

CC COURSE 3 ETOOLS

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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:

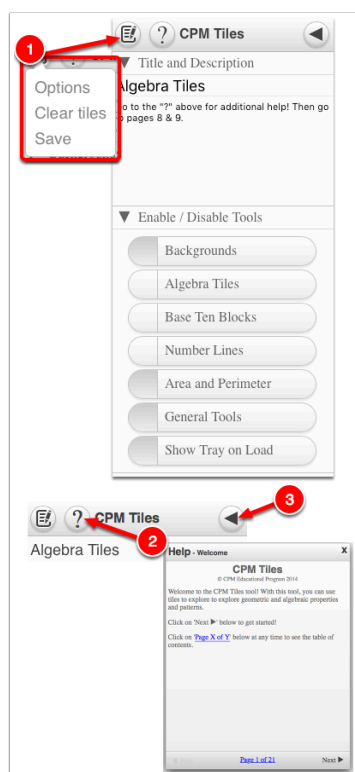
Options - Add Title and Description and Enable/Disable Tools.

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.

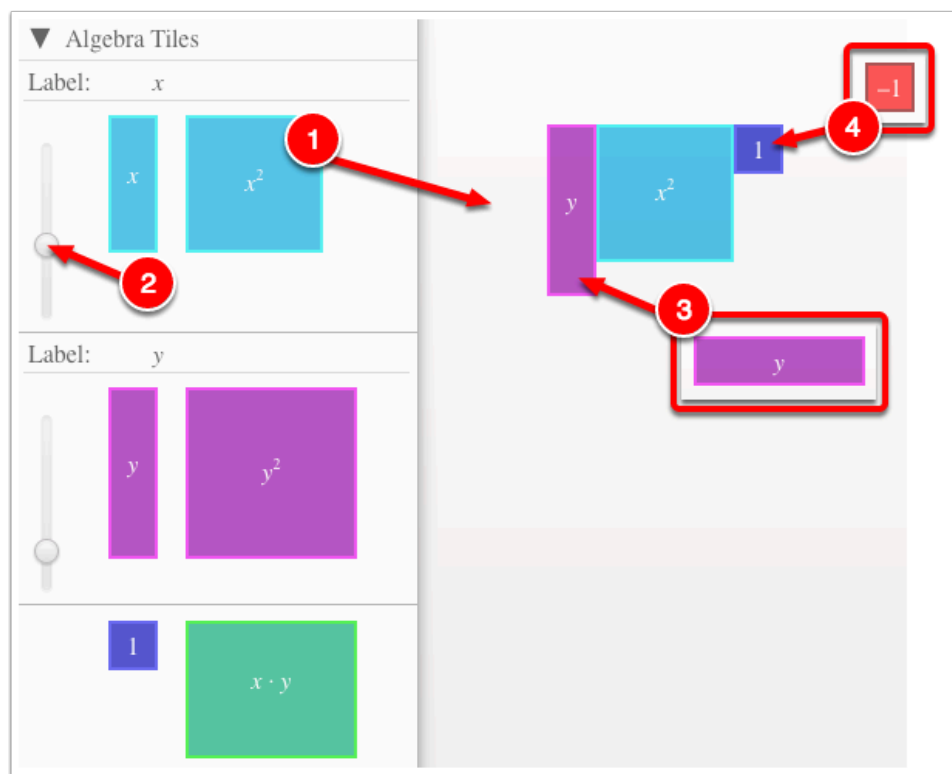
3. Select the Arrow Icon at the right to open and close the tray.



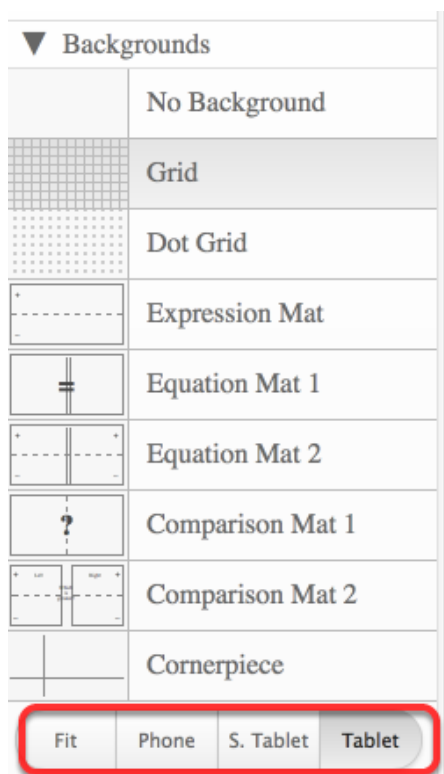
2. Drag tiles from the tray at the left to the display area at the right.

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.

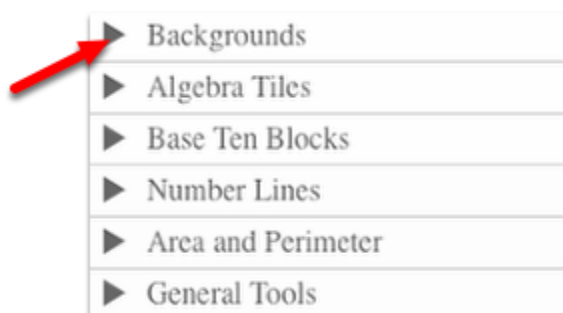


3. Choose from a variety of different mats. Also choose from a variety of sizes to fit on various devices.



4. Choose from a variety of different tiles:

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



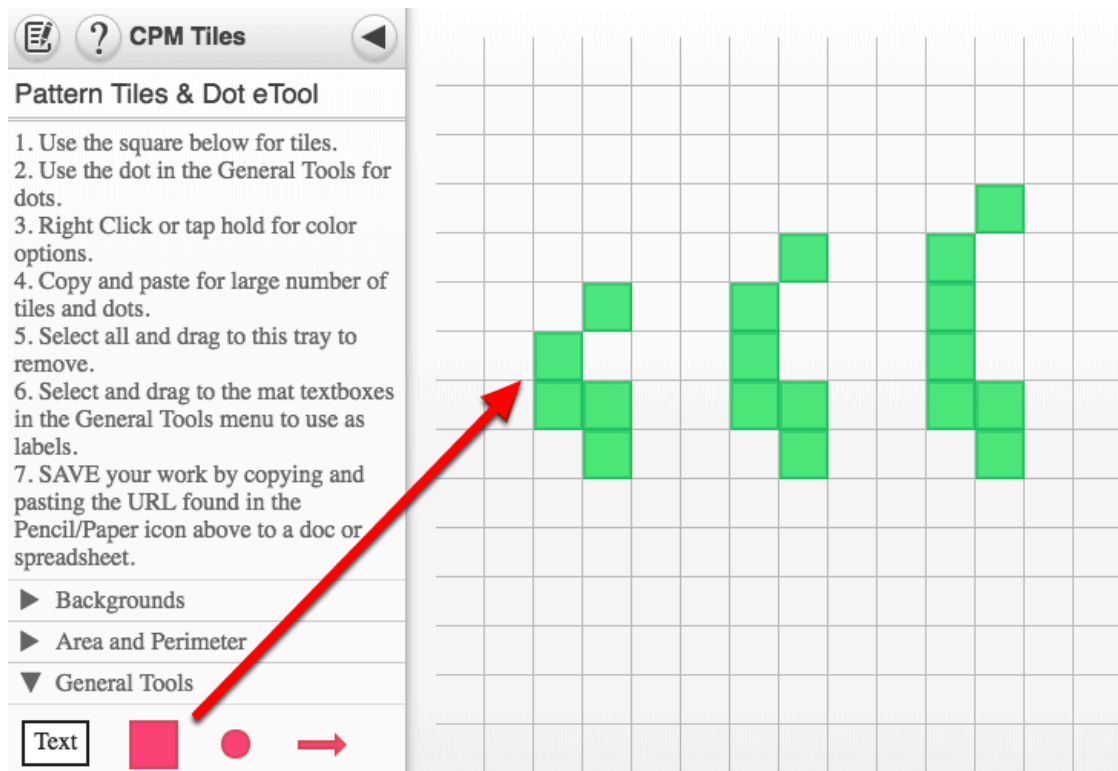
Pattern Tile & Dot Tool (CPM)

Click on the link below.

[Pattern Tile & Dot Tool](#)

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

- Add tiles and copy and paste them to the display area.
- Select all tiles and drag to the tray to remove the tiles.



2. Textboxes and Dots

- 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

Base Ten Blocks (CPM)

Use this tool for percents and counting out of one hundred.

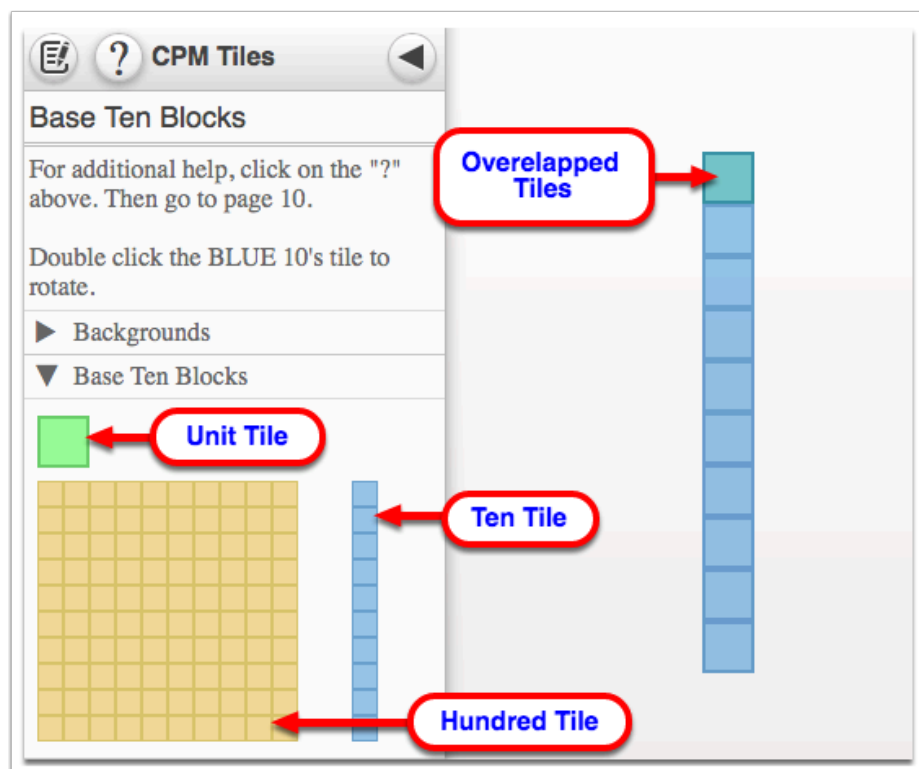
Click on the link below to access the eTool.

[Base Ten Blocks \(CPM\)](#)

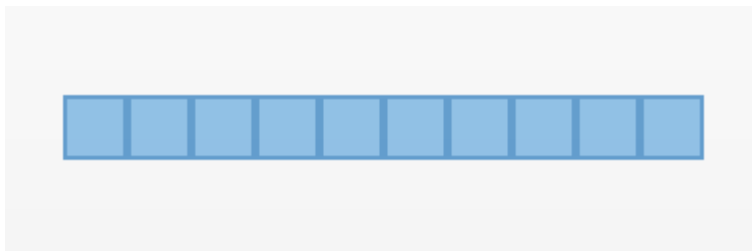
1. Drag Base Ten Blocks from the tray to the display area.

- Unit Tile
- Ten Tile
- Hundred Tile

Notes: Tiles can be overlapped.
Tiles will snap to the grid.



2. Double click to rotate.

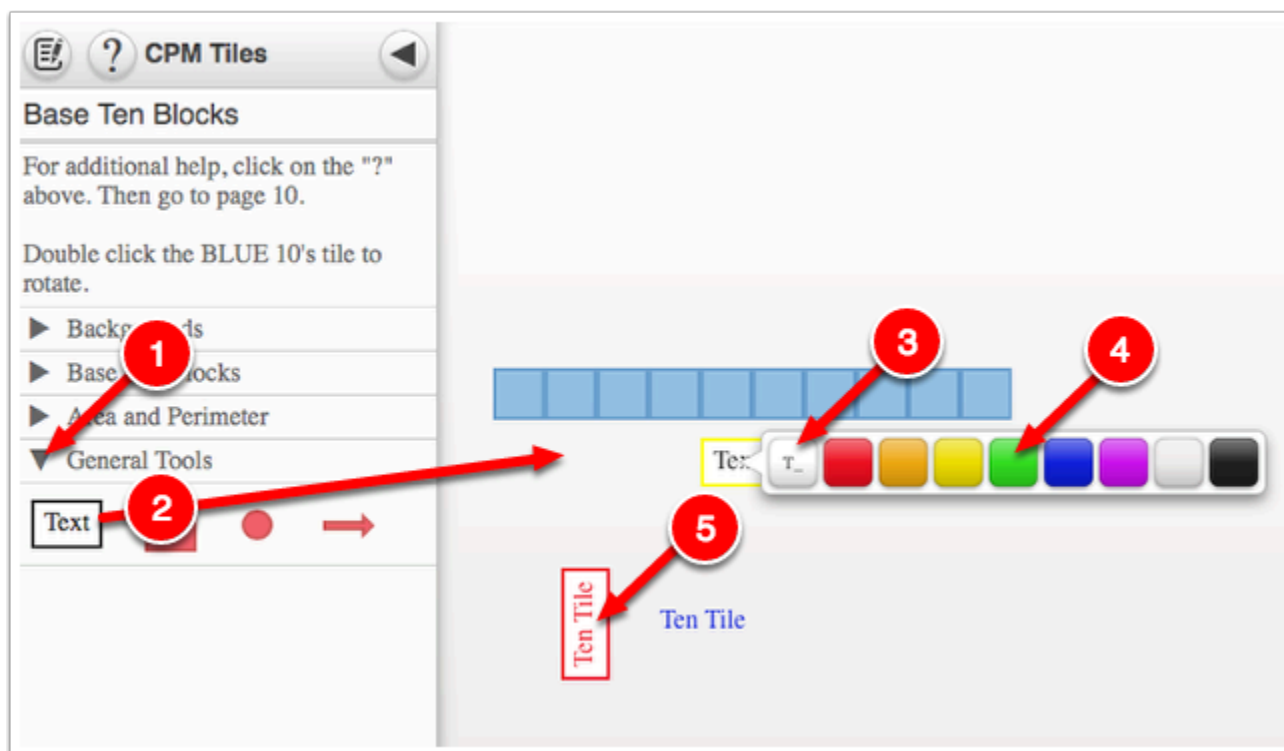


3. Add text.

1. Click the arrow before the 'General Tools' to view.
2. Click the Text Box and drag it to the display area.
3. Click the 'T_' icon to add/remove text border.

Note: If the Text Box settings do not display automatically, right click on the Text box.

4. Choose the font color you want to use.
5. Double click the Text Box to rotate.

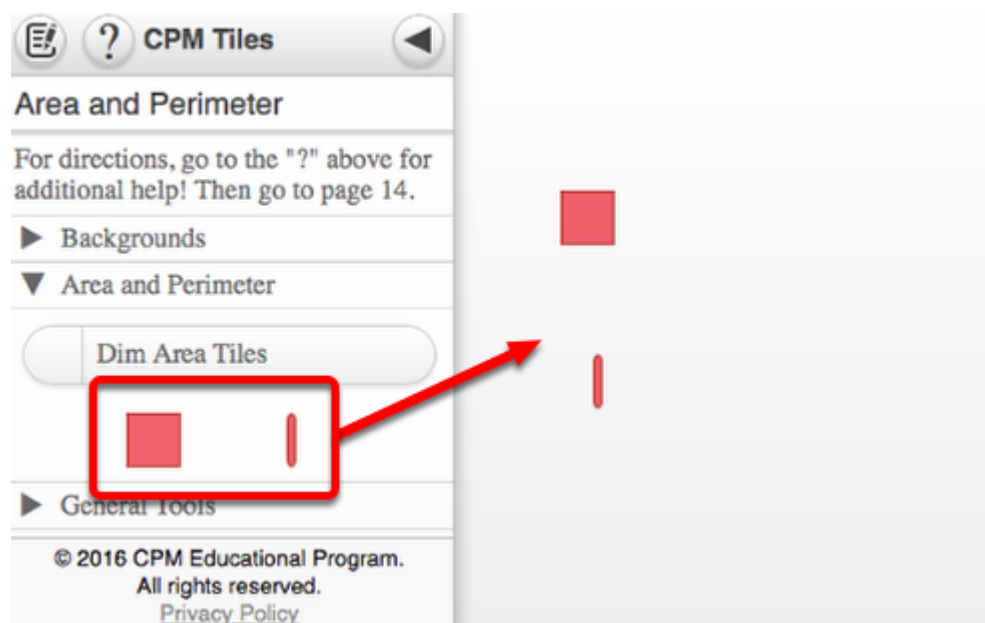


Area and Perimeter (CPM)

Click on the link below to access the eTool.

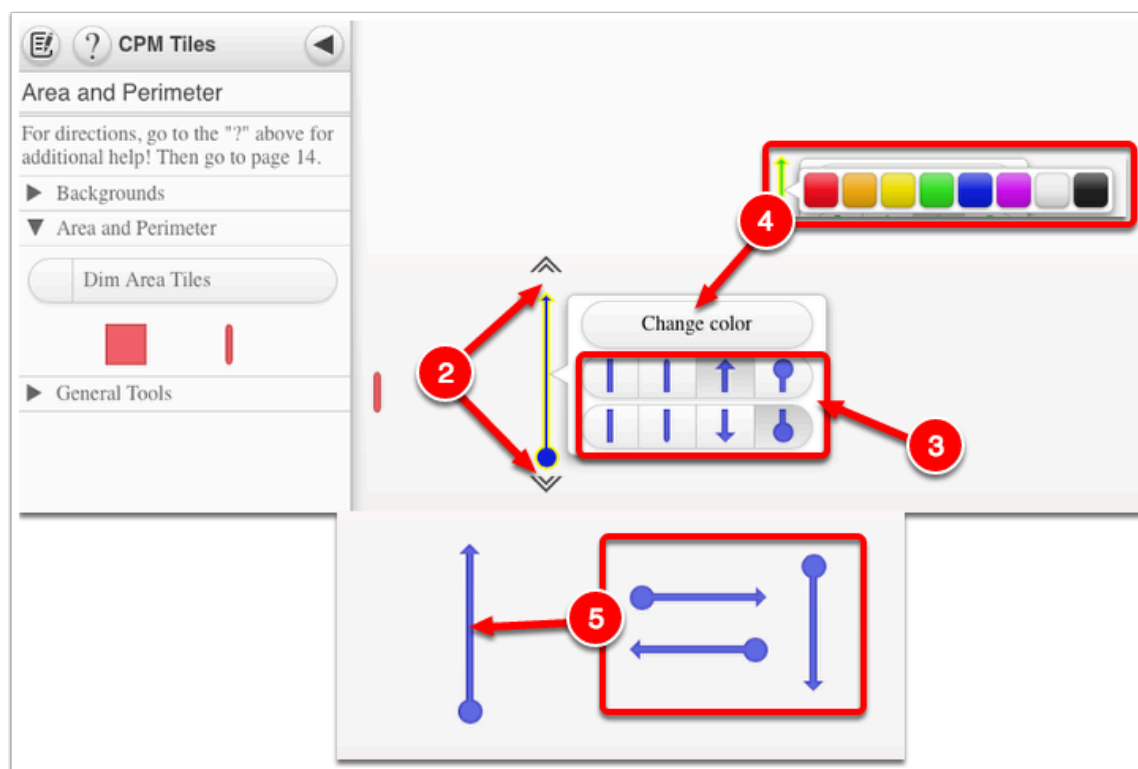
[Area and Perimeter \(CPM\)](#)

1. Drag the tiles and toothpicks to the display area. Double click toothpicks to rotate.

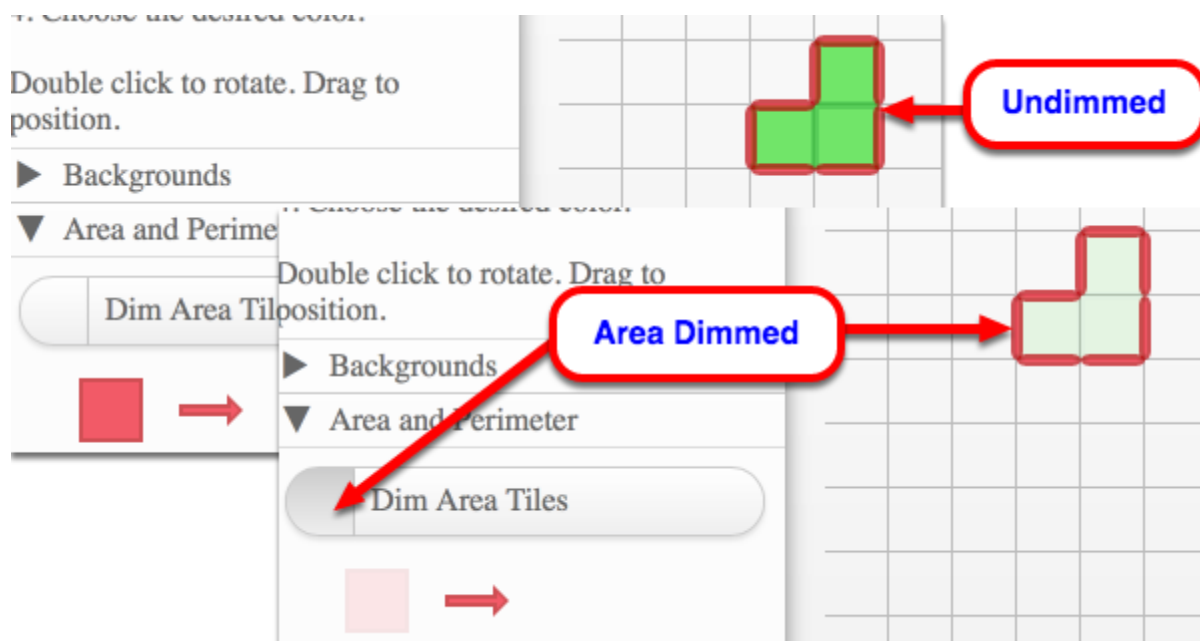


2. Toothpicks Settings

1. Click the toothpick and hold to view the toothpick settings.
2. Click one of the arrows at the end of toothpick to adjust the length.
3. Select the tip you want to use.
4. Click the "Change color" button to change the color of the toothpick.
5. Double click the toothpick to rotate.
6. Click and drag to move the toothpick.



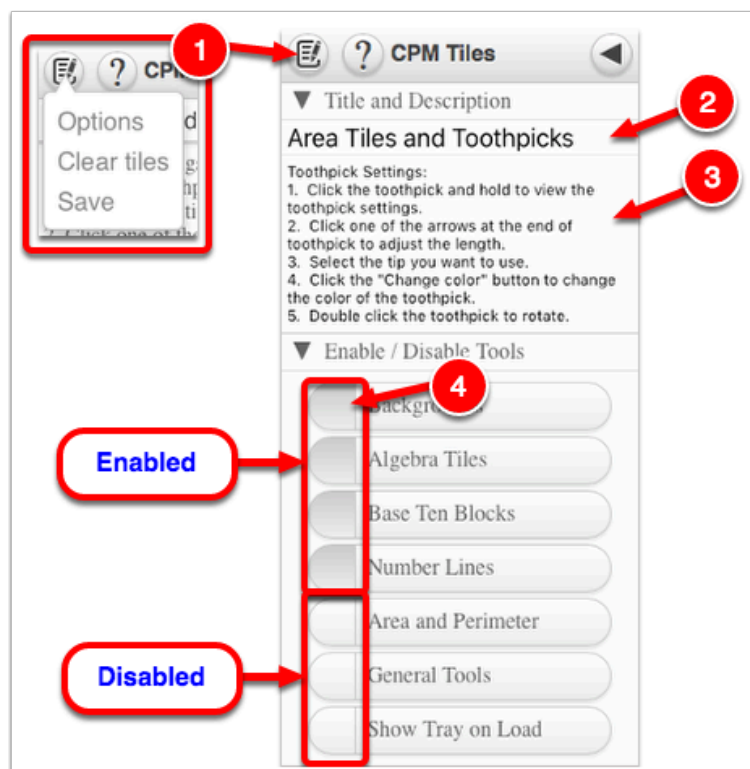
3. Dim Area showing the perimeter more sharply.



4. Explore the Options Menu:

1. Click the Paper & Pen Icon and select 'Options'.
2. Add a title.
3. Add description.

4. Click the button on the left of each tool name to enable/disable.



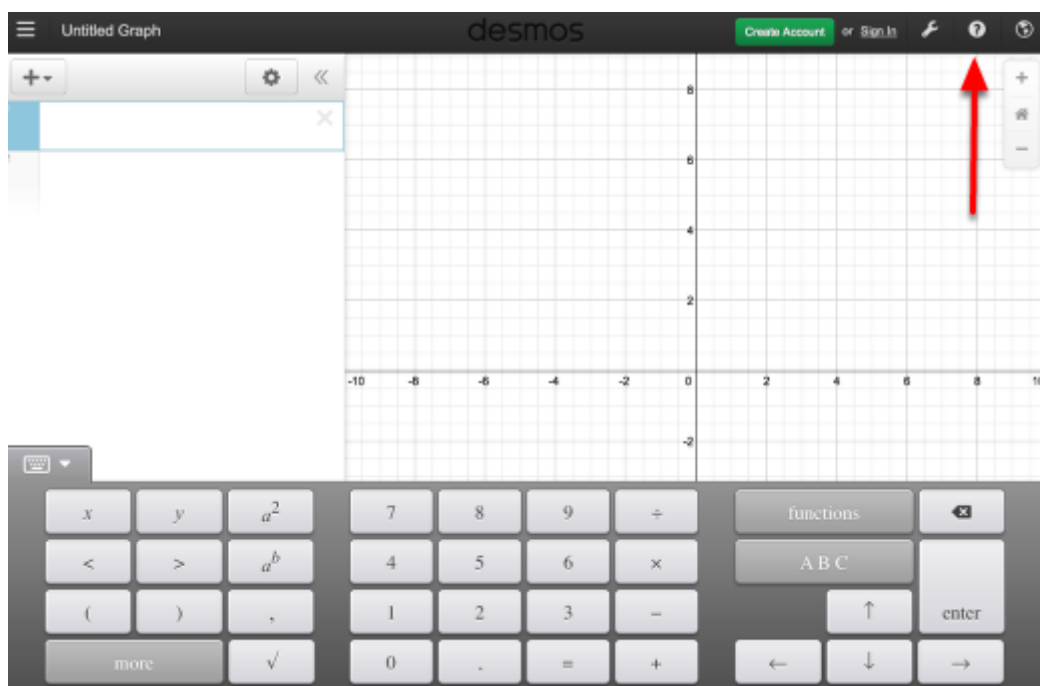
Desmos Graphing Calculator

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](#)

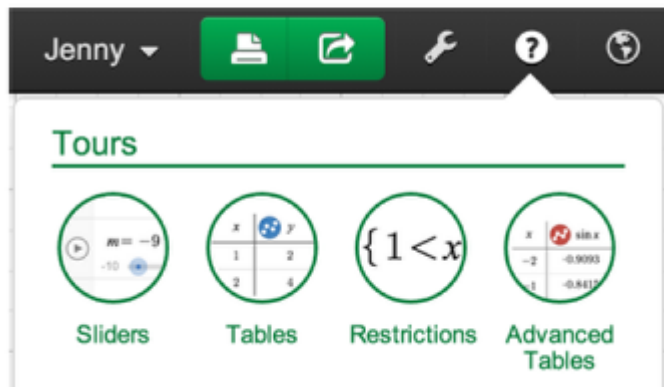
3. The interactive tours will NOT let you make a mistake! Try the links above!

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!

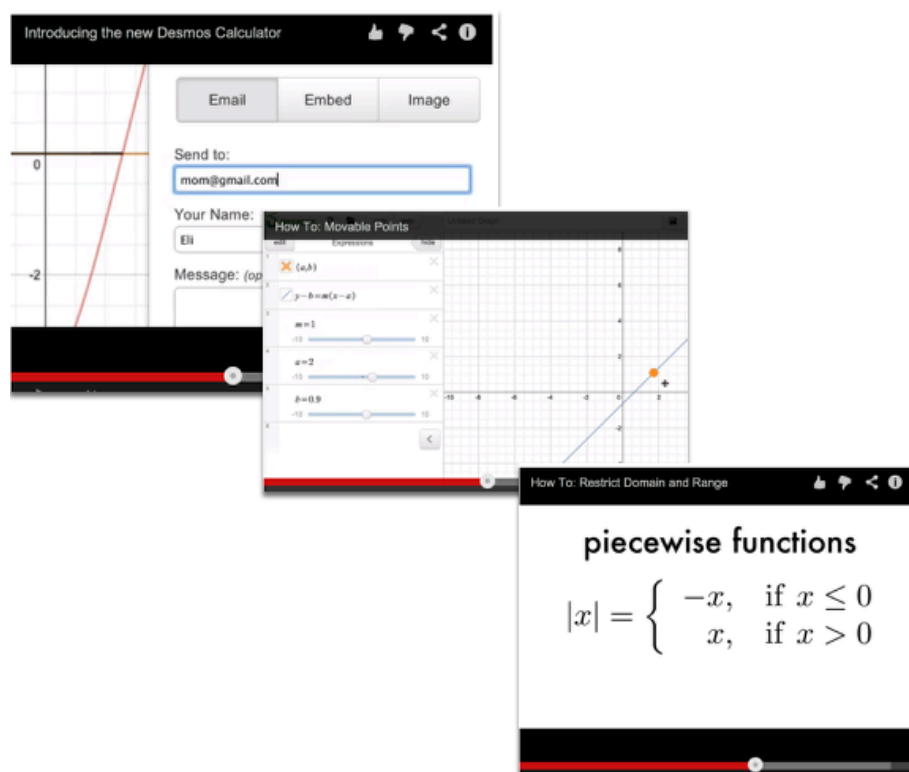
[Desmos Introduction](#)

[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](#)

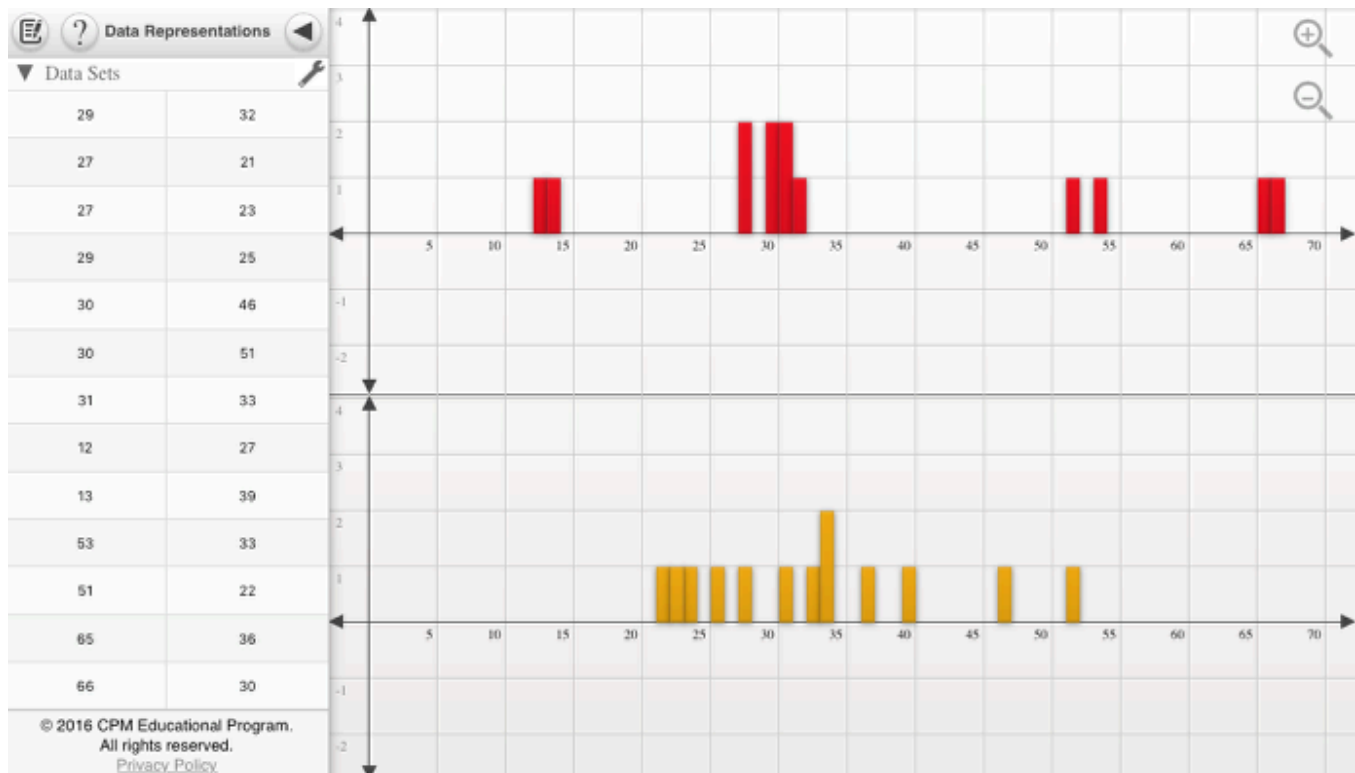
Data Representations (CPM)

Click the link below for “CPM Data Representations”

[CPM Data Representations](#)

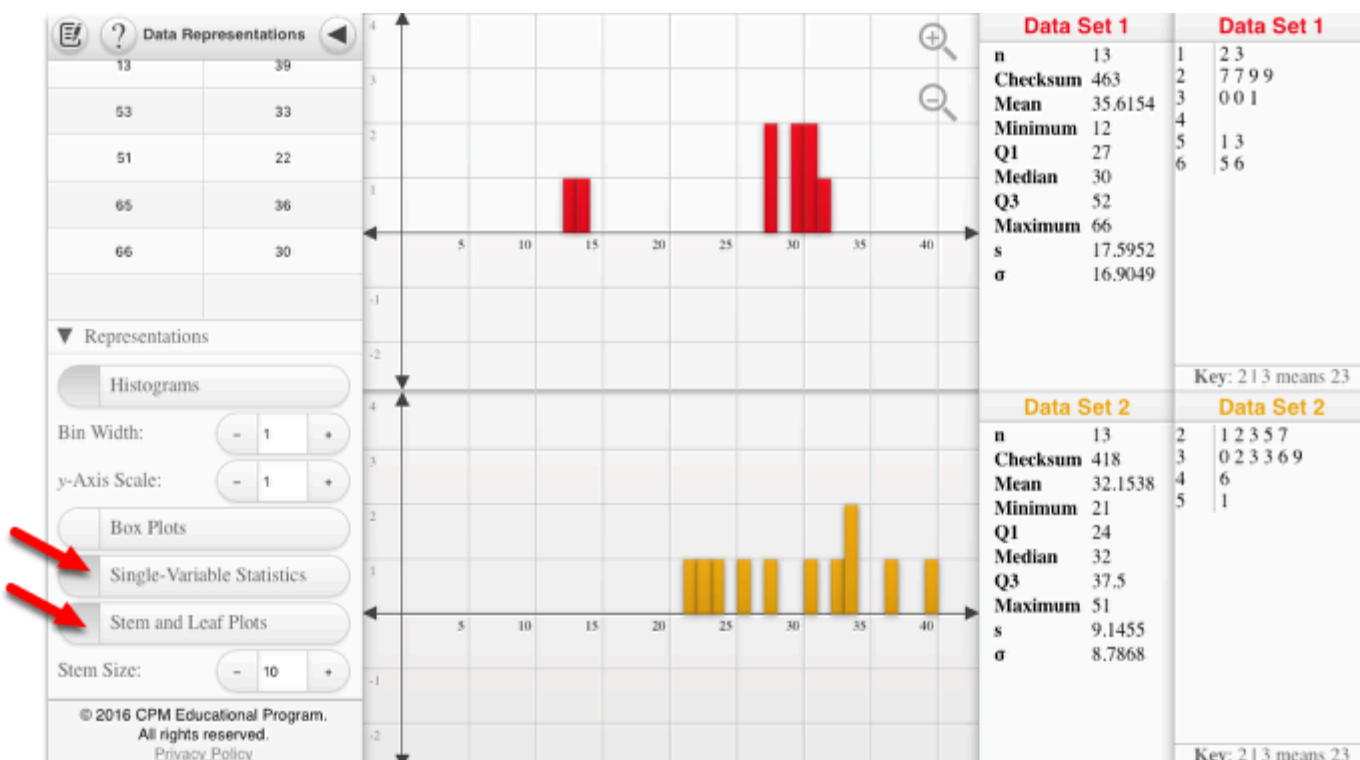
1. CPM Data Representations:

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.



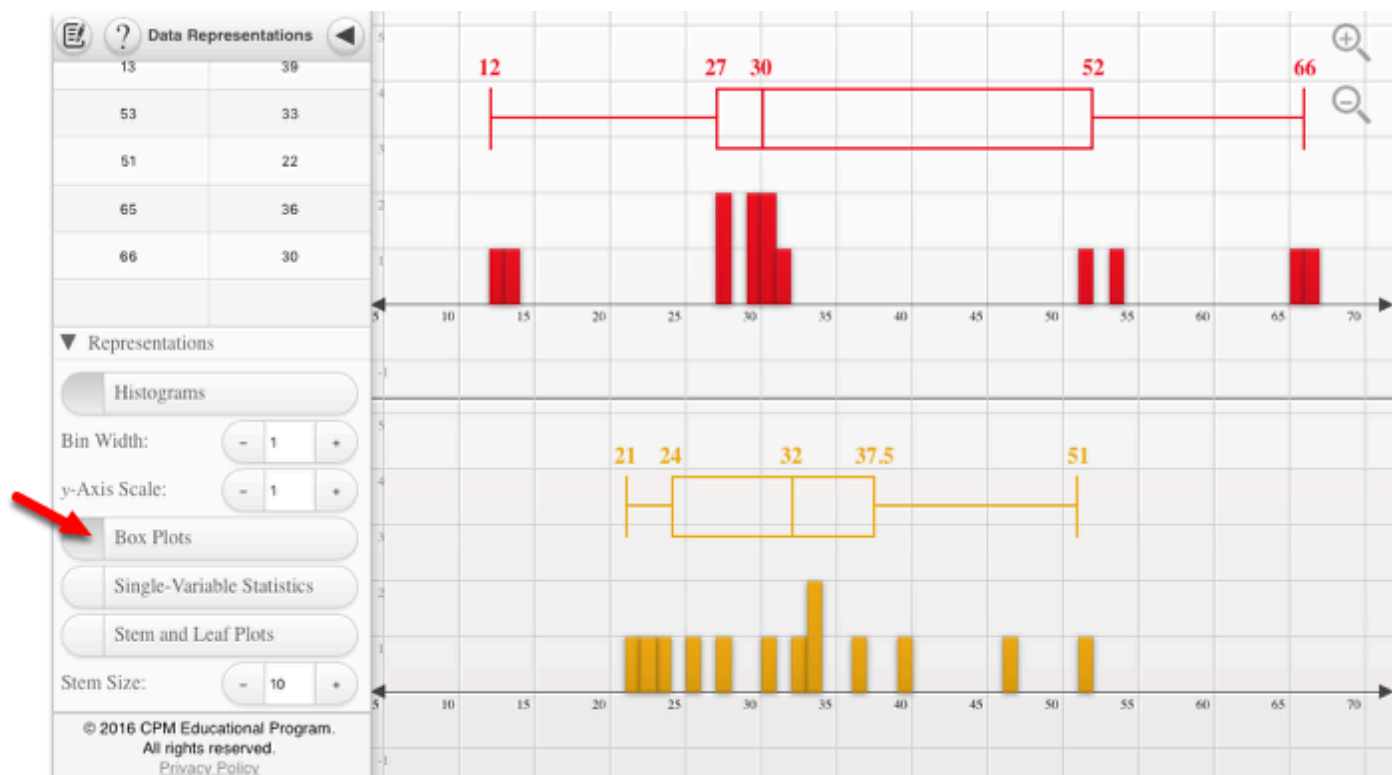
2. Single-Variable Statistics or the Stem and leaf Plots:

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.



Rigid Transformations eTool (CPM)

This eTool will record the steps you create showing translation, rotation, and reflection.

Click on the first link for the eTool. Click on the video links to view the use of the eTool.

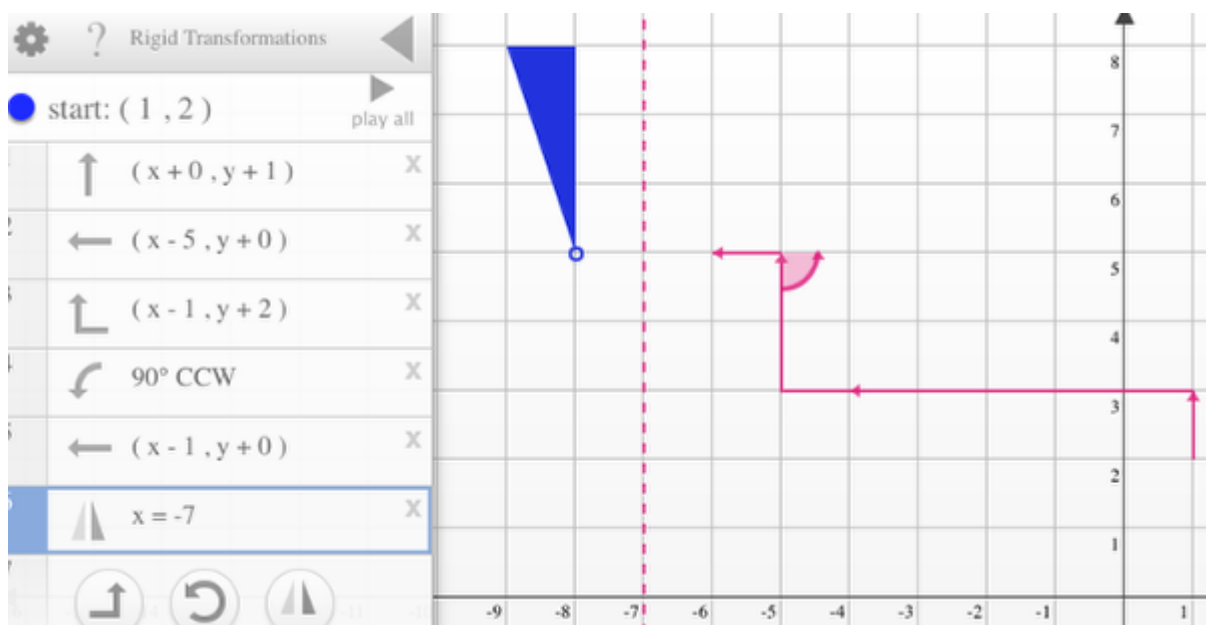
- Twelve games using the key lock are also available.
- This tool is designed so that teachers/students can create many more games.

[Rigid Transformations](#)

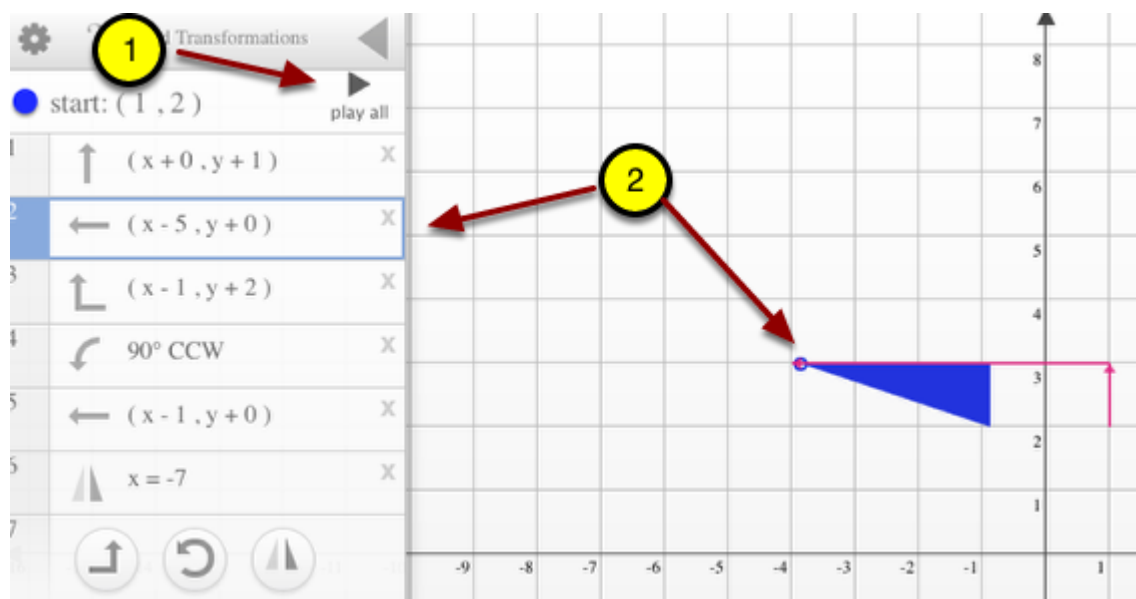
[Using RT Tool](#)

[Creating an RT Puzzle](#)

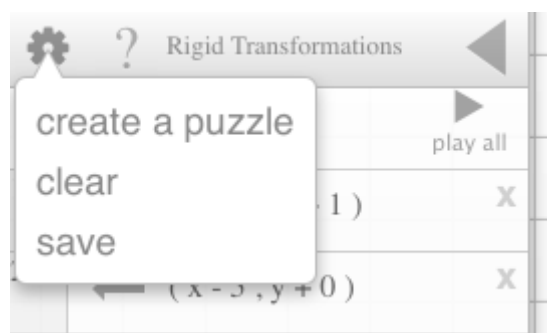
1. Steps are shown in the Tray at the left while the action occurs in the Display Area at the right.



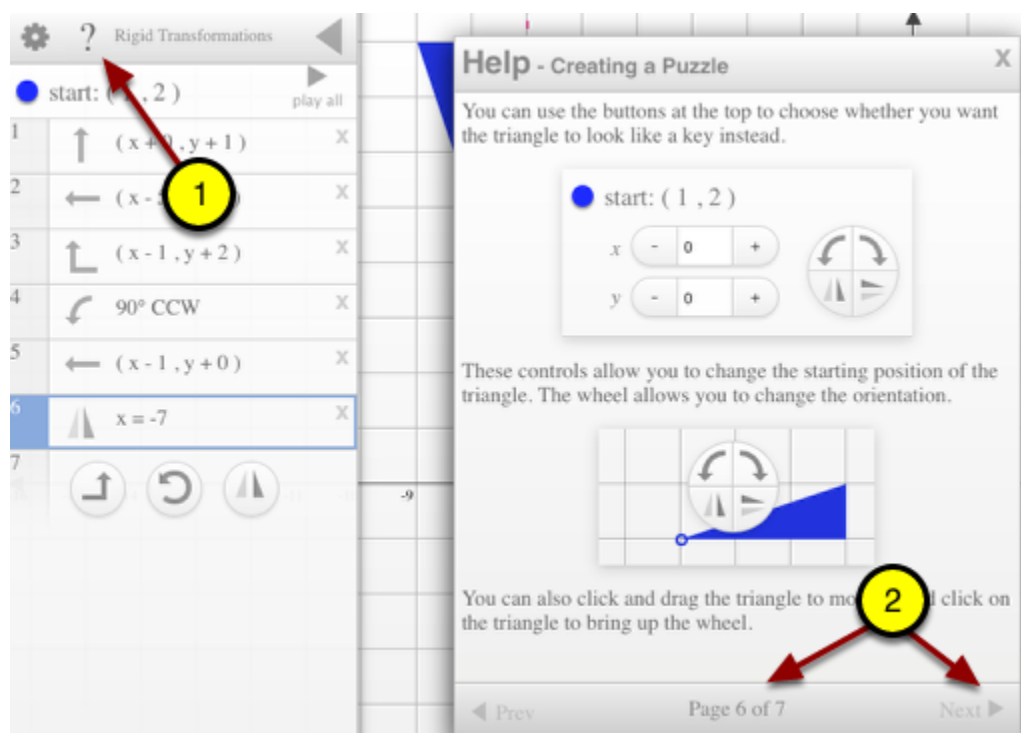
2. When playing, active steps are highlighted.



3. In the gear menu, you can create puzzles, clear, or save your projects.



4. Check the "?" for more help or watch the videos above.





Chapter 1

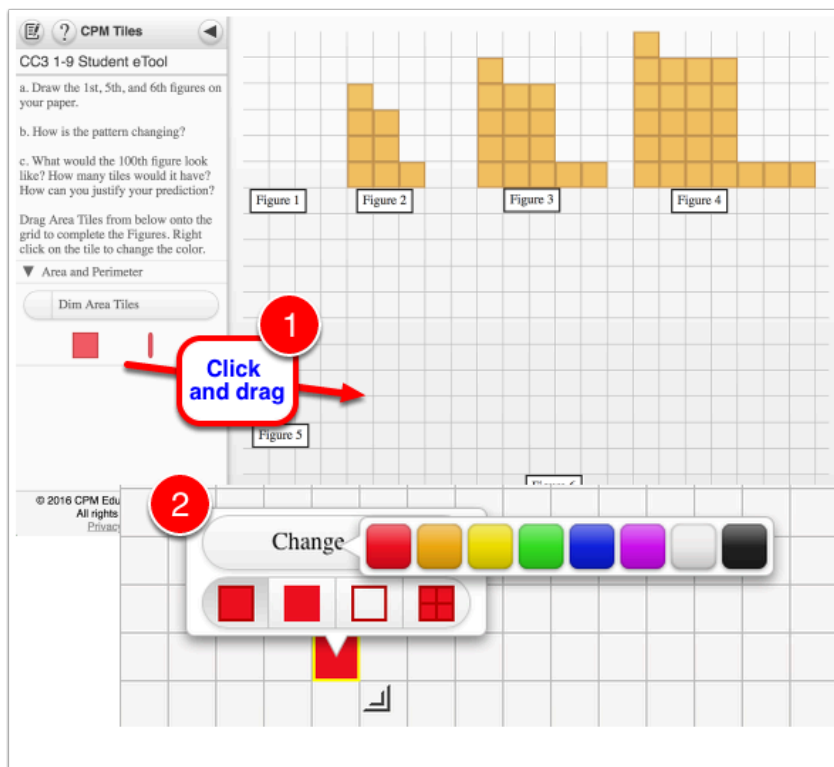
CC3 1.1.2: 1-9 Student eTool (CPM)

Click on the link below to access eTool.

[1-9 Student eTool \(CPM\)](#)

Use this eTool to build Figures 1, 5, and 6.

1. Drag the Area Tile from the tray to the grid.
2. Change the style and color of the Area Tile (optional).
 - a. Right click on the tile.
 - b. Select the tile.
 - c. Click 'Change color' and select the desired color.





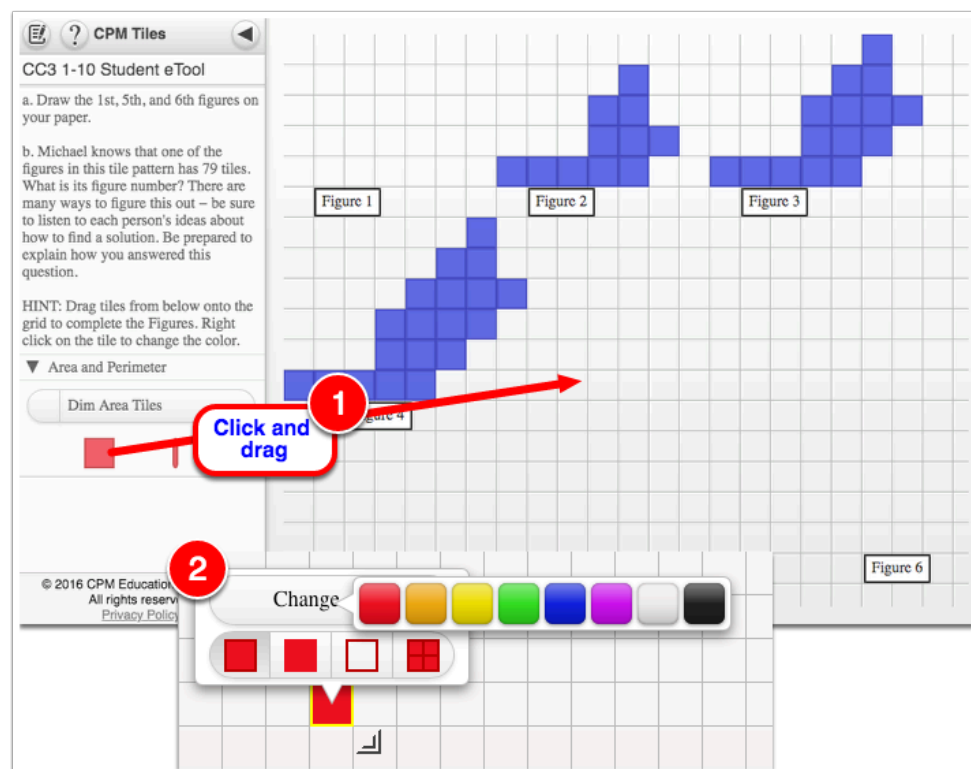
CC3 1.1.2: 1-10 Student eTool (CPM)

Click on the link below to access eTool.

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

Use this eTool to build Figure 1, Figure 5, and Figure 6.

1. Drag the Area Tile from the tray to the grid.
2. Change the style and color of the Area Tile (optional).
 - a. Right click on the tile.
 - b. Select the tile.
 - c. Click 'Change color' and select the desired color.



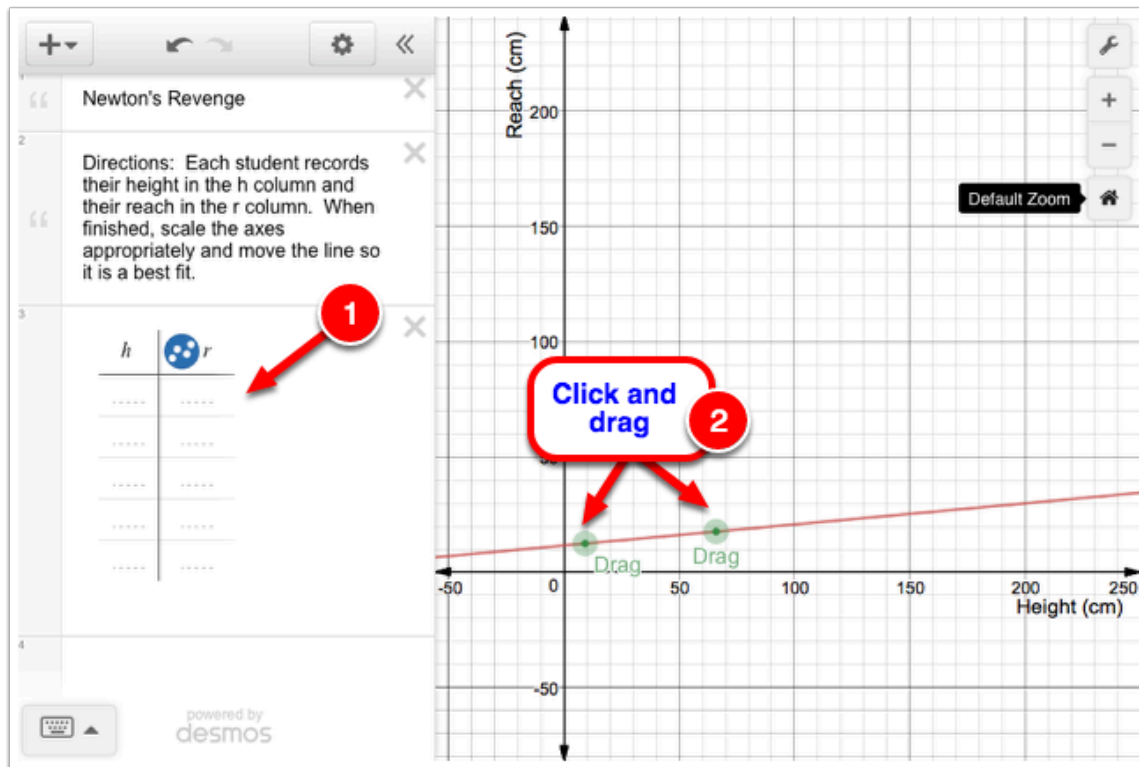
CC3 1.1.4: 1-25b Newton's Revenge Teacher eTool (Desmos)

Click on the link below to access eTool.

[CC3 1-25b Newton's Revenge Teacher eTool \(Desmos\)](#)

1. Add data to the table.

2. Drag the moveable line to show a trend in the data.



CC3 1.2.1: 1-42 Student eTool (Desmos)

Click on the link below to access eTool.

[1-42 Student eTool \(Desmos\)](#)

1. Click the white circle and arrow at left, below part (b) to view Doug's Table.

2. Add data to the table.

3. Click the white circle at left, below part (c) to view Johnny's Graph.

The screenshot shows the Desmos CC3 1-42 Student eTool interface. The left sidebar contains a list of questions. The central workspace displays a table for Doug's earnings and a graph for Johnny's earnings. Red arrows and circles highlight the steps:

- 1. Click the white circle and arrow at left, below part (b) to view Doug's Table.
- 2. Add data to the table.
- 3. Click the white circle at left, below part (c) to view Johnny's Graph.

Doug's Table:

Time (Hours)	Earnings (\$)
6	55

Johnny's Graph:

The graph shows Earnings (\$) on the y-axis and Time (Hours) on the x-axis. The y-axis ranges from 0 to 90, and the x-axis ranges from 0 to 8.



Chapter 2

CC3 2.1.4: 2-36 Student eTool (CPM)

Click on the link below to access eTool

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

Use this eTool to build Expression Mat.

The screenshot shows the CPM Tiles eTool interface. On the left is a sidebar with instructions and tile selection options. The main area on the right is a workspace for building an expression mat.

Instructions:

CC3 2-36 Student eTool

2-36. Gretchen used seven algebra tiles to build the expression shown at right.

a. Build this collection of tiles on your own Expression Mat and write its value.

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.

Algebra Tiles:

Label: x

Label: y

Label: 1

Label: $x \cdot y$

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The workspace shows a collection of algebra tiles arranged to represent the expression $x^2 - x + 1$. The tiles are: one large blue square (x^2), one medium blue rectangle (x), one small red rectangle ($-x$), and four small blue squares (1). The tiles are arranged in a grid with a dashed line separating the top and bottom sections.

Click on the link below to access eTool.

Use this eTool to compare the two Expression Mats and see which is greater.

CPM Tiles

CC3 2-47 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.

► Algebra Tiles

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Left

Which
is
greater?

Right

CC3 2.1.5: 2-49a and 2-49b Student eTools (CPM)

Click on the links below to access eTools.

[2-49a Student eTool \(CPM\)](#)

[2-49b Student eTool \(CPM\)](#)

Determine which side of each Expression Comparison Mats is greater.

2-49a:

CPM Tiles

CC3 2-49a Student eTool

Problem: Use Karl's "legal" simplification moves to determine which side of each Expression Comparison Mat below is greater.

After each expression is simplified, state which side is greater (has the largest value).

► Backgrounds

▼ Algebra Tiles

Label: x

x

x^2

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Left

+

1

-1

1

-1

1

1

1

Which is greater?

Right

1

-1

1

+

1

-1

1

-1

-1

-1

-

2-49b:

CPM Tiles

CC3 2-49b Student eTool

Problem: Use Karl's "legal" simplification moves to determine which side of each Expression Comparison Mat below is greater.

After each expression is simplified, state which side is greater (has the largest value).

▶ Backgrounds

▼ Algebra Tiles

Label: x

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Left

+

1

-1

x

1

1

-1

1

-1

1

1

—

Which
is
greater?

Right

+

1

-1

-1

1

x

-1

-1

-1

-1

—

CC3 2.1.6: 2-56a to 2-56f Student eTools (CPM)

Click on the links below to access the eTools.

[2-56a Student eTool \(CPM\)](#)

[2-56b Student eTool \(CPM\)](#)

[2-56c Student eTool \(CPM\)](#)

[2-56d Student eTool \(CPM\)](#)

[2-56e Student eTool \(CPM\)](#)

[2-56f Student eTool \(CPM\)](#)

Use these eTools to compare the two Expression Mats and see which is greater.

1. 2-56a:

CPM Tiles

CC3 2-56a Student eTool

2-56. 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.

Algebra Tiles

Label: x

x

x^2

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Left

+

-1

-1

1

-1

-1

1

-1

Right

-1

-1

+

-1

1

1

1

-

Which is greater?

2. 2-56b:


CPM Tiles

CC3 2-56b Student eTool

2-56. 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.

▼ Algebra Tiles

Label: x



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Left

+

1

-1

-1

1

1

-x

1

-

Right

+

-1

1

x

1

1

1

1

1

-

Which
is
greater?

3. 2-56c:

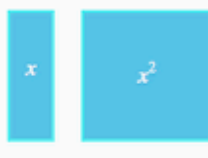
CPM Tiles

CC3 2-56c Student eTool

2-56. 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.

▼ Algebra Tiles

Label: x



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Left

+

1

-1

-1

y

1

1

y

y

-

Right

+

-1

-1

-y

1

1

-1

1

1

-1

-

Which
is
greater?

4. 2-56d:


CPM Tiles

CC3 2-56d Student eTool

2-56. 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.

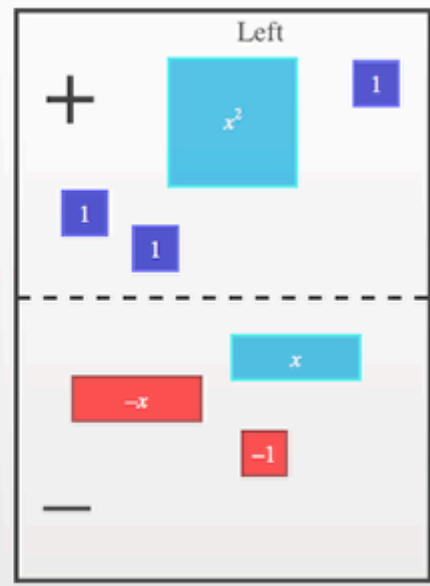
▼ Algebra Tiles

Label: x



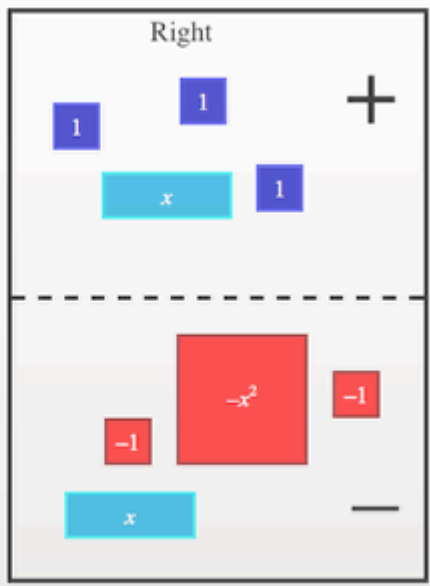
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Left



Which
is
greater?

Right



5. 2-56e:


CPM Tiles

CC3 2-56e Student eTool

2-56. 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.

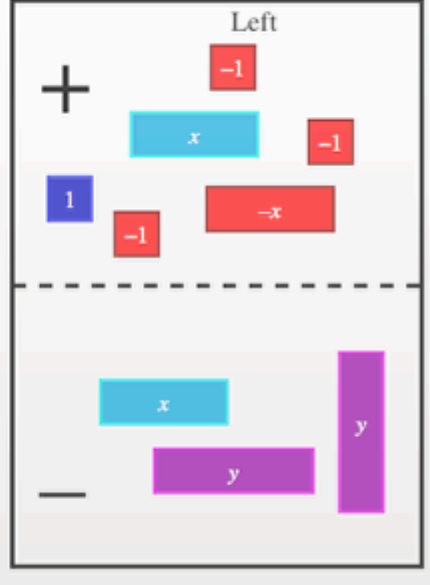
▼ Algebra Tiles

Label: x



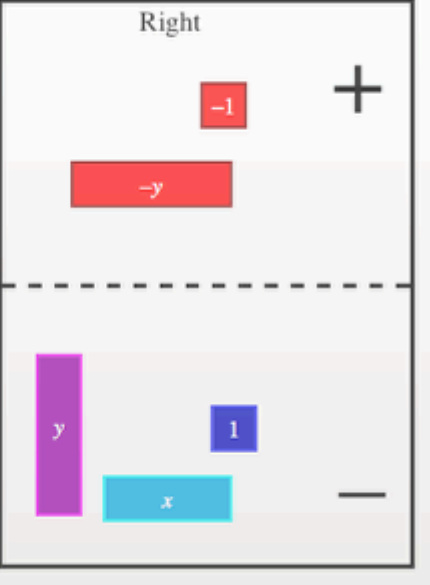
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Left



Which
is
greater?

Right



6. 2-56f:

CPM Tiles

CC3 2-56f Student eTool

2-56. 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.

▼ Algebra Tiles

Label: x

x^2 Tile

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Left

+

x

1

-1

x

-1

-1

Right

x

-1

+

1

1

1

Which
is
greater?

x

1

1

1

$-x$

1

1

1

1

-1

1

-1

$-x$

CC3 2.1.6: 2-57 Student eTool (CPM)

Click on the link below to access eTool.

[2-57 Student eTool \(CPM\)](#)

Use this eTool to compare the two Expression Mats and see which is greater.

CPM Tiles

CC3 2-57 Student eTool

2-57. a. Simplify the expressions using the "legal" moves that you developed in Lesson 2.1.5.

b. Can you tell which expression is greater? Explain in a few sentences on your paper. Be prepared to share your conclusion with the class.

Algebra Tiles

Label: x

x

x^2

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Left

+

x

x

x

1

-1

-1

1

Which is greater?

Right

x

-1

+

1

-1

-1

1

1

1

1

1

1

CC Course 3 eTools

Page 38

CC3 2.1.7: 2-64, 2-65, 2-66a & 2-66b Student eTools (CPM)

Click on the links below to access eTools.

[2-64 Student eTool \(CPM\)](#)

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

[2-66a Student eTool \(CPM\)](#)

[2-66b Student eTool \(CPM\)](#)

Use the eTools below to compare the given Expression Mats in each problem and determine which is greater.

1. CC3 Lesson 2.1.7 2-64:

CPM Tiles

CC3 2-64 Student eTool

Use the simplification strategies you have learned to determine which expression on the Expression Comparison Mat at right is greater. Record each step as instructed by your teacher. Also record the simplified expression that remains after each move. This will be a written record of how you solved this problem. Discuss with your team what the best way is to record your moves.

Algebra Tiles

Label: x

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Left

$+$
 -1
 -1
 1
 -1
 $-x$
 $-x$

Right

1
 1
 $+$
 -1
 -1
 -1
 x
 -1

Which is greater?

2. CC3 Lesson 2.1.7 2-65:

CPM Tiles

CC3 2-65 Student eTool

2-65. While Athena was comparing the expressions shown at right, she was called out of the classroom. When her teammates needed help, they looked at her paper and saw the work shown below. Unfortunately, she had forgotten to explain her simplification steps. Can you help them figure out what Athena did to get each new set of expressions?

▶ Algebra Tiles

▶ General Tools

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Left

Which is greater?

Right

3. CC3 Lesson 2.1.7 2-66a:

CPM Tiles

CC3 2-66a Student eTool

For each pair of expressions, determine which is greater, carefully recording your steps as you go. If you cannot tell which expression is greater, state, "Not enough information." Make sure that you record your result after each type of simplification. For example, if you flip all of the tiles from the "-" region to the "+" region, record the resulting expression and indicate what you did using either words or symbols. Be ready to share your work with the class.

▼ Algebra Tiles

Label: x

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Left

Which is greater?

Right

4. CC3 Lesson 2.1.7 2-66b:

CPM Tiles

CC3 2-66b Student eTool

2-66. For each pair of expressions, determine which is greater, carefully recording your steps as you go. If you cannot tell which expression is greater, state, "Not enough information." Make sure that you record your result after each type of simplification. For example, if you flip all of the tiles from the "-" region to the "+" region, record the resulting expression and indicate what you did using either words or symbols. Be ready to share your work with the class.

Algebra Tiles

Label: x

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Left

+

1

x

-1

x

-1

x

x

1

x

1

x

Right

-1

1

+

x

1

x

1

1

1

1

Which is greater?

CC3 2.1.8: 2-72 & 2-74 Student eTools (CPM)

Click on the links below to access eTools.

[2-72 Student eTool \(CPM\)](#)

[2-74 Student eTool \(CPM\)](#)

2-72:

Use this eTool to help you determine which expression is greater.

CPM Tiles

CC3 2-72 Student eTool

2-72. 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.

a. Tiles are completed at right.

b. Which is greater: $x + 1 - (1 - 2x)$ or $3 + x - 1 - (x - 4)$?

Algebra Tiles

Label: x

x

x^2

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Left

+

-1

1

-1

-1

-1

-1

-1

-1

-1

1

-1

-

Right

+

1

1

1

-1

1

1

-

Which is greater?

2-74:

Use this eTool to solve for x .

CPM Tiles

CC3 2-74 Student eTool

2-74. SOLVING FOR X

To learn more about 'x', assume that the left expression and the right expression are equal. The two expressions will be brought together on one mat to create an Equation Mat. The double line down the center of an Equation Mat represents the word "equals." It is a wall that separates the left side of an equation from the right side.

a. Simplify as much as possible and then solve for 'x'. Be sure to record your work.

b. Build the equation $2x - 5 = -1 + 5x + 2$ using your tiles by placing $2x - 5$ on the left side and $-1 + 5x + 2$ on the right side. Then use your simplification skills to simplify this equation as much as possible so that 'x' is alone on one side of the equation. Use the fact that both sides are equal to solve for 'x'. Record your work.

▼ Algebra Tiles

Label: x

+

1

x

-1

-1

1

-x

-x

1

1

1

1

1

-x

1

Click on the links below to access eTools.

[2-82c Student eTool \(CPM\)](#)

Use these eTools below to help you determine if each equation has a solution for x .

1. 2-82a:

CC Course 3 eTools

2. 2-82b:

CPM Tiles

CC3 2-82b Student eTool

2-82b. IS THERE A SOLUTION?

While solving homework last night, Richie came across three homework questions that he thinks have no solution. Build each equation below and determine if it has a solution for 'x'. If it has a solution, find it. If it does not have a solution, explain why not. Explore using the virtual tiles at right.

Algebra Tiles

Label: x

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+

1

-1

x

1

1

1

x

-1

-1

1

-x

3. 2-82c:

CPM Tiles

CC3 2-82c Student eTool

2-82c. IS THERE A SOLUTION?

While solving homework last night, Richie came across three homework questions that he thinks have no solution. Build each equation below and determine if it has a solution for 'x'. If it has a solution, find it. If it does not have a solution, explain why not. Explore using the virtual tiles at right.

Algebra Tiles

Label: x

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+

1

-1

-1

-1

-1

-x

-x

-1

-1

1

1

1

1

1

-1

1

1

1

1



Chapter 3

CC3 3.1.1: 3-1a & 3-1b Student eTool (CPM)

Click on the links below to access the eTools.

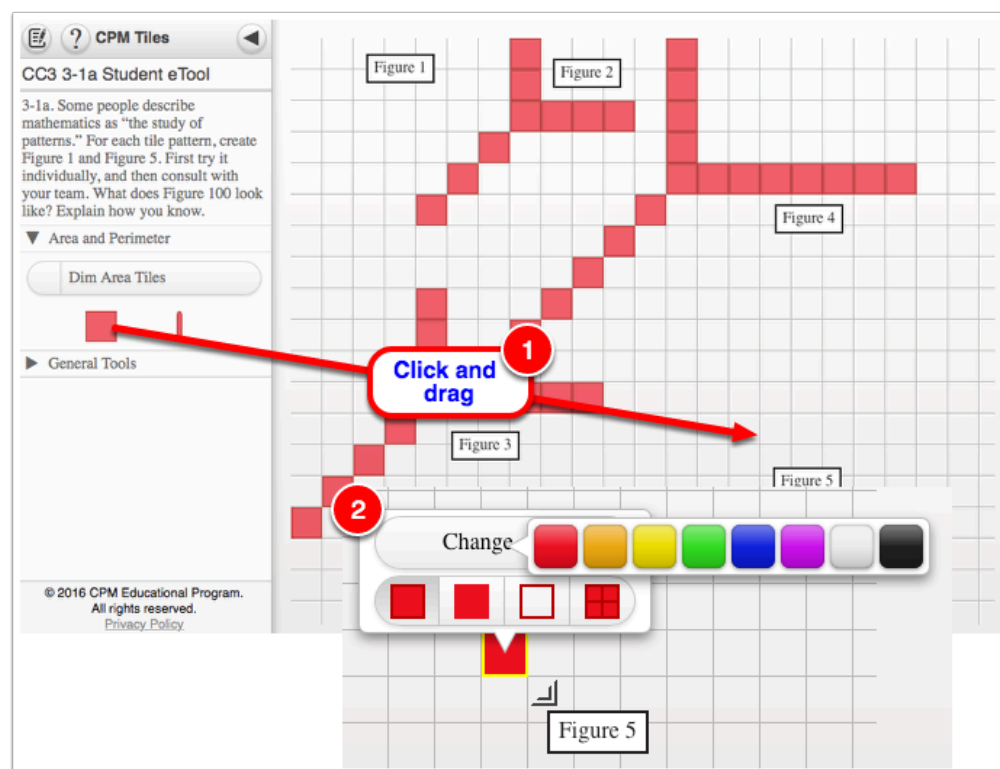
[3-1a Student eTool \(CPM\)](#)

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

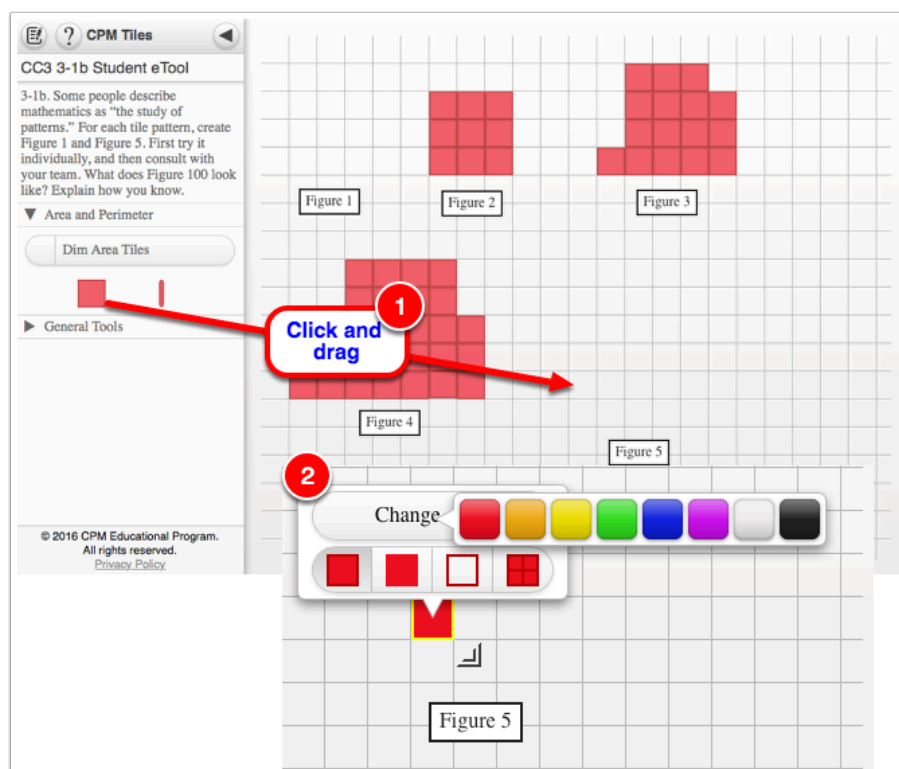
Use these eTools to create Figure 1 and Figure 5.

1. Drag the Pattern Tile from the tray to the grid.
2. Change the style and color of the Area Tile (optional).
 - a. Right click on the tile.
 - b. Select the tile.
 - c. Click 'Change color' and select the desired color.

1. 3-1a:



2. 3-1b:



CC3 3.1.2: Redwoods: The Tallest Trees Video

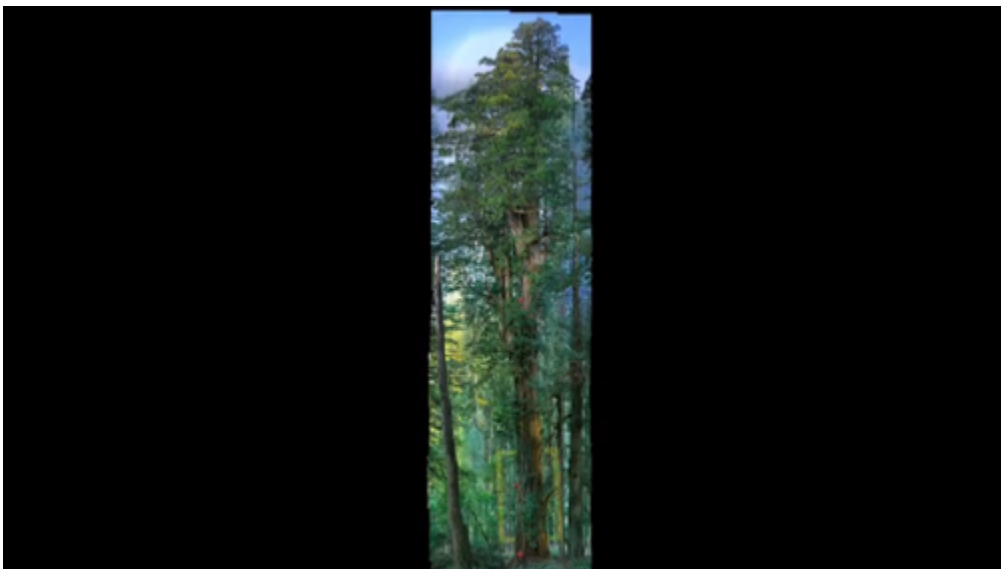
Click on the link below for the "Redwoods: The Tallest Trees Video"

[Redwoods: The Tallest Trees](#) 

1. This short video shows the extent some redwood trees can grow.



2. The video also shows how scientists go about measuring the height.





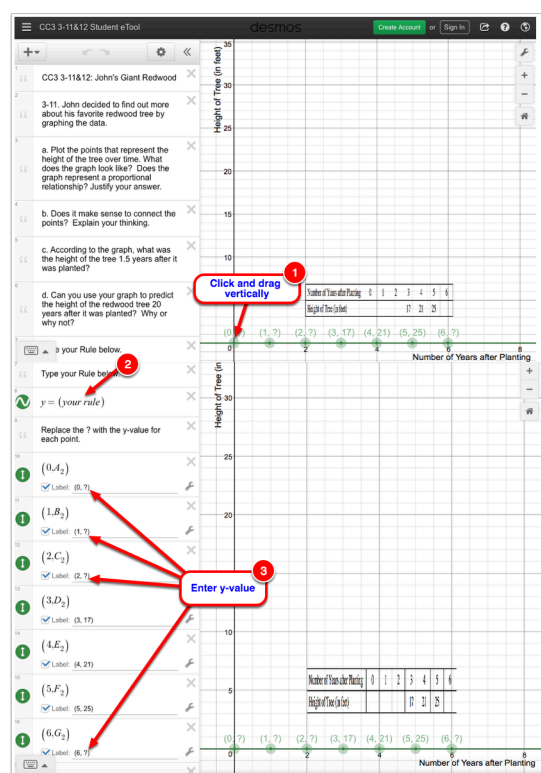
CC3 3.1.2: 3-11&12 John's Giant Redwood Student eTool (Desmos)

Click on the link below to access eTool.

[3-11&12 John's Giant Redwood Student eTool \(Desmos\)](#)

Use this eTool to answer problems 3-11 and 3-12.

1. Plot the green points by clicking and dragging each one vertically.
2. Type your Rule that goes through the points in Line 9.
3. Replace "?" with the y-value for lines 10, 11, 12, and 16.



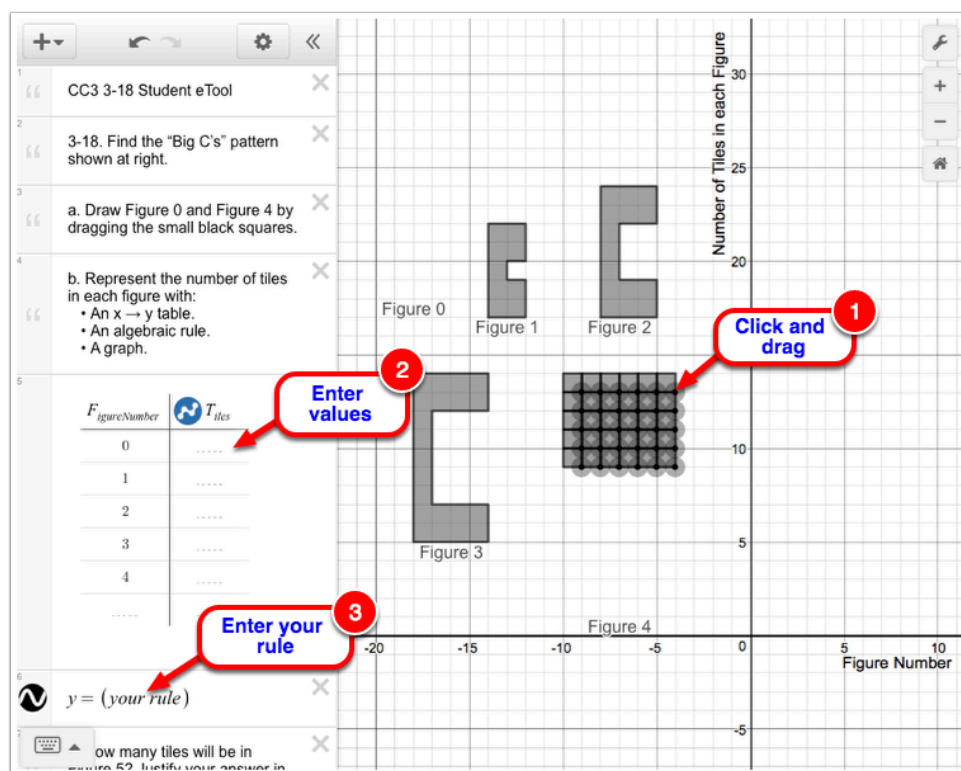
CC3 3.1.3: 3-18 Student eTool (Desmos)

Click on the link below to access the eTool.

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

Use this eTool to create Figure 0 and Figure 4 and to find the "Bic C's" pattern.

1. Click onto the corner dot of each small black squares and drag to the desired location to create Figure 0 and Figure 4.
2. Enter the values of Tiles Column in line 5.
3. Enter your rule in line 6.



CC3 3.1.3: 3-19 to 3-22 Student eTool (Desmos)

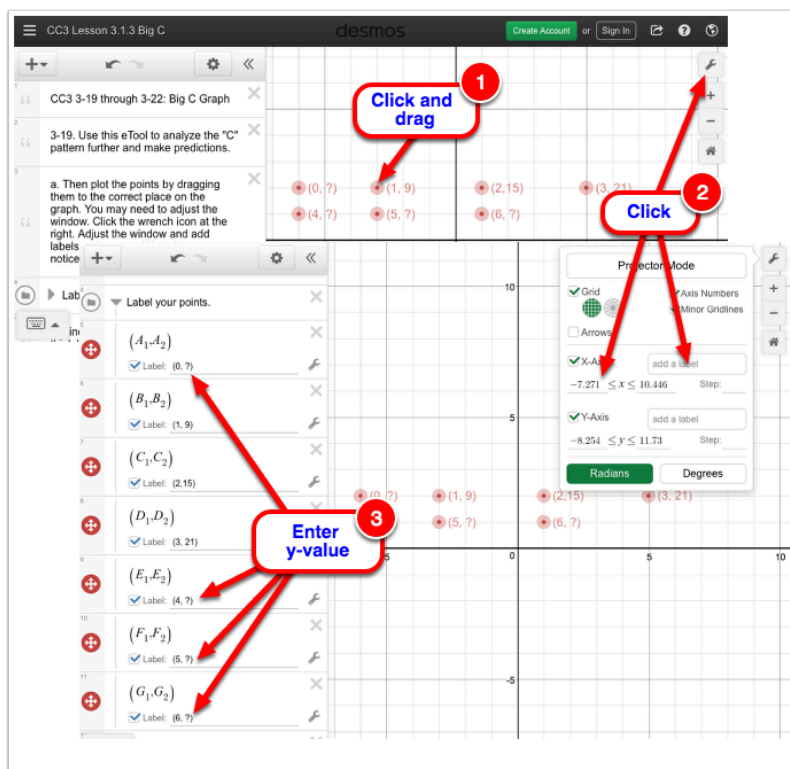
Click on the link below to access eTool.

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

Use this eTool to analyze the "C" pattern further and make predictions.

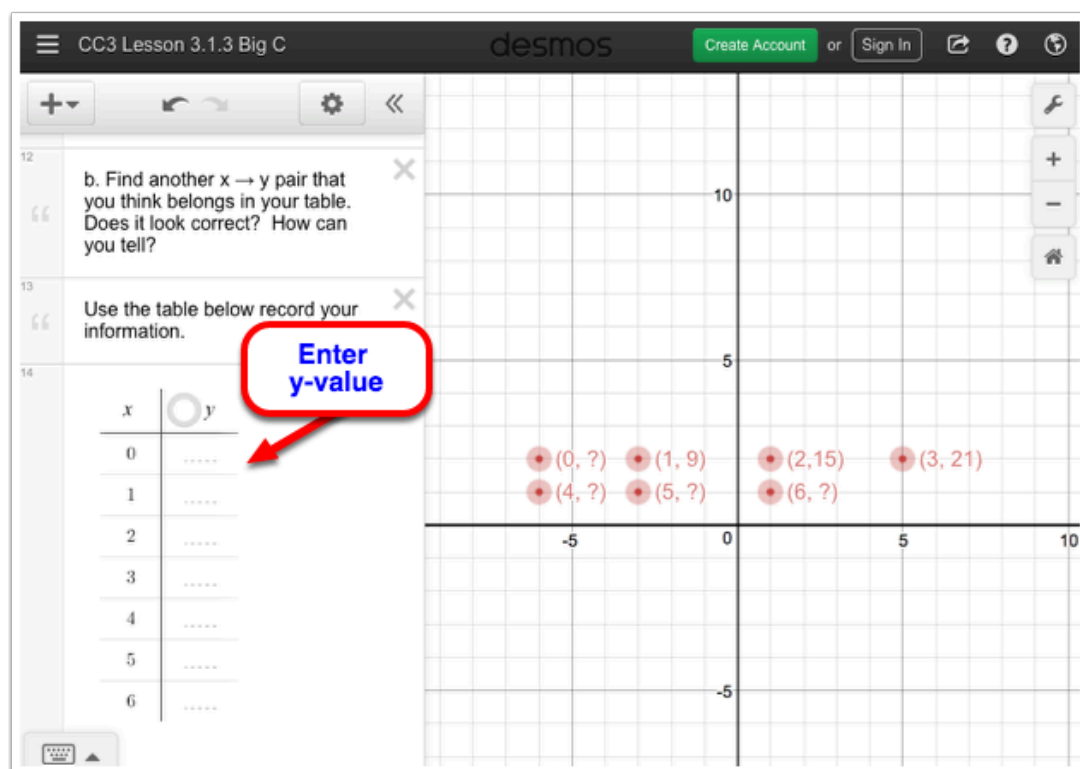
3-19a:

1. Click each RED points and drag them to the correct place.
2. Click the wrench icon at the right corner of the Desmos eTool to adjust the window settings.
 - Adjust the size in X-Axis and Y-Axis.
 - Add a label for your X-Axis and Y-Axis.
3. Click the "Label your points" folder to add values to the missing y-values.
 - Replace "?" with the correct y-value.



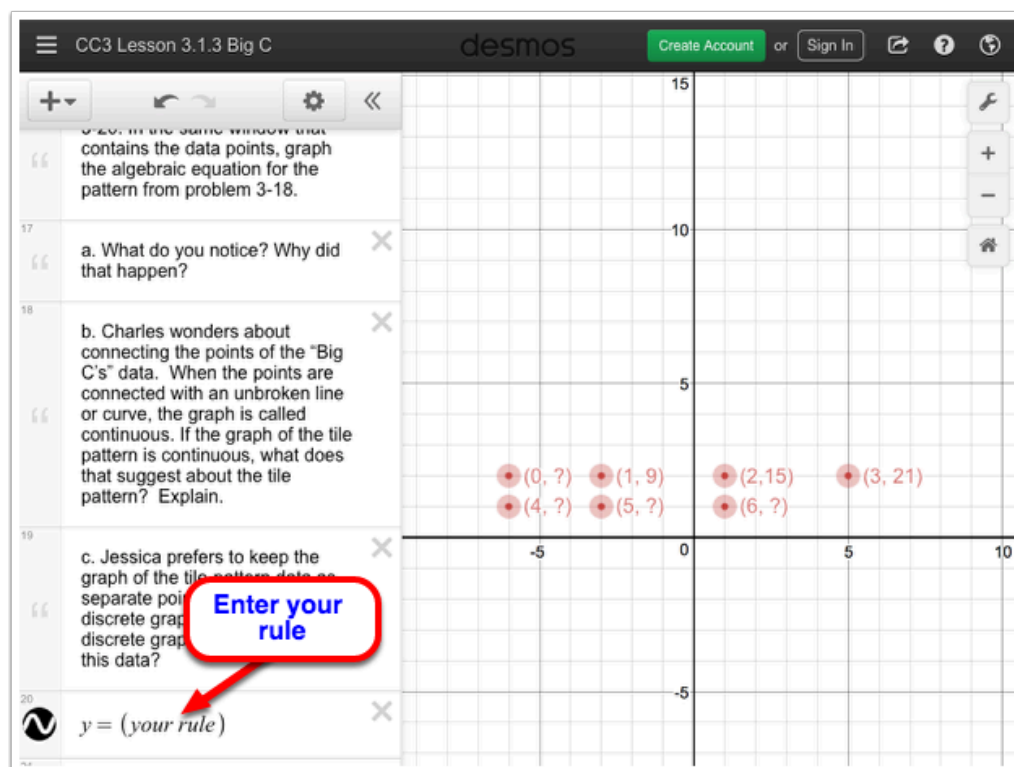
3-19b:

1. Enter the y-values in the table located in line 14.



3-20:

1. Enter the rule in finding the y-value in line 20.



CC3 3.2.1: 3-70 Student eTool (CPM)

Click on the link below to access eTool."

[3-70 Student eTool \(CPM\)](#)

Use this eTool to view the Equation Mat that will be used in solving part (b) of problem 3-70.

Solve the equation on your Equation Mat one step at a time. Every time you make a step, record your work in two ways:

- Record the step that was taken to get from the old equation to the new equation.
- Write a new equation that represents the tiles on the Equation Mat.

CPM Tiles

CC3 3-70 Student eTool

3-70. For this activity, share with your partner.

a. Start by setting up your Equation Mat as shown at right. Write the equation on your paper.

b. Next, solve the equation on your Equation Mat one step at a time. Every time you make a step, record your work in two ways:

- Record the step that was taken to get from the old equation to the new equation.
- Write a new equation that represents the tiles on the Equation Mat.

c. With your partner, find a way to check if your solution is correct.

Algebra Tiles

Label: x

x

x^2

+

x

x

x

1

x

1

1

1

1

1

1

1

1

–

x

1

1

1

1

1

1

1

1

+

–



Chapter 4

CC3 4.1.2: 4-12, 4-13a, 4-13b, and 4-15 Student eTools (CPM)

Click on the links below to access eTools.

[4-12 Student eTool \(CPM\)](#)

[4-13a Student eTool \(CPM\)](#)

[4-13b Student eTool \(CPM\)](#)

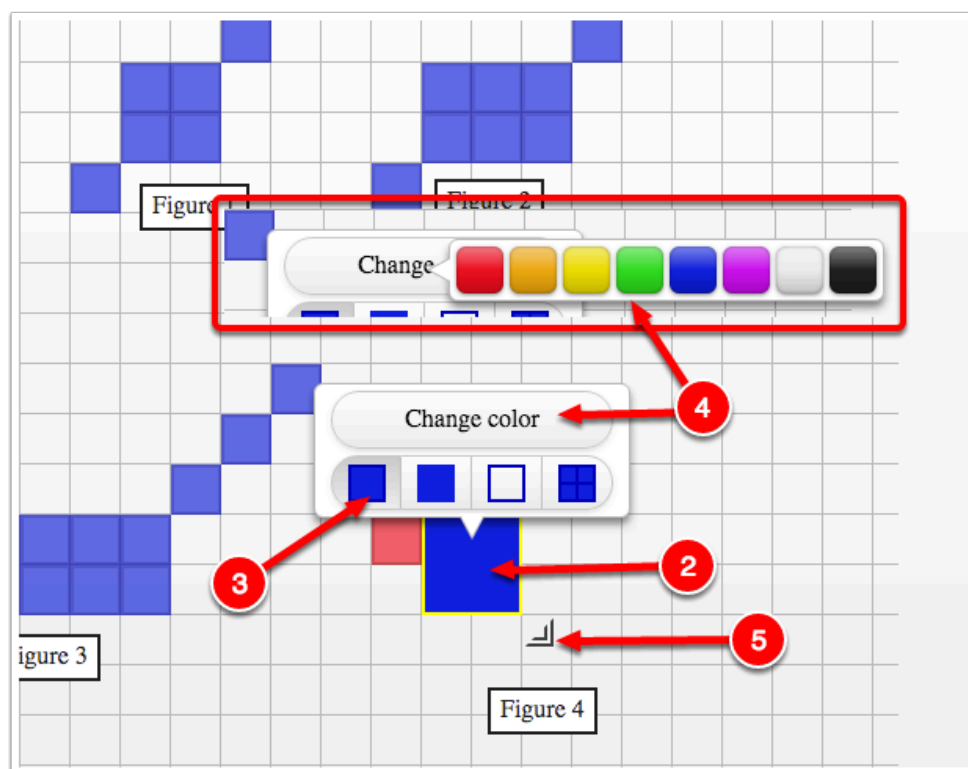
[4-15 Student eTool \(CPM\)](#)

Create Figure 0 and Figure 4 for each problem.

1. Click the Pattern Tile under the General Tools and drag it to the tile area.



2. Click and hold the tile until the tile settings appear.
3. Select the tile pattern you want to use.
4. Click 'Change color' button and select the desired color.
5. Click the arrow-like symbol on the lower left corner of the tile and drag (to the right or down) to extend/add more tiles.



4-12: Tile Pattern #1

CC3 4-12 Student eTool

4-12. Examine the tile pattern shown at right.

a. What do you notice? After everyone has had a moment to examine the figures independently, discuss what you see with your team.

b. Sketch the next figure in the sequence (Figure 4) on your resource page. Sketch Figure 0, which is the figure that comes before Figure 1.
HINT: Drag the RED squares below to the display at right.

c. How is the tile pattern growing? Where are the tiles being added with each new figure?

d. What would Figure 100 look like? Describe it in words. How many tiles would be in the 100th figure? Find as many ways as you can to justify your conclusion. Be prepared to report back to the class with your team's findings and methods.

▼ General Tools

Text ■ ● →

The image shows a screenshot of the CPM Tiles eTool interface. A grid contains blue tiles forming a pattern. The pattern consists of a central square of blue tiles, with a single blue tile at each corner of the square. The pattern is labeled Figure 0, Figure 1, Figure 2, Figure 3, and Figure 4.

4-13a: Tile Pattern #2

CC3 4-13a Student eTool

4-13a. Tile Pattern #2:

Examine the tile pattern shown at right.

a. What do you notice? After everyone has had a moment to examine the figures independently, discuss what you see with your team.

b. Sketch the next figure in the sequence (Figure 4) on your resource page. Sketch Figure 0, which is the figure that comes before Figure 1. HINT: Drag the RED squares below to the display at right.

c. How is the tile pattern growing? Where are the tiles being added with each new figure?

d. What would Figure 100 look like? Describe it in words. How many tiles would be in the 100th figure? Find as many ways as you can to justify your conclusion. Be prepared to report back to the class with your team's findings and methods.

► Backgrounds

▼ Area and Perimeter

4-13b: Tile Pattern #3

CC3 4-13b Student eTool

4-13b. Tile Pattern #3:

Examine the tile pattern shown at right.

a. What do you notice? After everyone has had a moment to examine the figures independently, discuss what you see with your team.

b. Sketch the next figure in the sequence (Figure 4) on your resource page. Sketch Figure 0, which is the figure that comes before Figure 1. HINT: Drag the RED squares below to the display at right.

c. How is the tile pattern growing? Where are the tiles being added with each new figure?

d. What would Figure 100 look like? Describe it in words. How many tiles would be in the 100th figure? Find as many ways as you can to justify your conclusion. Be prepared to report back to the class with your team's findings and methods.

▼ General Tools

4-15: Tile Pattern #4

CPM Tiles

CC3 4-15 Student eTool

4-15. Consider Tile Pattern #4, shown at right.

a. Draw Figures 0 and 4 on the resource page or use 4-15 Student eTool (CPM).

b. Find an equation (rule) for the number of tiles in this pattern. On your resource page, label Tile Pattern #4 with its rule. Then use a new color to show where the numbers in your rule appear in the tile pattern.

c. What is the same about this pattern and Tile Pattern #3? What is different? What do those similarities and differences look like in the tile pattern? In the equation?

d. How is the number of tiles by which the pattern increases each time you move from one figure to the next figure in the sequence represented in each equation?

▼ General Tools

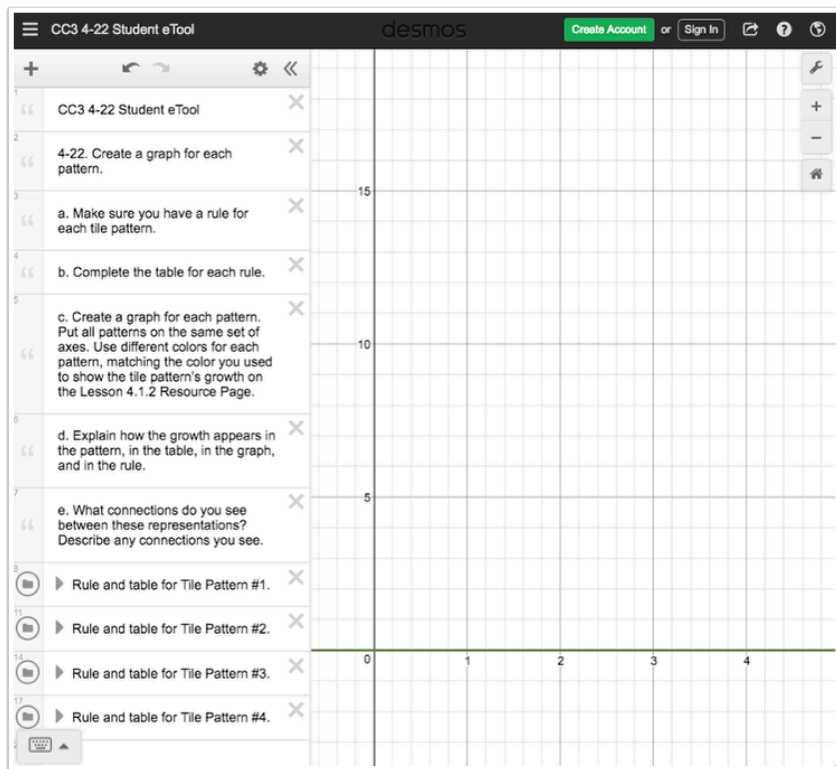
Text →

CC3 4.1.3: 4-22 Student eTool (Desmos)

Click on the link below to access eTool.

[4-22 Student eTool \(Desmos\)](#)

Use this eTool to create a graph for Tile Pattern #1 to Tile Pattern #4.



1. Click the arrow to view/hide the table and rule for each Tile Pattern.
2. Enter the rule on the space provided.
3. Enter the y-values in the table.

8 Rule and table for Tile Pattern #1. X

9 $y = (\text{your rule})$

10

x	y
0
1
2
3
4

11 Rule and table for Tile Pattern #2. X

14 Rule and table for Tile Pattern #3. X

17 Rule and table for Tile Pattern #4. X

Graph area with x-axis (0, 1, 2, 3) and y-axis (0, 5, 10).

CC3 4.1.7: 4-65 Student eTool (Desmos)

Click on the link below to access eTool.

[4-65 Student eTool \(Desmos\)](#)

Use this eTool to complete the tasks in problem 4-65.

- Copy the three figures above onto a piece of graph paper. On your graph paper, extend the pattern to include Figures 1 and 5.
- Find a table, a graph, and a rule, for this pattern.
- Which figure will have 79 tiles? Use as many representations as you can to justify your answer.

1. Enter values in the table (line 3).

2. Enter the rule in line 5.

CC3 4-65 Student eTool

4-65. REVISITING "GROWING, GROWING, GROWING"

Problem 1-10 from Chapter 1 asked you to determine which figure in the pattern shown at right would have 79 tiles. Now that you know more about tile patterns, $x \rightarrow y$ tables, graphs, and rules, you can show the answer to this question in multiple ways.

Your Task: Solve this problem by completing the following tasks. Use a graphing calculator or other graphing technology to help you find a graph and a table. Be sure to record your work and justify your thinking.

- Copy the three figures at right onto a piece of graph paper. On your graph paper, extend the pattern to include Figures 1 and 5.
- Find a table, a graph, and a rule, for this pattern.
- Which figure will have 79 tiles? Use as many representations as you can to justify your answer.

HINT: Type the rule below.

Figure 2

Figure 3

Figure 4



Chapter 5

CC3 5.1.1: 5-2b Student eTool (CPM)

Click on the link below to access eTool.

[5-2b Student eTool \(CPM\)](#)

Use this eTool to complete part (b) of problem 5-2.

Using only “legal” moves, rearrange the tiles to get ‘y’ by itself on the left side of the mat.

- To rearrange the tiles, click on each tile and drag it to the desired location.

CPM Tiles

CC3 5-2b Student eTool

5-2. CHANGING FORMS

You can find the growth rate and starting value for $y = 4x + 5$ quickly, because the equation is in $y = mx + b$ form. But what if the equation is in a different form? Explore this situation below.

a. The line $-6x + 2y = 10$ is written in standard form. Can you tell what the growth of the line is? Its y-intercept? Predict these values.

b. The equation $-6x + 2y = 10$ is shown on the Equation Mat at right. Using only “legal” moves, rearrange the tiles to get ‘y’ by itself on the left side of the mat. Record each of your moves algebraically.

c. Now use your result from part (b) to find the growth pattern and y-intercept of the line $-6x + 2y = 10$. Did your result match your prediction in part (a)?

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+

y

y

x

x

x

x

x

x

+

1

1

1

1

1

1

1

1

1

Click and drag

CC3 5.2.1: Iditarod- Checkpoints Video

Click on the link below for the "Iditarod-Checkpoints Video"

[Iditarod-Checkpoints](#) 

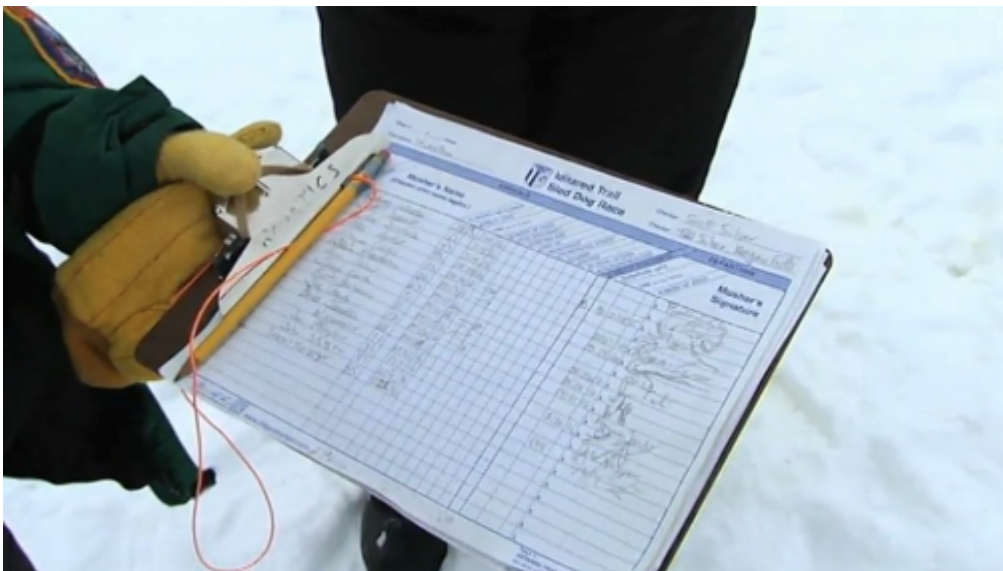
1. Iditarod-Checkpoints Video: 2:49 minutes long



2. The map continues to Nome!



3. Volunteers man the checkpoints recording time.



4. Preparation for the trip:



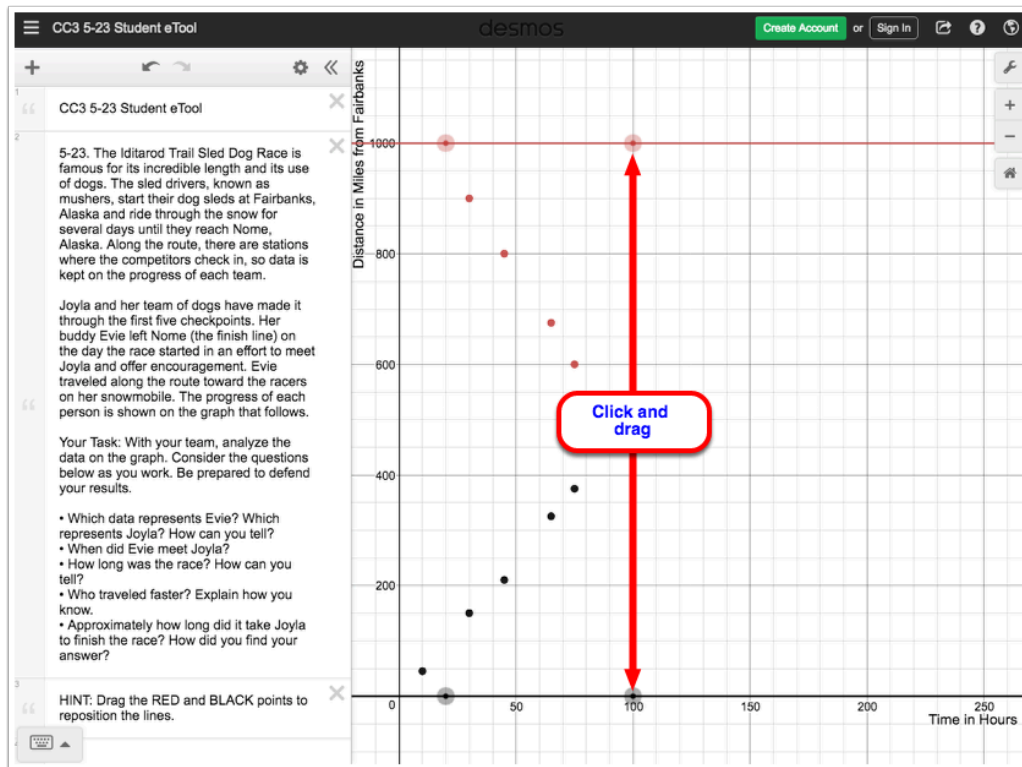
CC3 5.2.1: 5-23 Student eTool (Desmos)

Click on the link below to access eTool.

[5-23 Student eTool \(Desmos\)](#)

Explore math concepts using this eTool:

Click and drag the PURPLE and ORANGE points to reposition the lines.





CC3 5.2.3: 5-42 Student eTool (CPM)

Click on the link below to access eTool.

[5-42 Student eTool \(CPM\)](#)

Use this Equation Mat to determine when the weights of the bunny and cat are equal.

Record all steps while solving for the value of "x".

CPM Tiles

CC3 5-42 Student eTool

5-42. SOLVING SYSTEMS OF EQUATIONS ALGEBRAICALLY

In problem 5-41, you could write rules like those shown below to represent the weights of Barbara's cat and bunny. For these rules, 'x' represents the number of years and 'y' represents the weight of the animal.

Since you want to know when the weights of the cat and bunny are the same, you can use an Equation Mat to represent this relationship, as shown at right.

a. Problem 5-41 asked you to determine when the weight of the cat and the bunny are the same. Therefore, you want to determine when the expressions on the left (for the bunny) and the right (for the cat) are equal. Write an equation that represents this balance.

b. Solve your equation for 'x', which represents years. According to your solution, how many years will it take for the bunny and the cat to weigh the same number of pounds? Does this answer match your answer from the graph of problem 5-41?

c. How much do the cat and bunny weigh at this time?

► Backgrounds

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+

1

1

1

x

x

1

1

Weight of the Bunny

+

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

x

Weight of the Cat

CC Course 3 eTools

Page 69



Chapter 6

CC3 6.1.1: Key-Lock Puzzle (CPM)

Click on the links below.

[Key-Lock Puzzle \(CPM\)](#)

[Intro1](#); [Intro2](#); [Intro3](#); [Intro4](#)

[Wall1](#); [Wall2](#); [Wall3](#); [Wall4](#)

[Star1](#); [Star2](#); [Star3](#); [Star4](#)

[Challenge 1](#)

[Challenge 2](#)

[Using RT Tool](#)

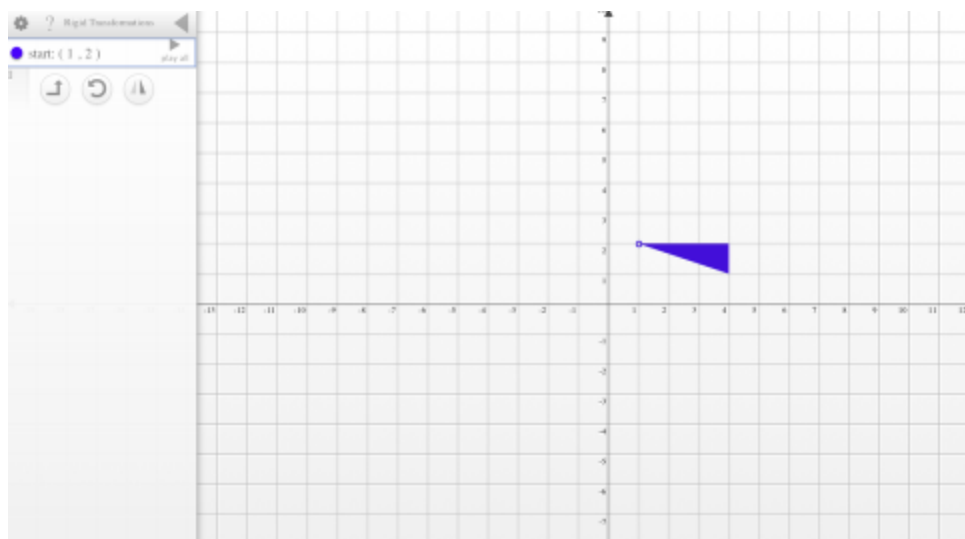


[Creating an RT Puzzle](#)



1. Key-Lock Puzzle:

- Choose between triangle and key.
- Click the Gear to create puzzles and save.

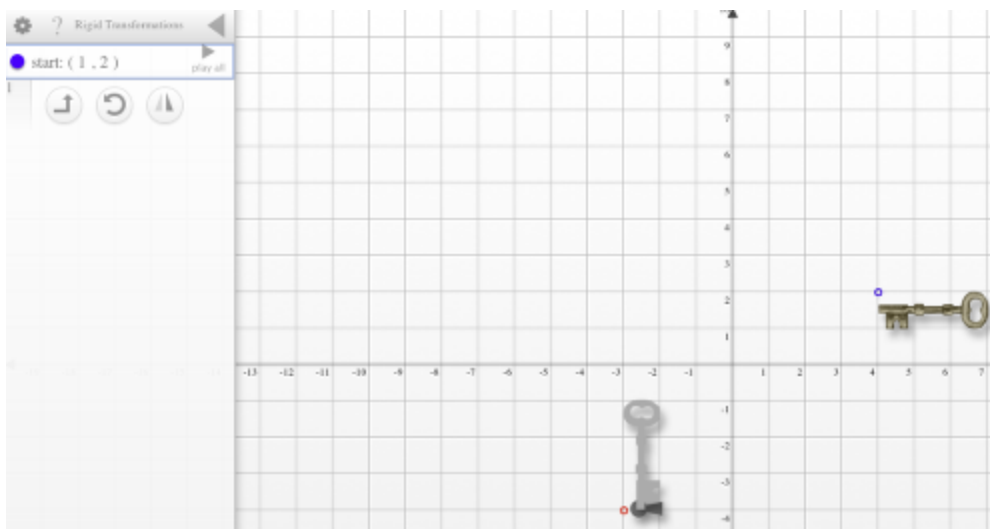


2. The left tray records all rigid transformation steps!

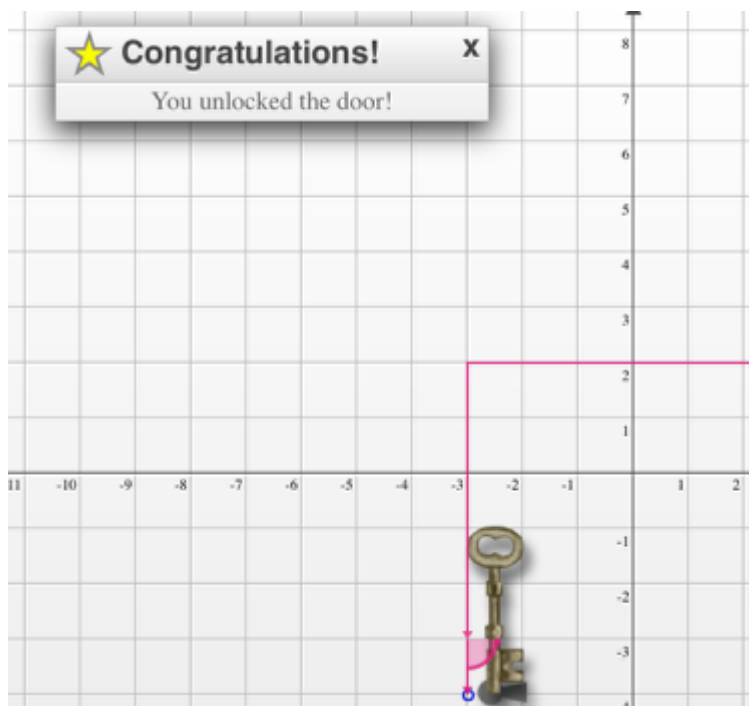


3. Intro Problems:

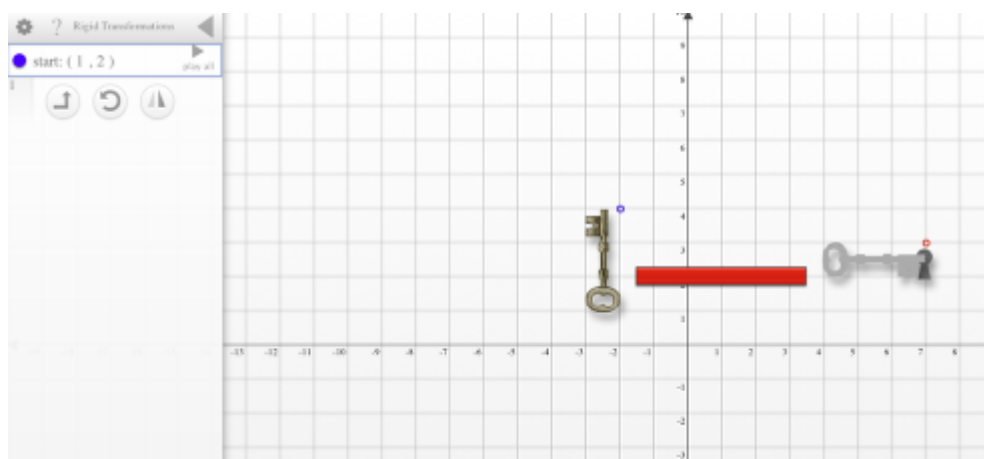
- Drag to translate (or)
- Click on the translate button in the tray. Choose the desired translation.
- Click the "?" for complete instructions.



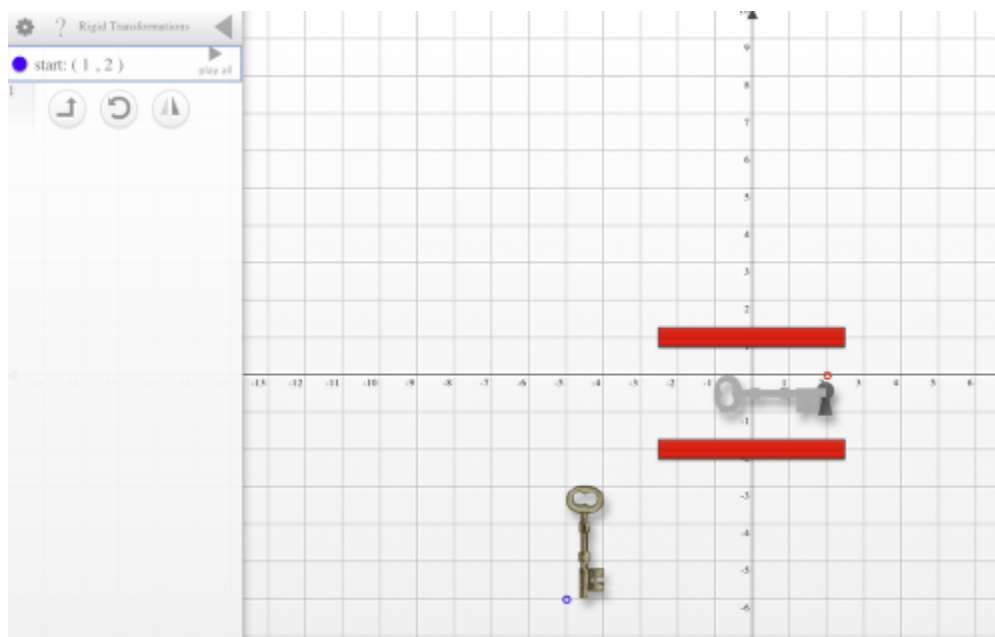
4. When the key is placed in the key hole correctly, the student is congratulated!



5. Wall problems: Each of these have at least one wall which cannot be bumped or crossed.



6. Star Problems:



CC3 6.1.2: Transformation Challenge 1 & 2 (CPM)

Click on the links below to access eTools

[Challenge 1 \(CPM\)](#)

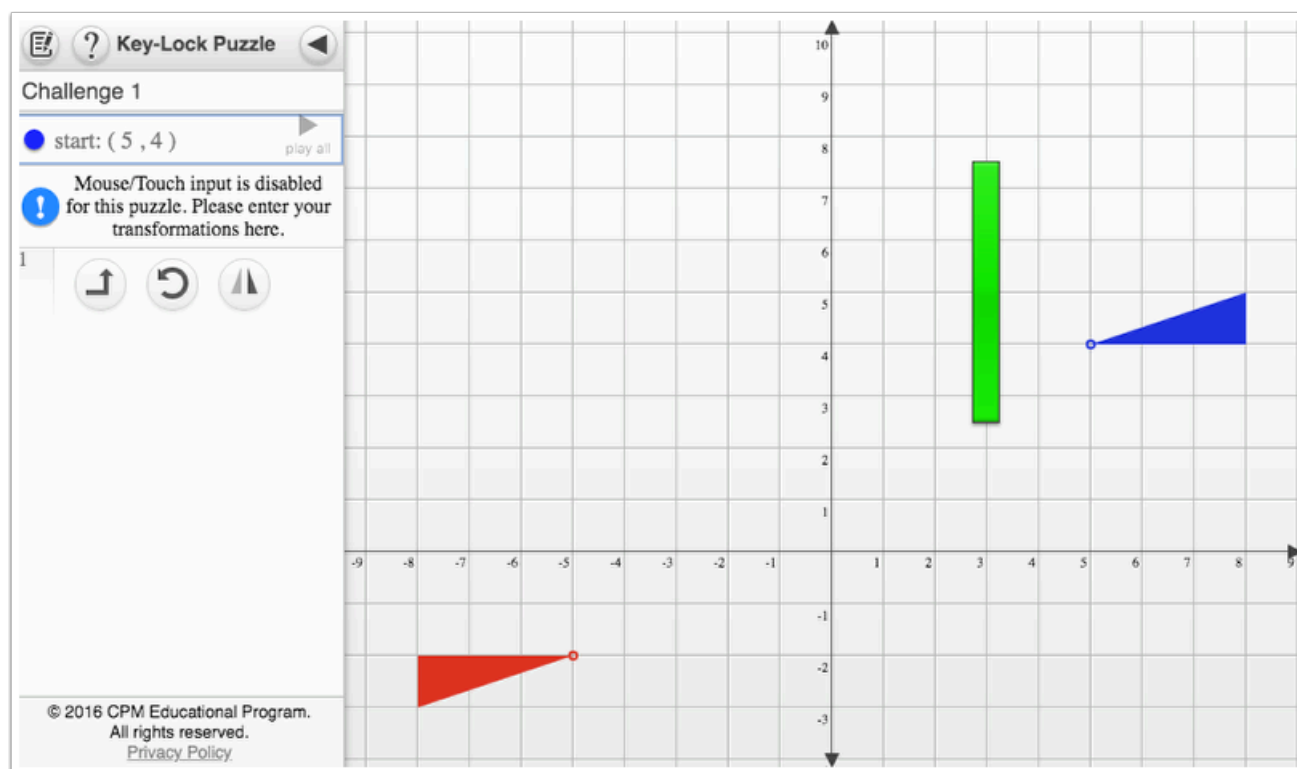
[Challenge 2 \(CPM\)](#)

Use these eTools to complete the task in problem 6-8.

With your team, describe how Rowan could have moved each key from the starting position to the ending position using slides (also called **translations**), turns (also called **rotations**), and/or flips (also called **reflections**).

- Make sure you provide enough detail to describe the moves completely.
- Try to find more than one way he could have moved each key.
- Be ready to justify your ideas with the class.

Challenge 1:



Challenge 2:

? **Key-Lock Puzzle**

Challenge 2

Click the grid and drag until you see the red and blue triangles with 2 green walls. Then use the transformation buttons below to move the blue triangle onto the red triangle.

start: $(-2, -4)$ play all

Mouse/Touch input is disabled for this puzzle. Please enter your transformations here.

1

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[Privacy Policy](#)

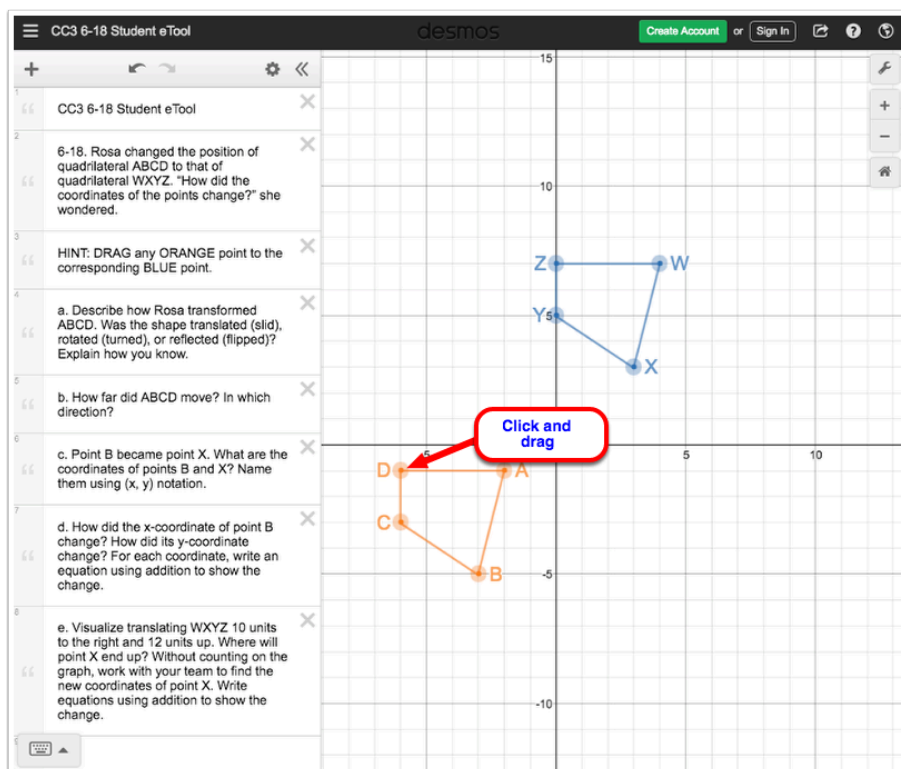
CC3 6.1.3: 6-18 Student eTool (Desmos)

Click on the link below to access eTool.

[6-18 Student eTool \(Desmos\)](#)

Use this eTool to explore on how to describe transformations.

1. Click any ORANGE point and drag to move.



CC3 6.1.3: 6-24 Student eTool (CPM)

Click on the link below to access eTool.

[6-24 Student eTool \(CPM\)](#)

Follow the steps Stella wrote below to move the key on the graph from A to B. What was her last move?

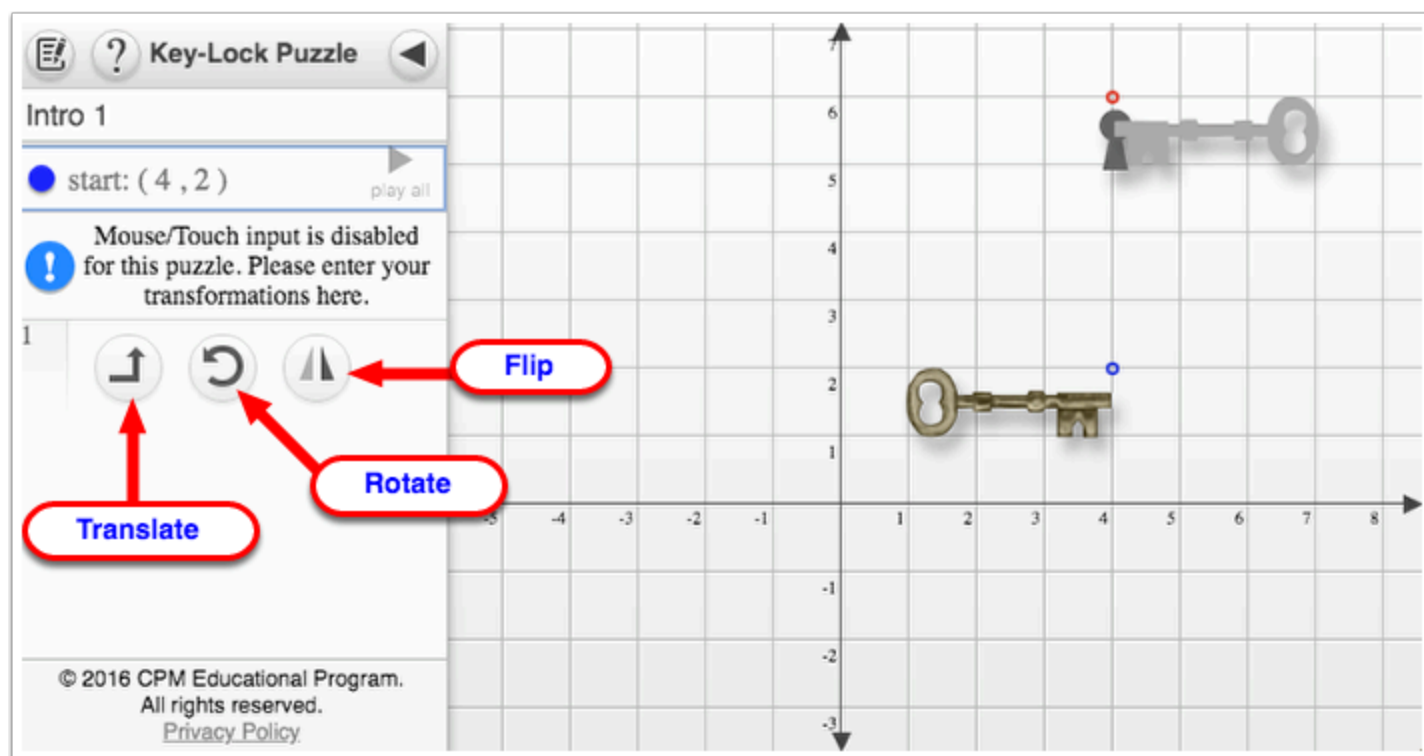
1. Slide the key to the right 3 units and up 6 units.
2. Reflect the key across the line $x = 4$.
3. ???

Use the the following buttons to help you move the key on the graph.

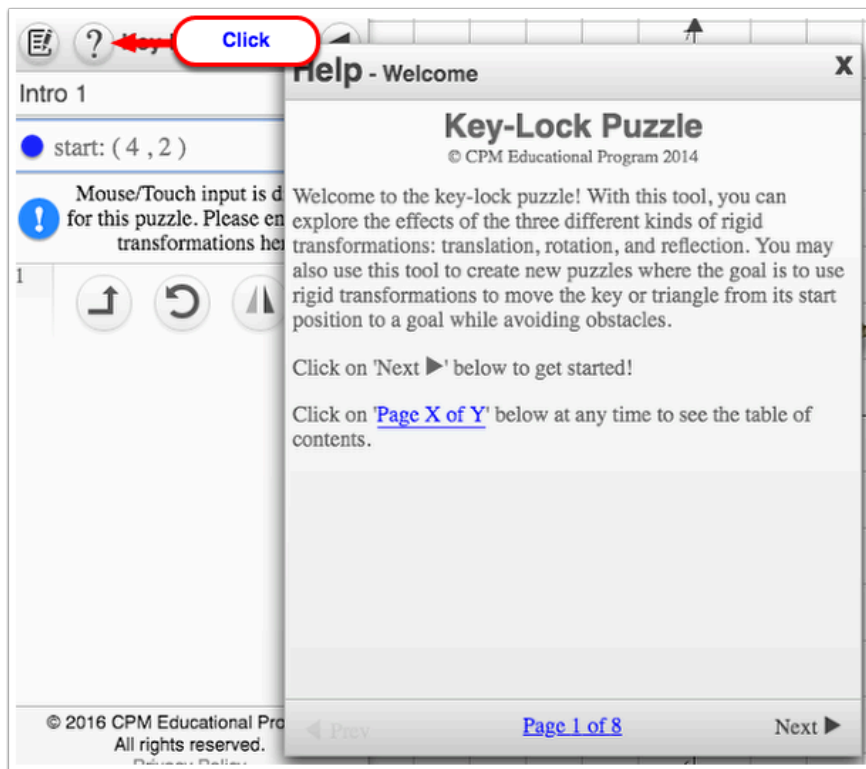
Translate (slide) – move the triangle horizontally and vertically.

Rotate (turn) – rotate the triangle around its origin (indicated by the dot).

Reflect (flip) – reflect the triangle across a horizontal or vertical line.



For more information on how to navigate the puzzle, click '?' button.



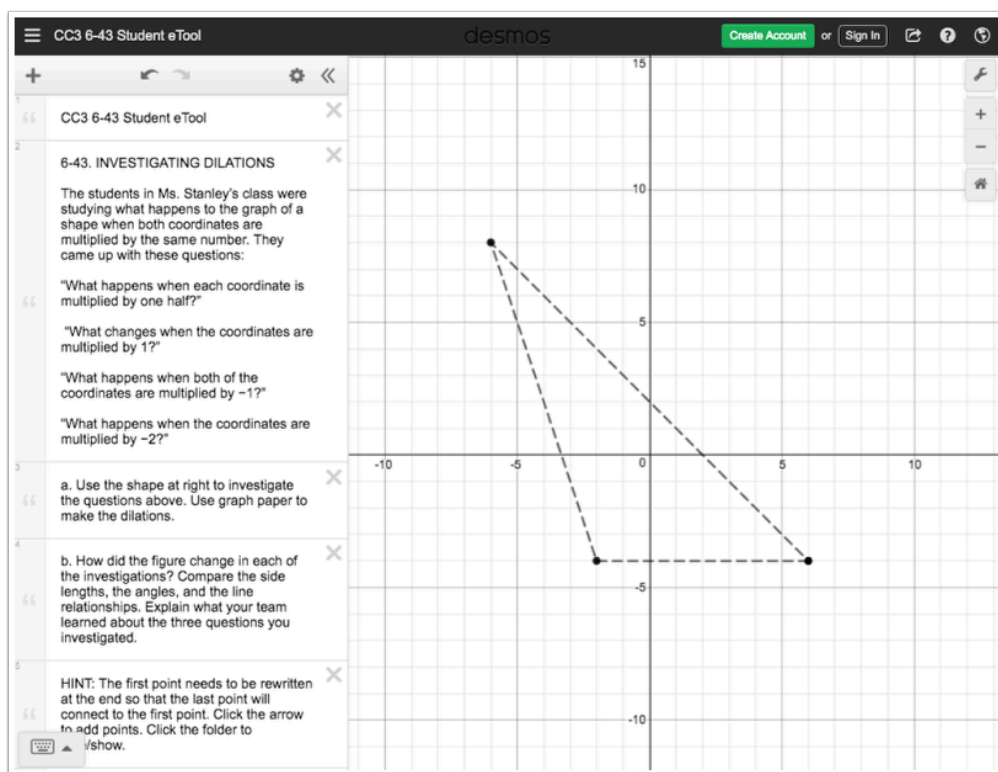
CC3 6.2.1: 6-43 Student eTool (Desmos)

Click on the link below to access eTool.

[6-43 Student eTool \(Desmos\)](#)

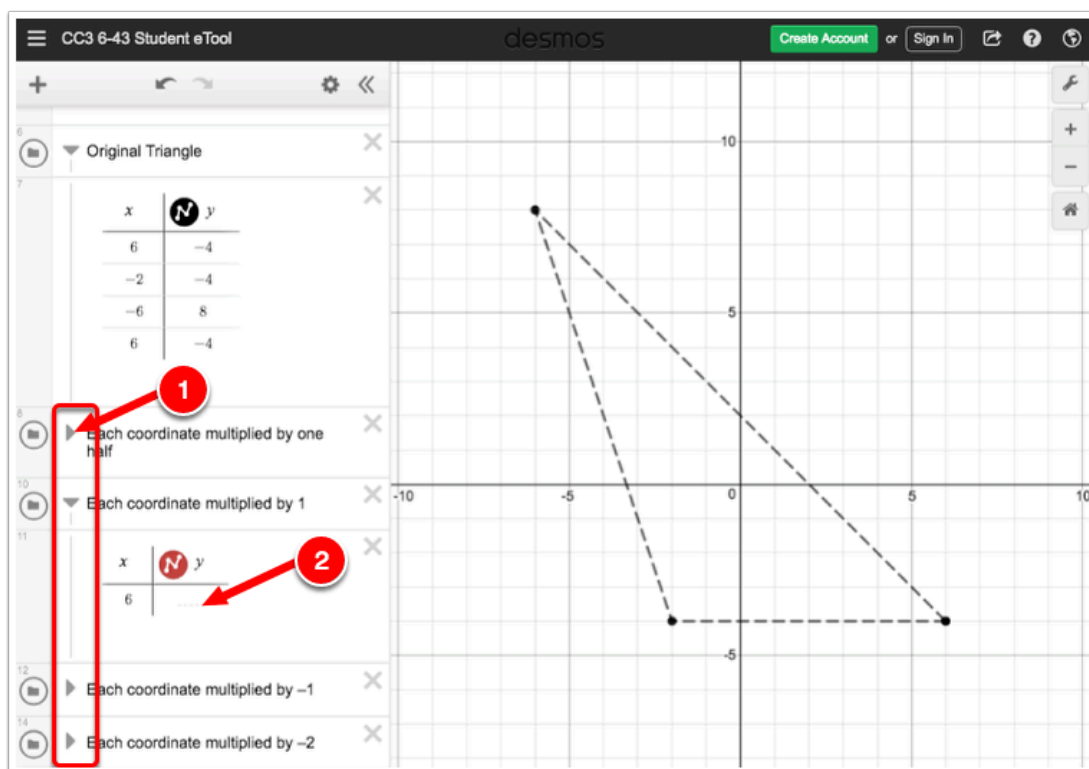
Use this eTool to investigate the questions below and make dilations.

- “What happens when each coordinate is multiplied by one half?”
- “What changes when the coordinates are multiplied by 1?”
- “What happens when both of the coordinates are multiplied by -1 ?”
- “What happens when the coordinates are multiplied by -2 ?”



1. Click each arrow on lines 8, 10, 12, and 14 to access the tables.

2. Enter points in the tables.



CC3 6.2.2: 6-52, 6-53, & 6-56 Student eTools (Desmos)

Click on the links below to access eTools.

[6-52 Student eTool \(Desmos\)](#)

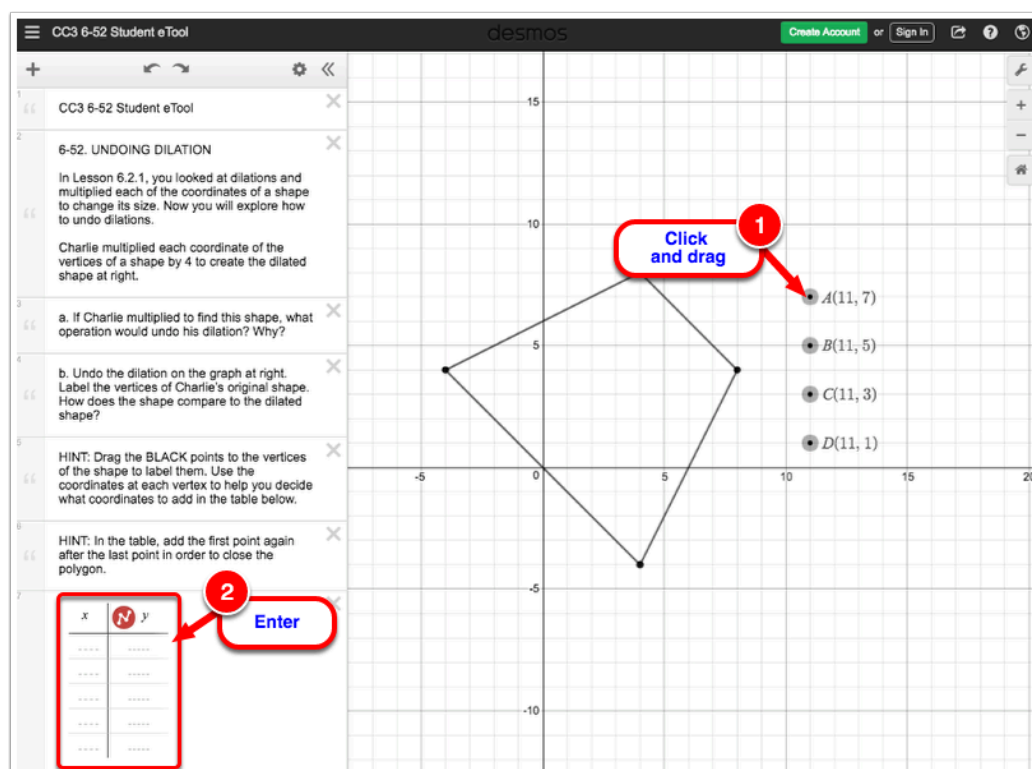
[6-53 Student eTool \(Desmos\)](#)

[6-56 Student eTool \(Desmos\)](#)

CC3 6-52 Student eTool:

1. Click on the **BLACK** points and drag them to the vertices of the shape to label them.

2. Enter the points in the table provided in line 7.



CC3 6-52 Student eTool

6-52. UNDOING DILATION

In Lesson 6.2.1, you looked at dilations and multiplied each of the coordinates of a shape to change its size. Now you will explore how to undo dilations.

Charlie multiplied each coordinate of the vertices of a shape by 4 to create the dilated shape at right.

a. If Charlie multiplied to find this shape, what operation would undo his dilation? Why?

b. Undo the dilation on the graph at right. Label the vertices of Charlie's original shape. How does the shape compare to the dilated shape?

HINT: Drag the BLACK points to the vertices of the shape to label them. Use the coordinates at each vertex to help you decide what coordinates to add in the table below.

HINT: In the table, add the first point again after the last point in order to close the polygon.

x	y

CC3 6-53 Student eTool:

1. Enter the points in the table provided in line 8.

CC3 6-53 Student eTool

desmos

Create Account or Sign In

CC3 6-53 Student eTool

6-53. Alana was also working with dilations. She wondered, "What would happen if I multiplied each coordinate of a shape by $1/3$?" Graph and connect the points below to form her dilated shape. Be sure to connect them in the order given.

$(-1, -1)$ $(-1, 1)$ $(1, 2)$ $(2, -1)$

a. Alana graphed this shape by multiplying each of her original coordinates by $1/3$. What do you think Alana's shape looked like before the dilation? Make a prediction.

b. On the same graph, undo the dilation to show Alana's original shape. List the coordinates of the vertices of Alana's original shape.

c. What did you do to each coordinate to undo the dilation? How did the shape change?

d. Why do you think the shape changed in this way?

HINT: Undo the dilation. Add the first point again after the last point in order to close the shape.

x	y
-1	-1
-1	1
1	2
2	-1

HINT: This is the dilated figure.

x	y
-1	-1
-1	1

Enter

CC3 6-56 Student eTool:

1. Enter the points in the tables provided in lines 5 and 8.

The screenshot shows the Desmos eTool interface for CC3 6-56. On the left, a list of instructions is visible. Instruction 5 is highlighted, and a red box around the table below it is labeled "Enter". The table has columns for x and y coordinates. The coordinate plane on the right shows a quadrilateral PQRS with vertices P(0, 2), Q(6, 7), R(4, 0), and S(0, 0). The x-axis is labeled from 0 to 15, and the y-axis is labeled from 0 to 15.

Instructions from the eTool interface:

- 6-56. Test the predictions your team made in problem 6-55. Graph each of the shapes described below.
- a. Dilate each coordinate of shape PQRS by multiplying each x-coordinate and each y-coordinate by 4. Graph the dilated shape on the same graph using a color other than black.
- HINT: Multiply both coordinates of each vertex of the black polygon by 4 and enter them in the table below. Add the first point again after the last point in order to close the polygon.

x	y

b. Go back to the original shape, and this time multiply only the x-coordinates by 3. Leave the y-coordinates the same. Find, graph, and connect the new coordinates.

HINT: This time multiply only the x-coordinate of each vertex of the black polygon by 3. Add the first point again after the last point in order to close the polygon.



Chapter 7

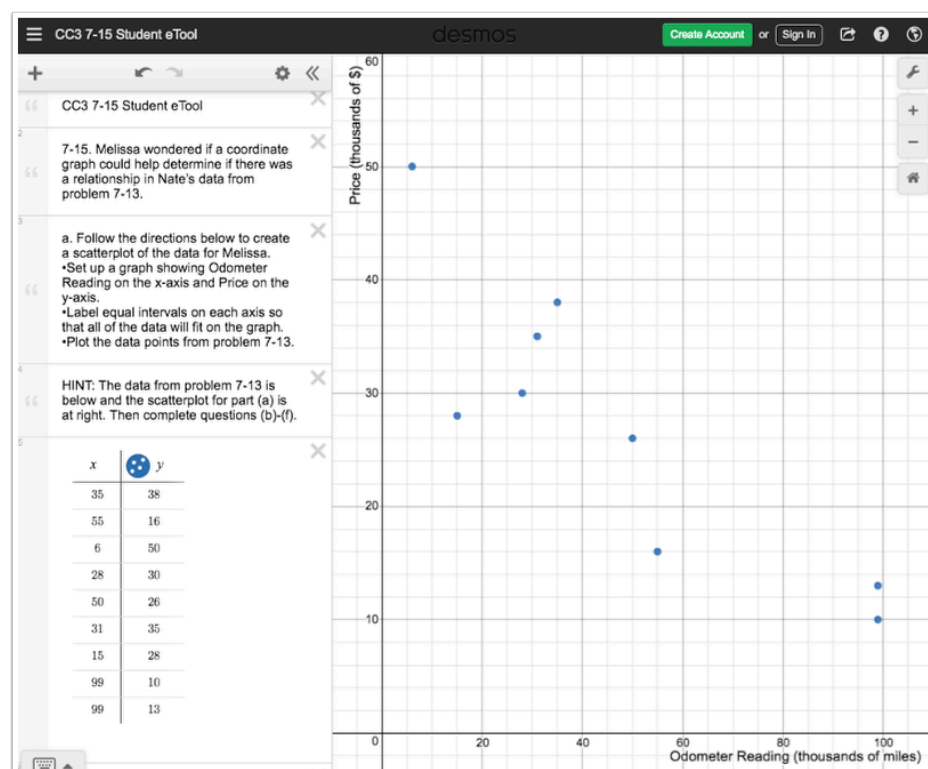
CC3 7.1.2: 7-15 Student eTool (Desmos)

Click on the link below to access eTool.

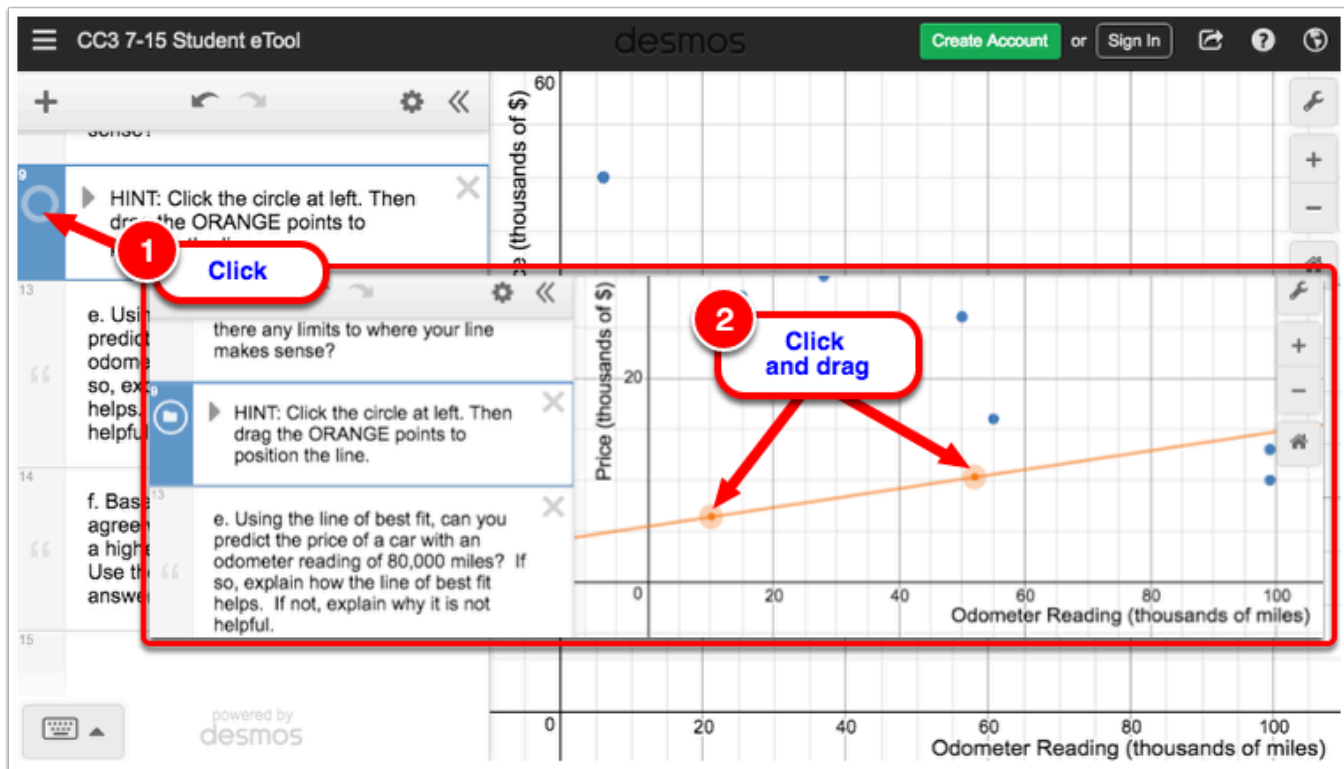
[7-15 Student eTool \(Desmos\)](#)

Use this eTool to complete parts (a) to (f) of problem 7-15.

HINT: The data from problem 7-13 (see table) and scatterplot for part (a) are already provided in this eTool.



1. Click the circle at left in line 9 to view the line of best fit.
2. Click the ORANGE points and drag (horizontally) to position the line.



CC3 7.2.2: 7-43 Student eTool (Desmos)

Click on the link below to access eTool.

[7-43 Student eTool \(Desmos\)](#)

Use this eTool as a graphical presentation. It has information about four bicyclists during a 20-minute portion of a race.

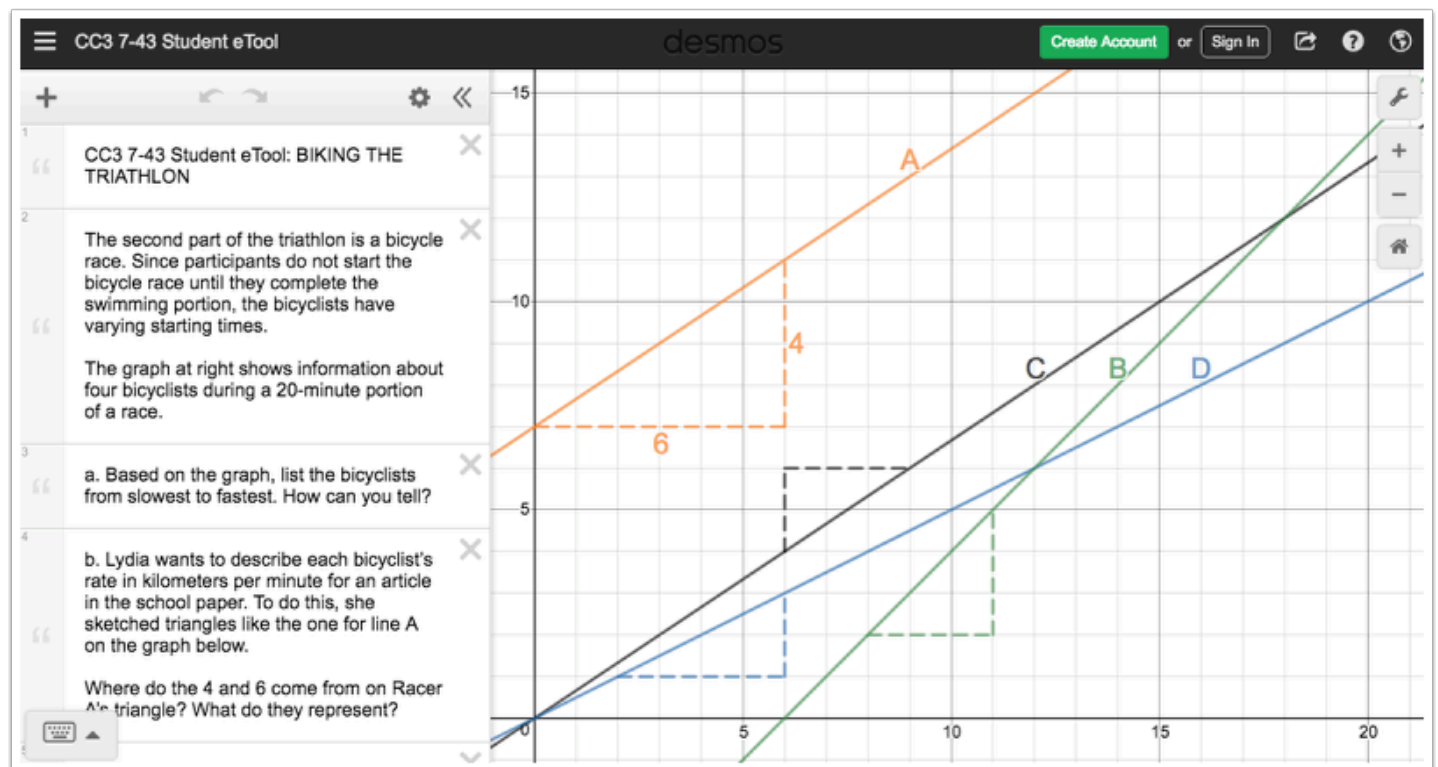
Each color represents a bicyclist:

ORANGE - Graph A

GREEN - Graph B

BLACK - Graph C

BLUE - Graph D



CC3 7.2.3: 7-56 & 7-59 Student eTools (Desmos)

Click on the links below to access eTools.

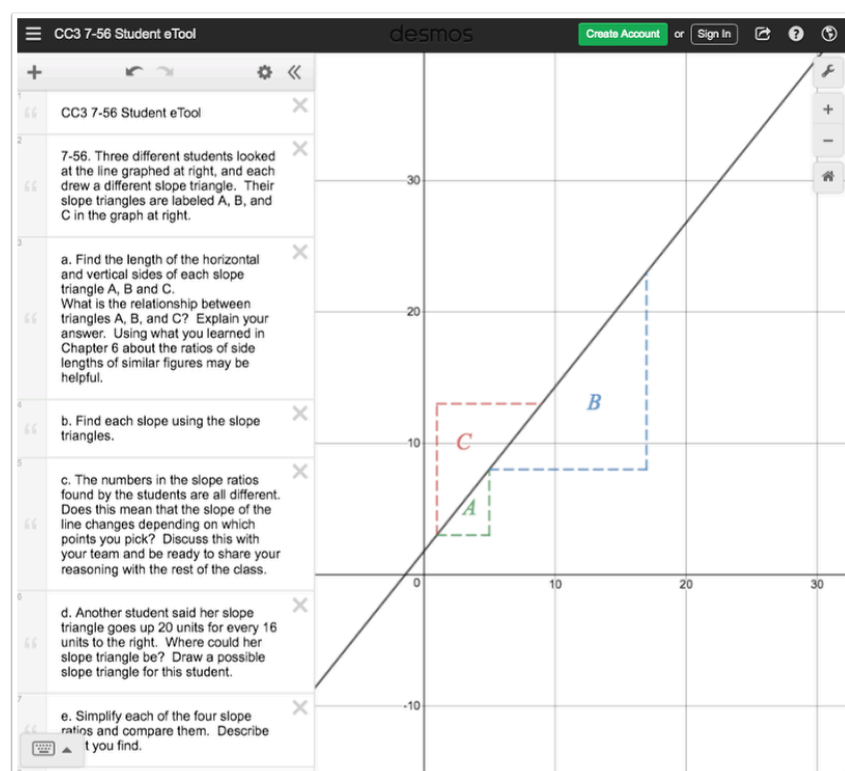
[7-56 Student eTool \(Desmos\)](#)

[7-59 Student eTool \(Desmos\)](#)

Use these eTools to answer problems 7-56 and 7-59.

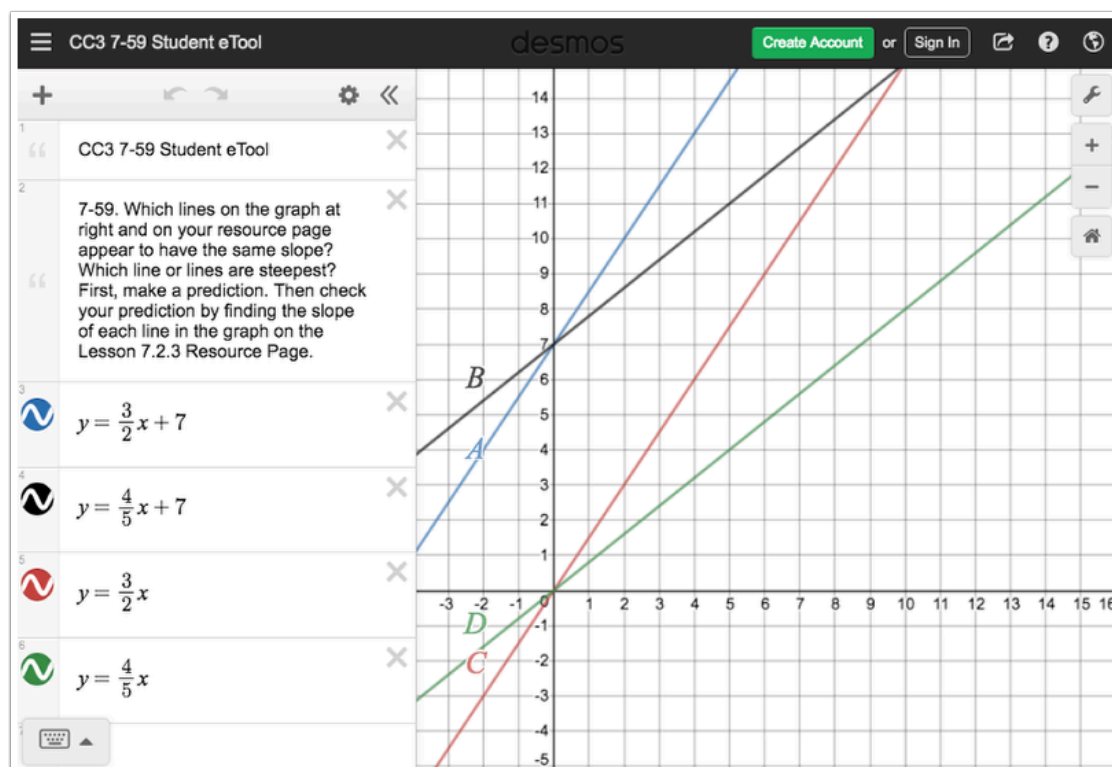
7-56 Student eTool:

Slope Triangles A, B, and C



7-59 Student eTool:

Which line or lines have the same slope? Which are steepest? Check your prediction.

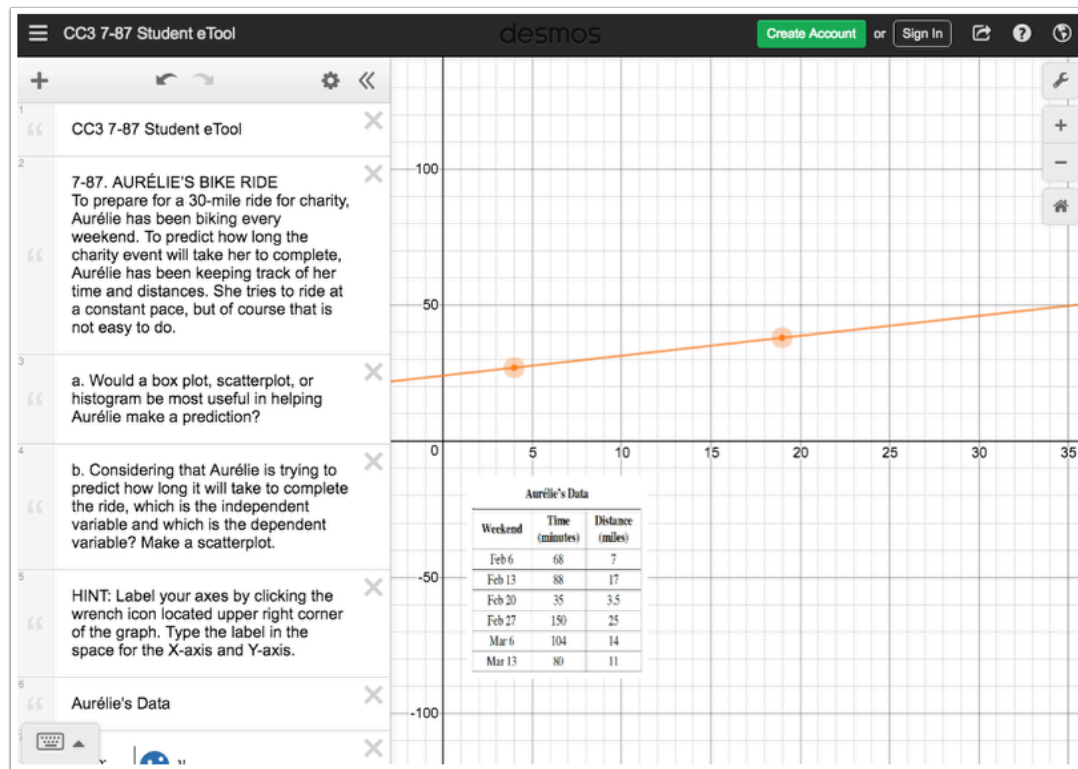


CC3 7.3.1: 7-87 Student eTool (Desmos)

Click on the link below to access eTool.

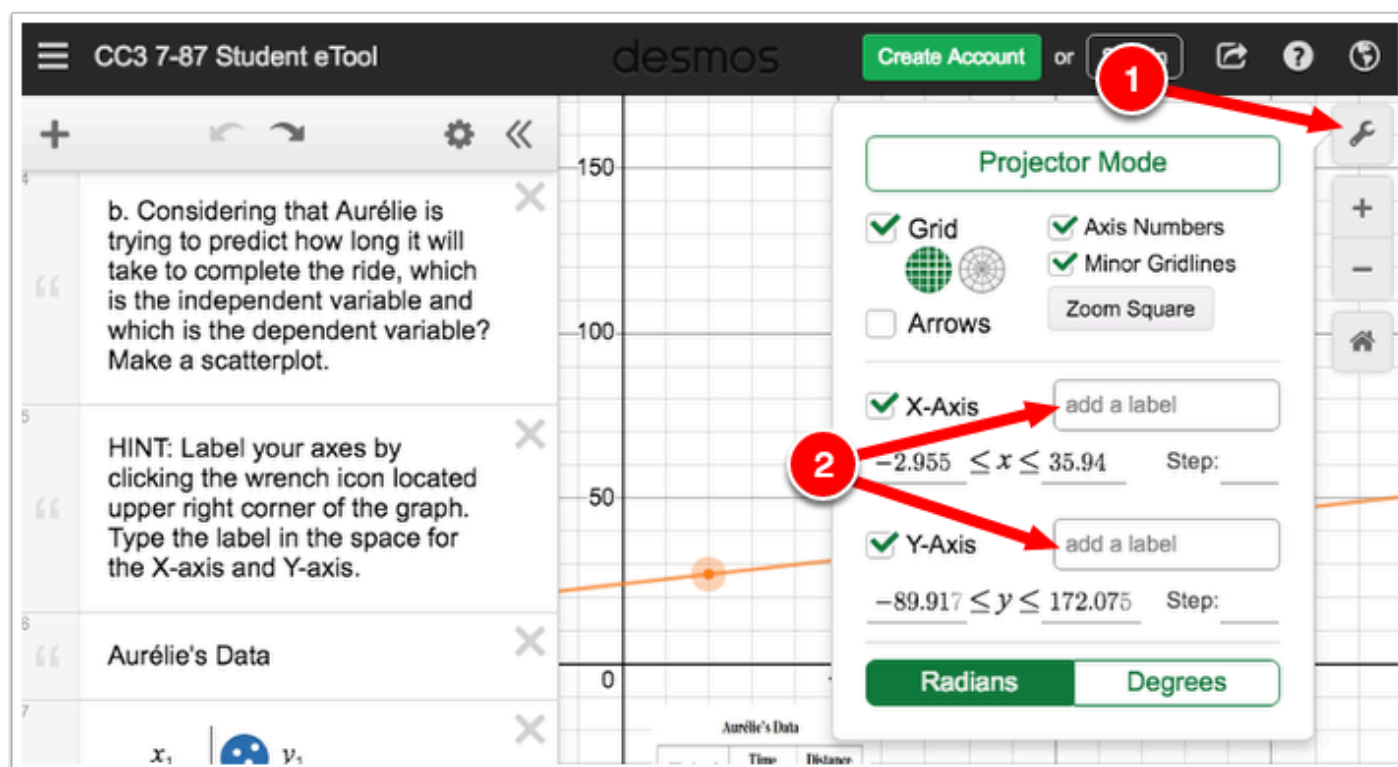
[7-87 Student eTool \(Desmos\)](#)

Use this eTool to demonstrate positioning a line of best fit.



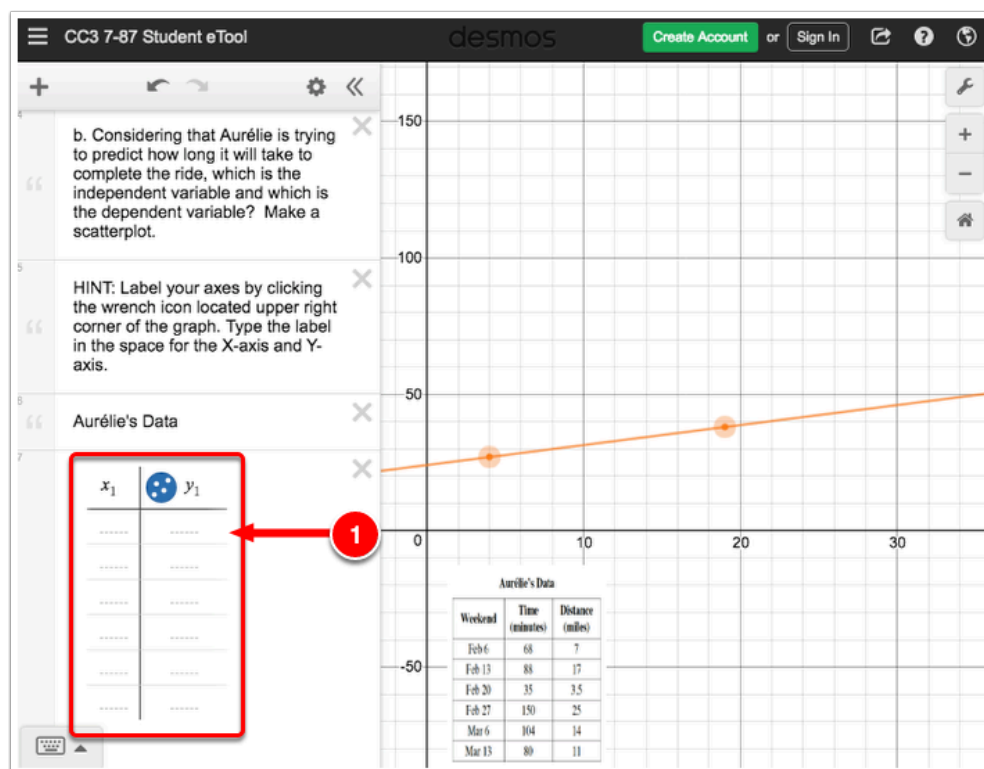
1. Label your axes.

1. Click the wrench icon on the upper right corner of the graph to show/hide the Projector Mode settings.
2. Type the label of in the text field for the X-Axis and Y-Axis.



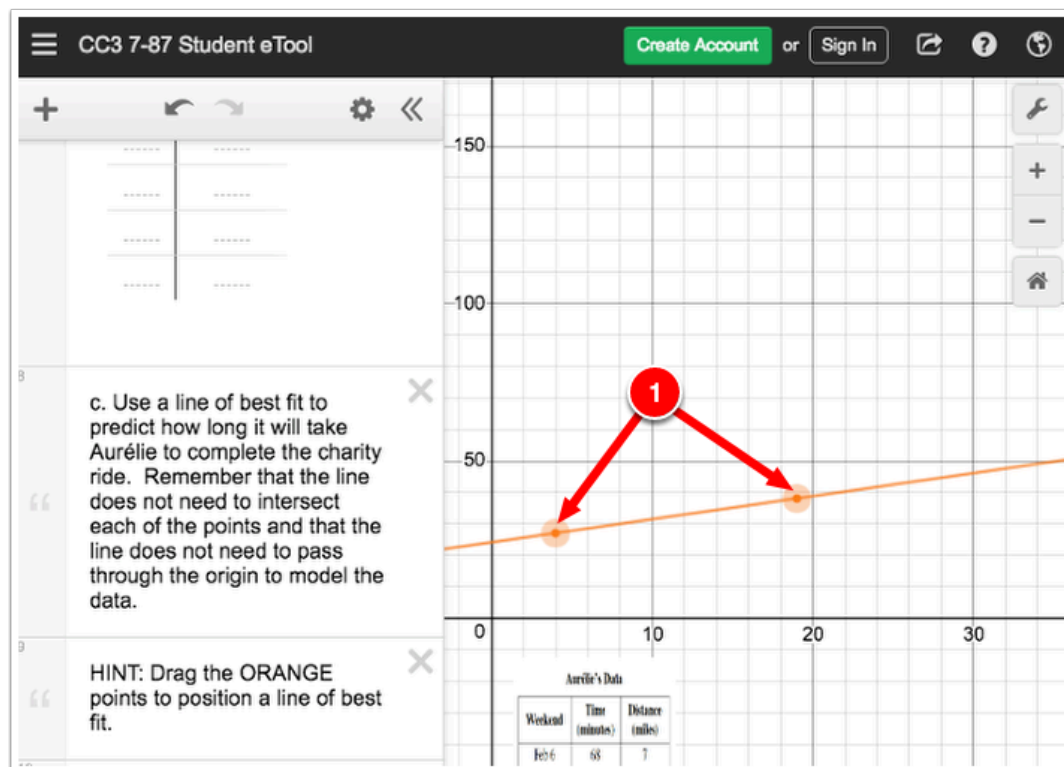
2. Make a scatterplot.

1. Enter the values in the table provided.



3. Position the line of best fit.

1. Click the ORANGE points and drag to position a the line of best fit.



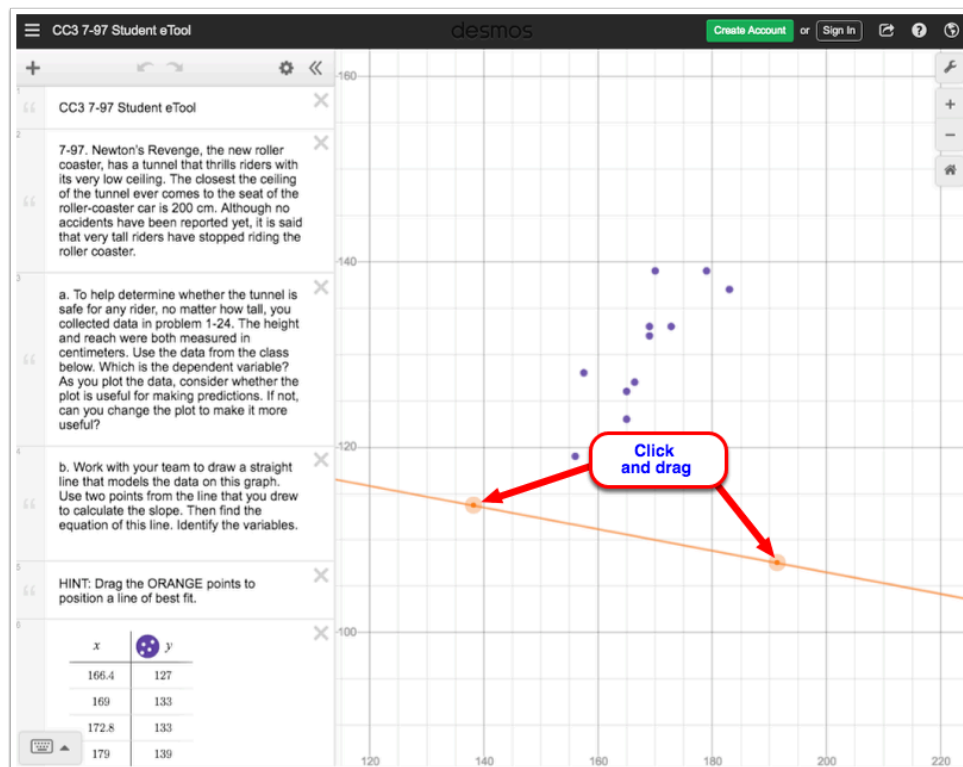
CC3 7.3.2: 7-97 Student eTool (Desmos)

Click on the link below to access eTool

[7-97 Student eTool \(Desmos\)](#)

Use this eTool to complete problem 7-97.

Click on the ORANGE points and drag to position a line of best fit.





Chapter 8

CC3 8.1.1: 8-2 and 8-3 Student eTools (Desmos)

Click on the links below to access eTools

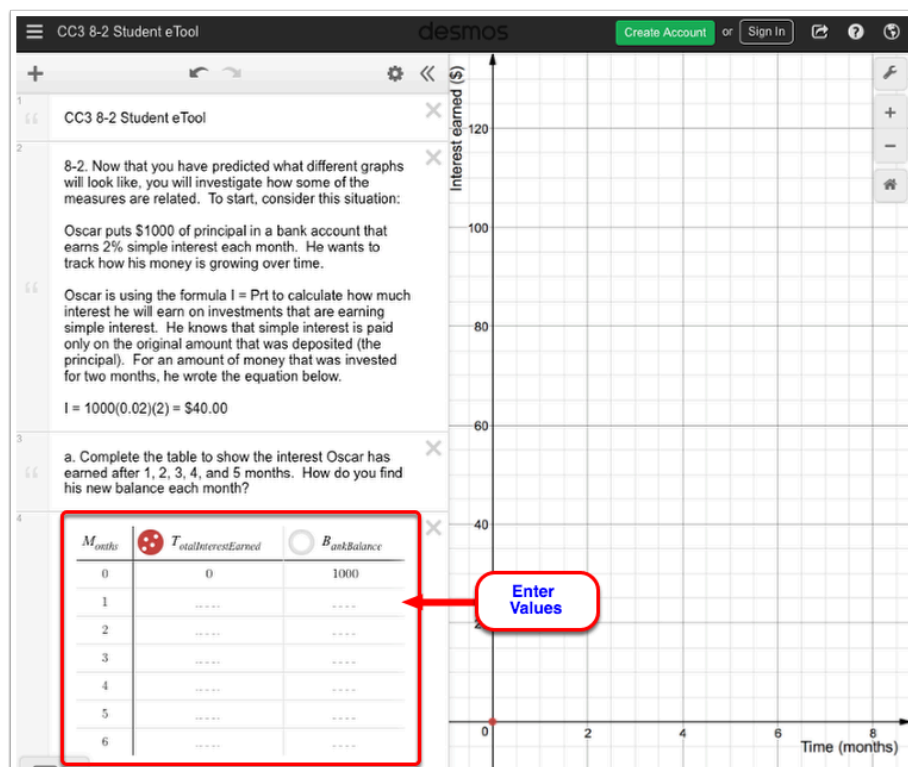
[8-2 Student eTool \(Desmos\)](#)

[8-3 Student eTool \(Desmos\)](#)

8-2 Student eTool:

Use this eTool to create a table and a graph for problem 8-2.

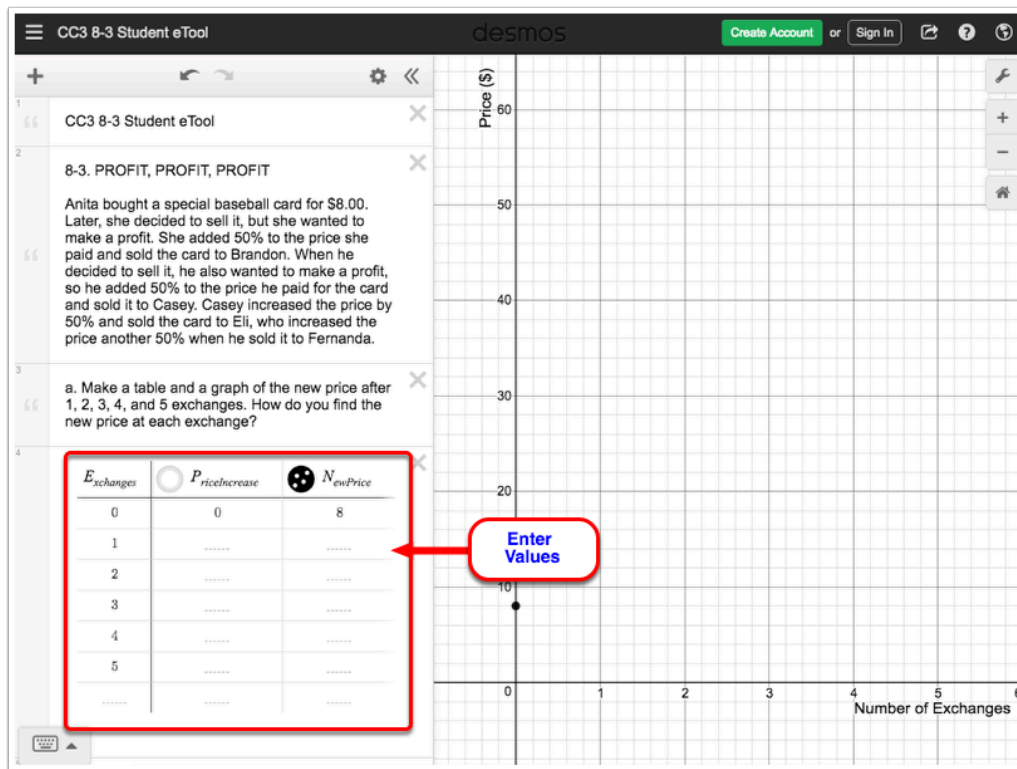
- Enter the values in the table.



8-3 Student eTool:

Use this eTool to create a table and a graph for problem 8-3.

- Enter the values in the table.



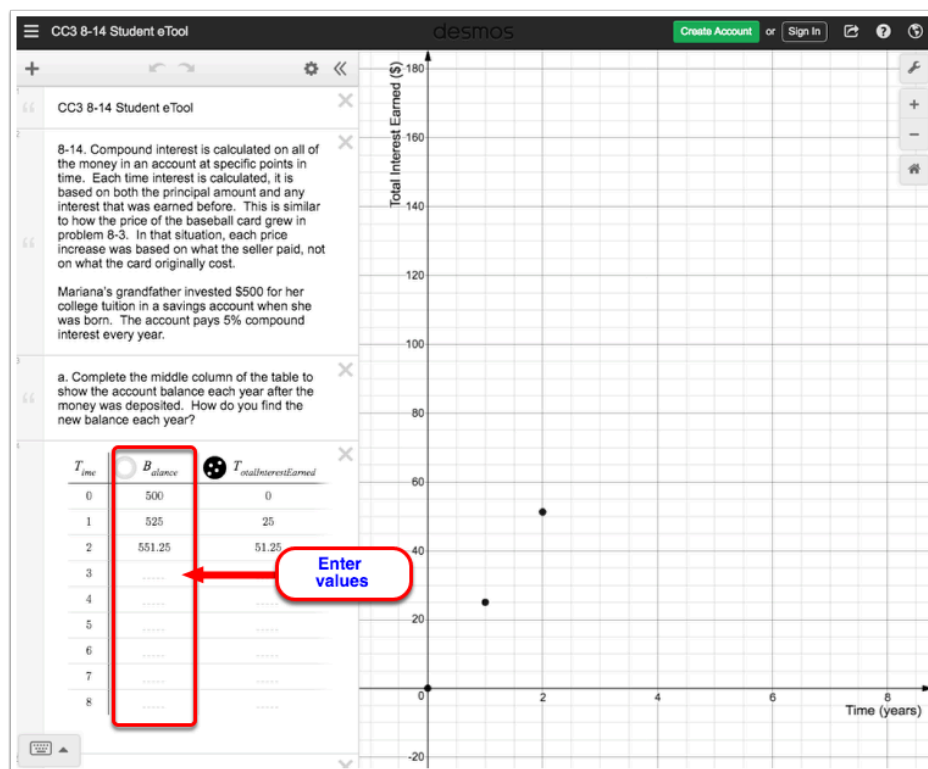
CC3 8.1.2: 8-14 Student eTool (Desmos)

Click on the link below to access eTool.

[8-14 Student eTool \(Desmos\)](#)

Use this eTool to answer problem 8-14.

Enter the values in the Balance column of the table.



CC3 8.2.3: Powers of Ten Film

Click on the link below for the “Powers of Ten Film”

[Powers of Ten Film](#) 

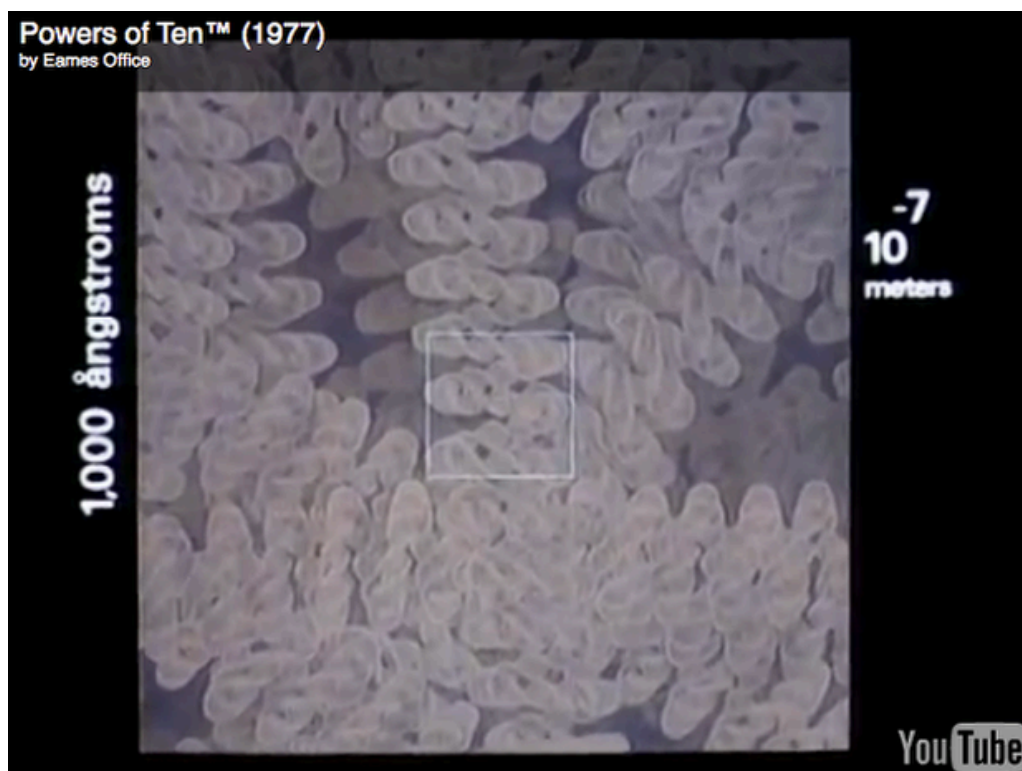
1. Title:



2. The film shows powers of 10 going away from an object.



3. The film shows powers of ten getting closer to an object.





Chapter 9

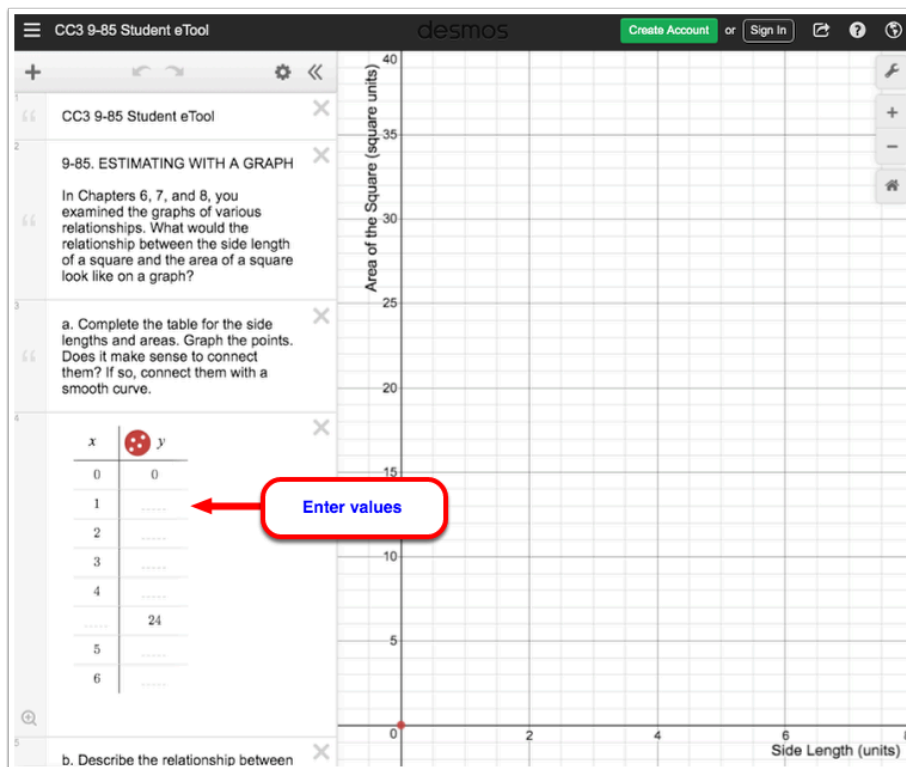
CC3 9.2.3: 9-85 Student eTool (Desmos)

Click on the link below to access eTool.

[9-85 Student eTool \(Desmos\)](#)

Use this eTool to see how the relationship between the side length of a square and the area of a square look like on a graph.

1. Complete the table in line 4.



CC3 9.2.4: 9-105 ShowMe video

Click on the link below for the "9-105 ShowMe video"

[CC3 9-105 ShowMe video](#) 

1. Setup:



CC3 9-105

$$0.\overline{57} = 0.575757\dots$$

$$\underline{-0.\overline{57} = -0.575757\dots}$$

$$0 = 0$$

$$10(0.\overline{57}) = 5.75757\dots$$

$$\underline{-(0.\overline{57}) = -0.575757\dots}$$

$$100(0.\overline{57}) = 57.575757\dots$$

$$\underline{-(0.\overline{57}) = -0.575757\dots}$$

$$99(0.\overline{57}) = 57.0$$

2. Removing the repeating part:

CPM CC3 9-105

$$\begin{array}{r}
 \rightarrow 0.\overline{57} = 0.575757\dots \\
 \rightarrow -0.\overline{57} = -0.575757\dots \\
 \hline
 0 = 0
 \end{array}
 \quad
 \begin{array}{r}
 \rightarrow 10(0.\overline{57}) = 5.75757\dots \\
 \rightarrow -(0.\overline{57}) = -0.575757\dots \\
 \hline
 99(0.\overline{57}) = 57.0
 \end{array}$$

$$\begin{array}{r}
 \rightarrow 100(0.\overline{57}) = 57.575757\dots \\
 \rightarrow -(0.\overline{57}) = -0.575757\dots \\
 \hline
 99(0.\overline{57}) = 57.0
 \end{array}$$

3. Finding the fraction equivalent:

CPM CC3 9-105

$$\begin{array}{r}
 \rightarrow 0.\overline{57} = 0.575757\dots \\
 \rightarrow -0.\overline{57} = -0.575757\dots \\
 \hline
 0 = 0
 \end{array}
 \quad
 \begin{array}{r}
 \rightarrow 10(0.\overline{57}) = 5.75757\dots \\
 \rightarrow -(0.\overline{57}) = -0.575757\dots \\
 \hline
 99(0.\overline{57}) = 57.0
 \end{array}$$

$$\begin{array}{r}
 \rightarrow 100(0.\overline{57}) = 57.575757\dots \\
 \rightarrow -(0.\overline{57}) = -0.575757\dots \\
 \hline
 99(0.\overline{57}) = 57.0
 \end{array}$$

$$\frac{57}{99}$$

$$0.\overline{57} = \frac{57}{99}$$

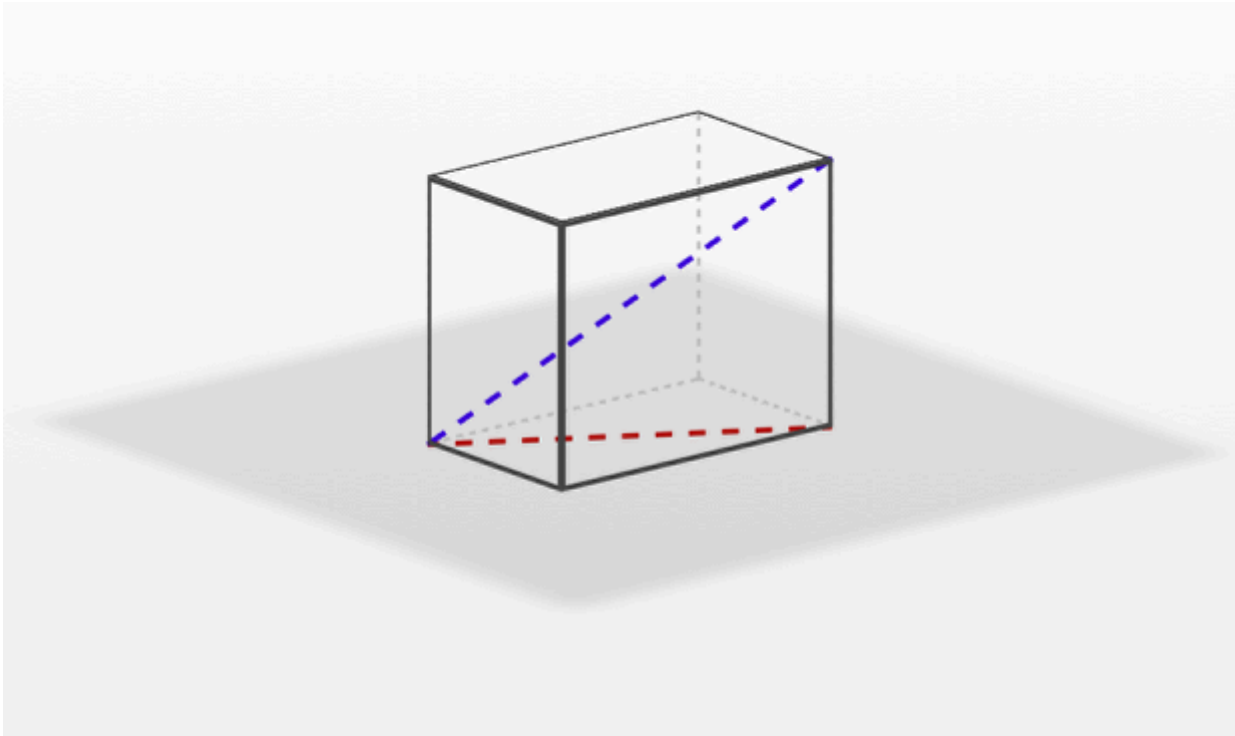


CC3 9.2.6: 3D Model Box (CPM)

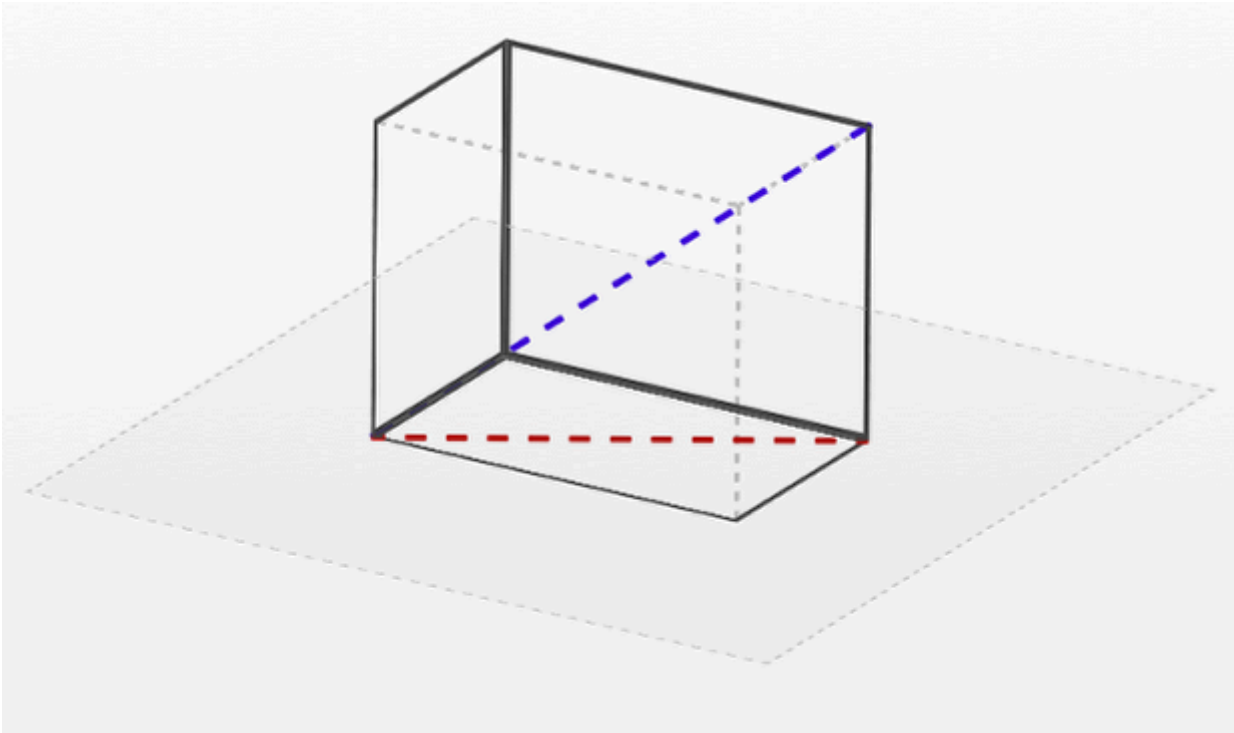
Click on the link below for the "3D Model Box (CPM)."

[3D Model Box \(CPM\)](#)

1. Click on the box and drag.



2. Drag the box until you have viewed all sides including the views from the top and bottom.



CC3 9.2.7: Pythagorean Proof Video

Click on the link below for the "Pythagorean Proof Video"

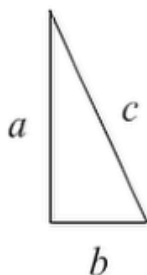
[Pythagorean Proof Video](#) (Vimeo) 

1. Question:



Pythagorean Theorem Proof

How do you prove
the Pythagorean Theorem?

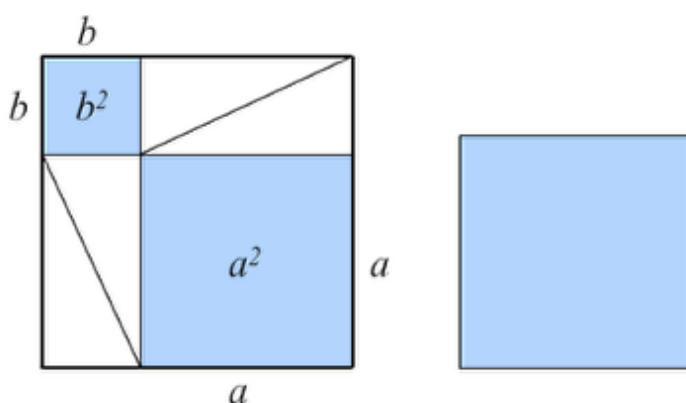


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2. Screen shot:



Pythagorean Theorem Proof

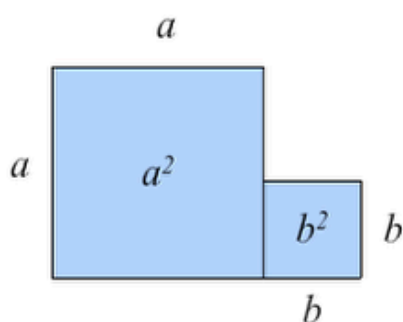


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3. Screen shot:



Pythagorean Theorem Proof



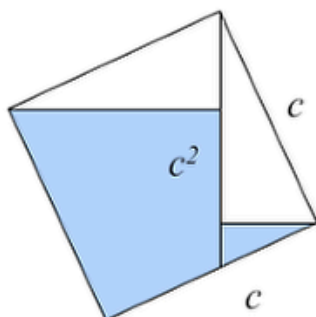
Here's another way...

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4. Screen shot:



Pythagorean Theorem Proof



$$a^2 + b^2 = c^2$$

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Chapter 10

CC3 10.1.3: Volume of a Pyramid Video

Click on the link below for the "Volume of a Pyramid Video"

[Volume of a Pyramid](#) (Vimeo) 

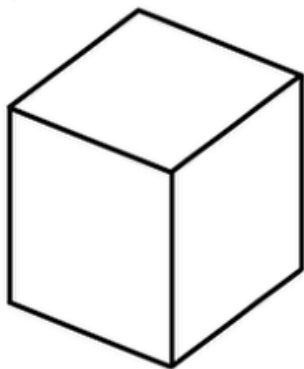
[Volume of a Pyramid](#) (YouTube) 

1. First Video Question:



Volume of a Pyramid

How many pyramids of equal volume



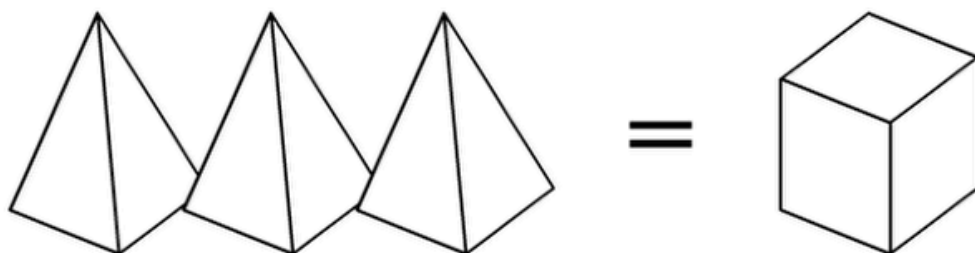
Fit inside a cube with the same base?

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2. Screen Shot:

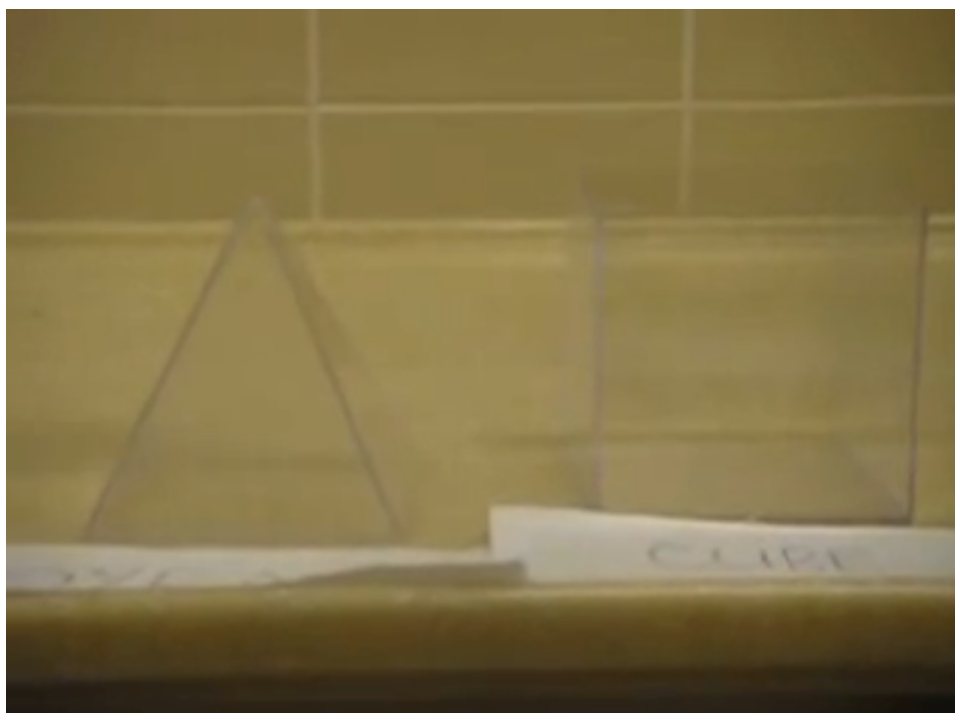


Volume of a Pyramid



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3. Second Video Demo:




4. Screen shot:

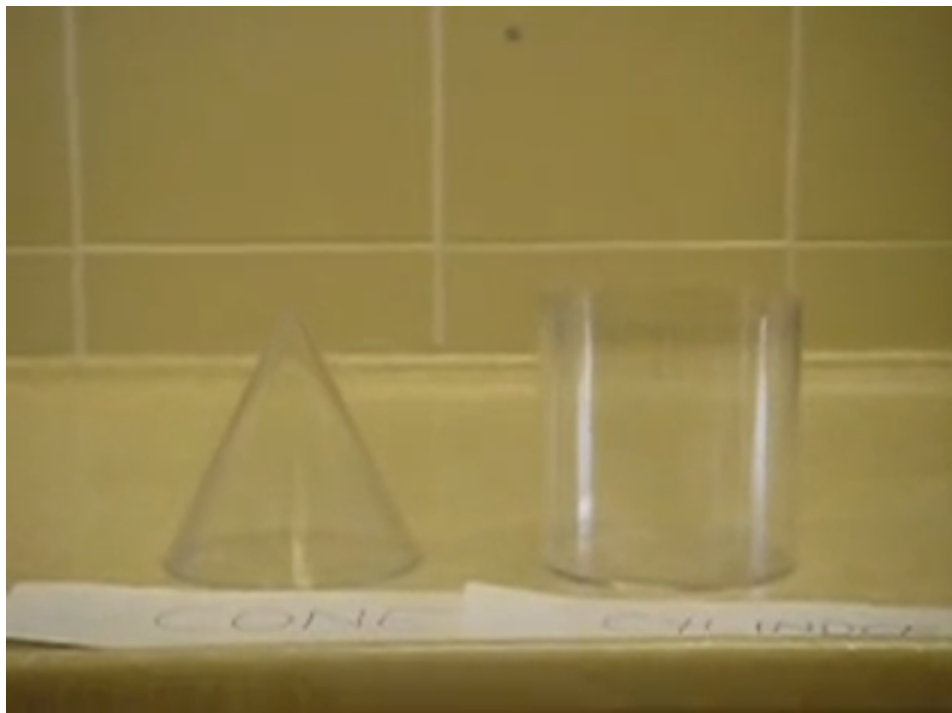


CC3 10.1.3: Volume of a Cone

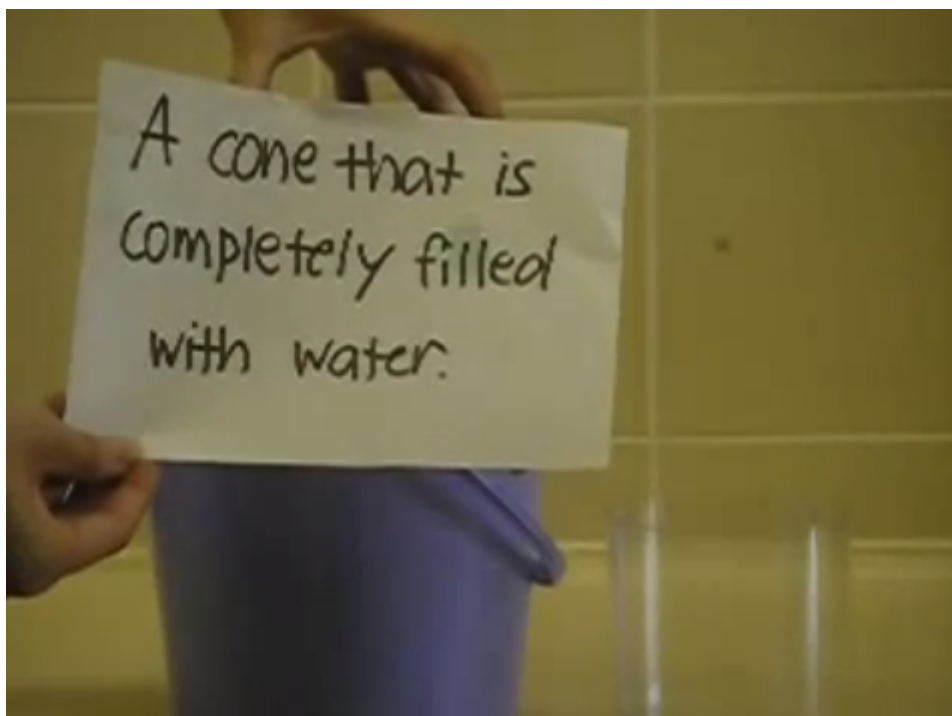
Click on the link below for the "Volume of a Cone"

[Volume of a Cone](#) (YouTube) 

1. Volume of a Cone Demo:



2. Screen shot:





CC3 10.1.3: Volume of a Sphere

Click on the link below for the "Volume of a Sphere"

[Volume of a Sphere](#) (Vimeo) 

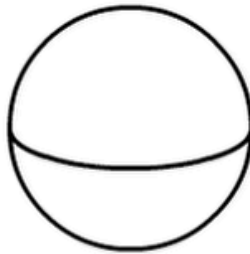
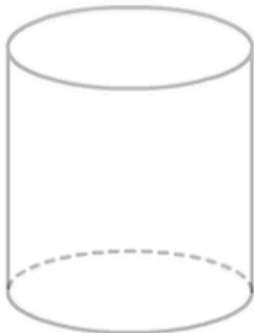
[Volume of a Sphere](#) (YouTube) 

1. First Video Question:



Volume of a Sphere

How many spheres...



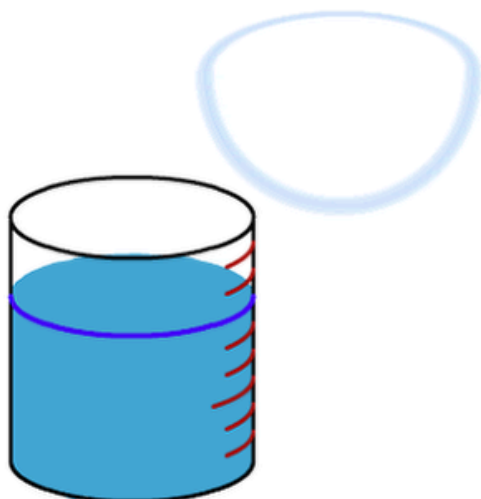
Fit in a cylinder...

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2. Screen shot:



Volume of a Sphere



$\frac{3}{2}$ Sphere(s)

$\frac{2}{3}$ Cylinder

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3. Second Video Demo:



4. Screen shot:

