

ALGEBRA CONNECTIONS

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General Tools

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:

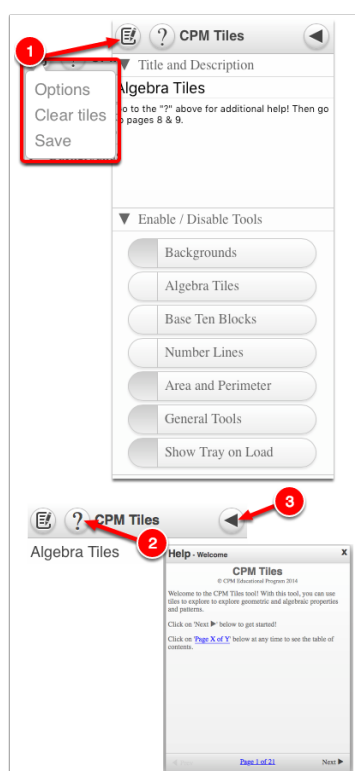
Options - Add Title and Description and Enable/Disable Tools.

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.

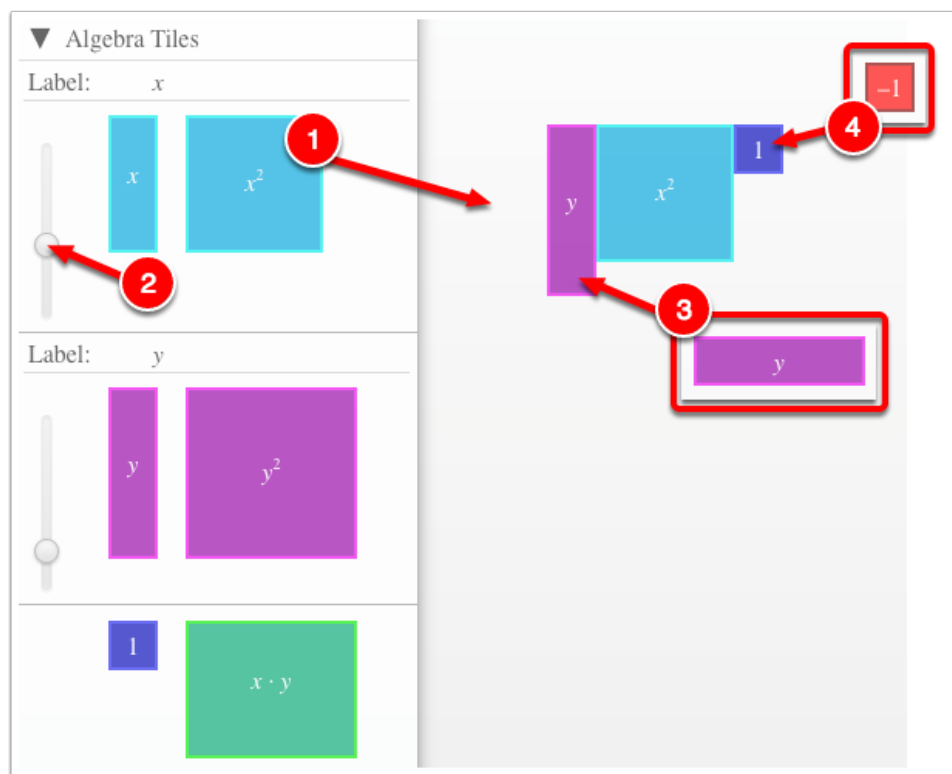
3. Select the Arrow Icon at the right to open and close the tray.



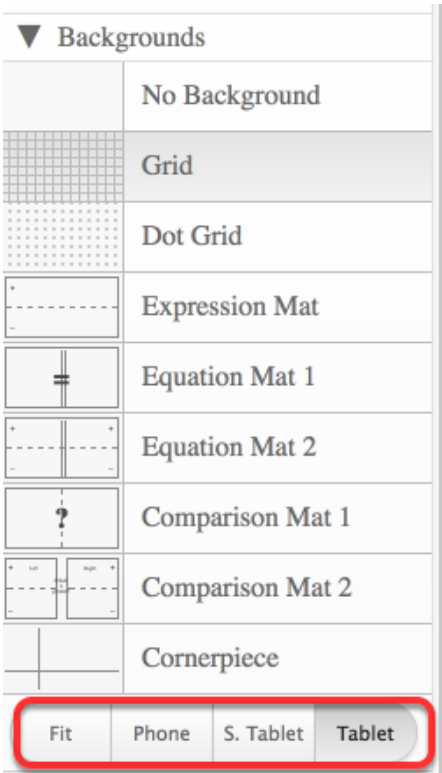
2. Drag tiles from the tray at the left to the display area at the right.

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.

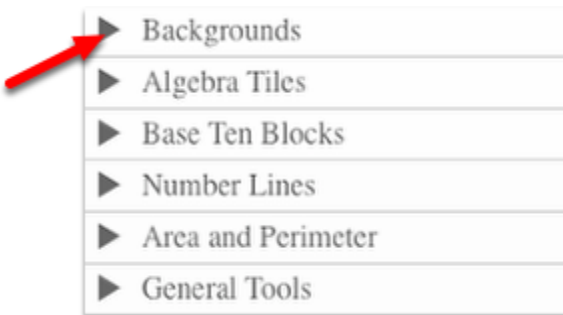


3. Choose from a variety of different mats. Also choose from a variety of sizes to fit on various devices.



4. Choose from a variety of different tiles:

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



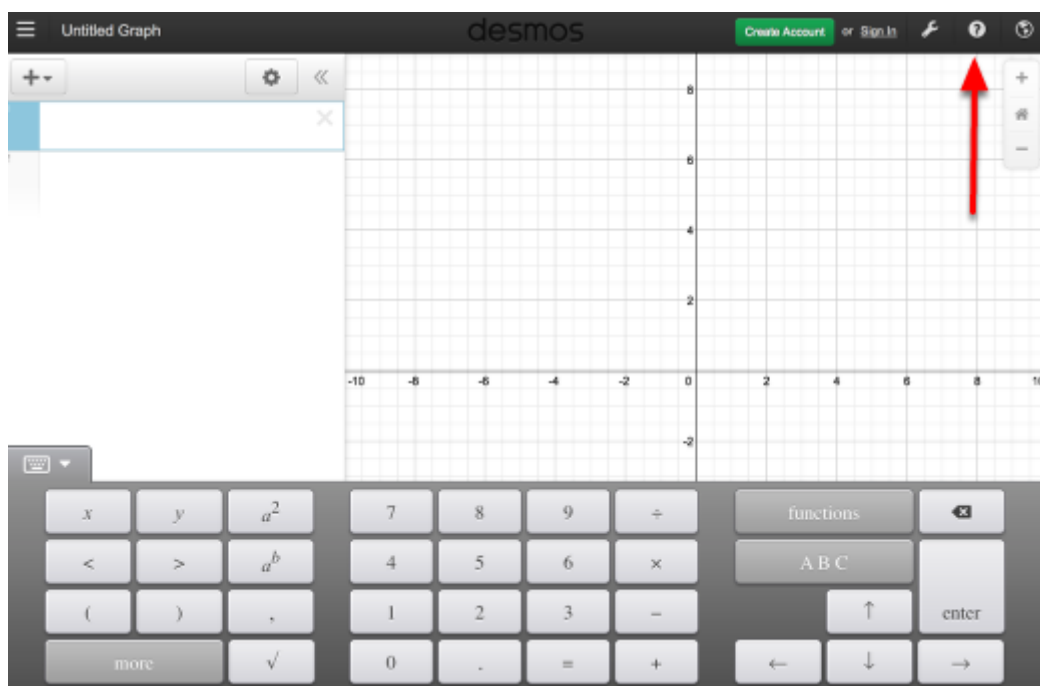
Desmos Graphing Calculator

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](#)

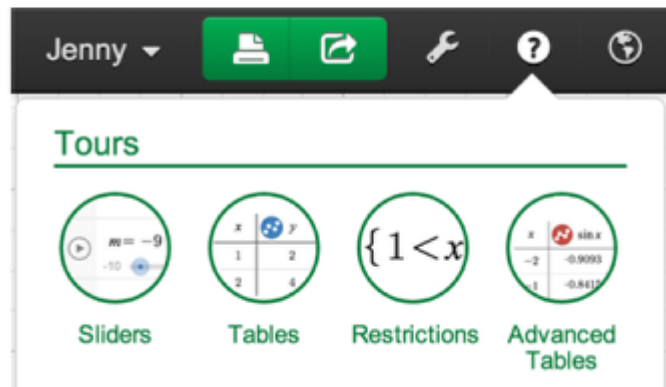
3. The interactive tours will NOT let you make a mistake! Try the links above!

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!

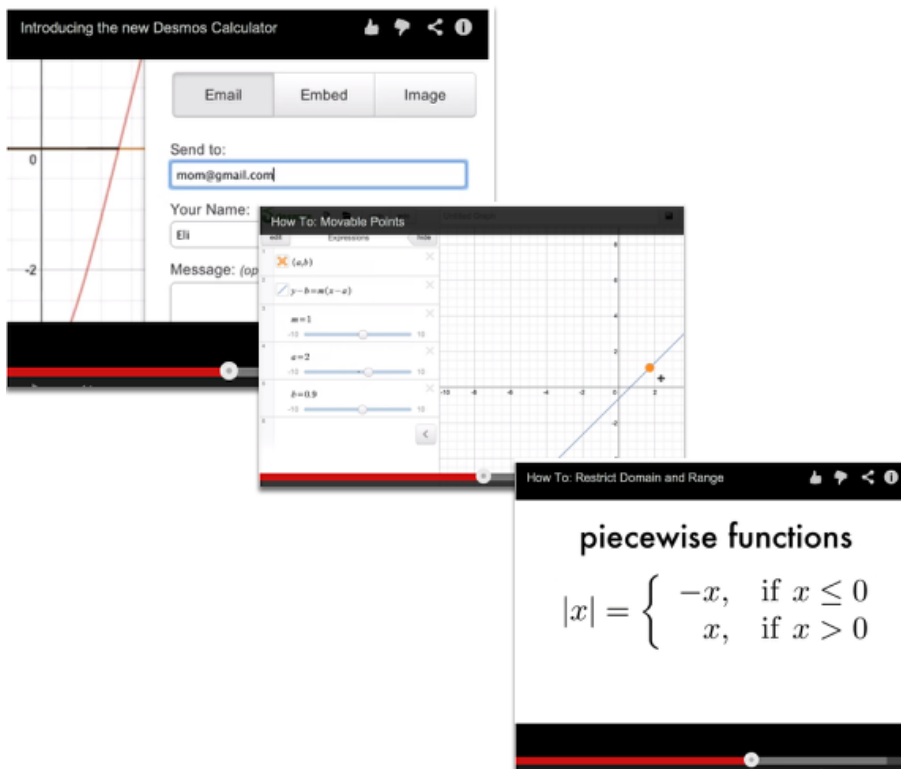
[Desmos Introduction](#)

[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](#)

Click on the link below.

1. Drag tiles from the tray to the Display area.

- CPM Tiles**

Pattern Tiles & Dot eTool

 1. Use the square below for tiles.
 2. Use the dot in the General Tools for dots.
 3. Right Click or tap hold for color options.
 4. Copy and paste for large number of tiles and dots.
 5. Select all and drag to this tray to remove.
 6. Select and drag to the mat textboxes in the General Tools menu to use as labels.
 7. **SAVE** your work by copying and pasting the URL found in the Pencil/Paper icon above to a doc or spreadsheet.

► Backgrounds

► Area and Perimeter

▼ General Tools

Text

- Located in the General Tools
- Drag out and choose border/no border and color.
- Double click to rotate.
- Click to add text.

CPM Tiles

Pattern Tiles & Dot eTool

1. Use the square below for tiles.
2. Use the dot in the General Tools for dots.
3. Right Click or tap hold for color options.
4. Copy and paste for large number of tiles and dots.
5. Select all and drag to this tray to remove.
6. Select and drag to the mat textboxes in the General Tools menu to use as labels.
7. SAVE your work by copying and pasting the URL found in the Pencil/Paper icon above to a doc or spreadsheet.

▶ Backgrounds

▶ Area and Perimeter

▼ General Tools

Text

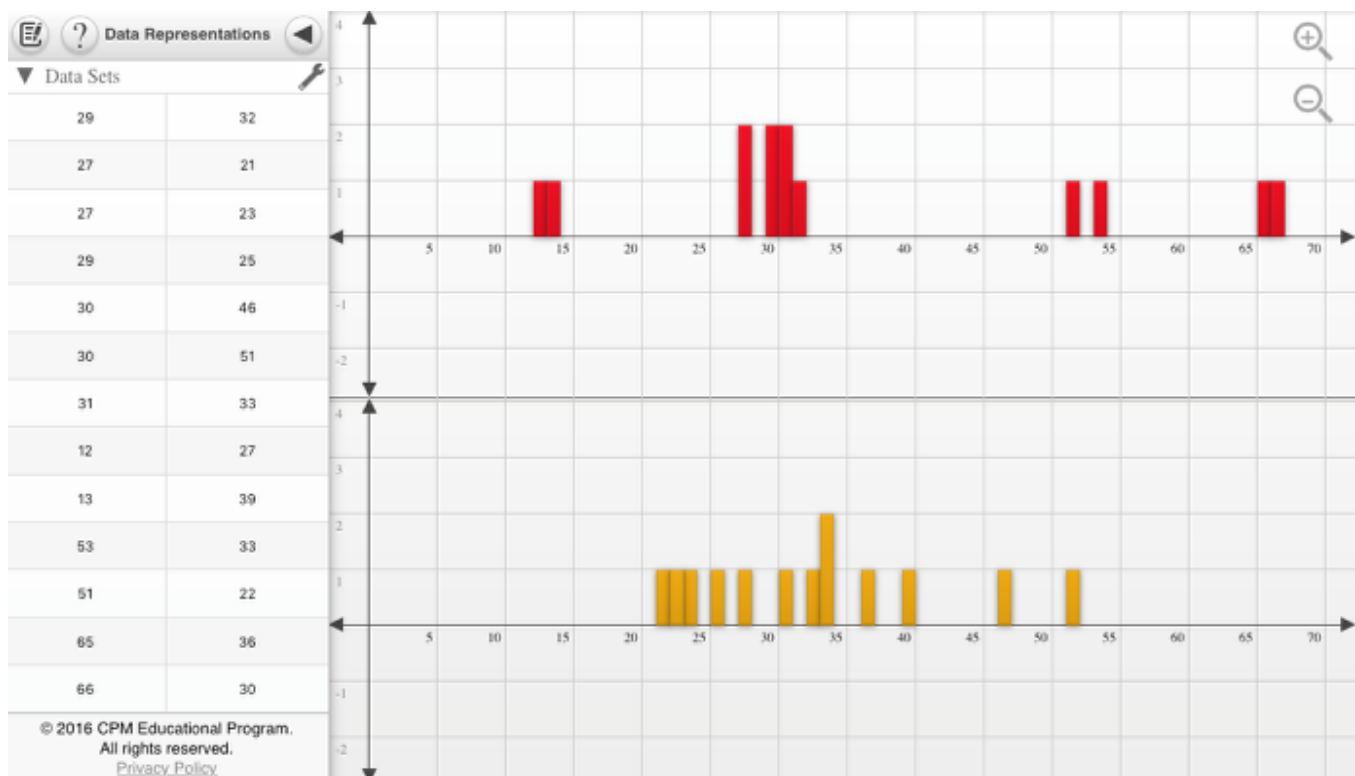
Data Representations (CPM)

Click the link below for “CPM Data Representations”

[CPM Data Representations](#)

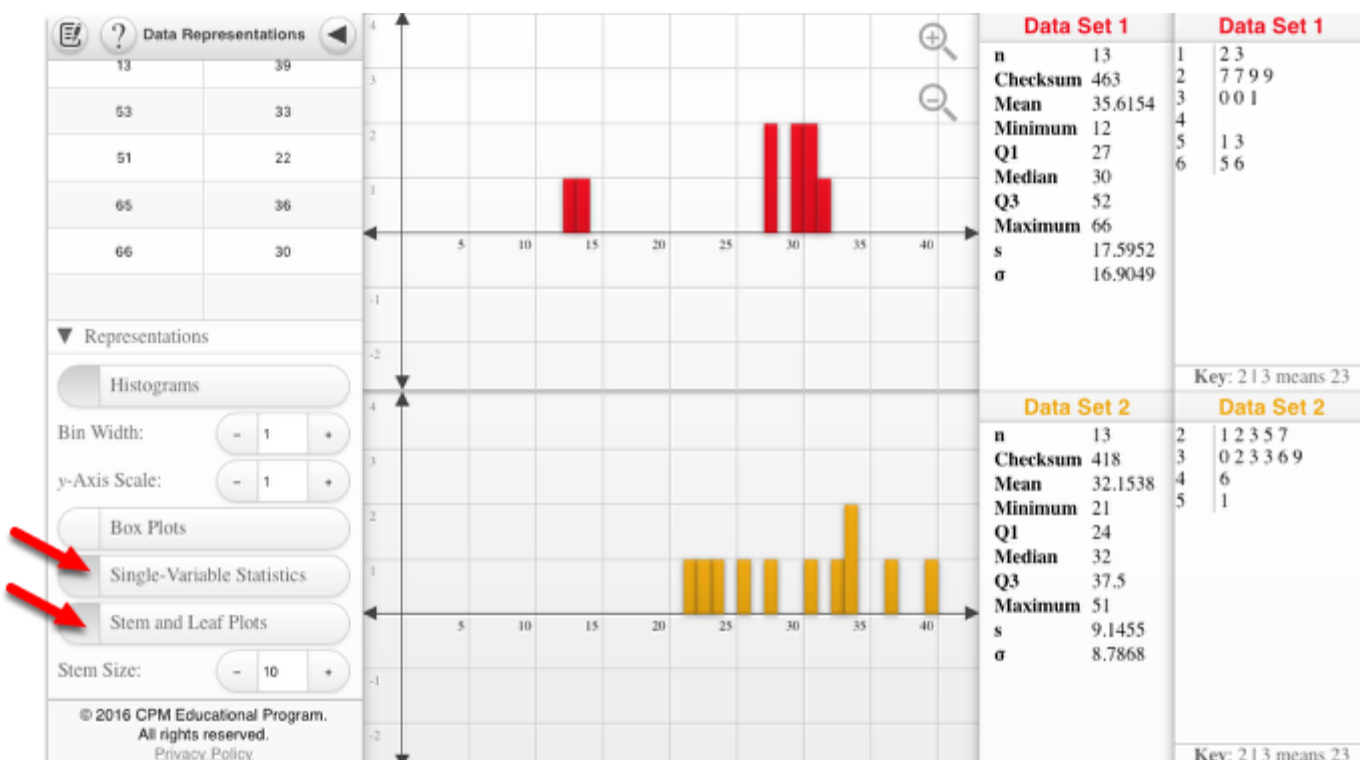
1. CPM Data Representations:

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.



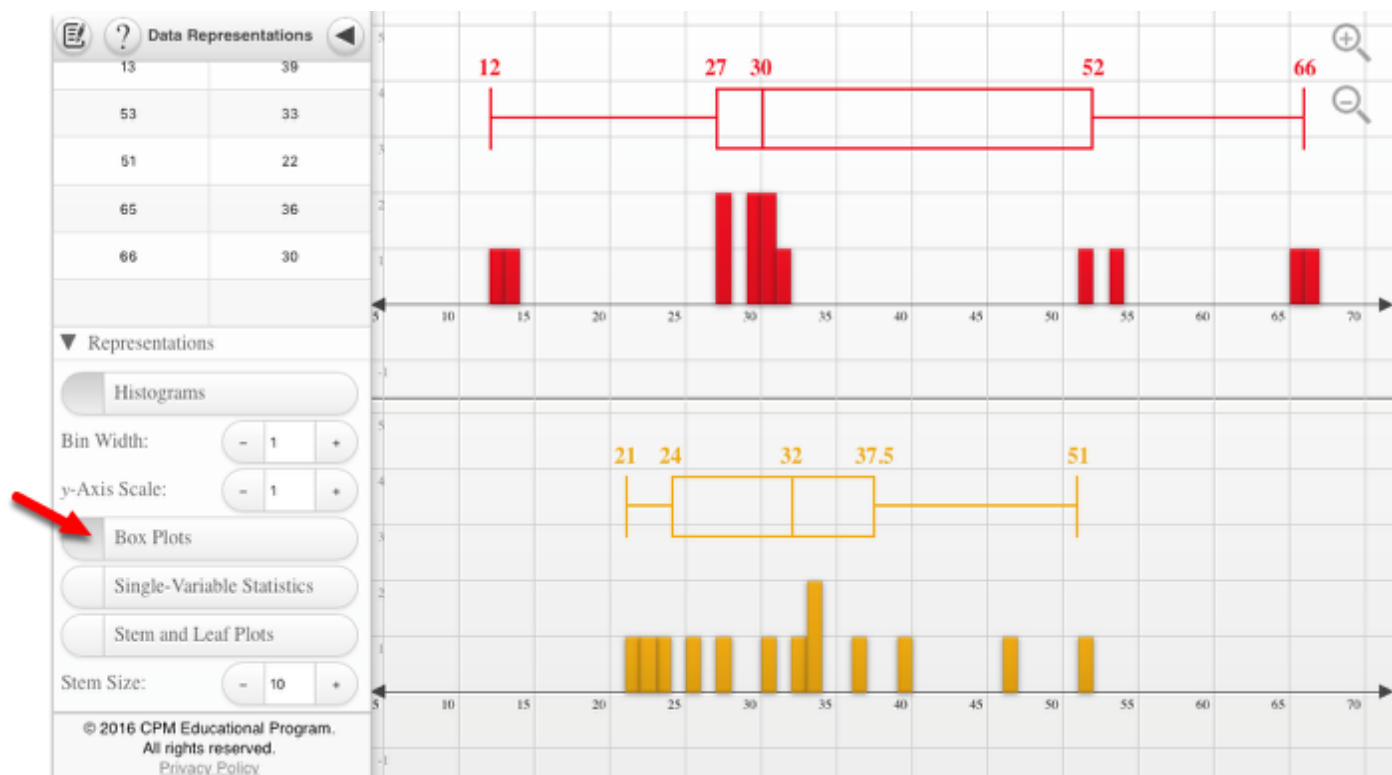
2. Single-Variable Statistics or the Stem and leaf Plots:

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.





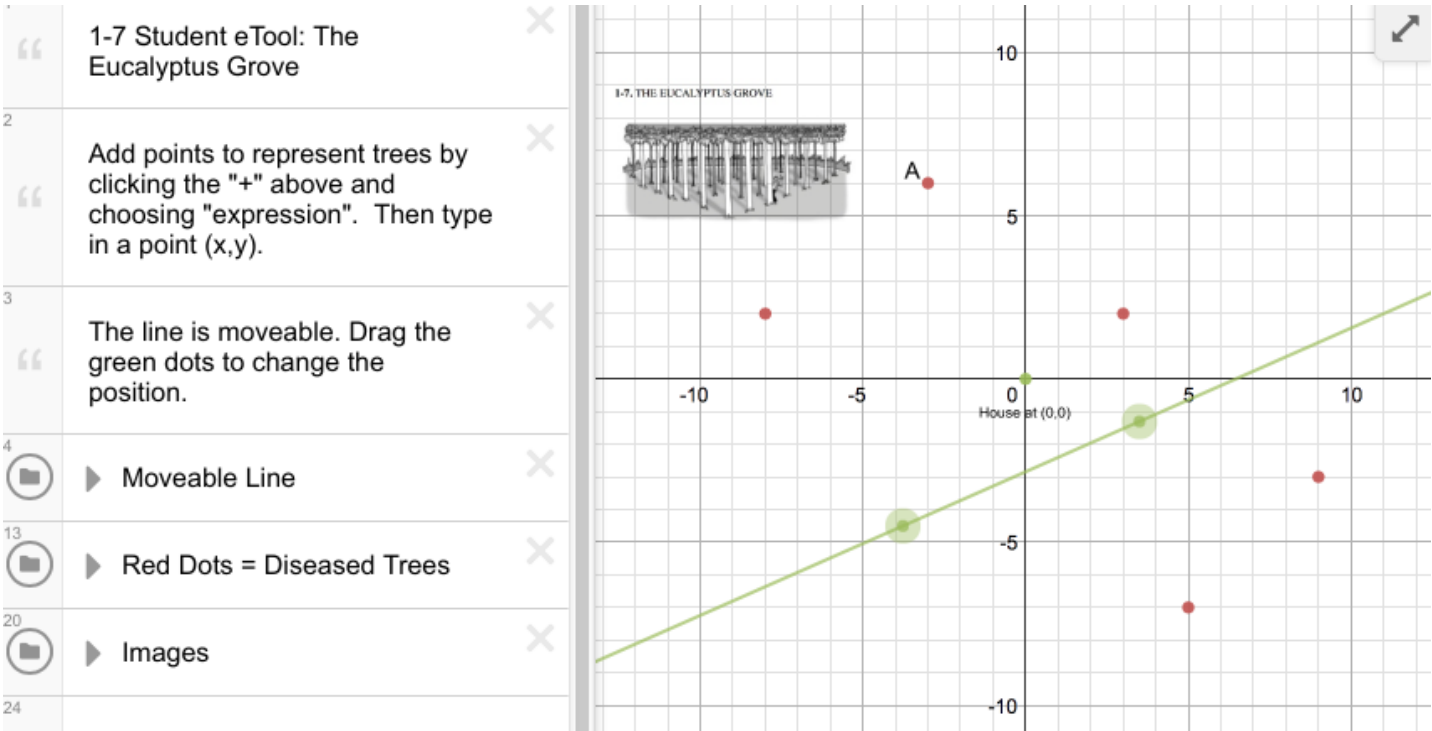
Chapter 1

AC 1.1.2: 1-7 Student eTool (Desmos)

The Eucalyptus Grove

[AC 1-7 Student eTool \(Desmos\)](#)

1. Use this eTool to solve the Eucalyptus Grove problem!



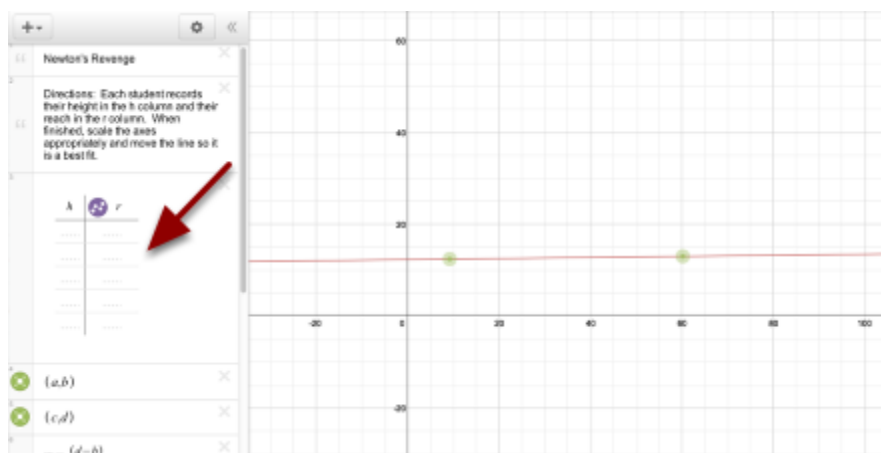
2.

AC 1.1.3: 1-15 Newton's Revenge Student eTool (Desmos)

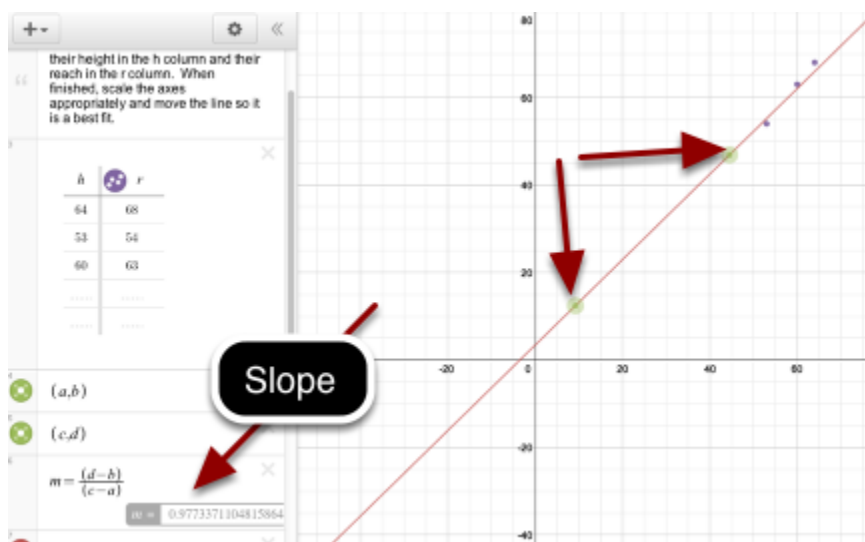
Click on the link below.

[Newton's Revenge Student eTool \(Desmos\)](#)

1. Add data to the table.



2. Drag the moveable line to show a trend in the data. The slope is indicated in the tray at the left.



AC 1.1.4: 1-31 & 1-32 Student eTool (CPM)

Click on the links below.

[1-31 Student eTool \(CPM\)](#)

[1-32 Student eTool \(CPM\)](#)

1. Drag the tiles from the tray to build Figures 1 and 5.

The screenshot shows the CPM Tiles eTool interface. On the left is a panel titled "CPM Tiles" with a sub-header "AC 1-31 Student eTool". Under "Algebra Tiles", there are three sections:

- Label: x** : Shows a blue vertical tile labeled x and a blue square tile labeled x^2 .
- Label: y** : Shows a purple vertical tile labeled y and a purple square tile labeled y^2 .
- Label: 1** : Shows a small blue square tile labeled 1 and a green square tile labeled $x \cdot y$.

At the bottom of the panel is a "General Tools" section. On the right is a large grid with six figures labeled "Figure 1" through "Figure 6". Figures 1, 2, 3, and 4 are built using yellow algebra tiles. Figure 1 is a 3x3 square. Figure 2 is a 4x4 square. Figure 3 is a 5x5 square. Figure 4 is a 6x6 square. Figure 5 and Figure 6 are empty boxes on the grid.

2. 1-32 Student eTool: Drag tiles to create figures not shown.

The screenshot displays the CPM Tiles eTool interface. On the left is a sidebar with the title "CPM Tiles" and a sub-header "AC 1-32 Student eTool". Below this are two expandable sections: "Backgrounds" and "Algebra Tiles". Under "Algebra Tiles", there are three categories: "x" (light blue tiles), "y" (purple tiles), and "1" (green tiles). Each category has a slider and a visual representation of the tiles. The "x" category shows a single tile labeled x and a square tile labeled x^2 . The "y" category shows a single tile labeled y and a square tile labeled y^2 . The "1" category shows a single tile labeled 1 and a square tile labeled $x \cdot y$. At the bottom of the sidebar is a "General Tools" section. The main area of the eTool is a large grid where six figures are displayed, each labeled in a box: "Figure 1", "Figure 2", "Figure 3", "Figure 4", "Figure 5", and "Figure 6". Figure 1 is a horizontal row of 4 light blue tiles. Figure 2 is a 3x3 square of light blue tiles. Figure 3 is a 3x3 square of light blue tiles with an additional light blue tile to its right. Figure 4 is a 3x3 square of purple tiles. Figure 5 is a 3x3 square of green tiles. Figure 6 is a 3x3 square of green tiles with an additional green tile to its right.



Chapter 2

AC 2.1.4: 2-36 Student eTool (CPM)

Click on the link below.

[AC 2-36 Student eTool \(CPM\)](#)

AC 2-36: Drag tiles to reposition.

The screenshot shows the CPM Tiles eTool interface. On the left is a sidebar with a settings icon, a help icon, and the title "CPM Tiles". Below this is the section "AC 2-36" with the text: "Gretchen used seven algebra tiles to build the expression shown below." followed by two tasks: "a. Build this collection of tiles in your own expression mat and write its value." and "b. Represent this same value three different ways, each time using a different number of tiles. Be ready to share your representations with the class." Below the tasks are tabs for "Backgrounds" and "Algebra Tiles". Under "Algebra Tiles", there is a "Label:" field with "x" and a slider. Below the slider are two blue tiles: a small square labeled "x" and a larger square labeled "x²".

The main area on the right is a large rectangle representing an expression mat. It is divided into two horizontal sections by a dashed line. The top section contains a plus sign (+) on the left, followed by two light blue rectangular tiles labeled "x", a red rectangular tile labeled "-x", and a small blue square tile labeled "1". The bottom section contains a minus sign (-) on the left, followed by three small blue square tiles labeled "1".

AC 2.1.5: 2-48, 2-50a & 2-50b tiles (CPM)

Click on the links below.

[2-48 tiles \(CPM\)](#)

[2-50a tiles \(CPM\)](#)

[2-50b tiles \(CPM\)](#)

2-48 Tiles:

CPM Tiles

AC 2-48 Student eTool

Write an expression representing each side of the expression mat.

a. Can you simplify each of the expressions so that fewer tiles are used? Develop a method to simplify both sides of the expression comparison mats. Why does it work? Be prepared to justify your method to the class.

b. Which side of the expression comparison mat do you think is greater (has the largest value)? Agree on an answer as a team. Make sure each person in your team is ready to justify your conclusion to the class.

Backgrounds

Left

Right

Which is greater?

2-50a Tiles:

CPM Tiles

AC 2-50a Student eTool

Backgrounds

Algebra Tiles

Label: x

Label: y

1

$x \cdot y$

Left

Right

Which is greater?

2-50b Tiles:

CPM Tiles

AC 2-50b Student eTool

Backgrounds

Algebra Tiles

Label: x

Label: y

Left

+

1

-1

1

x

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Which is greater?

Algebra Connections

Page 22

AC 2.1.6: 2-57a-f & 2-58 tiles (CPM)

Click on the links below.

[2-57a tiles \(CPM\)](#)

[2-57b tiles \(CPM\)](#)

[2-57c tiles \(CPM\)](#)

[2-57d tiles \(CPM\)](#)

[2-57e tiles \(CPM\)](#)

[2-57f tiles \(CPM\)](#)

[2-58 tiles \(CPM\)](#)

1. AC 2.1.6 2-57a:

CPM Tiles

AC 2-57a Student eTool

Write an algebraic expression for each side of the expression comparison mats given below. Use the "legal" simplification moves you worked with in Lesson 2.1.5 to determine which expression on the expression comparison mat is greater.

Backgrounds

Algebra Tiles

Label: x

x x^2

Left

Right

Which is greater?

2. AC 2.1.6 2-57b:

CPM Tiles

2-57b Student eTool

Write an algebraic expression for each side of the expression comparison mats given below. Use the "legal" simplification moves you worked with in Lesson 2.1.5 to determine which expression on the expression comparison mat is greater.

Backgrounds

Algebra Tiles

Label: x

x x^2

Left

Right

Which is greater?

3. AC 2.1.6 2-57c:

2-57c Student eTool

Write an algebraic expression for each side of the expression comparison mats given below. Use the 'legal' simplification moves you worked with in Lesson 2.1.5 to determine which expression on the expression comparison mat is greater.

▶ Backgrounds
▼ Algebra Tiles

Label: x

Left

Right

Which is greater?

4. AC 2.1.6 2-57d:

2-57d Student eTool

Write an algebraic expression for each side of the expression comparison mats given below. Use the 'legal' simplification moves you worked with in Lesson 2.1.5 to determine which expression on the expression comparison mat is greater.

▶ Backgrounds
▼ Algebra Tiles

Label: x

Left

Right

Which is greater?

5. AC 2.1.6 2-57e:

CPM Tiles

2-57e Student eTool

Write an algebraic expression for each side of the expression comparison mats given below. Use the 'legal' simplification moves you worked with in Lesson 2.1.5 to determine which expression on the expression comparison mat is greater.

► Backgrounds
▼ Algebra Tiles

Label: x

x x^2

Left

Top: $+$, -1 , x , -1 , 1 , -1 , $-x$

Bottom: $-$, x , y , y

Which
is
greater?

Right

Top: -1 , $+$, $-y$

Bottom: y , 1 , x , $-$

6. AC 2.1.6 2-57f:

CPM Tiles

2-57f Student eTool

Write an algebraic expression for each side of the expression comparison mats given below. Use the 'legal' simplification moves you worked with in Lesson 2.1.5 to determine which expression on the expression comparison mat is greater.

► Backgrounds
▼ Algebra Tiles

Label: x

x x^2

Left

Top: $+$, x , 1 , -1 , x , -1 , -1

Bottom: $-$, x , 1 , 1 , 1 , $-x$, 1

Which
is
greater?

Right

Top: x , -1 , $+$, 1 , 1 , 1

Bottom: 1 , 1 , 1 , -1 , $-x$, -1 , $-$

7. AC 2.1.6 2-58:

CPM Tiles

AC 2-58 Student eTool

Backgrounds

Algebra Tiles

Label: x

x x^2

Label: y

y y^2

Left

The 'Left' diagram shows a rectangular area divided by a dashed horizontal line. Above the line, there is a '+' sign in the top-left corner. The tiles include: one blue x^2 tile in the top-right, one blue x tile in the top-middle, one blue x tile in the middle-right, one blue 1 tile in the middle-left, one red -1 tile in the bottom-left, and one red -1 tile in the bottom-right. Below the dashed line, there is one blue 1 tile in the center.

Which
is
greater?

Right

The 'Right' diagram shows a rectangular area divided by a dashed horizontal line. Above the line, there is a '+' sign in the top-right corner. The tiles include: one blue x^2 tile in the top-left, one red -1 tile in the top-middle, one red -1 tile in the middle-left, one red -1 tile in the middle-right, one blue 1 tile in the middle-right, and one blue 1 tile in the bottom-right. Below the dashed line, there are four blue 1 tiles arranged in a 2x2 grid in the center, and a '-' sign in the bottom-left and bottom-right corners.

AC 2.1.7: 2-65, 2-66, 2-67a & 2-67b tiles (CPM)

Click on the links below.

[2-65 tiles \(CPM\)](#)

[2-66 tiles \(CPM\)](#)

[2-67a tiles \(CPM\)](#)

[2-67b tiles \(CPM\)](#)

1. AC 2.1.7 2-65:

The screenshot shows the CPM Tiles Student eTool interface. On the left is a toolbar with various algebra tiles and their labels. The main area displays two panels, 'Left' and 'Right', each containing a collection of algebra tiles arranged to represent a mathematical expression. A dashed line separates the two panels, and the text 'Which is greater?' is placed between them.

Left Panel: The top half contains a positive sign (+) and tiles representing x^2 (blue square), x (red rectangle), and -1 (blue square). The bottom half contains a negative sign (-) and tiles representing x^2 (blue square), x (red rectangle), and -1 (blue square).

Right Panel: The top half contains a positive sign (+) and tiles representing x^2 (blue square), x (red rectangle), and -1 (blue square). The bottom half contains a negative sign (-) and tiles representing x^2 (blue square), x (red rectangle), and -1 (blue square).

Toolbar: The toolbar includes a 'CPM Tiles' button, a 'Backgrounds' dropdown, and an 'Algebra Tiles' dropdown. Below these are sliders for 'x' and 'y' labels, and a section for 'Algebra Tiles' with tiles for x (red rectangle), x^2 (blue square), y (purple rectangle), y^2 (purple square), 1 (blue square), and $x \cdot y$ (green rectangle).

2. AC 2.1.7 2-66:

CPM Tiles

AC 2-66 Student eTool

Backgrounds

Algebra Tiles

Label: x

x x^2

Label: y

y y^2

1 $x \cdot y$

Left

$+$ x 1 1

x^2 1 x

x

-1 x

-1

Which
is
greater?

Right

x x -1 x^2 $+$ x

x

1 x x

1 1 1

$-$

3. AC 2.1.7 2-67a:

CPM Tiles

AC 2-67a Student eTool

Backgrounds

Algebra Tiles

Label: x

x x^2

Label: y

y y^2

1 $x \cdot y$

Left

$+$ x^2 $-x^2$ x

x

-1 x^2

1

Which
is
greater?

Right

1 $+$ x 1 -1

1

x^2 1

$-$

4. AC 2.1.7 2-67b:

CPM Tiles

AC 2-67b Student eTool

Backgrounds

Algebra Tiles

Label: x

x x^2

Label: y

y y^2

1 $x \cdot y$

Left

+

1

x

-1

x

-1

x

x

$-$

1

x

1

x

x

Which
is
greater?

Right

-1

+

1

x

x

1

1

1

1

$-$

AC 2.1.8: 2-73a & 2-75a tiles (CPM)

Click on the links below.

[2-73a tiles \(CPM\)](#)

[2-75a tiles \(CPM\)](#)

1. AC 2.1.8 2-73a:

CPM Tiles

AC 2-73a Student eTool

Use "legal" simplification moves to determine which expression is greater, if possible. If it is not possible to determine which expression is greater, explain why it is impossible. Be sure to record your work on your paper.

Backgrounds

Algebra Tiles

Label: x

x x^2

Left

Right

Which is greater?

2. AC 2.1.8 2-75a:

CPM Tiles

AC 2-75a Student eTool

Backgrounds

Algebra Tiles

Label: x

x x^2

Label: y

y y^2

AC 2.1.9: 2-83a-c tiles (CPM)

Click on the links below.

[2-83a tiles \(CPM\)](#)

[2-83b tiles \(CPM\)](#)

[2-83c tiles \(CPM\)](#)

1. AC 2.1.9 2-83a:

The screenshot shows the CPM Tiles tool interface. On the left is a sidebar with controls for 'AC 2-83a Student eTool', including 'Backgrounds' and 'Algebra Tiles'. Below these are sliders for 'x' (blue tiles) and 'y' (purple tiles). The main area displays two panels, 'Left' and 'Right', separated by a dashed line with the text 'Which is greater?' in between.

Left Panel: Contains a positive sign (+) in the top left, two blue unit tiles (1) in the top left, a large blue square tile (x^2) in the top right, and two red rectangular tiles ($-x$) in the bottom right. There is a minus sign (-) in the bottom left.

Right Panel: Contains a positive sign (+) in the top right, a blue rectangular tile (x) in the top left, two red unit tiles (-1) in the top right, a large red square tile ($-x^2$) in the bottom right, and a red unit tile (-1) in the bottom left. There is a minus sign (-) in the bottom right.

2. AC 2.1.9 2-83b:

The screenshot shows the CPM Tiles tool interface for 'AC 2-83b Student eTool'. The sidebar and sliders are similar to the previous one. The main area displays two panels, 'Left' and 'Right', separated by a dashed line with the text 'Which is greater?' in between.

Left Panel: Contains a positive sign (+) in the top left, a blue unit tile (1) in the top right, a blue rectangular tile (x) in the top right, and a red unit tile (-1) in the top left. There is a minus sign (-) in the bottom left.

Right Panel: Contains a positive sign (+) in the top right, three blue unit tiles (1) in the top left, a blue rectangular tile (x) in the top right, and a red rectangular tile ($-x$) in the bottom right. There is a minus sign (-) in the bottom right.

3. AC 2.1.9 2-83c:

AC 2-83c Student eTool

Backgrounds

Algebra Tiles

Label: x

x x^2

Label: y

y y^2

Which is greater?

Left

Right

Chapter 3

AC 3.1.1: 3-1a & 3-1b Student eTool (CPM)

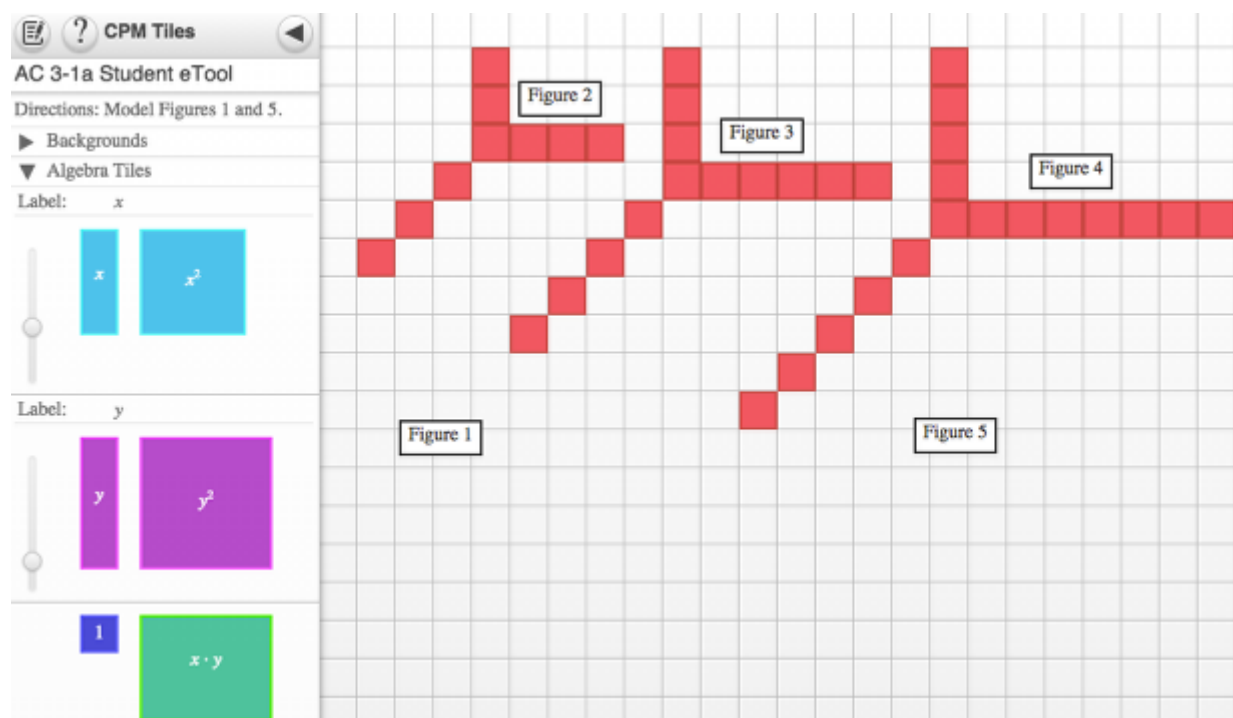
Click on the links below.

[3-1a Student eTool \(CPM\)](#)

[3-1b Student eTool \(CPM\)](#)

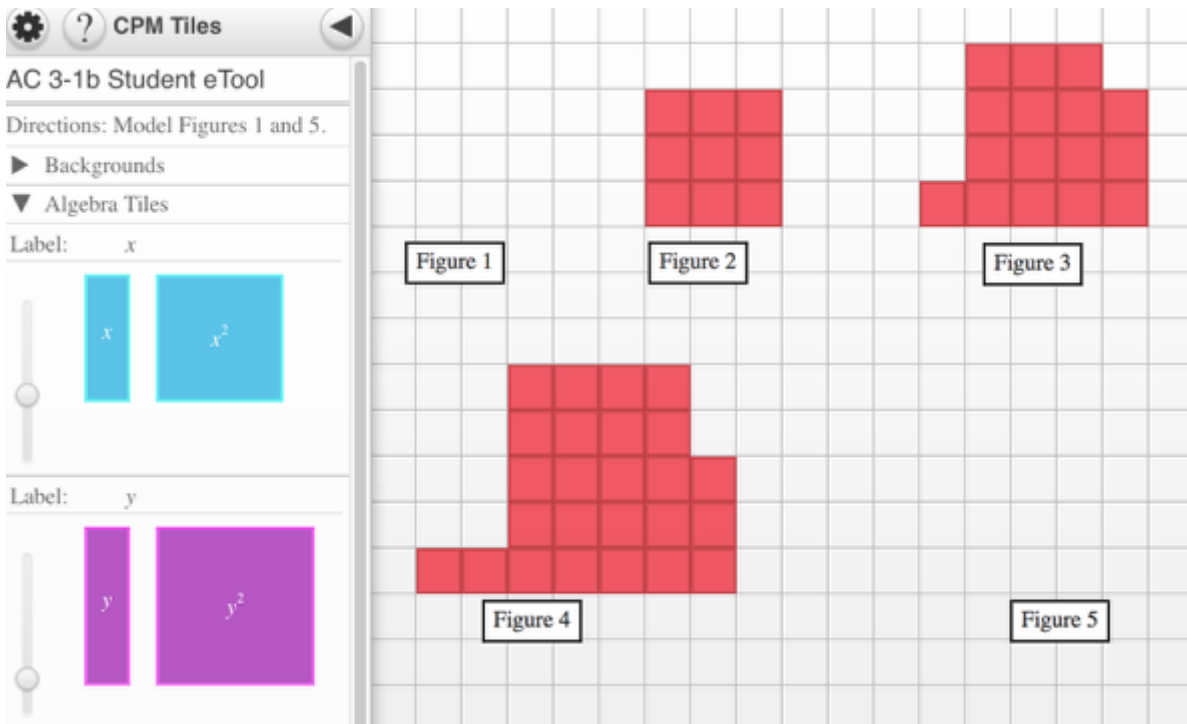
1. AC 3-1a:

Create figures 1 and 5. Move the text boxes to a better location.



2. AC 3-1b:

Create figures 1 and 5. Move the text boxes to a better location.

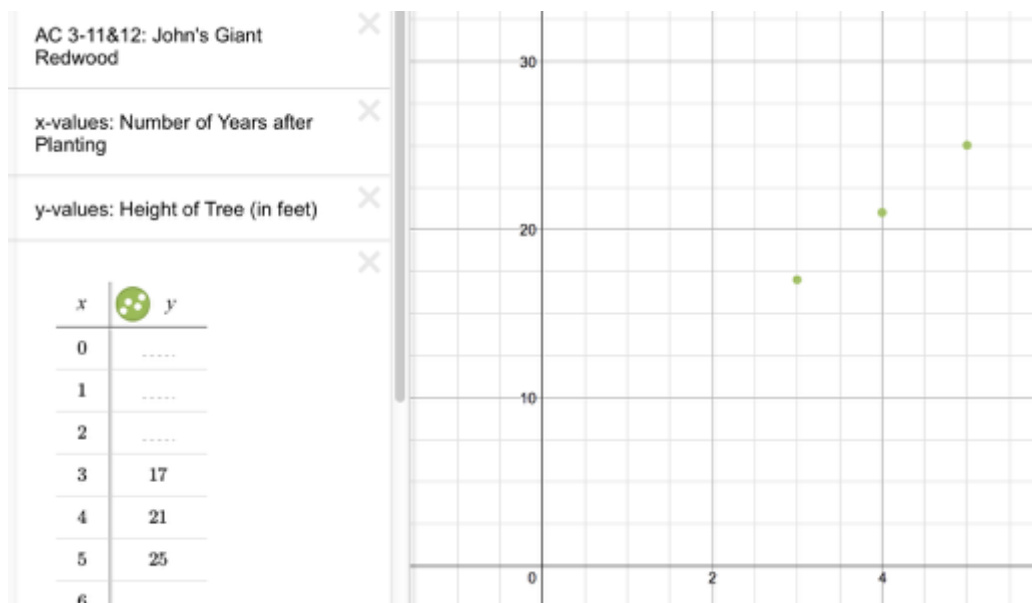


AC 3.1.2: John's Giant Redwood Student eTool (Desmos)

Click on the link below for the "John's Giant Redwood Student eTool (Desmos)."

[John's Giant Redwood Student eTool \(Desmos\)](#)

1. Complete the table. Then type in the rule that goes through the points.



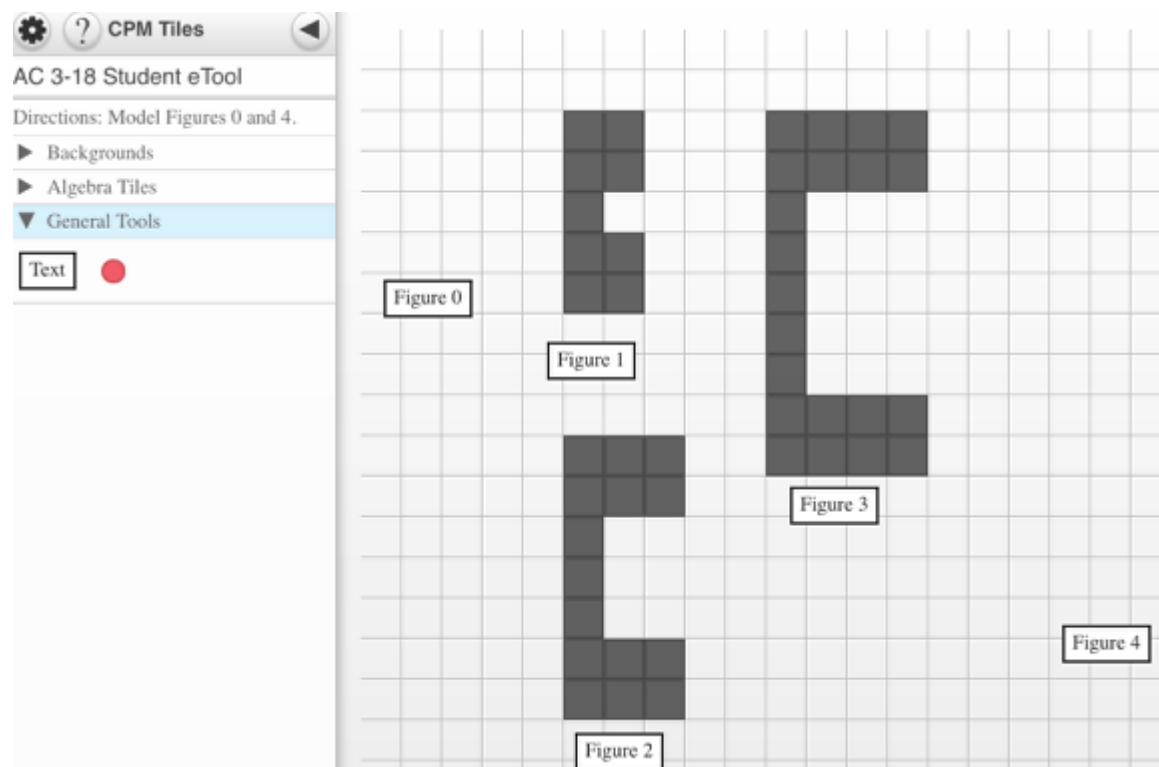
AC 3.1.3: 3-18, 3-19 to 3-22 Student eTool (CPM & Desmos)

Click on the links below.

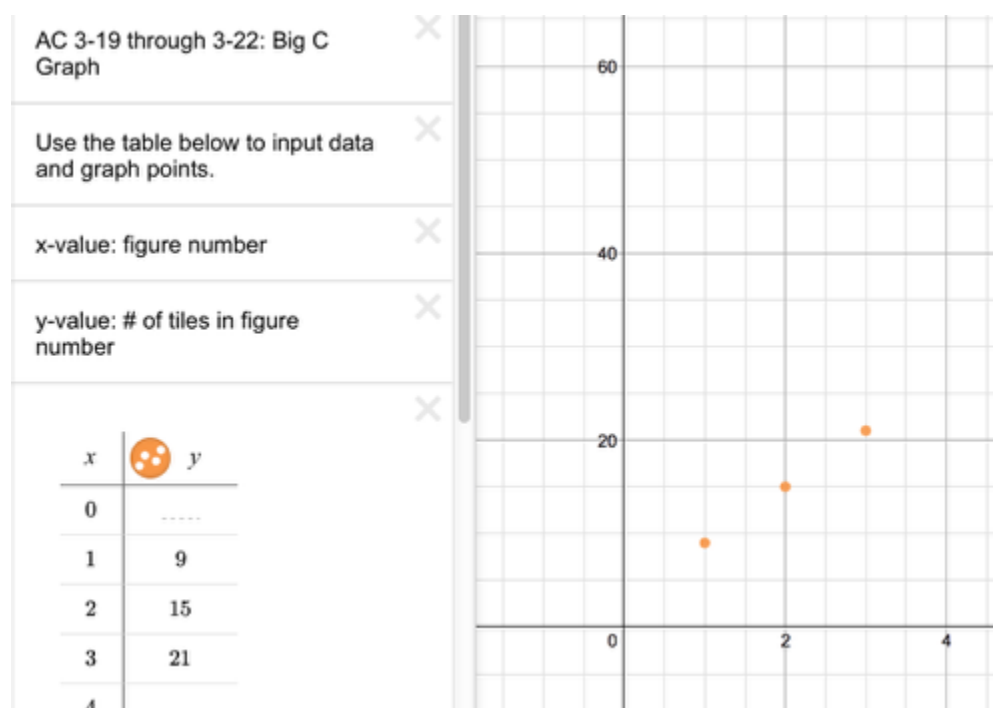
[3-18 Student eTool \(CPM\)](#)

[3-19 to 3-22 Student eTool \(Desmos\)](#)

1. Drag tiles to create Figure 0 and Figure 4.



2. Complete the table finding a rule that goes through the points.



AC 3.2.1: 3-69 Student eTool (CPM)

Click on the link below.

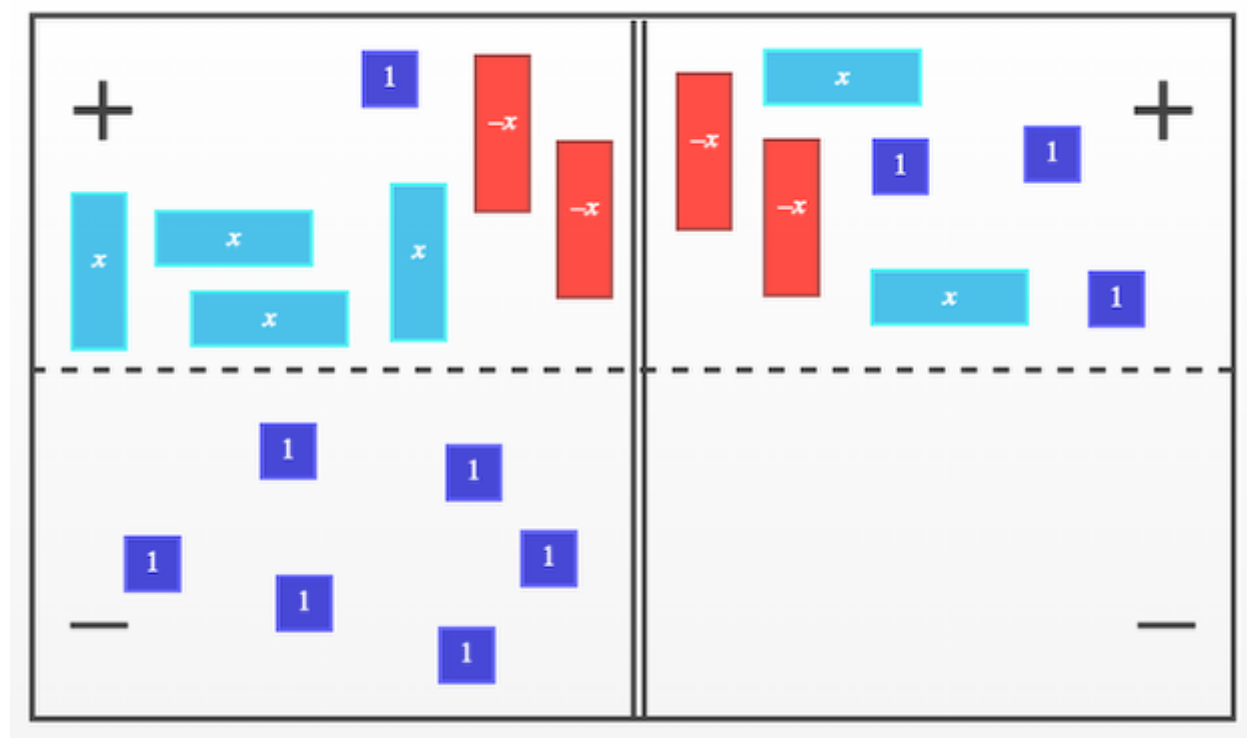
[3-69 tiles Student eTool \(CPM\)](#)

1. AC 3-69 Student eTool:

The screenshot shows the "AC 3-69 Student eTool" interface. On the left is a sidebar with instructions and controls. The main area is an "Equation Mat" divided into four quadrants by a dashed horizontal line and a solid vertical line. The top-left quadrant contains a plus sign, a vertical blue tile labeled x , a horizontal blue tile labeled x , a vertical blue tile labeled x , and a small blue square labeled 1 . The top-right quadrant contains a horizontal blue tile labeled x , a small blue square labeled 1 , another small blue square labeled 1 , and a plus sign. The bottom-left quadrant contains a minus sign, a small blue square labeled 1 , a horizontal blue tile labeled x , a small blue square labeled 1 , a vertical blue tile labeled x , and a small blue square labeled 1 . The bottom-right quadrant is empty except for a minus sign. The sidebar on the left includes a "CPM Tiles" header, a "Directions" section, a "Record the step" section, a "Write a new equation" section, a "With your partner" section, and a "Backgrounds" section. Below these is a "Label:" field with a dropdown menu showing x . At the bottom of the sidebar are two blue tiles: a vertical one labeled x and a horizontal one labeled x^2 .

2. Record each step.

Example below: Add a $-2x$ to both sides.



Chapter 4

AC 4.1.2: 4-8, 4-9a&b, 4-11 Student eTool (CPM)

Click on the links below.

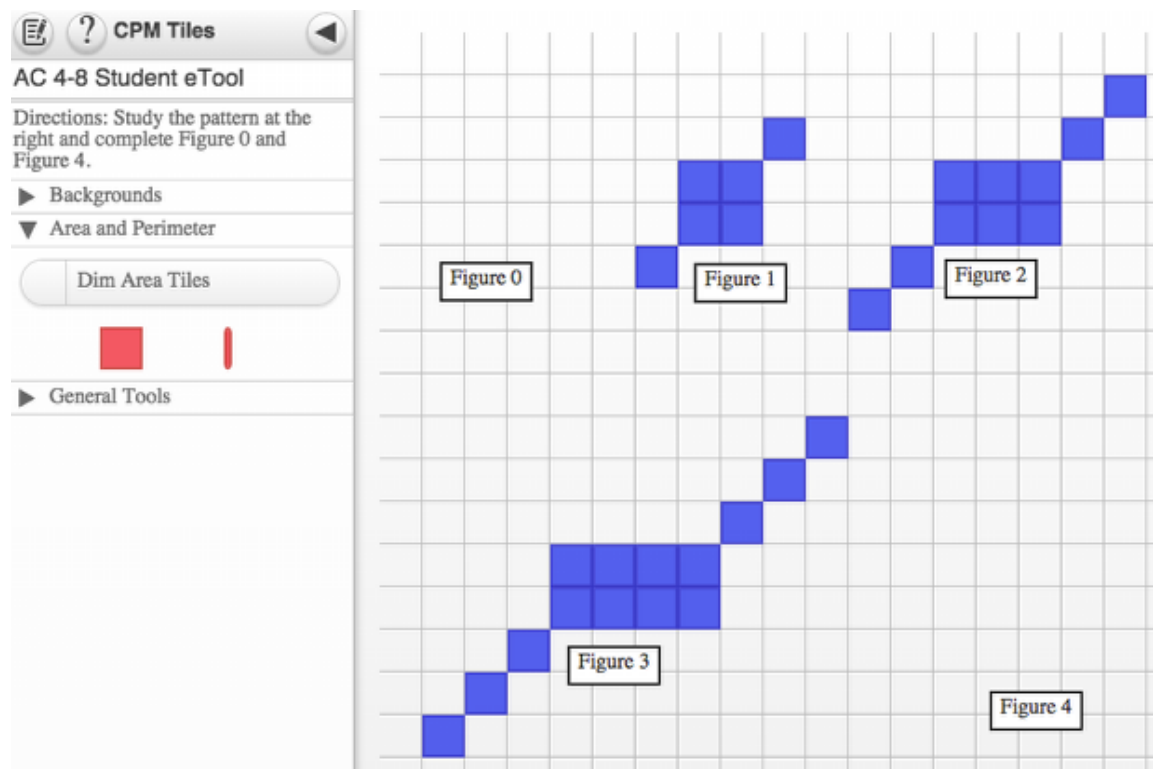
[4-8 Student eTool \(CPM\)](#)

[4-9a Student eTool \(CPM\)](#)

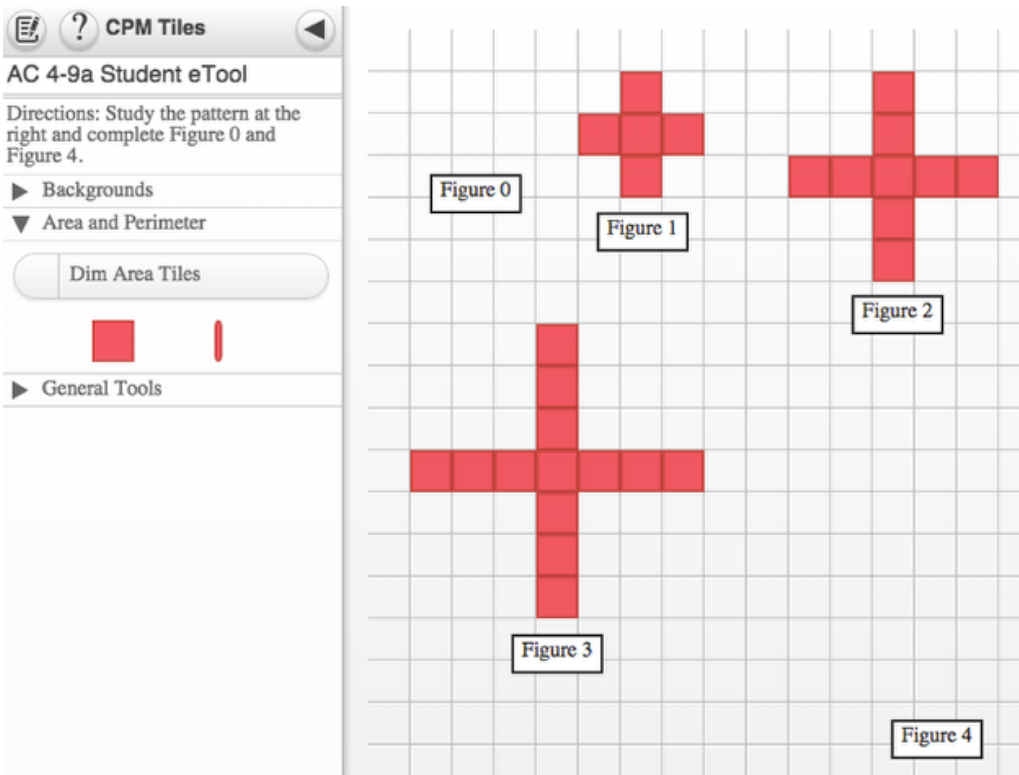
[4-9b Student eTool \(CPM\)](#)

[4-11 Student eTool \(CPM\)](#)

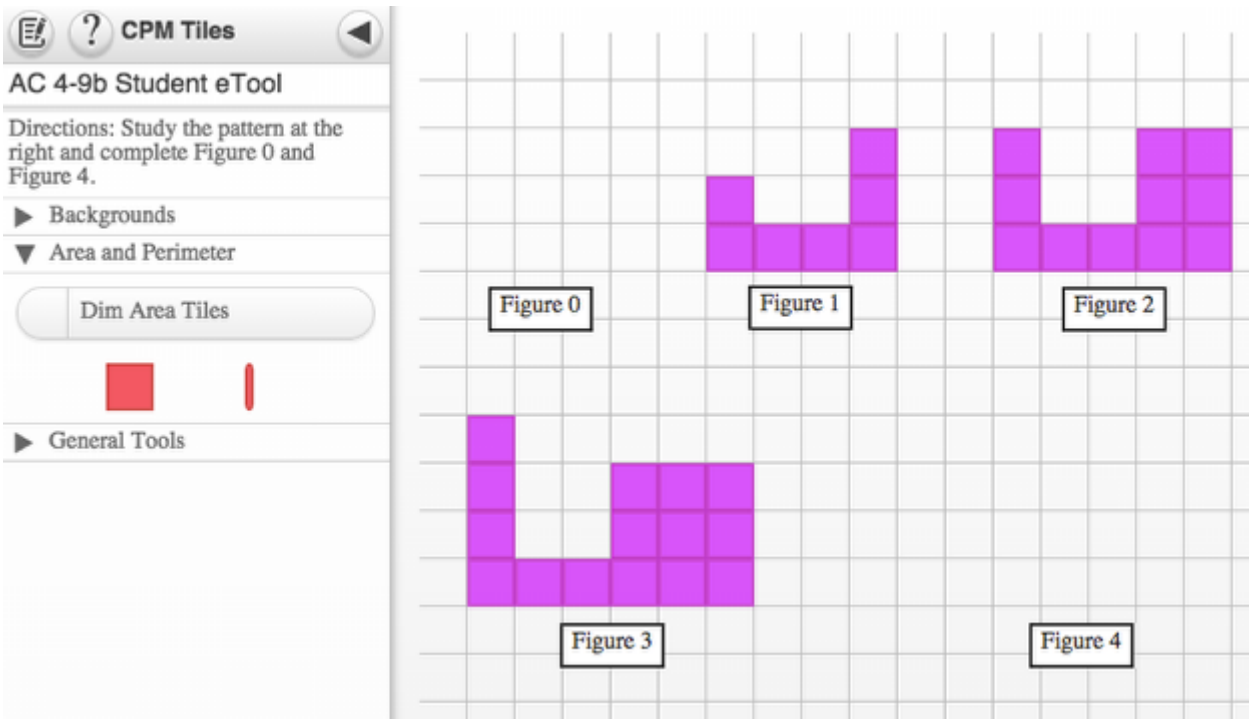
1. AC 4-8 Student eTool:



2. AC 4-9a Student eTool:



3. AC 4-9b Student eTool:



4. AC 4-11 Student eTool:

CPM Tiles
◀

AC 4-11 Student eTool

Directions: Study the pattern at the right and complete Figure 0 and Figure 4.

▶ Backgrounds

▼ Area and Perimeter

Dim Area Tiles

▶ General Tools

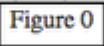


Figure 0



Figure 1

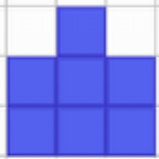


Figure 2



Figure 3

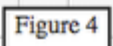


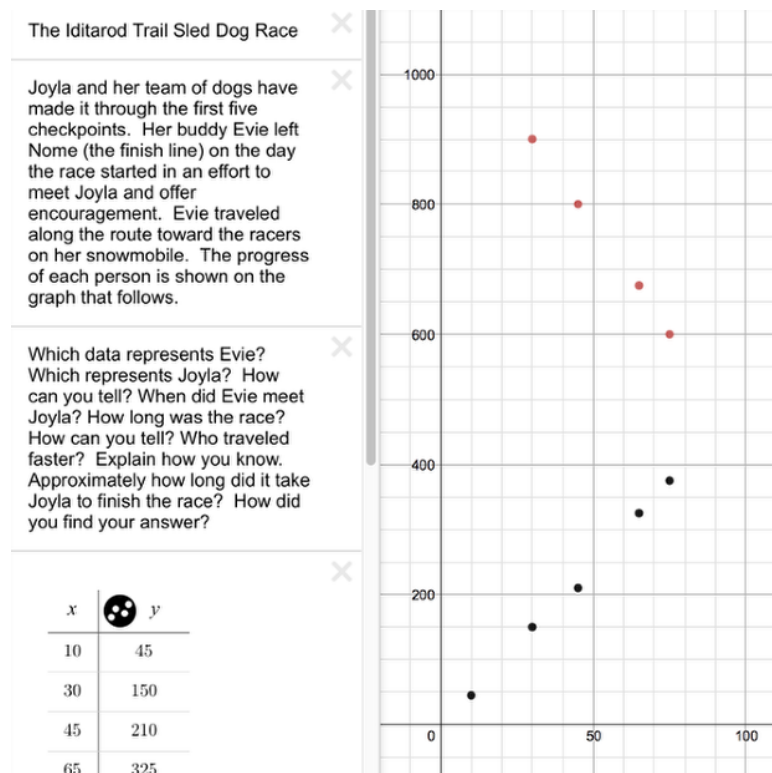
Figure 4

AC 4.2.1: AC-67 Student eTool (Desmos) & Iditarod - Checkpoints Video

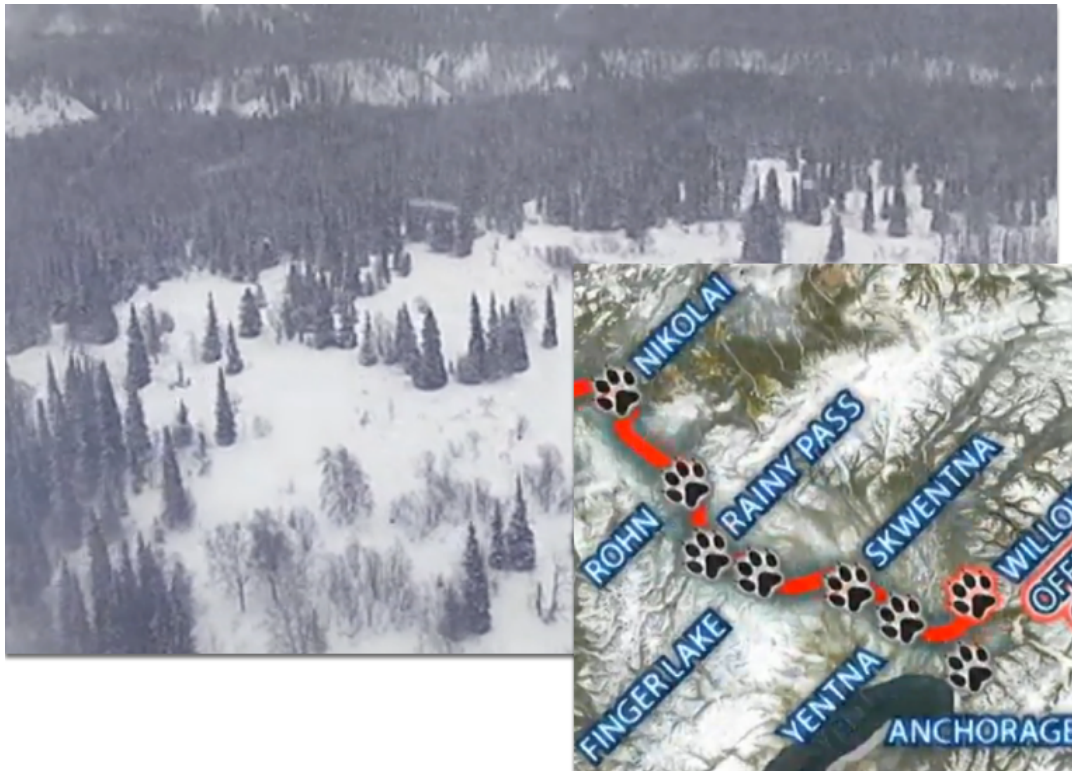
Click on the links below.

[AC 4-67 Student eTool](#) (Desmos)

1. AC 4-67 Student eTool (Desmos)



2. Iditarod - Checkpoints



AC 4.2.3: 4-86 Student eTool (CPM)

Click on the link below.

[AC 4-86 Student eTool \(CPM\)](#)

AC 4-86 Student eTool:

The screenshot displays the AC 4-86 Student eTool interface. On the left is a control panel titled "CPM Tiles" with a gear icon and a question mark. Below the title is "AC 4-86 Student eTool". There are two sections: "Backgrounds" (with a right-pointing arrow) and "Algebra Tiles" (with a downward-pointing arrow). Under "Algebra Tiles", there are two rows. The first row is labeled "x" and shows a vertical blue tile labeled x and a square blue tile labeled x^2 . The second row is labeled "y" and shows a vertical purple tile labeled y and a square purple tile labeled y^2 . Below these are two sliders. The main workspace is divided into two panels. The left panel is labeled "Weight of the Bunny" and contains several algebra tiles: a plus sign, a blue 1 tile, a blue x tile, a blue x^2 tile, and several other blue 1 tiles. The right panel is labeled "Weight of the Cat" and contains a large square made of blue 1 tiles, a blue x tile, and a plus sign. Both panels have a dashed horizontal line across the middle and a minus sign at the bottom.