

1. Use for 11-37 to generate 25 numbers between 1 and 100. Choose the appropriate settings.

Random Integer Generator

This form allows you to generate random integers. The randomness comes from atmospheric noise, which for many purposes is better than the pseudo-random number algorithms typically used in computer programs.

Part 1: The Integers

Generate random integers (maximum 10,000).

Each integer should have a value between and (both inclusive; limits $\pm 1,000,000,000$).

Format in column(s).

Part 2: Go!

Be patient! It may take a little while to generate your numbers...

Note: The numbers generated with this form will be picked independently of each other (like rolls of a die) and may therefore contain duplicates. There is also the [Sequence Generator](#), which generates randomized sequences (like raffle tickets drawn from a hat) and where each number can only occur once.

2. Select the number of dice and click "Roll Dice".

Dice Roller

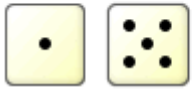
This form allows you to roll virtual dice. The randomness comes from atmospheric noise, which for many purposes is better than the pseudo-random number algorithms typically used in computer programs.

Roll virtual dice.

Confused about terminology? The word 'die' is singular and 'dice' is plural.

3. You can roll as many times as needed.

You rolled 2 dice:



Timestamp: 2014-02-02 03:13:38 UTC

[Roll Again](#)

[Go Back](#)

CCA2 11.2.4 7-73 & 7-74 Student eTools (Desmos)

Click on the links below to access eTools.

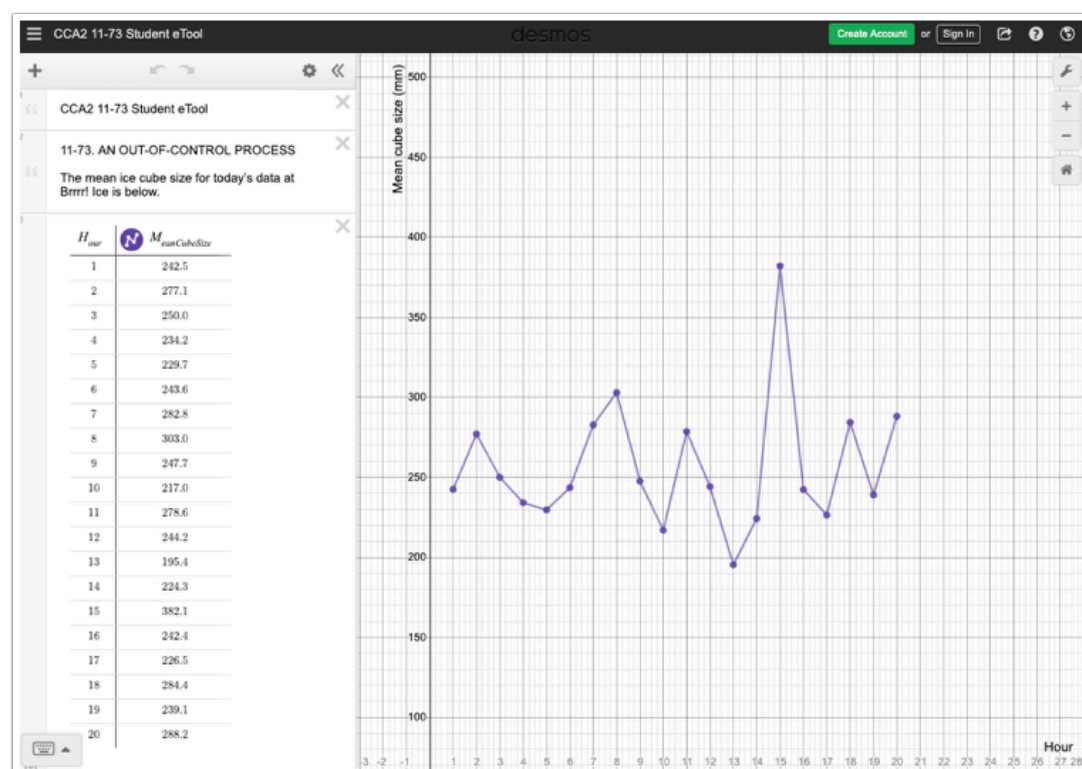
[11-73 Student eTool \(Desmos\)](#)

[11-74 Student eTool \(Desmos\)](#)

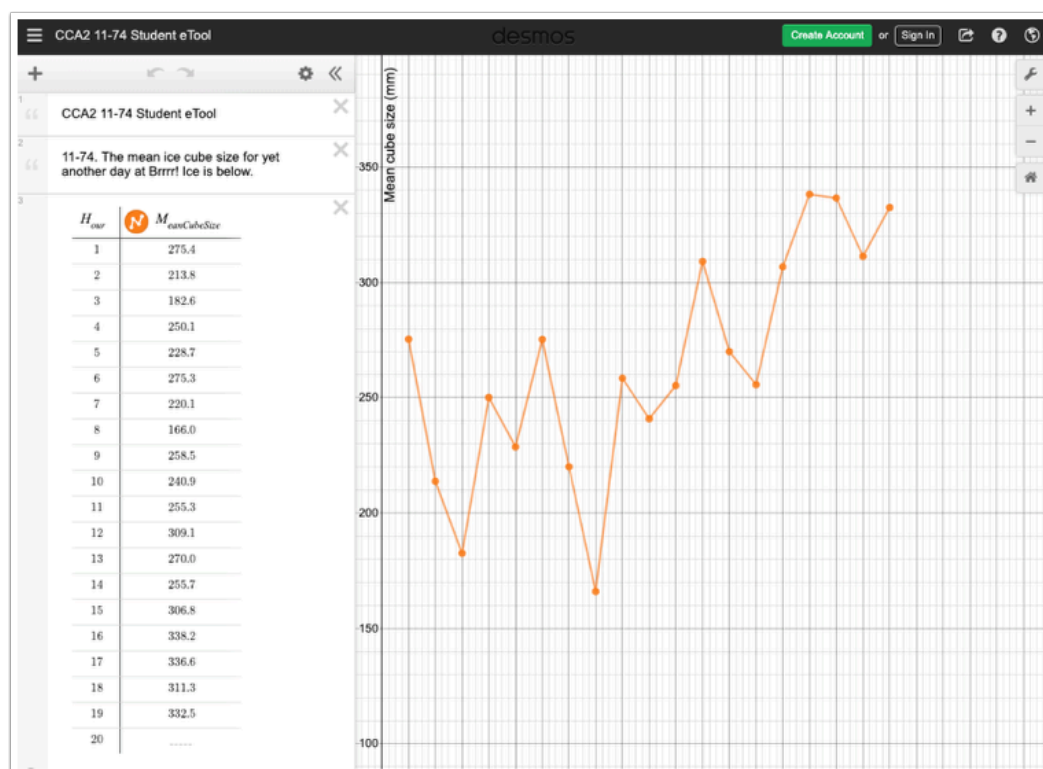
x-Bar Process Control Charts

Use the following eTools to complete problems 11-73 and 11-74.

7-73: x-Bar Control Chart



7-74: An Out-of-Control Process



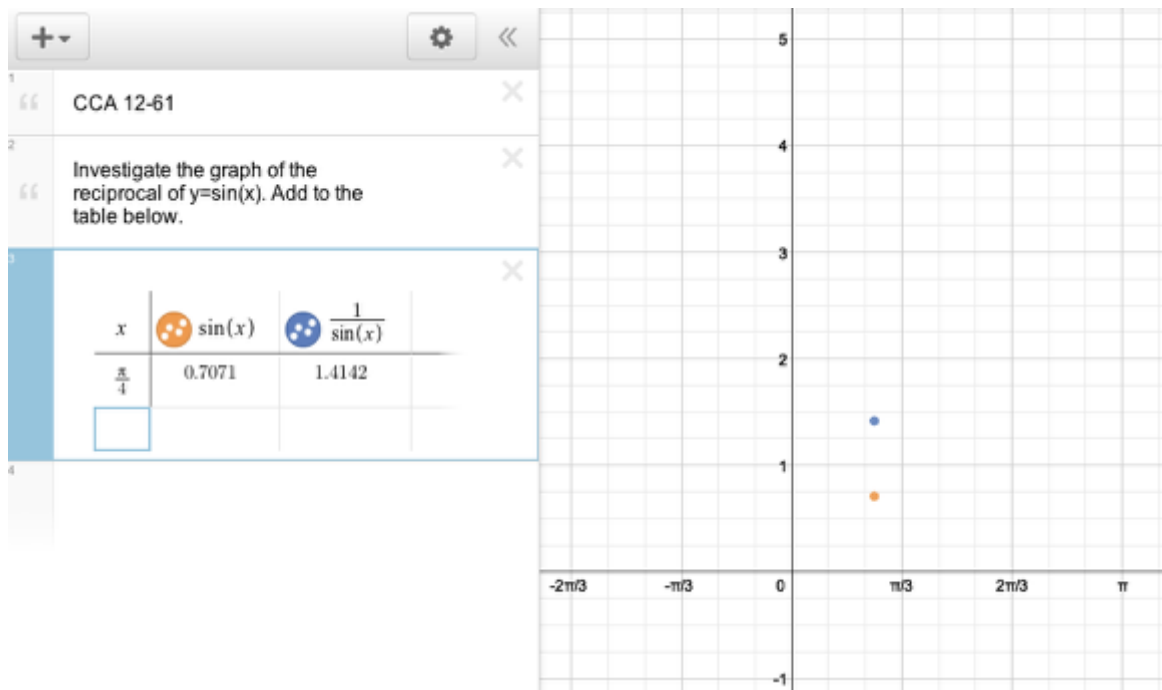
Chapter 12

CCA2 12.1.4: 12-61 (1/sinx) Student eTool (Desmos)

Click on the link below for the "12-61 (1/sinx) Student eTool (Desmos)."

[12-61 \(1/sinx\) Student eTool \(Desmos\)](#)

1. Explore the reciprocal of the sine graph.



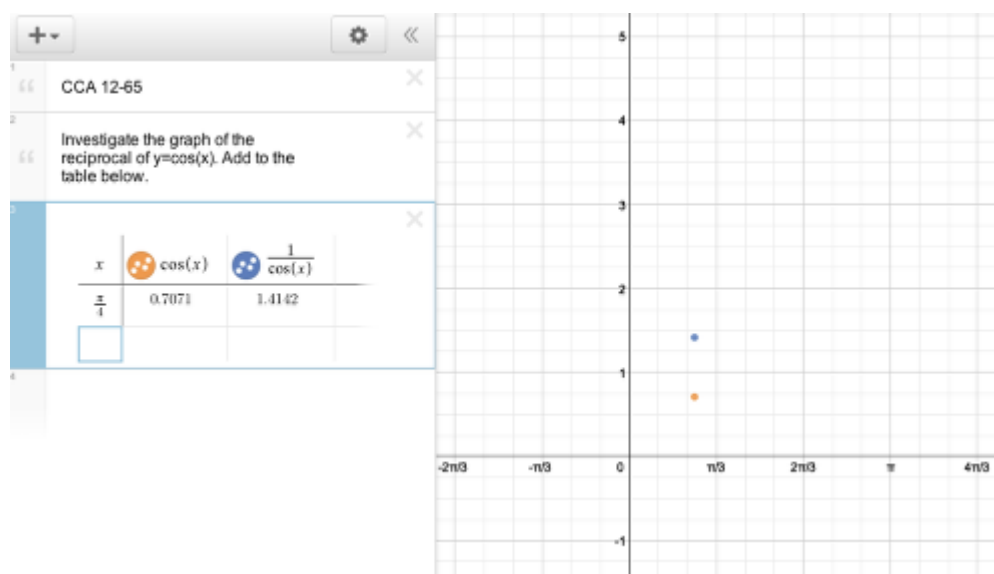
CCA2 12.1.4: 12-65 ($1/\cos x$ and $1/\tan x$) Student eTool (Desmos)

Click on the link below for the "12-65 ($1/\cos x$ and $1/\tan x$) Student eTool (Desmos)."

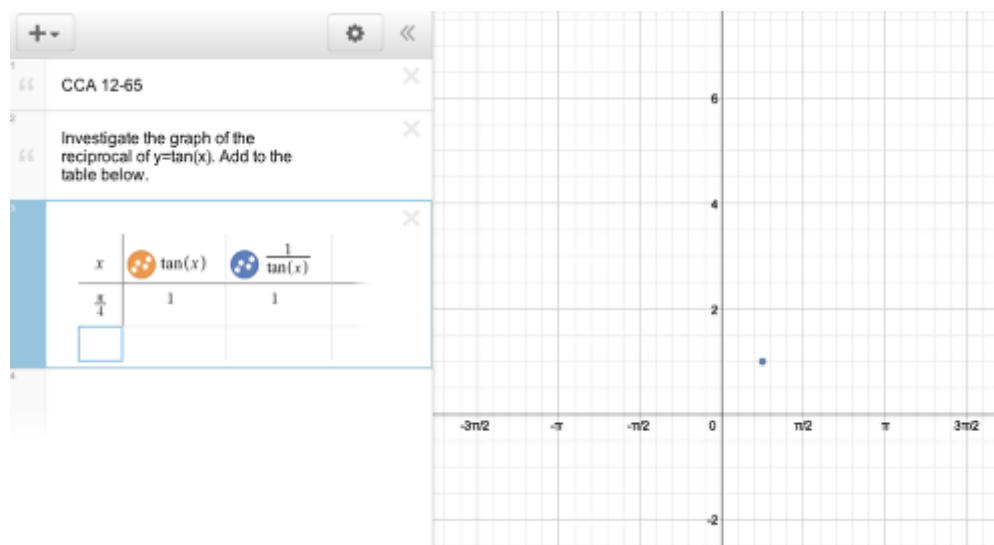
[12-65 \(\$1/\cos x\$ \) Student eTool \(Desmos\)](#)

[12-65 \(\$1/\tan x\$ \) Student eTool \(Desmos\)](#)

1. Explore the reciprocal of the cosine graph.



2. Explore the reciprocal of the tangent graph.



Appendix A

CCA2 A.1.1: A-4 Student eTool (Desmos)

Click on the link below to access eTool.

[A-4 Student eTool \(Desmos\)](#)

Use this eTool to complete part (b) of problem A-4.

1. Complete the table on line 5.

The screenshot shows the Desmos eTool interface for CCA2 A-4. The left sidebar contains a list of problems:

- 1. CCA2 A-4 Student eTool
- 2. A-4. A NEW FAMILY?
Look back at the tables you created in problems A-1 and A-3.
- 3. a. What pattern do they all have in common? Functions that have this pattern are called exponential functions.
- 4. b. Graph the data for Case 2. Give a complete description of the graph.
(Case 2: Start with 10 rabbits; each pair has 2 babies per month.)
- 5.

M_{months}	R_{rabbits}
0

A red arrow points to the empty cell in the table for problem 5, with a callout box that says "Enter Value". The right side of the interface shows a graphing area with a grid. The y-axis is labeled "Rabbits" and ranges from 0 to 300. The x-axis is labeled "Months" and ranges from 0 to 6.



CCA2 A.2.1: A-42 Student eTool (Desmos)

Click on the link below to access eTool.

[A-42 Student eTool \(Desmos\)](#)

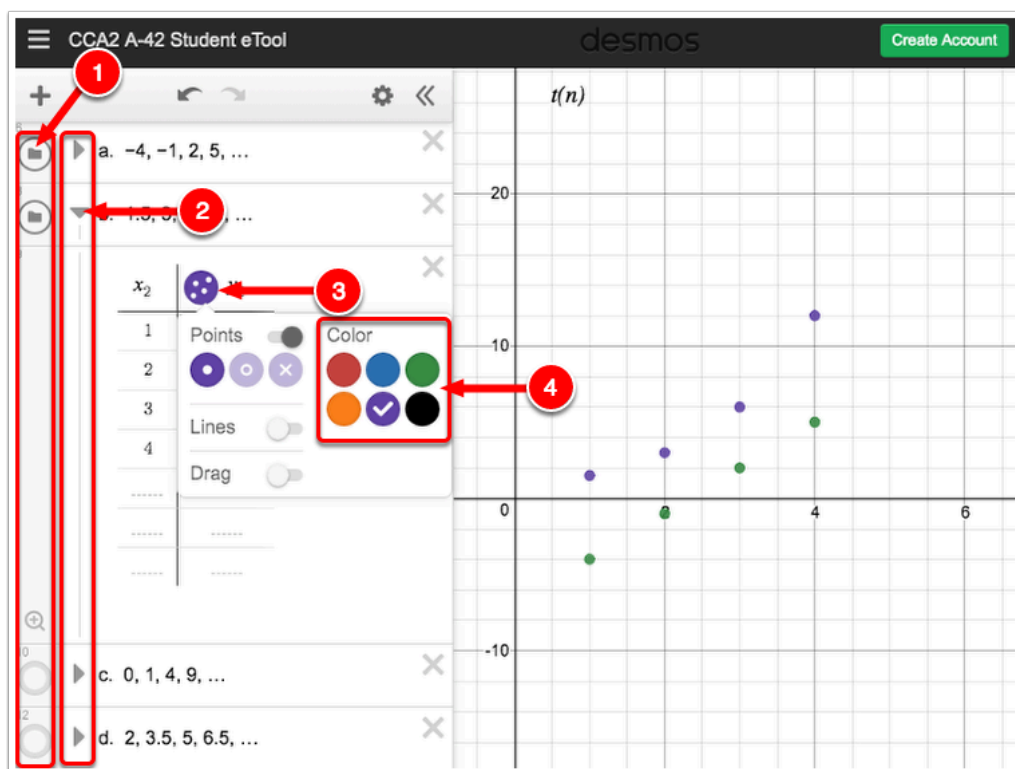
Use this eTool to complete the task in problem A-42.

Your Task: Working together, organize the sequences into families of similar sequences. Your team will need to decide how many families to make, what common features make the sequences a family, and what characteristics make each family different from the others. Read and carry out the directions that follow. As you work, use the following questions to help guide your team's discussion.

Discussion Points:

- How can we describe the pattern?
- How does it grow?
- What do they have in common?

1. Click the circle at left of each part starting on line 6 to show/hide the graph.
2. Click the arrow to show/hide the table.
3. Click and hold on the colored circle on the table to view the settings.
4. Select the color you want to use to group the graphs.



CCA2 A.3.1: A-84 Student eTool (Desmos)

Click on the link below to access eTool.

[A-84 Student eTool \(Desmos\)](#)

Use this eTool to help you visualize the patterns of growth and complete the task in problem A-84.

Your Task:

- Represent these three sequences on a graph. Use a different color for each sequence. Although the graph is discrete, connect the lines so you can see the trends easier.
- Consider the discussion points below for each sequence as you investigate the growth of these three sequences. You can discuss the sequences in any order.
- Be prepared to share your results with the class.

1. Complete the table in line 7.

The screenshot shows the Desmos eTool interface for CCA2 A-84 Student eTool. The sidebar on the left contains the following instructions:

- CCA2 A-84 Student eTool
- A-84. PATTERNS OF GROWTH
- Your Task:
- Represent these three sequences on a graph. Use a different color for each sequence. Although the graph is discrete, connect the lines so you can see the trends easier.
- Consider the "Discussion Points" in your book for each sequence as you investigate the growth of these three sequences. You can discuss the sequences in any order.
- Be prepared to share your results with the class.

The main area displays a coordinate plane with a grid. The x-axis is labeled n and the y-axis is labeled $t(n)$. Below the grid, there are three tables for Sequence A, Sequence B, and Sequence C.

Sequence A		Sequence B		Sequence C	
n	$t(n)$	n	$t(n)$	n	$t(n)$
1	27	1	9	1	6
2	54	2	36	2	12
		3	81	3	24
		4	144	4	48

A red box highlights the input area for Sequence A, and a red arrow points to it with the text "Enter values".

Appendix B

CCA2 B.1.1: B-2 Student eTool (Desmos)

Click on the link below to access eTool.

[B-2 Student eTool \(Desmos\)](#)

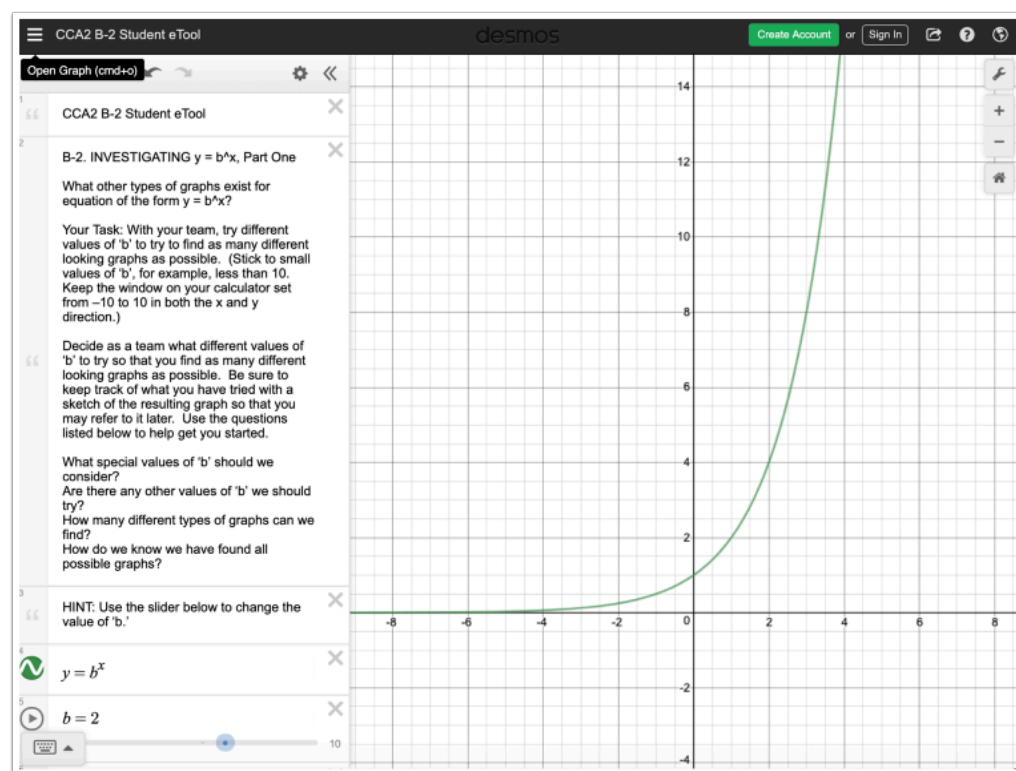
Use this eTool to investigate other types of graphs exist for equation of the form:

$$y = b^x$$

Your Task: With your team, try different values of b to try to find as many different looking graphs as possible.

Note: Stick to small values of b , for example, less than 10. Keep the window on your calculator set from -10 to 10 in both the x and y direction.

1. Click on the BLUE point (slider) and drag horizontally to change the value of 'b'.



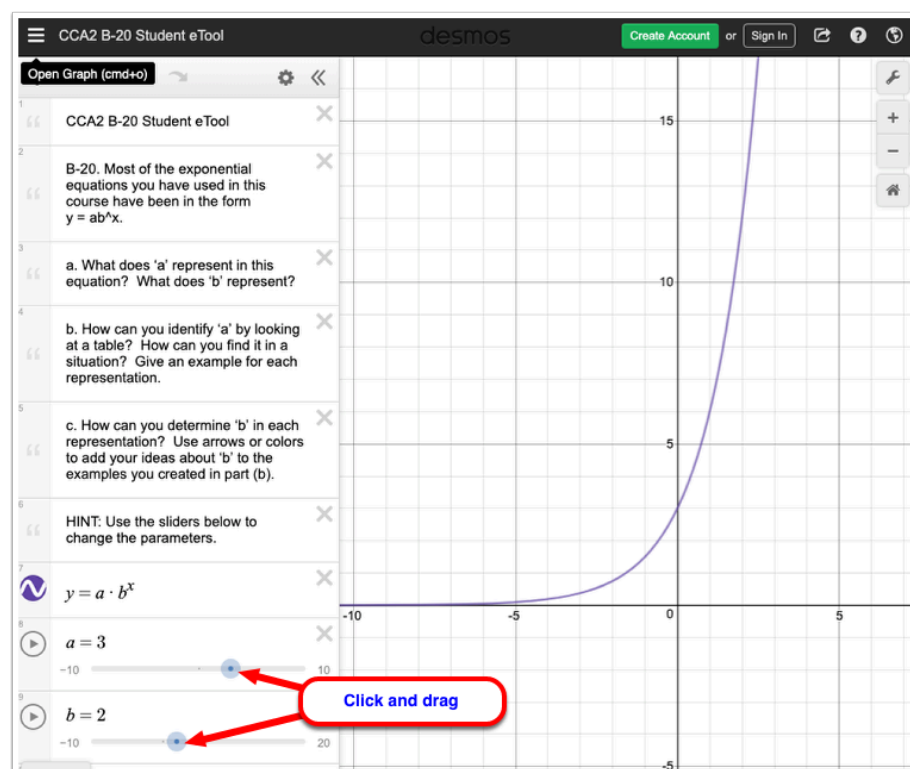
CCA2 B.1.2: B-20 Student eTool (Desmos)

Click on the link below to access eTool.

[B-20 Student eTool \(Desmos\)](#)

Use this eTool to explore multiple representations of exponential functions.

1. Click on the BLUE points (sliders) on lines 8 and 9 and drag horizontally to change the parameters.



CCA2 B.1.4: B-40 & B-41 Student eTool (Desmos)

Click on the link below to access eTool.

[B-40 & B-41 Student eTool \(Desmos\)](#)

Use this eTool to complete the tasks in problems B-40 and B-41.

1. Enter the data for each team in the table in line 7.
2. Expand the expression panel to view the columns in the the table.
 - 2.1. Hover your mouse to right side of the panel until you see the double-sided arrow cursor.
 - 2.2. Click and drag to adjust the size of the panel.

The image displays two screenshots of the Desmos eTool interface for CCA2 B-40 & B-41 Student. The top screenshot shows the initial state with a narrow expression panel. The bottom screenshot shows the panel expanded, with red arrows and numbers indicating the steps to expand it: arrow 1 points to the expression list, and arrow 2 points to the double-headed arrow on the right side of the panel.