

CC GEOMETRY ETOOLS - T

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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:

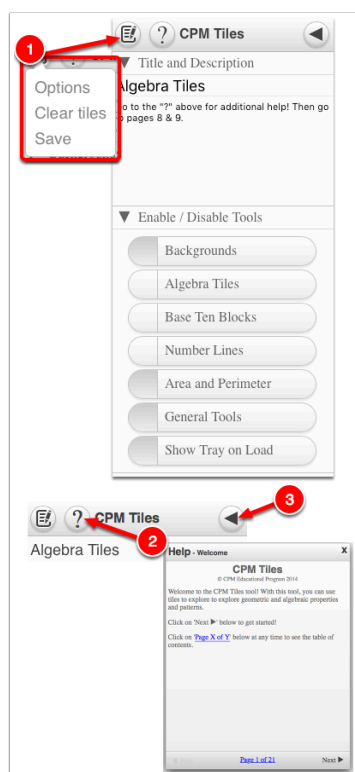
Options - Add Title and Description and Enable/Disable Tools.

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.

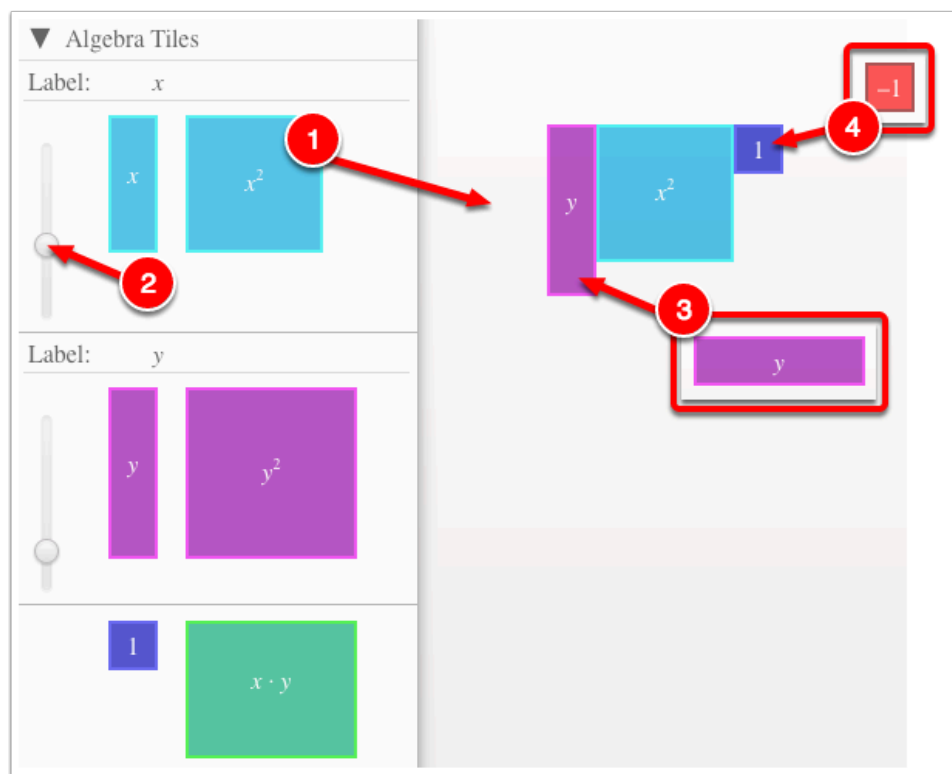
3. Select the Arrow Icon at the right to open and close the tray.



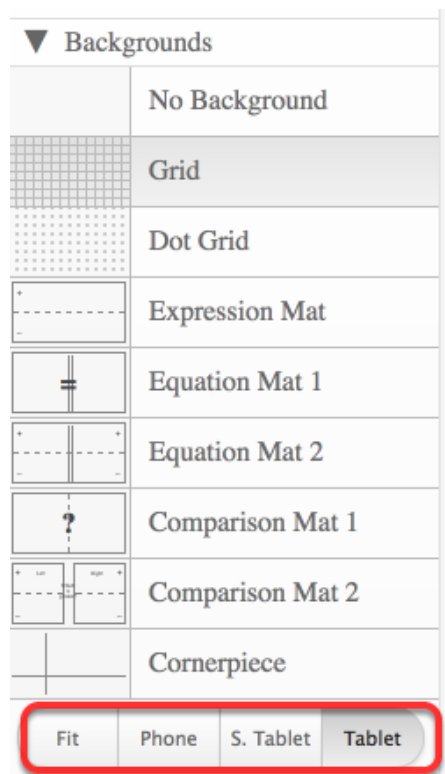
2. Drag tiles from the tray at the left to the display area at the right.

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.

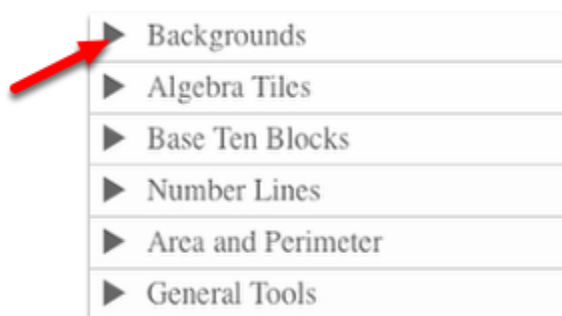


3. Choose from a variety of different mats. Also choose from a variety of sizes to fit on various devices.



4. Choose from a variety of different tiles:

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



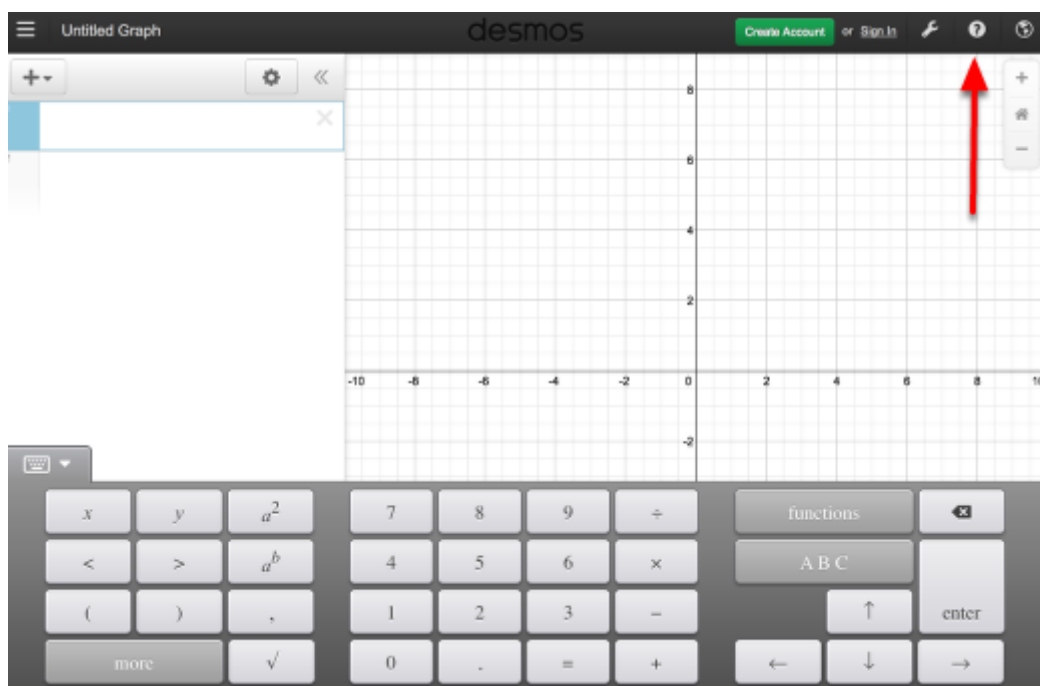
Desmos Graphing Calculator

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](#)

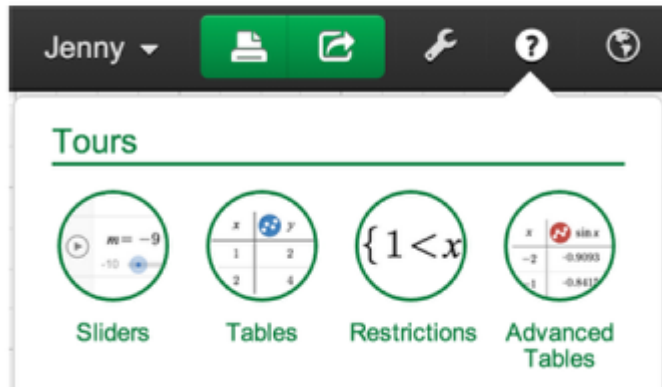
3. The interactive tours will NOT let you make a mistake! Try the links above!

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!

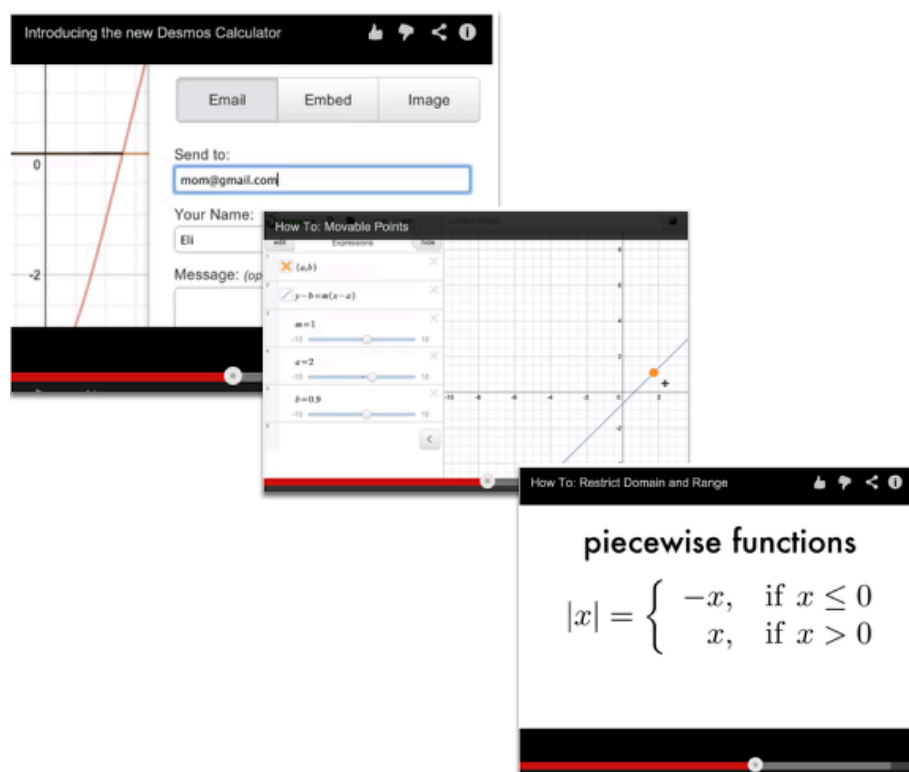
[Desmos Introduction](#)

[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](#)

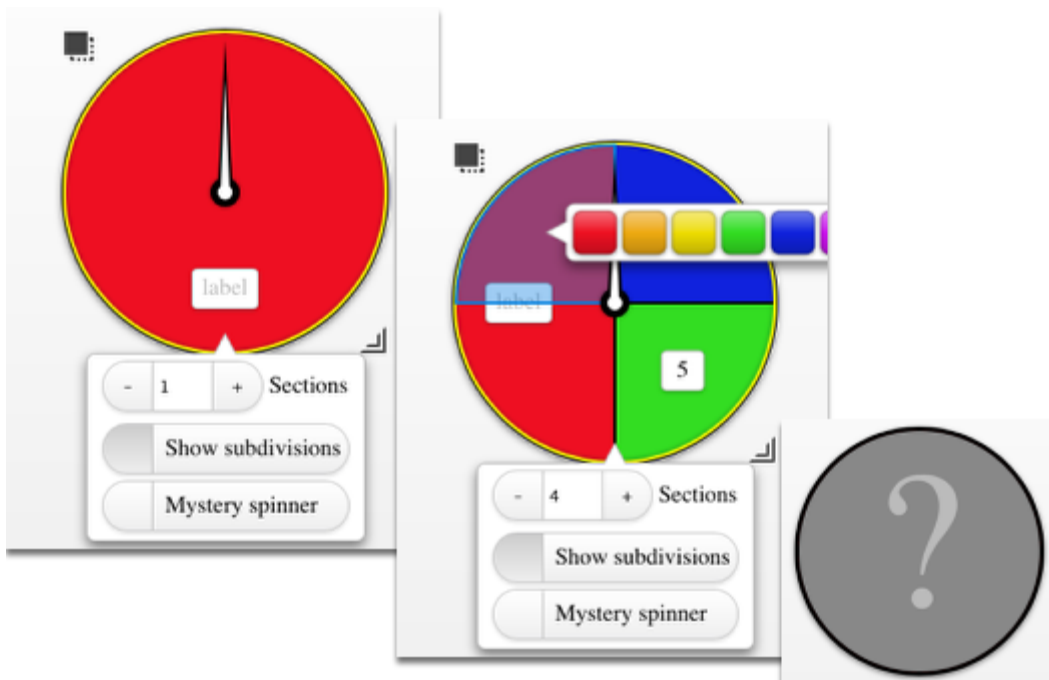
Probability Tools (CPM)

Click on the link below.

[Probability Tools \(CPM\)](#)

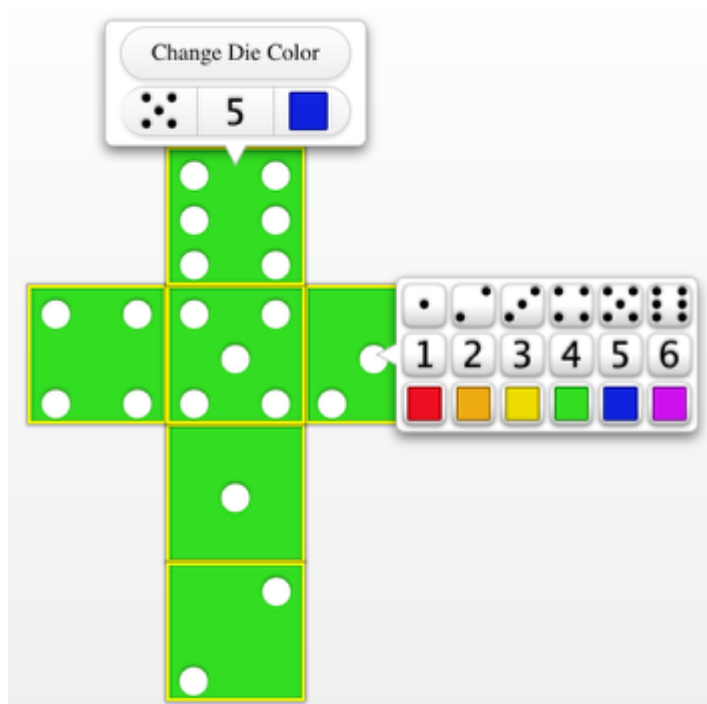
1. Spinners:

- Drag one or more spinners to the board.
- Resize the spinners.
- Choose color, number of sections, and labels.
- Hide subdivisions.
- Create Mystery Spinners.
- Click the spinners to spin.



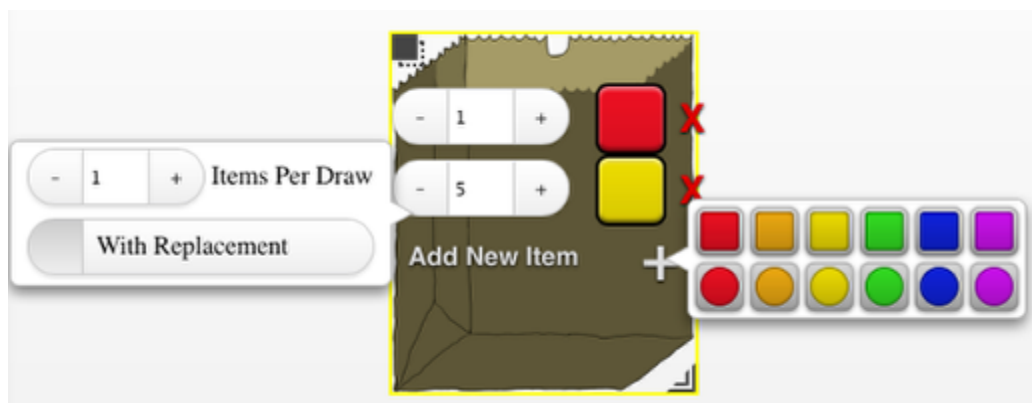
2. Dice:

- Drag one or more dice to the board.
- Choose dice color.
- Redesign the die with a variety of color, dot numbers, or Arabic numbers.
- Click each die to spin.



3. Bag:

- Drag one or more bags to the board.
- Choose the number, shape, and color of bag contents.
- Choose with or without replacement.
- Choose the number of items to draw.
- When finished, click the bag to shake and draw.



4. Coins:

- Coins are labelled "H" for Heads and "T" for Tails.
- Choose the color.
- Drag one or more coins to the board.
- Click each of them to spin.



5. Standard Deck of Cards:

- Drag one or more decks to the board.
- Choose with or without replacement and the number of cards draw at once.
- Modify the deck by eliminating specific cards or entire suits or number.
- Click the deck to draw the cards.



6. Random Number Generator:

- Drag the random number generator to the board.
- Indicate the number of integers to generate.
- Indicate the range for each random number.
- Click to randomize.

Generate Integers

From

To

Similarity Toolkit (CPM)

The similarity toolkit allows students to explore two triangles to determine congruency or similarity given SSS, SSA, SAS, AAA, etc.. Students show how two triangles are similar or congruent using rigid transformations (translation, rotation, and reflexion).

1. Click on the "Similarity Toolkit" link below. For additional help, click on the "Similarity Toolkit Video".

[Similarity Toolkit Video](#)

[Similarity Toolkit \(CPM\)](#)

2. Similarity Toolkit Basic Controls:

The screenshot shows the CPM Similarity Toolkit interface. On the left is a sidebar with various controls, and on the right are two triangles, $\triangle ABC$ and $\triangle DEF$, with their respective side lengths and angles.

Controls in the sidebar:

- Notes:** A text area with the prompt "click here to type notes".
- Show/Hide Labels:**
 - Points:** A button labeled "Show Angle Measures".
 - Sides:** Three buttons: "None", "Lengths" (selected), and "Names".
 - Other:** A button labeled "Visual Effects".
- Side Lengths and Ratios:** A table comparing the side lengths of $\triangle ABC$ and $\triangle DEF$.

Triangle Data:

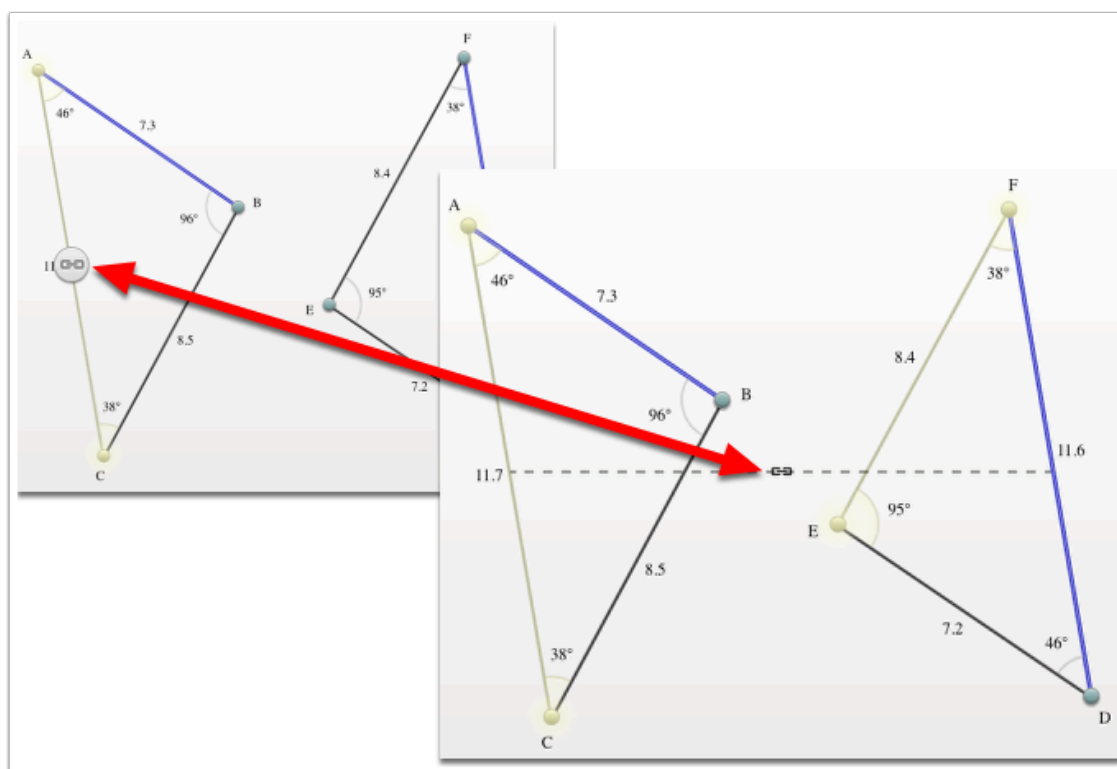
$\triangle ABC$	$\triangle DEF$
a = 8.5	d = 8.5
b = 11.7	e = 11.7
c = 7.3	f = 7.3

Link more elements to see side length ratios.

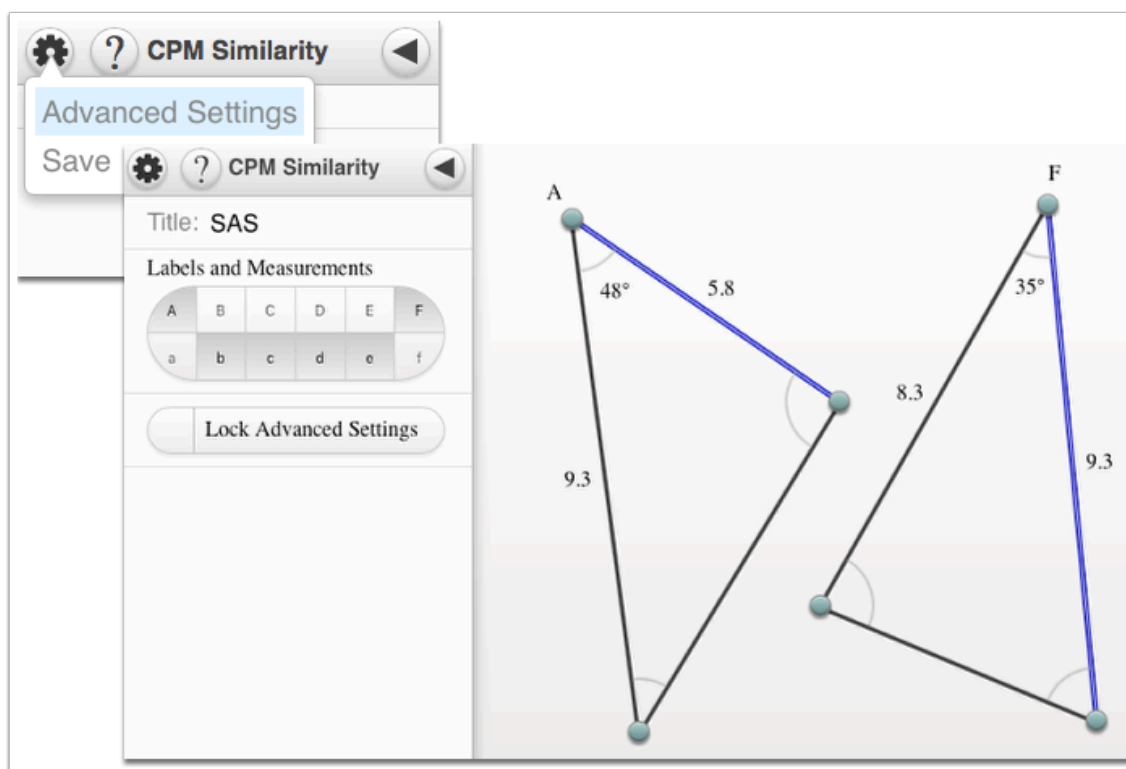
Triangle Details:

- $\triangle ABC$: Angles are 46° at vertex A, 96° at vertex B, and 38° at vertex C. Side lengths are AB = 7.3, BC = 8.5, and AC = 11.7.
- $\triangle DEF$: Angles are 38° at vertex F, 96° at vertex E, and 46° at vertex D. Side lengths are FE = 8.5, ED = 7.3, and FD = 11.7.

3. Indicate what sides/angles are similar/congruent.



4. By going to the Advanced Settings, indicate what angles and sides you want shown!



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.

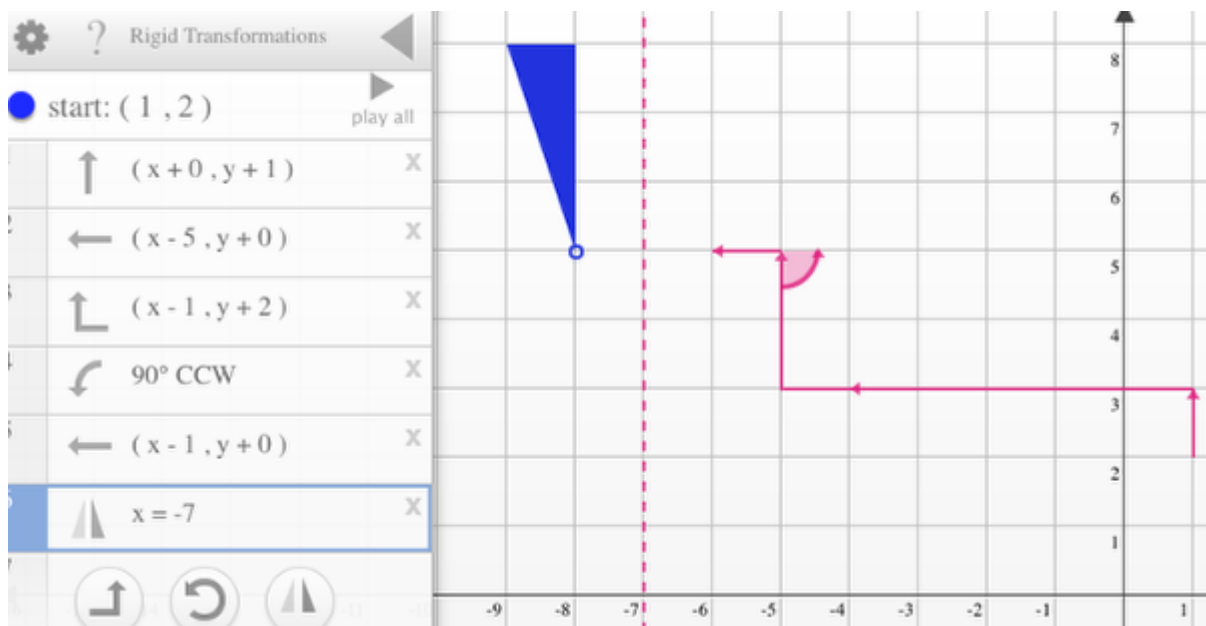
- Twelve games using the key lock are also available.
- This tool is designed so that teachers/students can create many more games.

[Rigid Transformations](#)

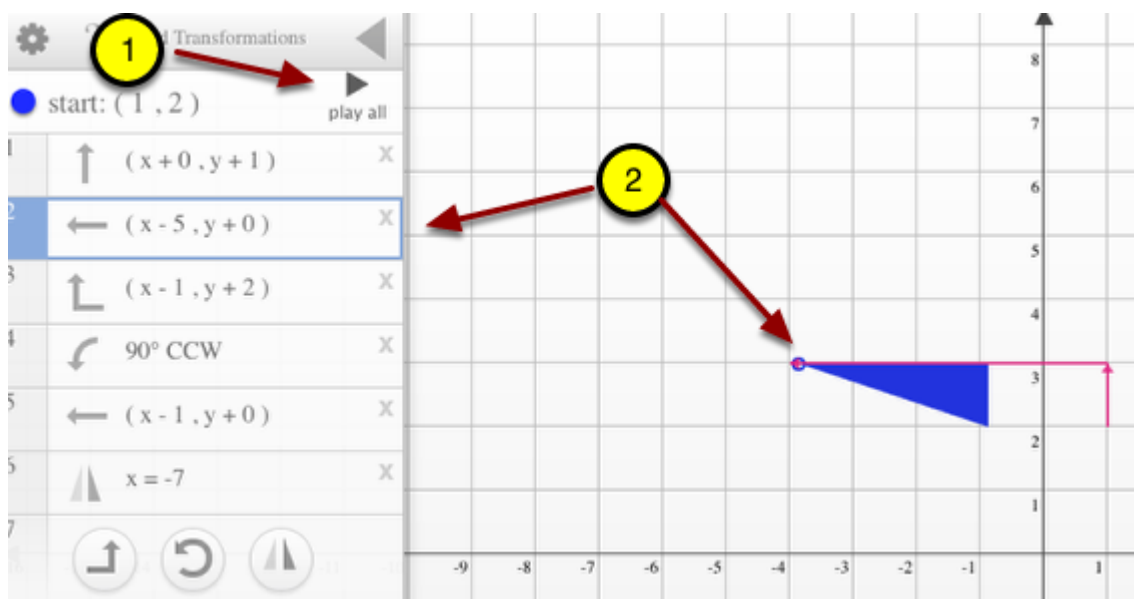
[Using RT Tool](#)

[Creating an RT Puzzle](#)

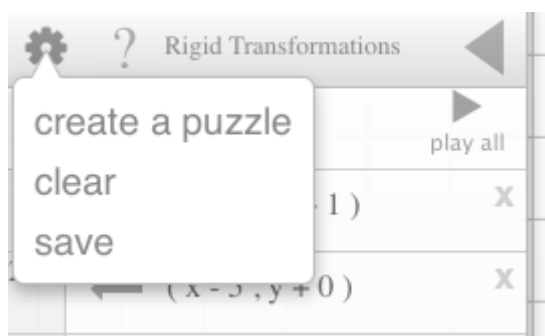
1. Steps are shown in the Tray at the left while the action occurs in the Display Area at the right.



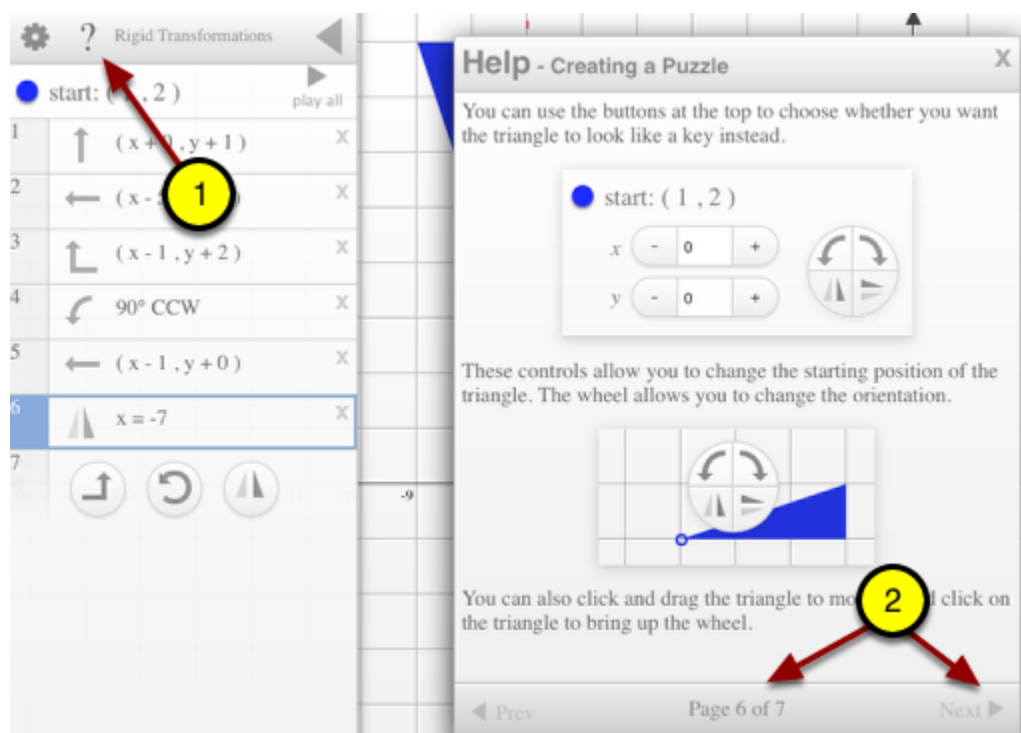
2. When playing, active steps are highlighted.



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.



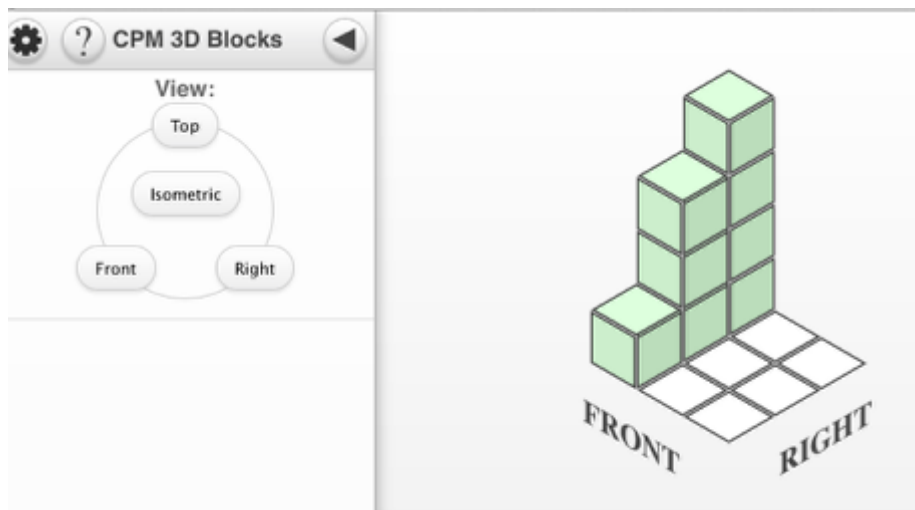
3D Blocks (CPM)

Click on the link below.

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

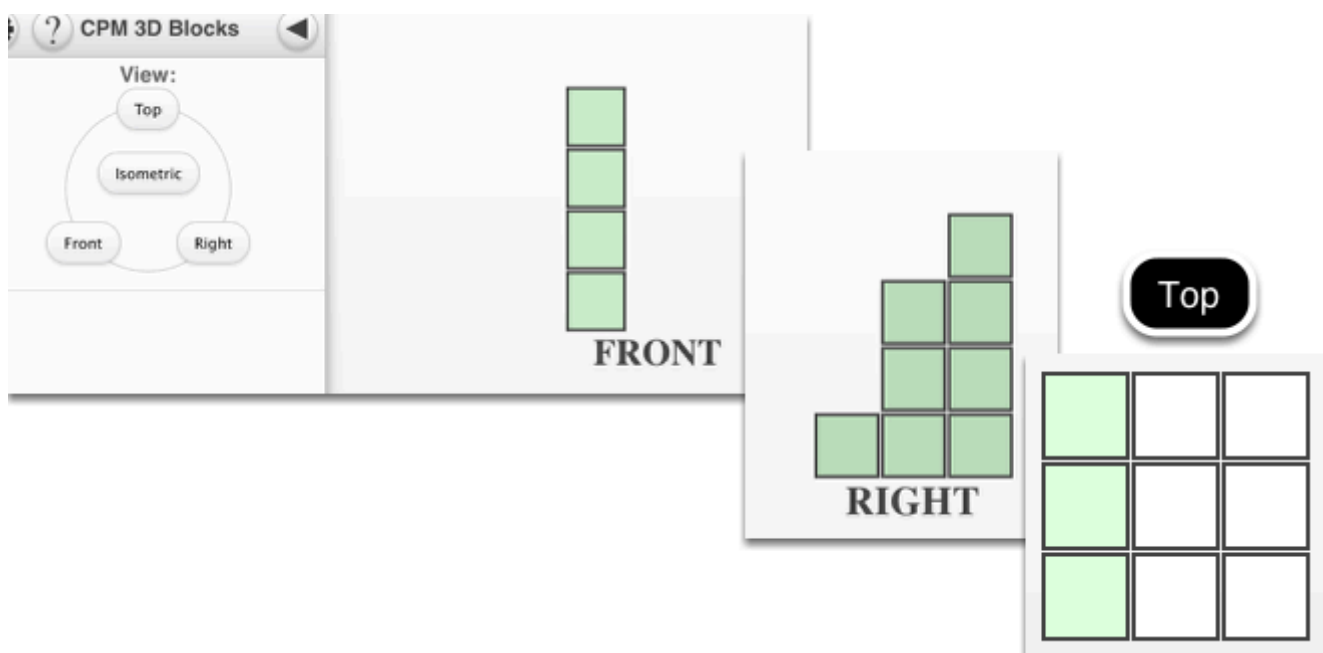
1. 3D Blocks (CPM)

- Build by clicking the top of blocks or the pad.
- Remove by clicking the side of blocks.



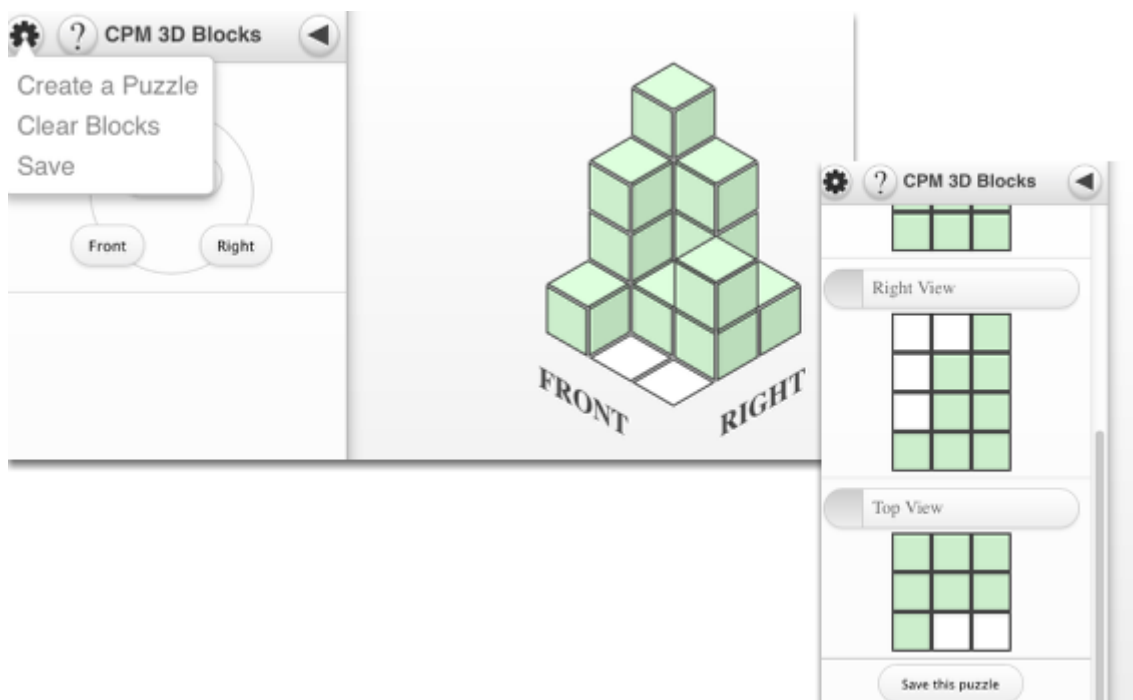
2. Choose the view:

- Isometric view is in step 1 above.
- Also, choose Front, Right, or Top views.



3. Create a Puzzle:

- Design your own puzzle by showing only the views you choose.
- Other students attempt to build your structure from the given views.

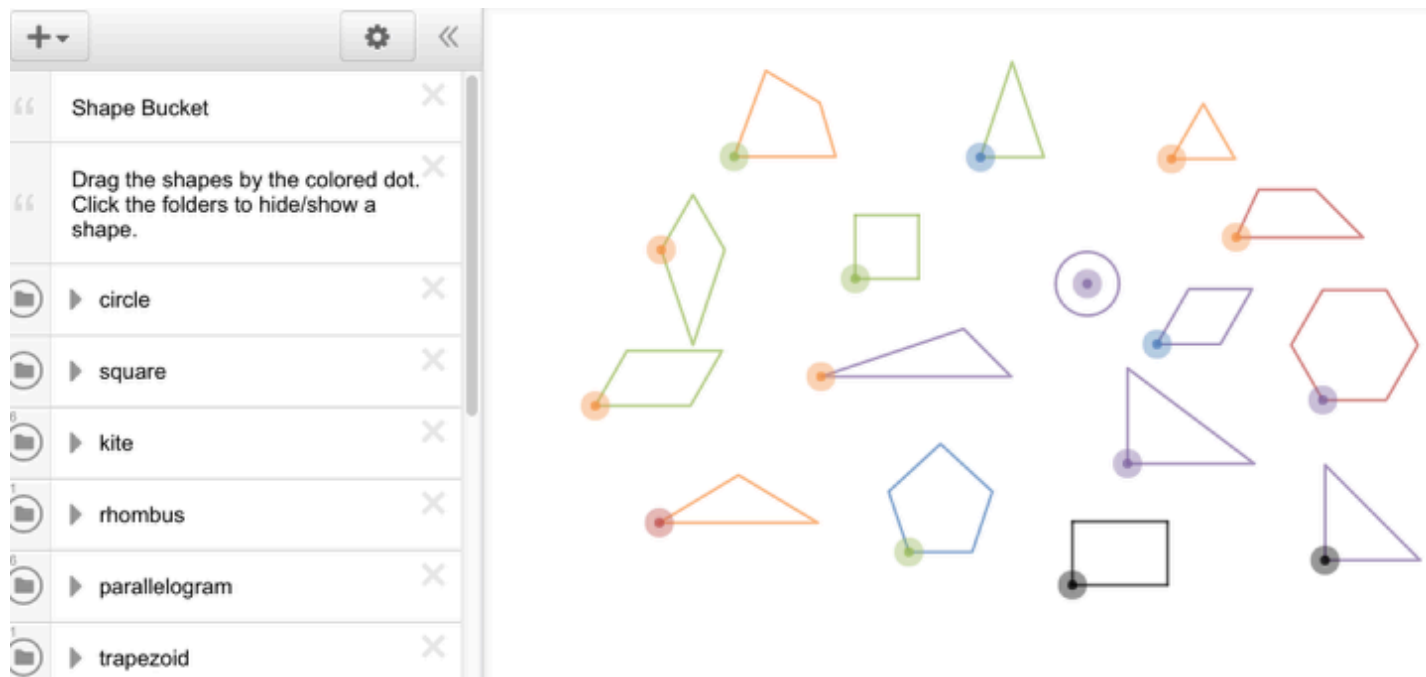


Shape Bucket (Desmos)

Click on the link below for the "Shape Bucket"

[Shape Bucket\(Desmos\)](#)

1. Use the "Shape Bucket" to explore geometric concepts.

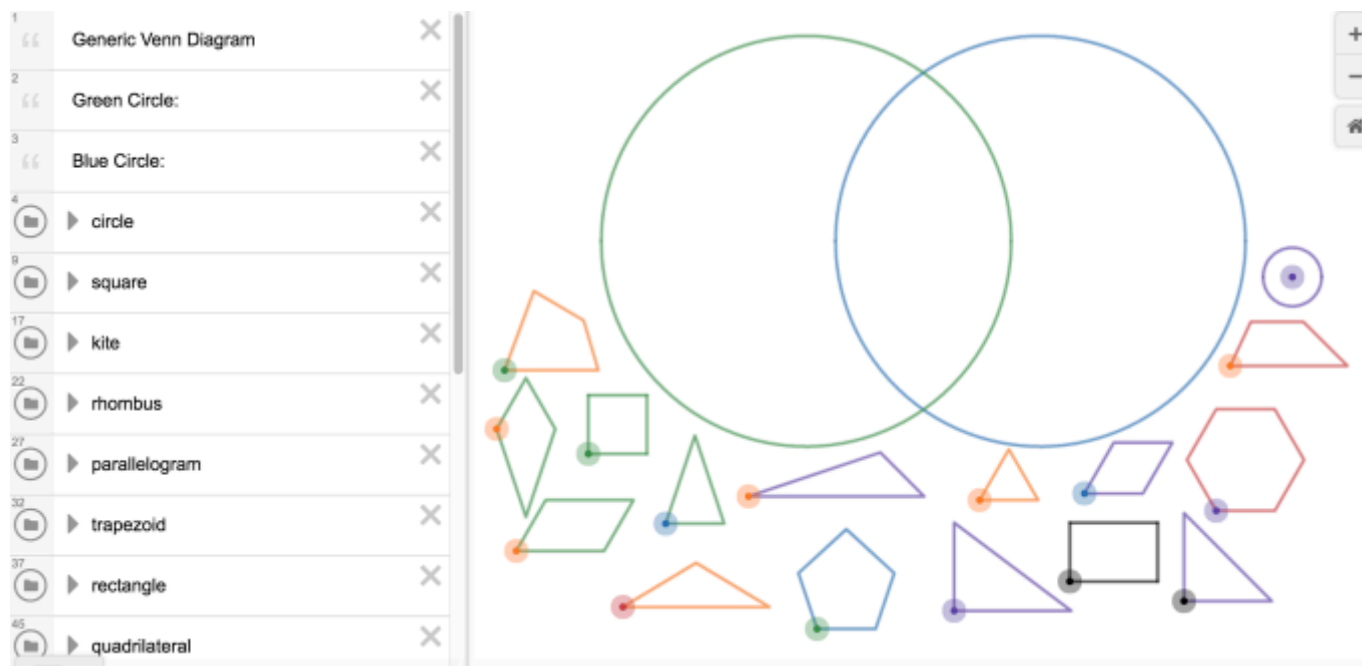


Generic Venn Diagram (Desmos)

Click on the link below.

[Generic Venn Diagrams \(Desmos\)](#)


1. Create your own Venn Diagrams.



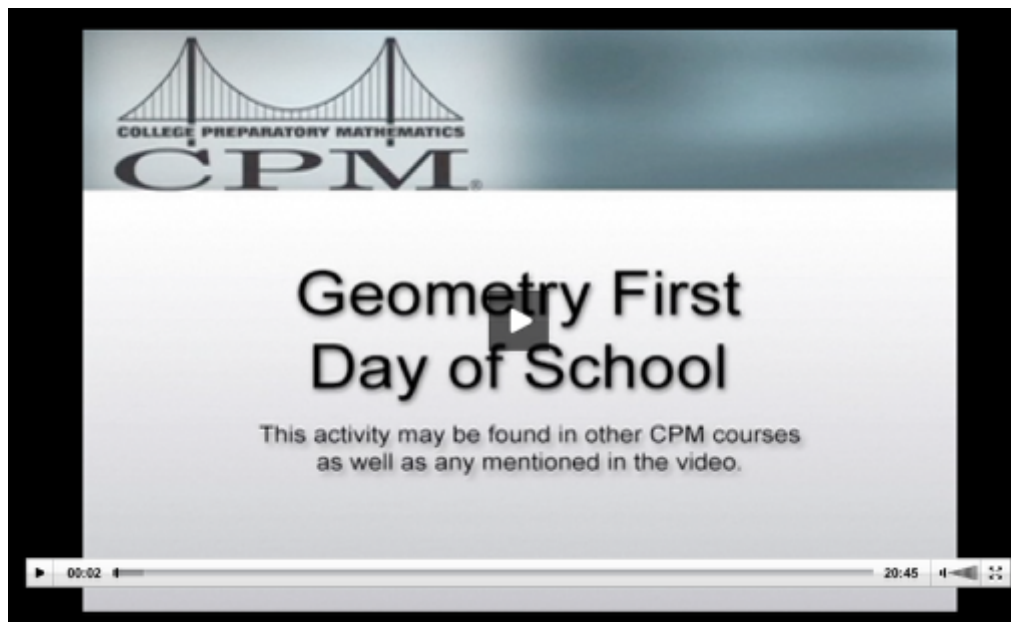
Chapter 1

CCG 1.1.1: Geometry First Day of School Teacher Video

Click on the link below for the "Geometry First Day of School" video

[Geometry First Day of School](#) 

1. This video offers suggestions for class activities for the first day of school.



CCG 1.1.1: Quilt Pictures and PowerPoint (.pps & .doc)

Click on the links below for the "Quilt Pictures and PowerPoint Presentation"

[Quilt PowerPoint Presentation](#)

[Quilt Pictures](#)


1. Examples:







CCG 1.1.2: Teacher Mobius Strip Setup, Lesson, Closure and Intro/Summary Video

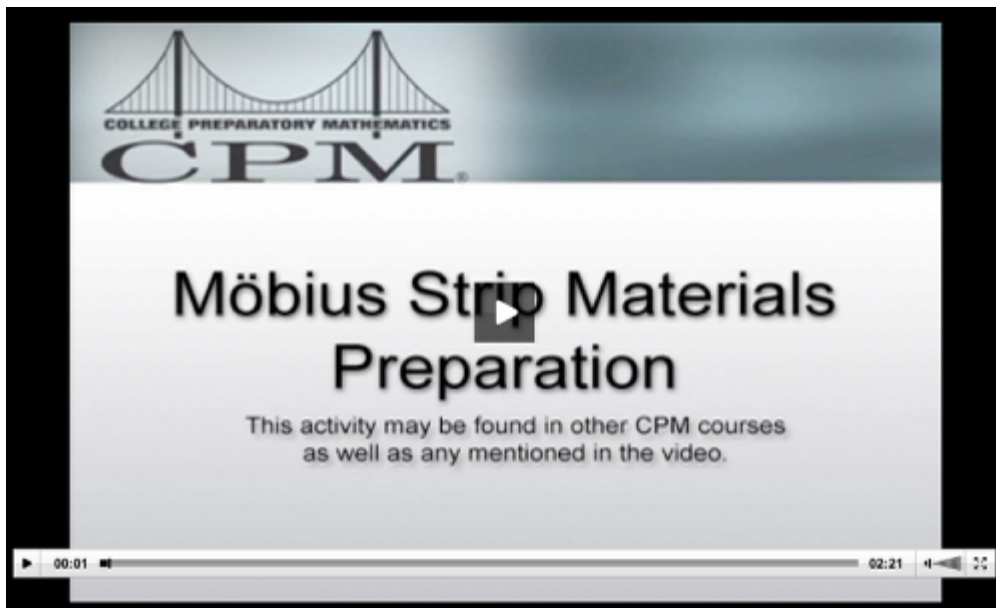
Click on the links below for the "Mobius" videos

[Möbius Strip Setup](#) 

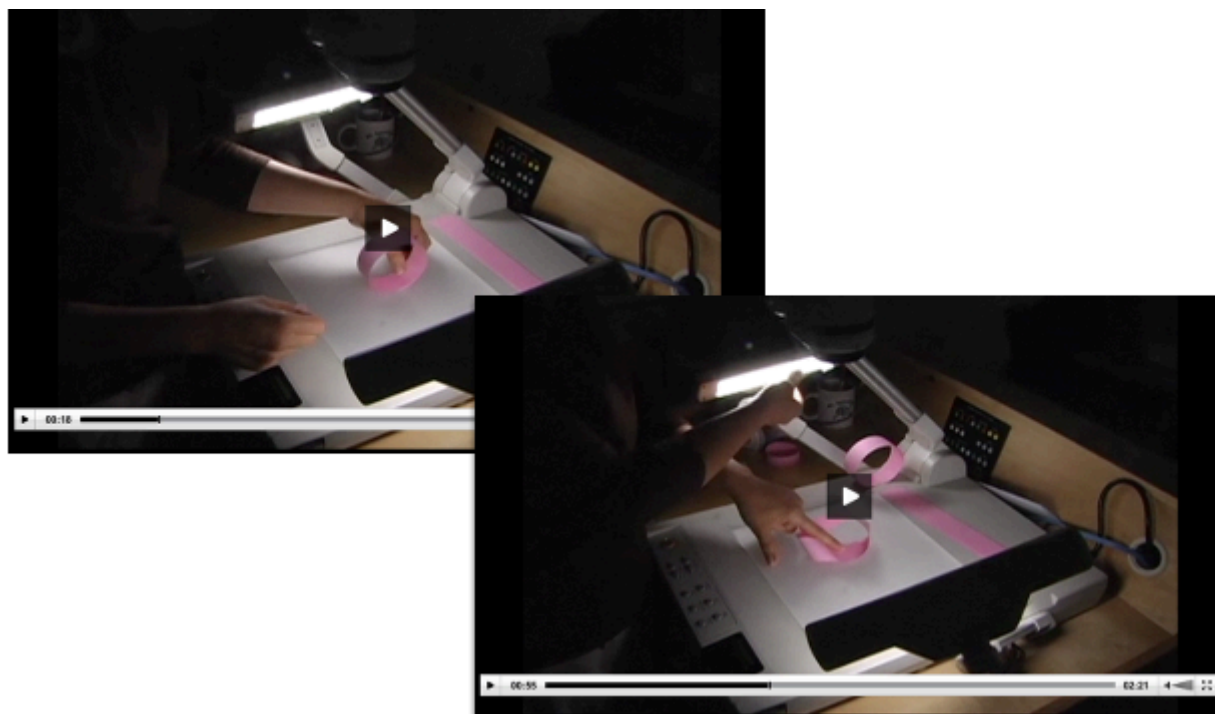
[Möbius Strip classroom Lesson](#) 

[Möbius Strip Closure](#) 

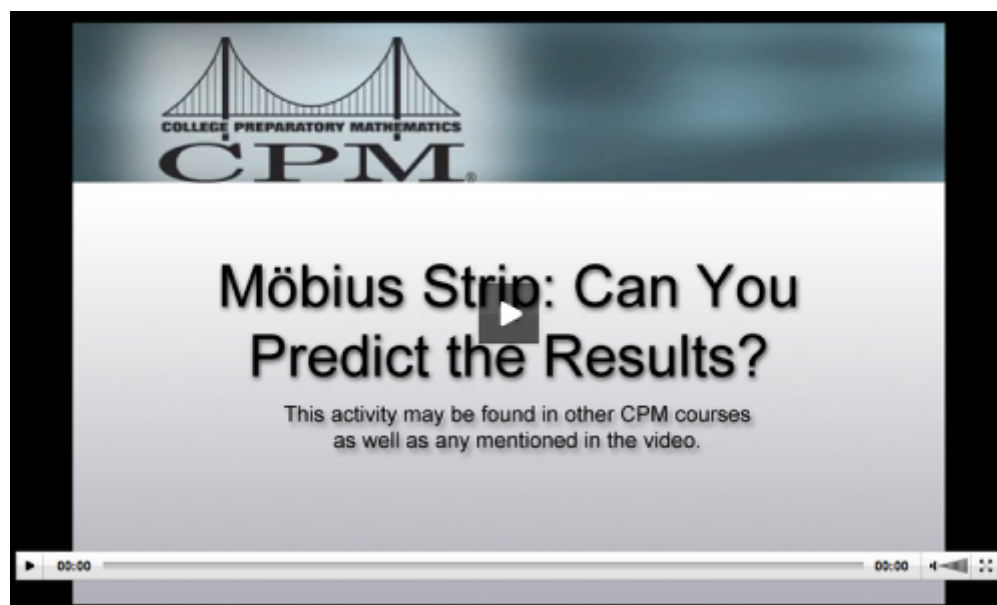
1. Materials Preparation:



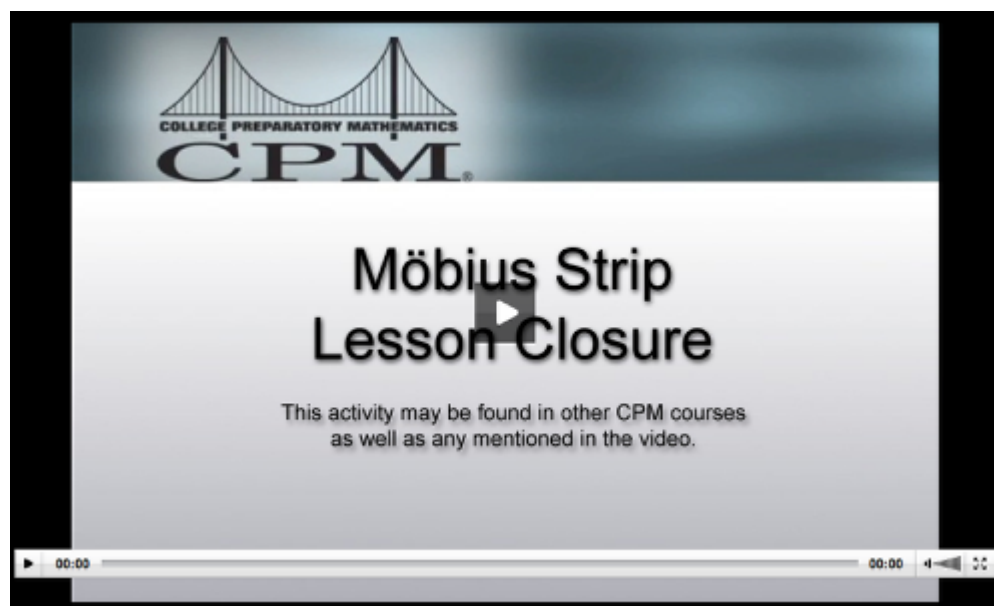
2. Using the strips:



3. Predicting results:




4. Closure:



CCG 1.1.5: The Power of X Videos

Click on the link below for the "Power of X Video and Beyond the Power of X Video"

[The Power of X](#) 
[Behind the Power of X](#) 

1. Human kaleidoscope




TEDxSummit intro: The power of x

2. The making of the film:



CCG 1.1.5: Using Hinged Mirrors Teacher Video

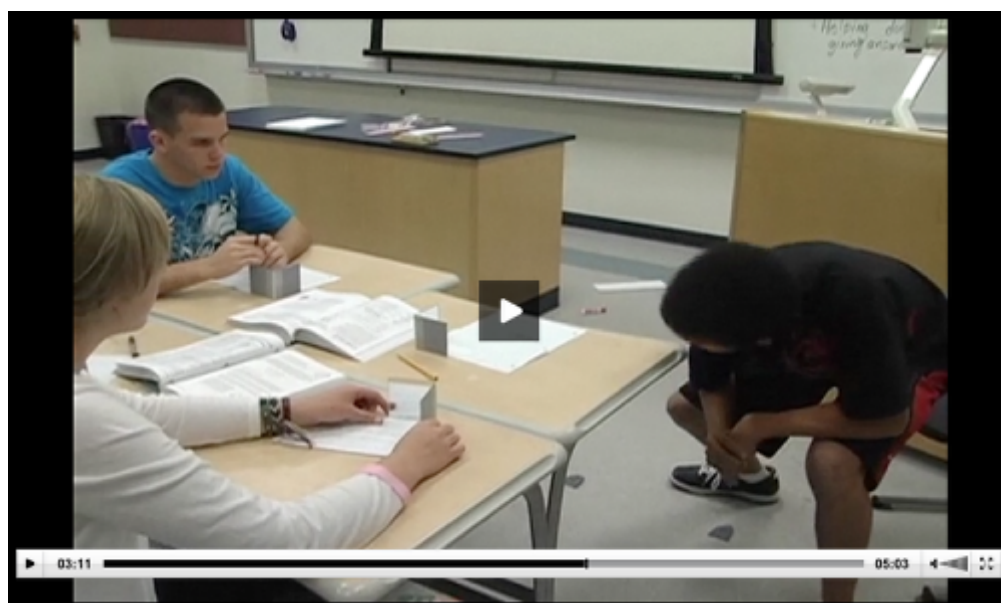
Click on the link below for the "Using Hinged Mirrors Video"

[Using Hinged Mirrors](#) 

1. Ideas for using hinged mirrors in Lesson 1.1.5 are presented in this video.



2. Students investigate the shapes they "see" as they change the opening angle of the hinged mirrors.





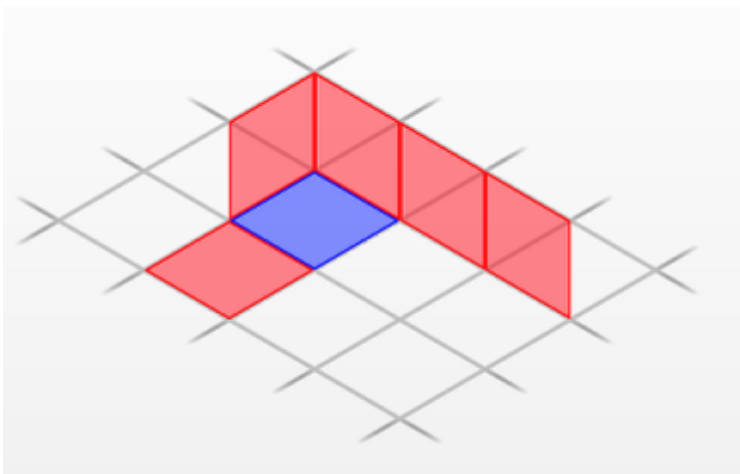
CCG 1.2.1: 1-47 3D Nets (CPM)

These nets are interactive. Click on the sides to raise or lower them. Drag in a circular motion outside of the net to rotate in space. Go to the "?" for more help!

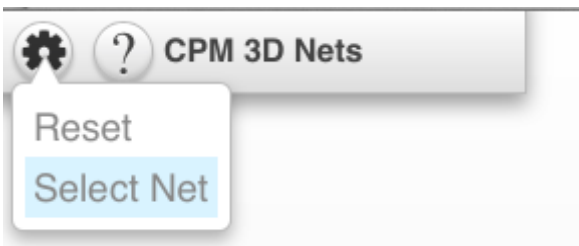
Click on the link below.

[GC 1-47 3D Nets \(CPM\)](#)

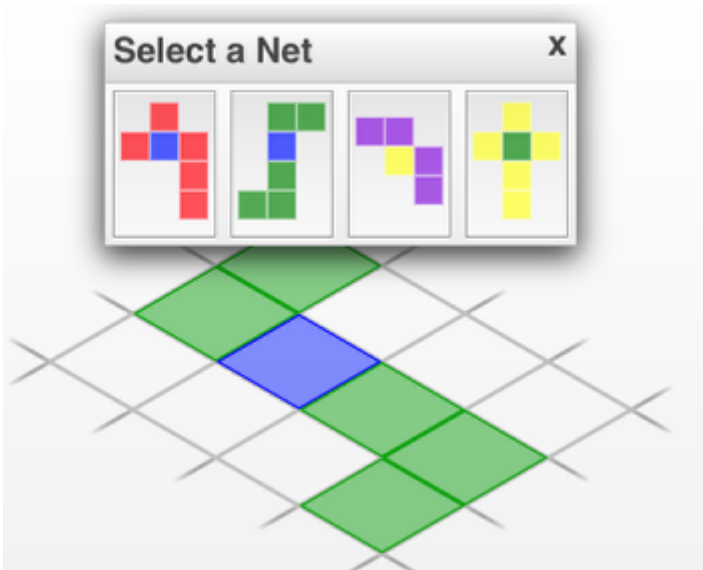
1. GC 47a:



2. Get the other nets by going to the Gear menu!



3. GC 47b:



4. GC 47c:



5. GC 47d:



CCG 1.2.2: Transformations with 1-59 & 1-60a, c (Desmos)

Click on the links below.

[1-59 Student eTool](#)

[1-60a Student eTool](#)

[1-60c Student eTool](#)

1. 1-59: Click the folder buttons to view.

CCG 1-59 Student eTool

desmos

1. CCG 1-59 Student eTool

2. 1-59. As Amanda was finding reflections, she wondered, "What if I reflect a shape twice over parallel lines?"

3. a. Find $\triangle ABC$ and lines n and p (shown below). What happens when $\triangle ABC$ is reflected across line n to form $\triangle A'B'C'$ and then $\triangle A'B'C'$ is reflected across line p to form $\triangle A''B''C''$? First visualize the reflections and then test your idea of the result by drawing both reflections.

4. b. Examine your result from part (a). Compare the original triangle $\triangle ABC$ with the final result, $\triangle A''B''C''$. What single motion would change $\triangle ABC$ to $\triangle A''B''C''$?

5. c. Amanda analyzed her results from part (a). "It looks like I could have just slid $\triangle ABC$ over!" Sliding a shape from its original position to a new position is called translating. What words can you use to describe a translation?

6. d. The words "transformation" and "translation" sound alike and can easily be confused. Discuss in your team what these words mean and how they are related to each other.

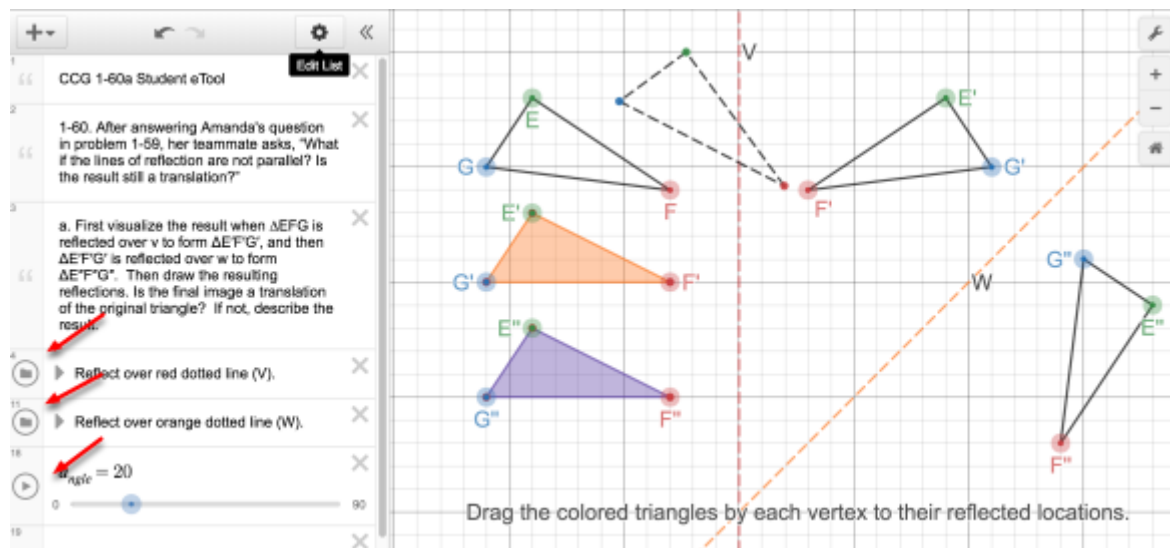
7. Click the circle on line 9 and 16 to reveal the reflection. To create a new shape, move the colored points about to change the shape.

9. Reflect over red dotted line.

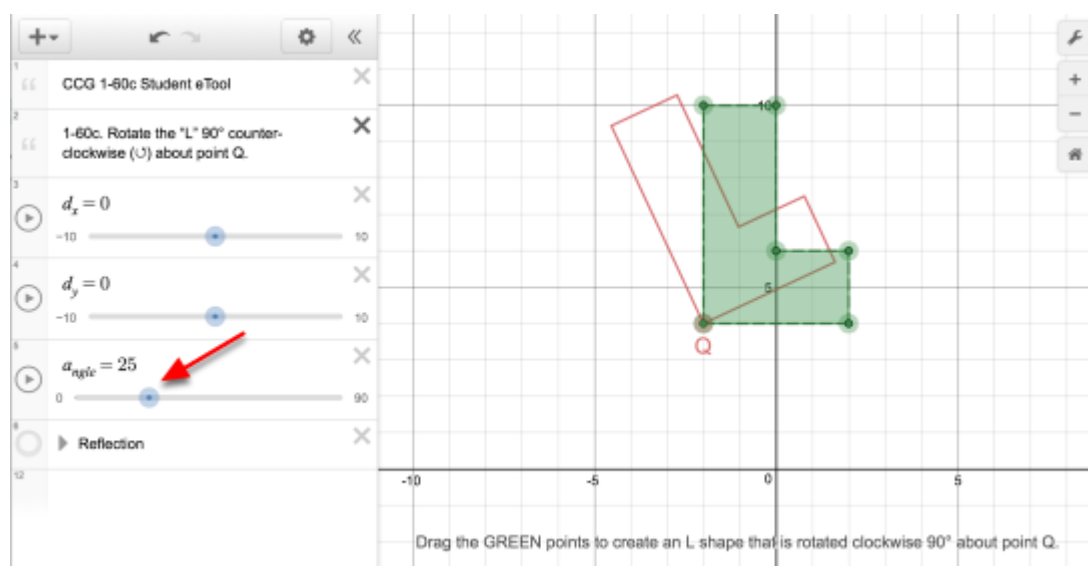
16. Reflect over blue dotted line.

Drag the colored triangles by each vertex to their reflected locations.

2. 1-60a: Click the folder buttons to view the reflections. Drag the slider to view the rotation.




3. 1-60c: Drag the Angle Slider to view the rotation.

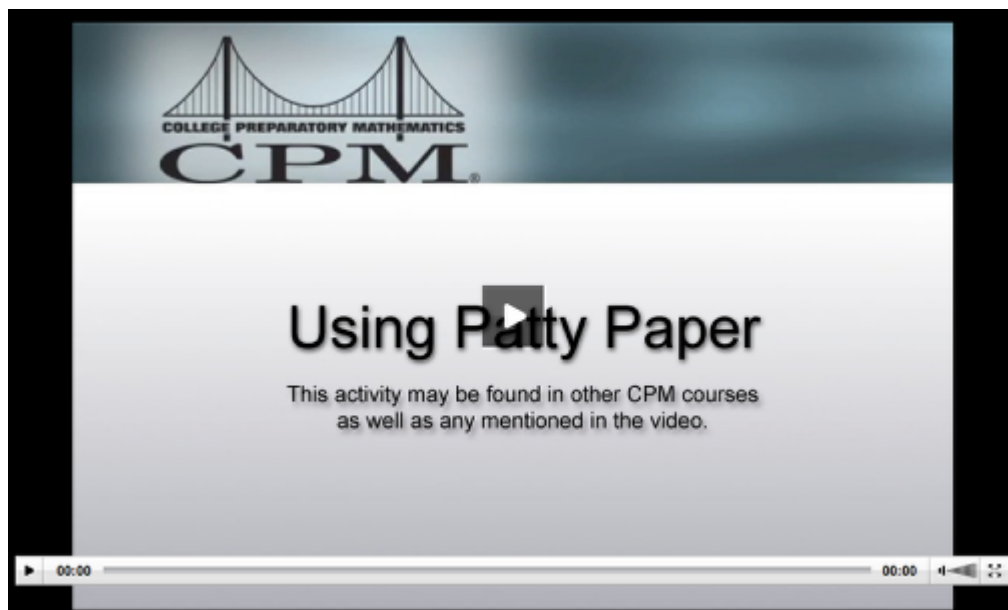


CCG 1.2.2: Using Patty Paper Teacher Video

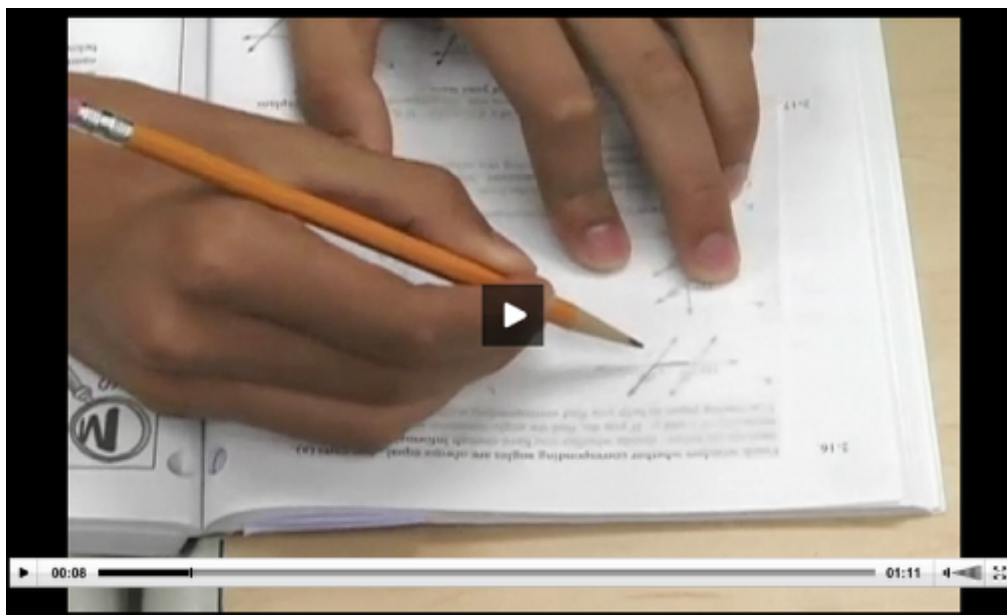
Click on the link below for the "Using Patty Paper" Video

[Using Patty Paper](#) 

1. Screen shot:



2. Screen shot:

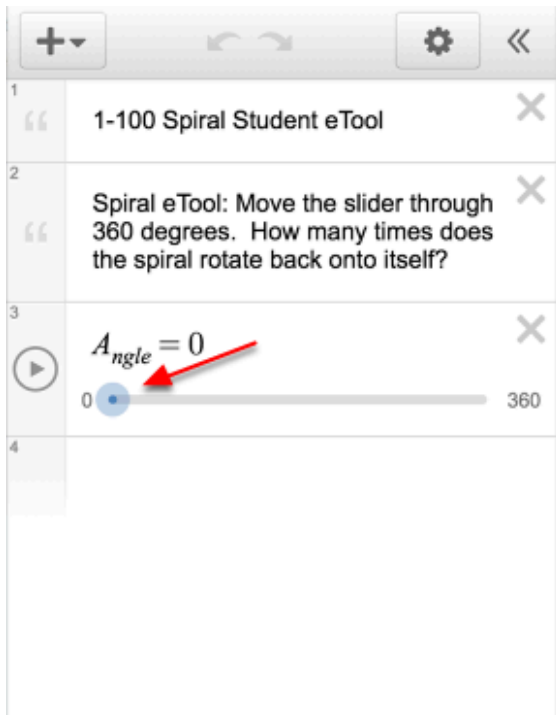


CCG 1.2.6: 1-100 Spiral Student eTool (Desmos)

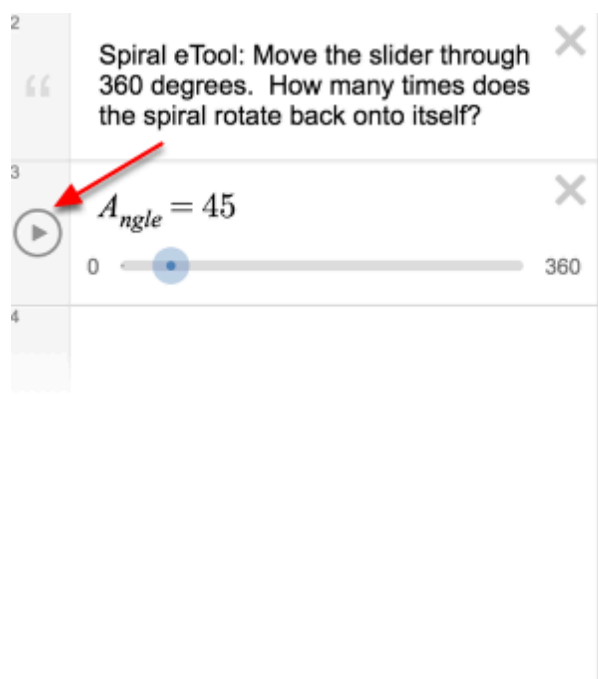
Click on the link below for the "1-100 Spiral Student eTool"

[1-100 Spiral Student eTool \(Desmos\)](#)

1. Move the slider. In how many degrees does the figure rotate back to itself?



2. To toggle between continuous play and stop, click the play/pause button.



CCG 1.3.1: 1-111 Venn Diagrams Shape A, B & C eTools (Desmos)

Click on the link below.

[Shape Bucket\(Desmos\)](#)

[Generic Venn Diagram\(Desmos\)](#)

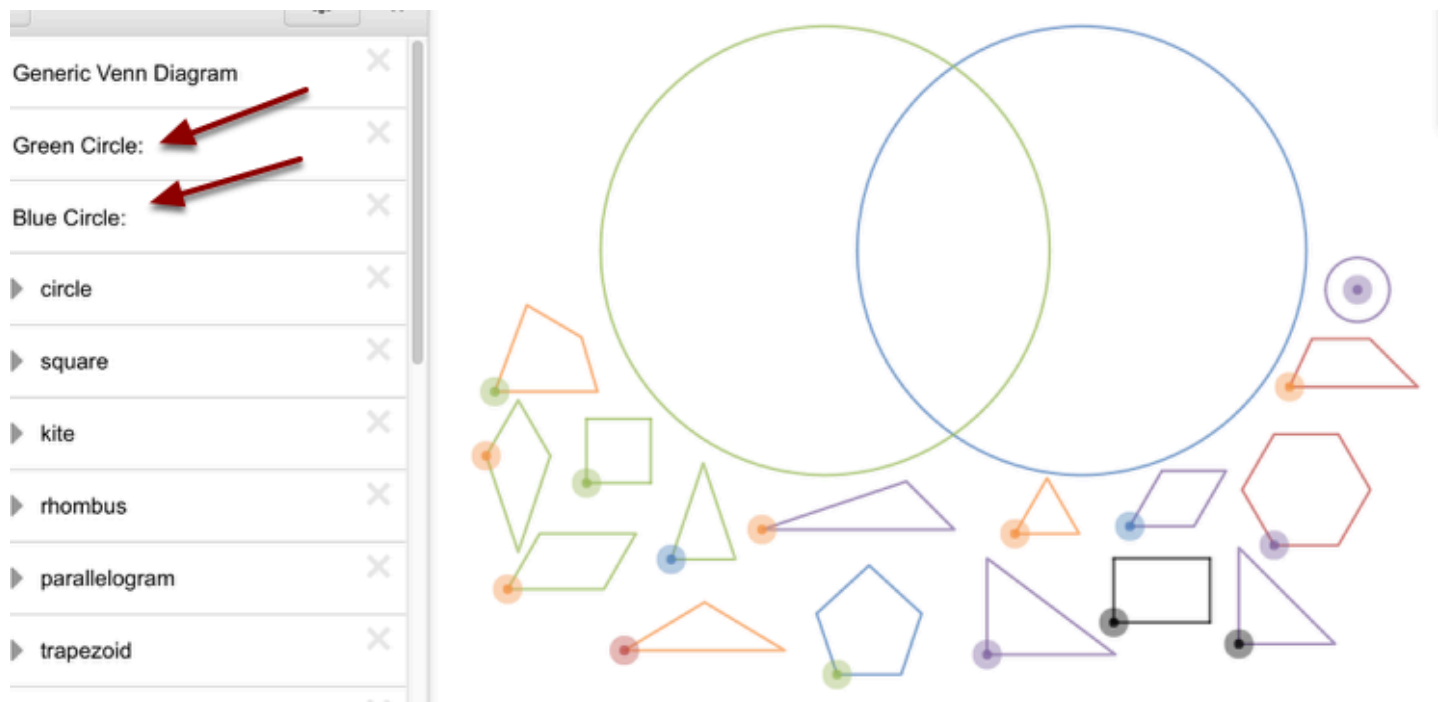
[1-111 Venn Diagram A: Student eTool\(Desmos\)](#)

[1-111 Venn Diagram B: Student eTool\(Desmos\)](#)

[1-111 Venn Diagram C: Student eTool\(Desmos\)](#)

1. Generic Venn Diagram

- Type the attributes for each circle at the left
- Fill the circles appropriately.



2. Venn Diagram A:

- Hide the tray for more room to move the shapes.
- Enlarge/shrink the shapes by using the mouse or pinching on a tablet.

1-111 Venn Diagram A: Stu...

desmos

Create Account or Sign In

Open Graph (cmd+o)

1-111 Venn Diagram A: Student eTool

HINT: Drag the shapes by the colored dots to the appropriate section on the Venn Diagram.

square

kite

rhombus

parallelogram

trapezoid

rectangle

quadrilateral

acute isosceles triangle

equilateral triangle

Has at least one pair of parallel sides

Has at least two sides of equal length

3. Venn Diagram B:

- Hide the tray for more room to move the shapes.
- Enlarge/shrink the shapes by using the mouse or pinching on a tablet.

1-111 Venn Diagram B: Stu...

desmos

Create Account or Sign In

1-111 Venn Diagram B: Student eTool

HINT: Drag the shapes by the colored dots to the appropriate section on the Venn Diagram.

square

kite

rhombus

parallelogram

trapezoid

rectangle

quadrilateral

acute isosceles triangle

Has only three sides

Has a right angle

4. Venn Diagram C:

- Hide the tray for more room to move the shapes.
- Enlarge/shrink the shapes by using the mouse or pinching on a tablet.

1-111 Venn Diagram C: Stu...

desmos

Create Account or Sign In

Open Graph (cmd+o)

1-111 Venn Diagram C: Student eTool

HINT: Drag the shapes by the colored dots to the appropriate section on the Venn Diagram.

square

kite

rhombus

parallelogram

trapezoid

rectangle

quadrilateral

acute isosceles triangle

equilateral triangle

Has reflection symmetry

Has 180° rotation symmetry

5. Shape Bucket

Shape Bucket

Drag the shapes by the colored dot. Click the folders to hide/show a shape.

circle

square

kite

rhombus

parallelogram

trapezoid

CCG 1.3.1: 1-111 Venn Diagrams Shape A, B & C Answer eTools (Desmos)

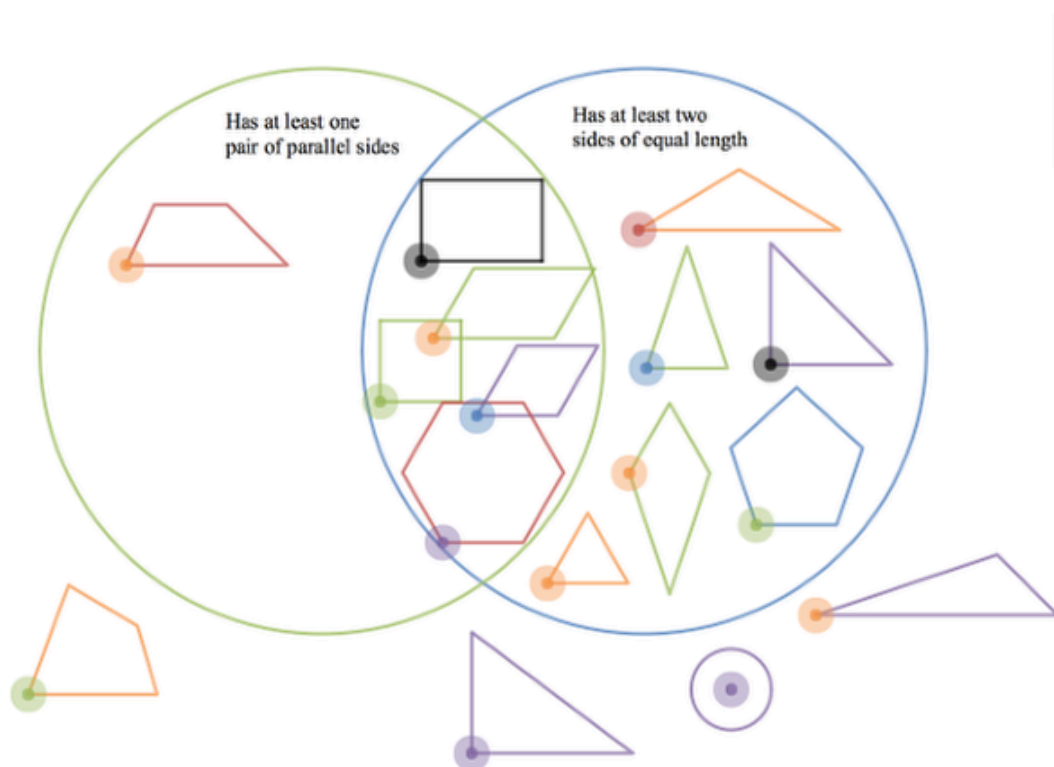
Click on the link below for the "Shape A, B & C eTools (Desmos)."

[1-111 Venn Diagram A: Answer eTool \(Desmos\)](#)

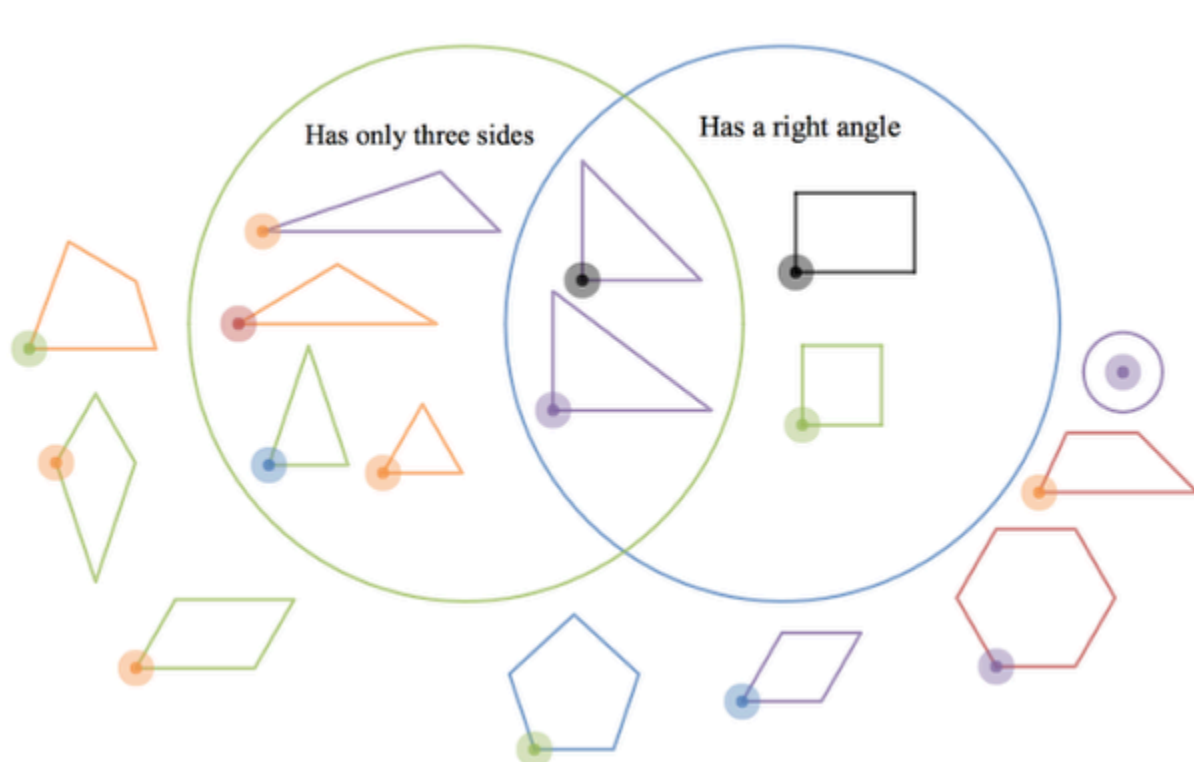
[1-111 Venn Diagram B: Answer eTool \(Desmos\)](#)

[1-111 Venn Diagram C: Answer eTool \(Desmos\)](#)

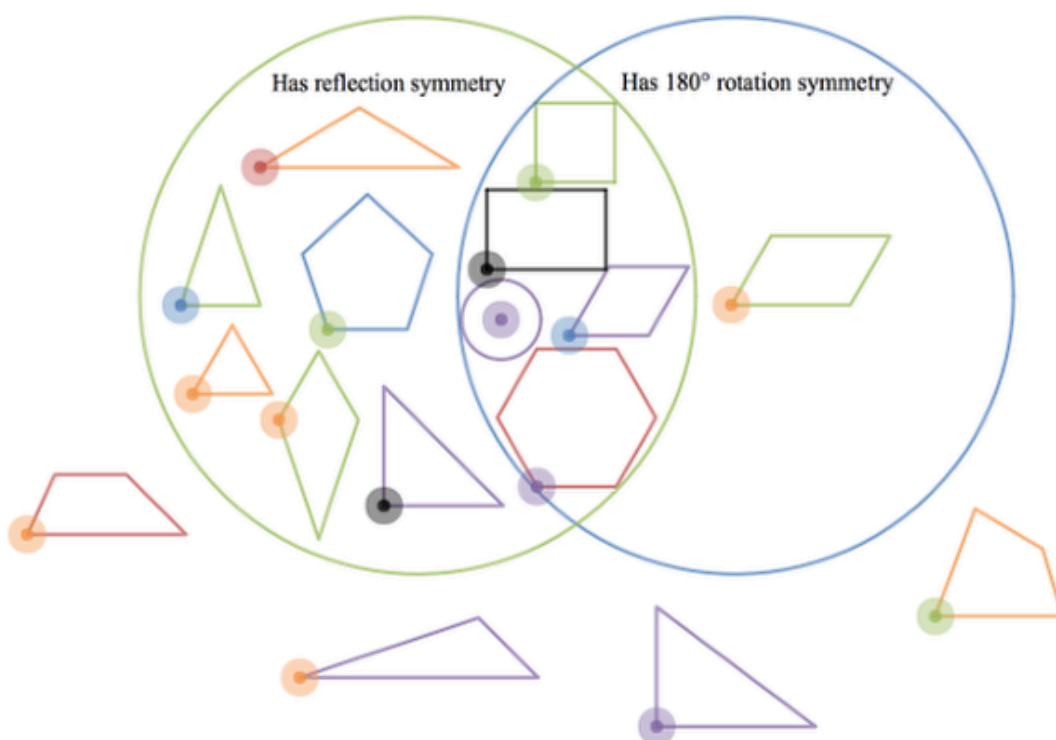
1. Venn Diagram Answer A: See below for the placement of shapes.



2. Venn Diagram Answer B: See below for the placement of shapes.



3. Venn Diagram Answer C: See below for the placement of shapes.



CCG: 1.3.2 1-117 Student eTool (Desmos)

Click on the link below to access eTool.

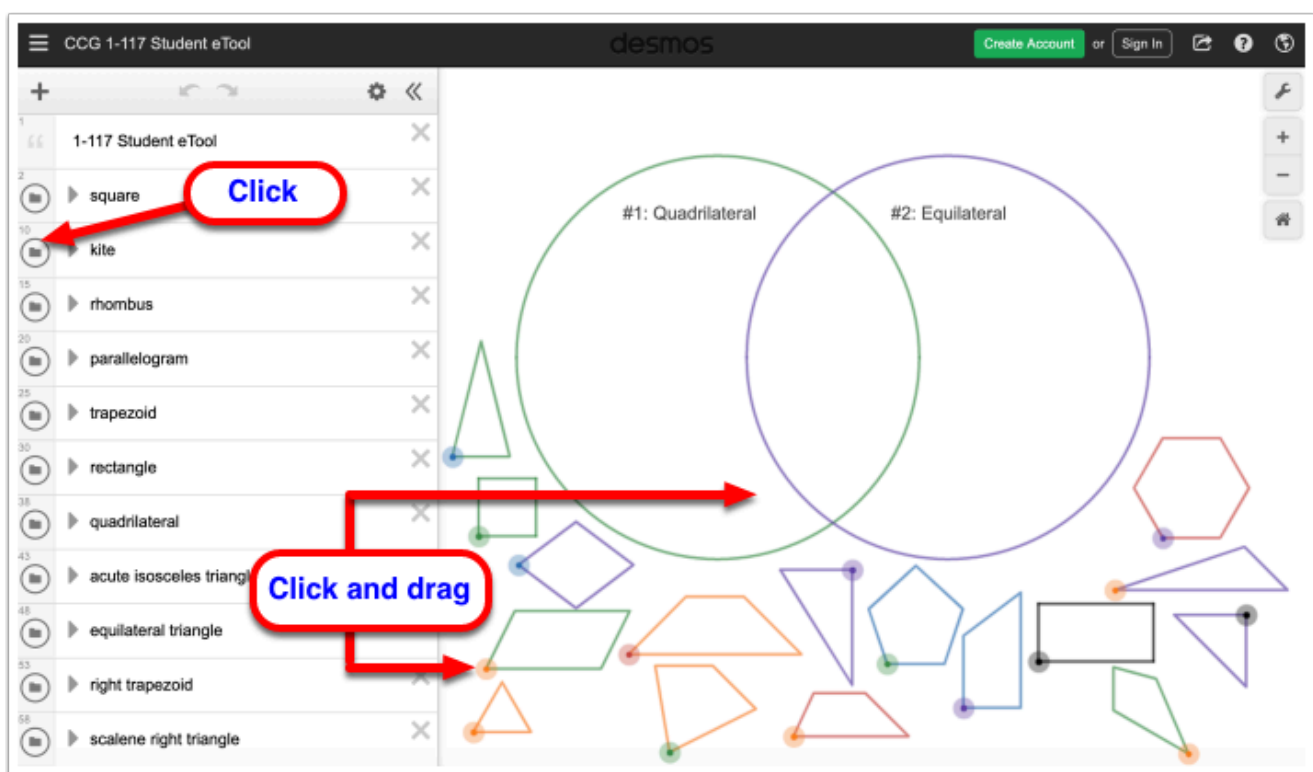
[1-10 Student eTool \(Desmos\)](#)

Use this eTool to learn more about different Polygons and Venn Diagram.

1. Move a shape to the appropriate section on the Venn Diagram.

- Click the colored dot and drag it to the appropriate section on the Venn Diagram

2. Click the folder icon before the name of the shape to view or hide a shape.



Chapter 2



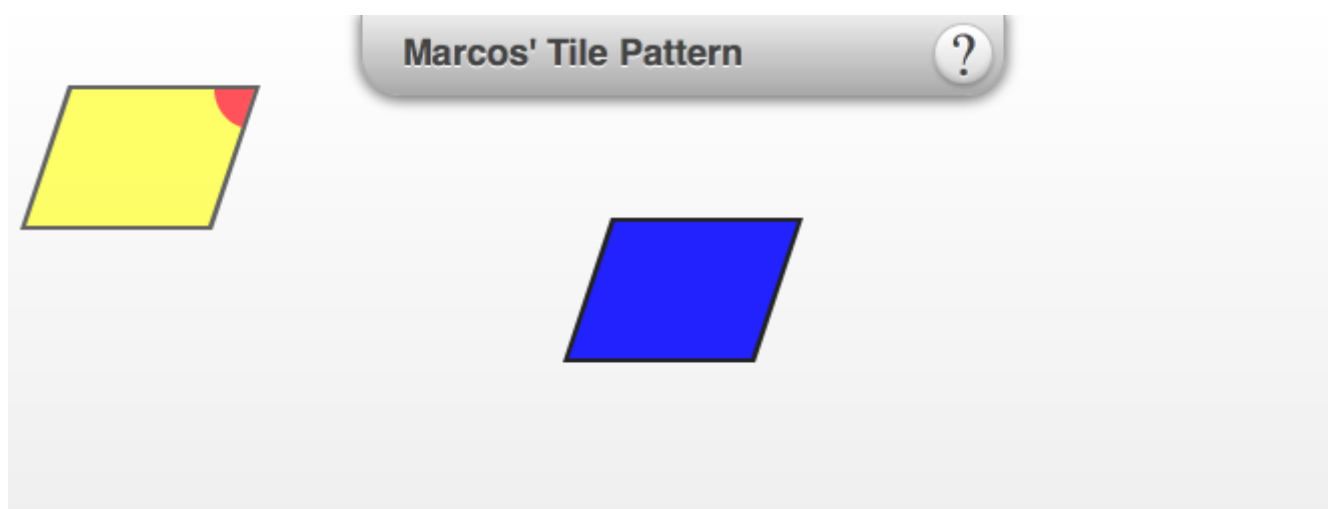
CCG 2.1.2: Marcos' Tile Pattern (CPM)

Tessellate the parallelograms by sliding them up, down, or sideways. Double click the yellow parallelogram to rotate.

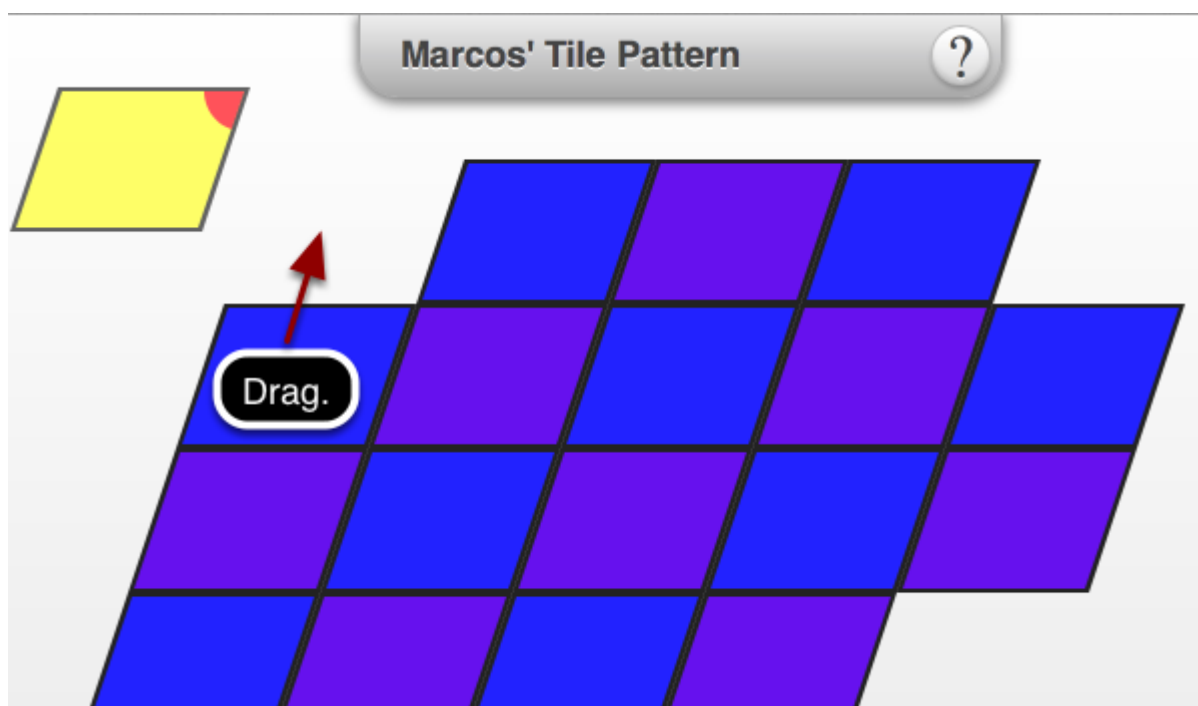
Click the link below.

[*Marcos' Tile Pattern \(CPM\)*](#)

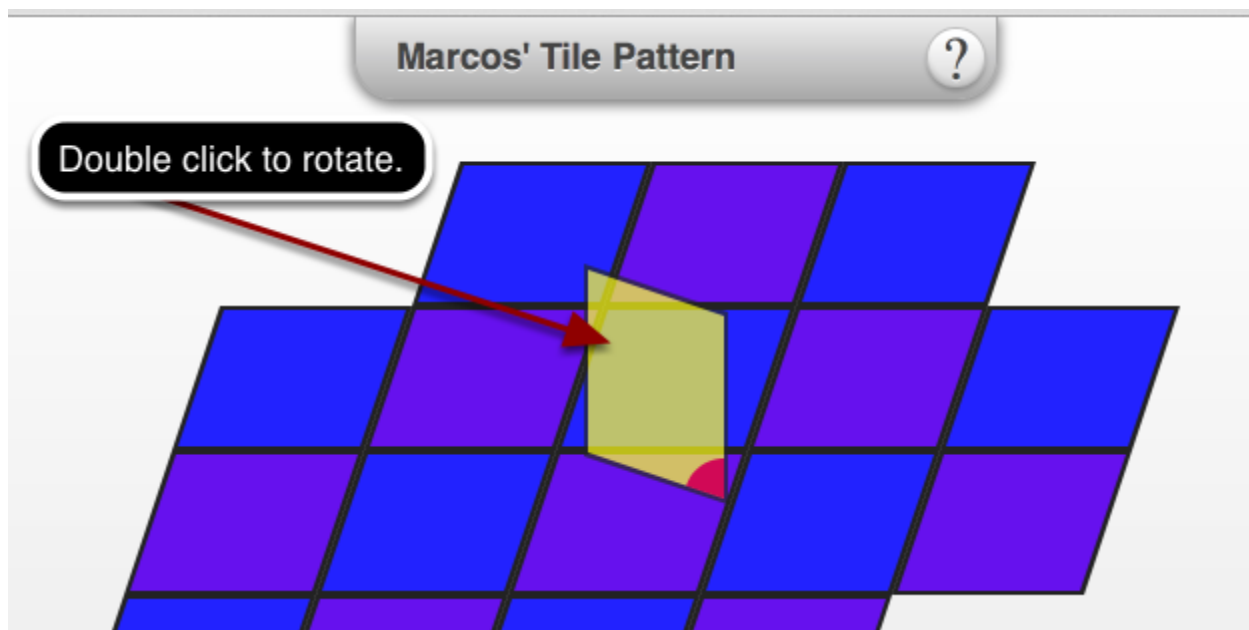
1. This interactive eTool starts with the following parallelograms. Drag the blue tile to tessellate.



2. Drag until the entire space is covered.




3. Continue to double click to rotate at 90 degree intervals.

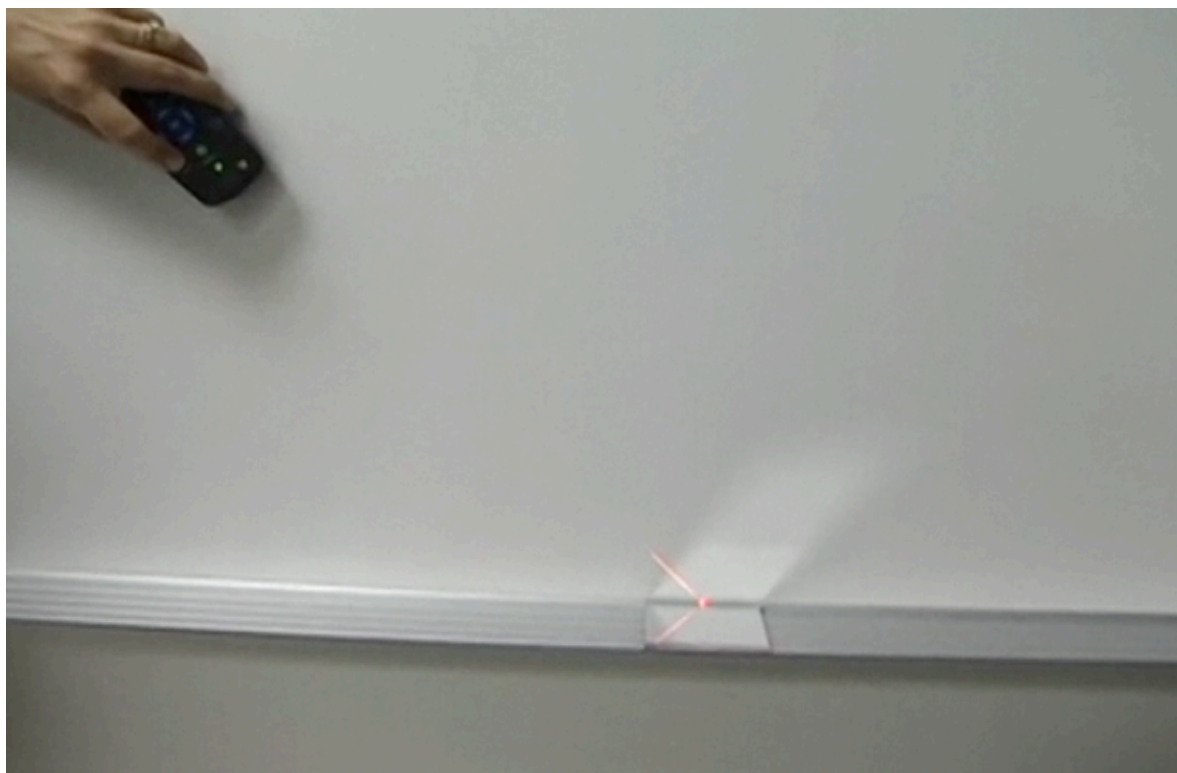


CCG 2.1.3: Reflection of Light Teacher Demonstration (CPM)

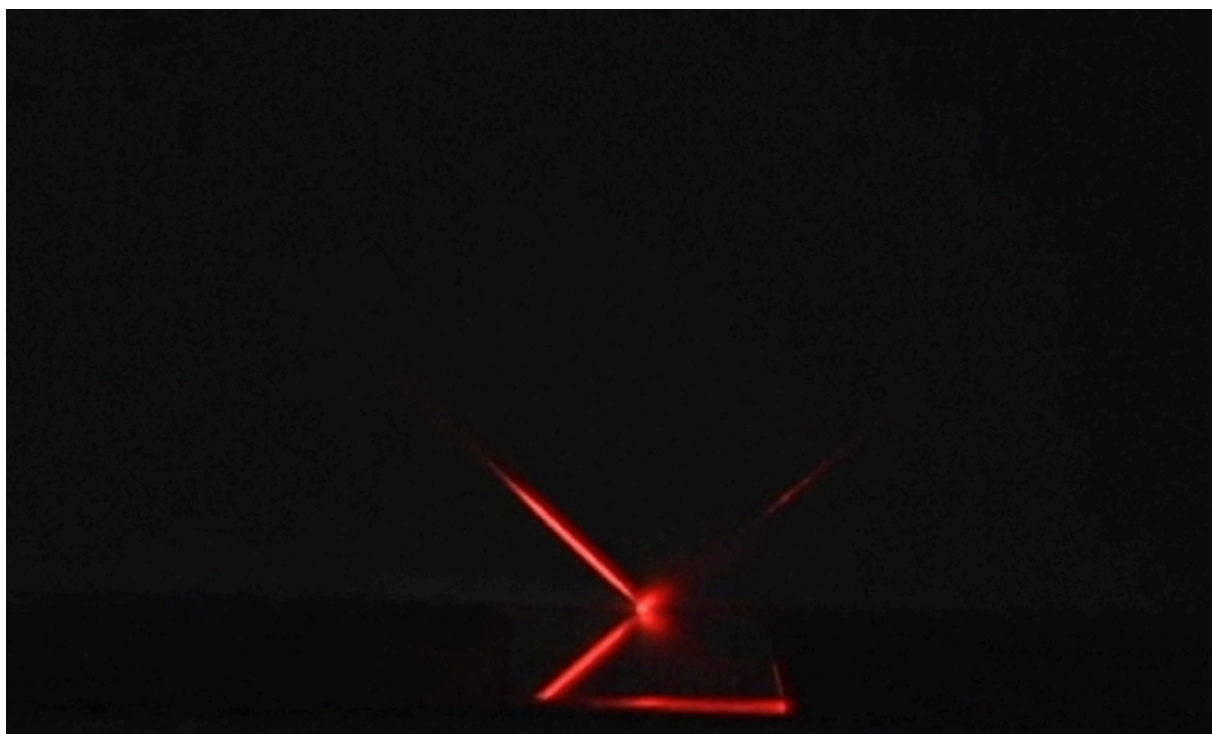
Click on the link below for the "Reflection of Light Demonstration"

[Reflection of Light Demonstration](#) 

1. Reflect off a mirror.



2. Use chalk dust.



CCG 2.1.4: Triangle Sum Theorem (Desmos)

Click on the link below for the "Angles in a Triangle."

[Triangle Sum Theorem \(Desmos\)](#)

1. Triangle Sum Theorem:

Triangle Angle Sum Theorem eTool

Question: What is the sum of the angles of a triangle? Use this tool to investigate this question. Then prove your result.

Drag the angles to change them. Does the Sum ever change? Why?

Show Parallel lines

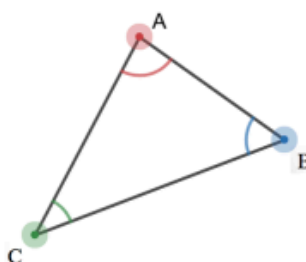
$S_{um} = A + B + C$

$S_{um} = 180$

$\text{round}(A)$ = 83

$\text{round}(B)$ = 56

$\text{round}(C)$ = 41



2. How does "Show Parallel Lines" help when determining the sum of the interior angles of a triangle?

Triangle Angle Sum Theorem eTool ✕

Question: What is the sum of the angles of a triangle? Use this tool to investigate this question. Then prove your result. ✕

Drag the angles to change them. Does the Sum ever change? Why? ✕

► Show Parallel lines ✕

$S_{sum} = A + B + C$ ✕

$S_{sum} =$ ✕

$\text{round}(A)$ ✕

$=$ ✕

$\text{round}(B)$ ✕

$=$ ✕

$\text{round}(C)$ ✕

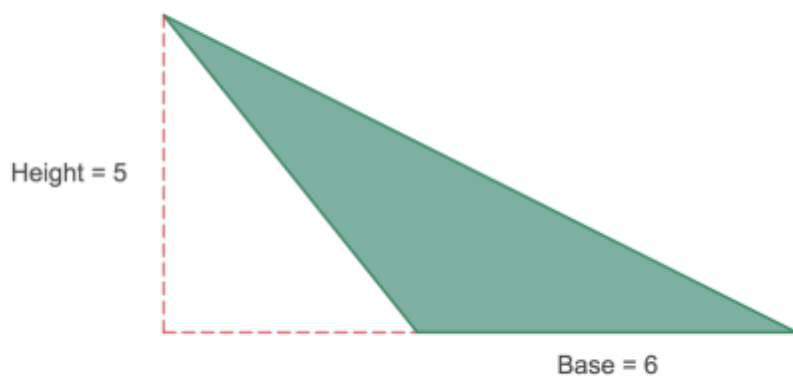
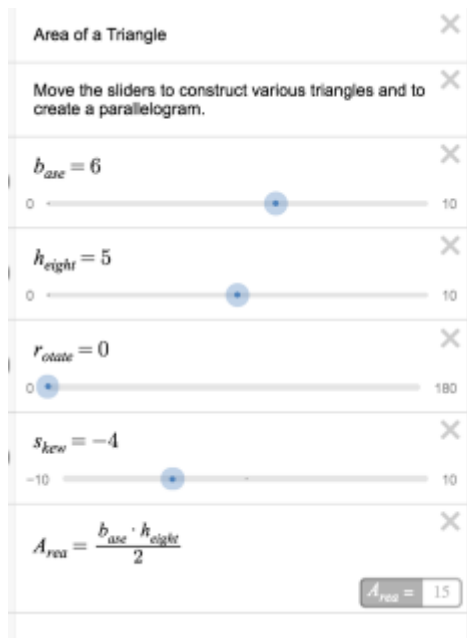
$=$ ✕

CCG 2.2.2: Area of a Triangle (Desmos)

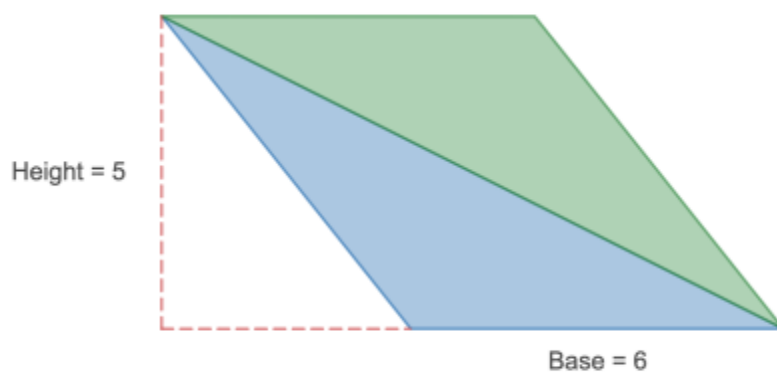
Click on the link below for the "Area of a Triangle."

[Area of a Triangle \(Desmos\)](#)

1. Move sliders to change the shape of the triangle.



2. Rotate a second copy of the triangle on itself to form a parallelogram.

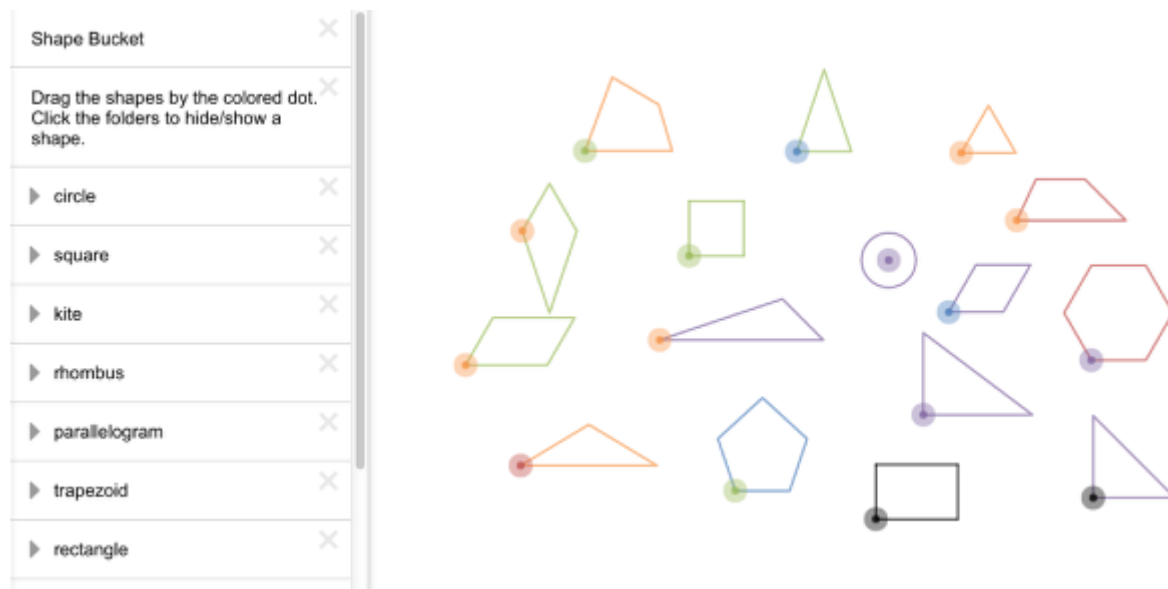


CCG 2.2.3: Shape Bucket (Desmos)

Click on the link below for the "Shape Bucket."

[Shape Bucket \(Desmos\)](#)

1. Shape Bucket:

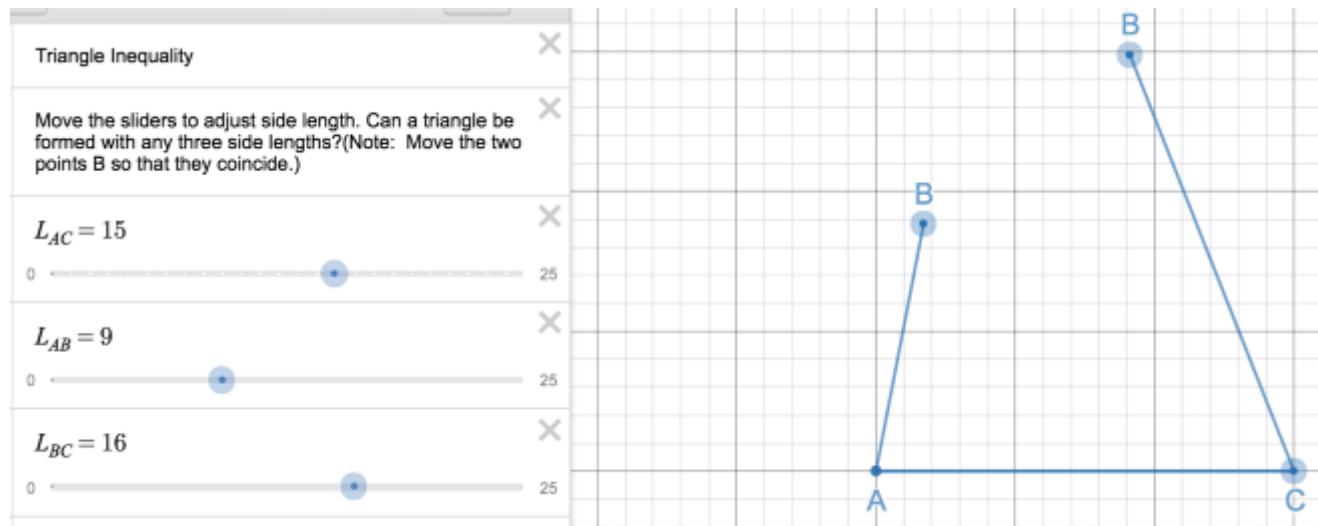


CCG 2.3.1: Triangle Inequality (Desmos)

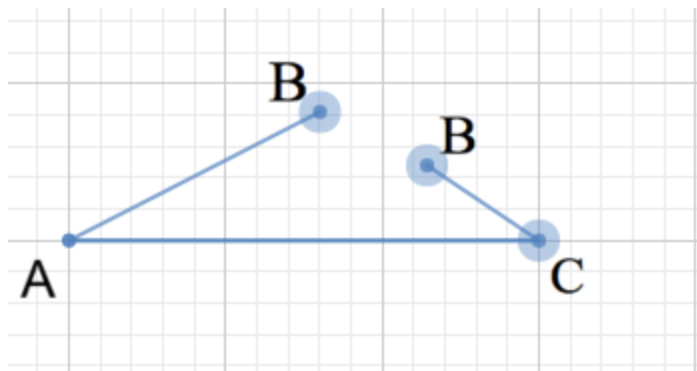
Click on the link below for the "Triangle Inequality."

[Triangle Inequality \(Desmos\)](#)

1. Using the sliders, adjust the side lengths.



2. Drag the B handles until they form a vertex of a triangle if possible.



CCG 2.3.2: The Pythagorean Theorem (Desmos)

Click on the link below for the "The Pythagorean Theorem."

[The Pythagorean Theorem \(Desmos\)](#)

1. Pythagorean Theorem:

+
Pythagorean Theorem
×

Directions: Move the sliders to get a different triangle. Drag each colored piece to fill C squared!

$a = 10$

1

10

$b = 10$

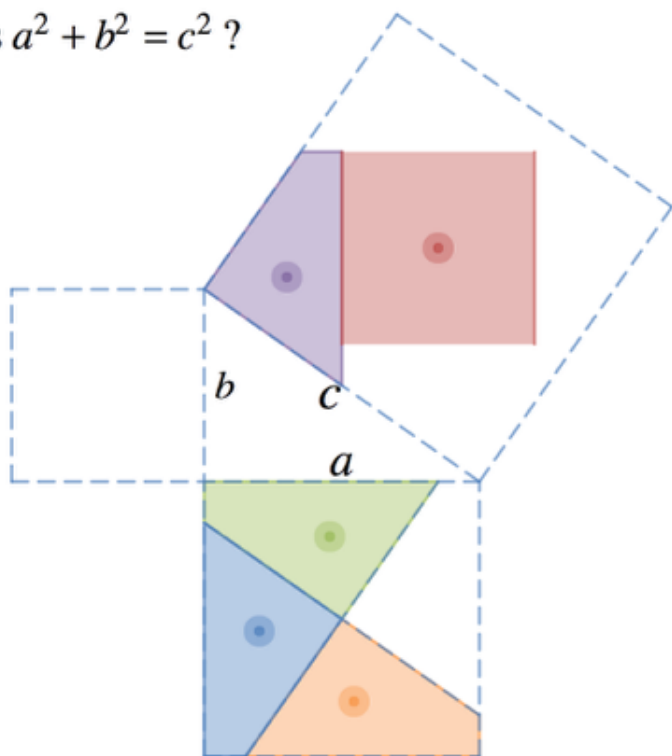
1

10

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

2. Drag the colored shapes to fill c^2 . Do they fit?


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



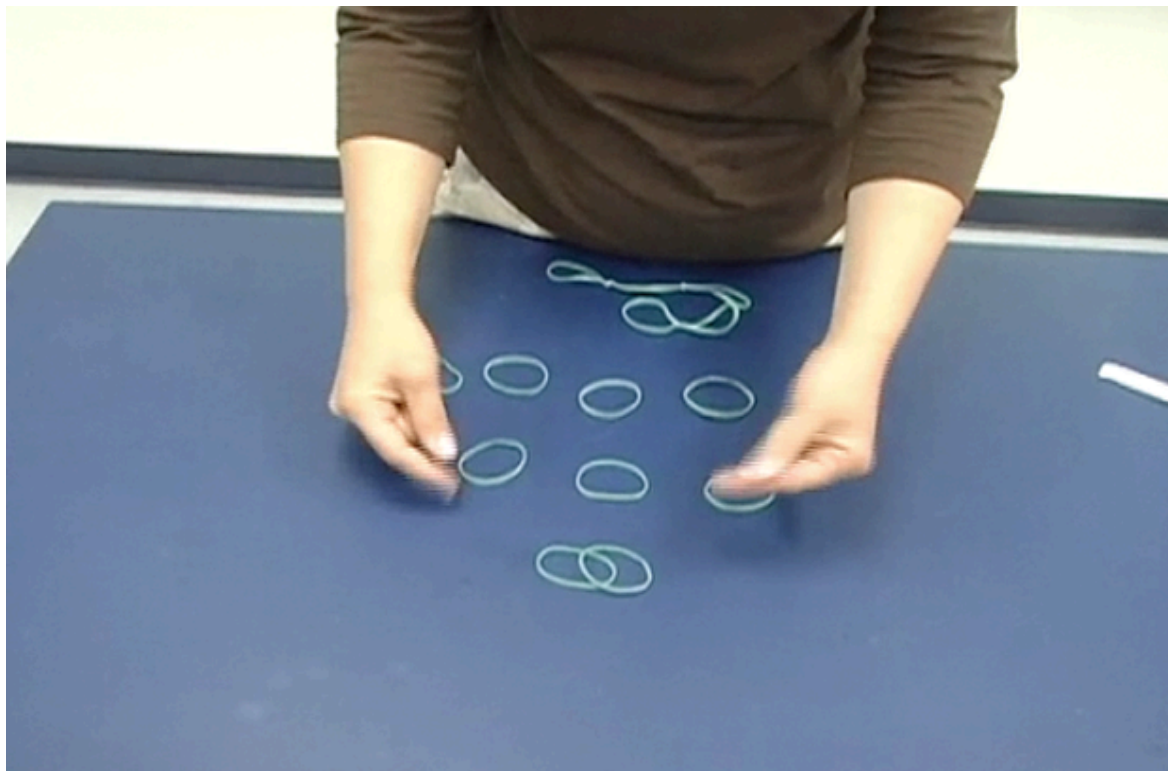
Chapter 3

CCG 3.1.1: Pantograph Teacher Video

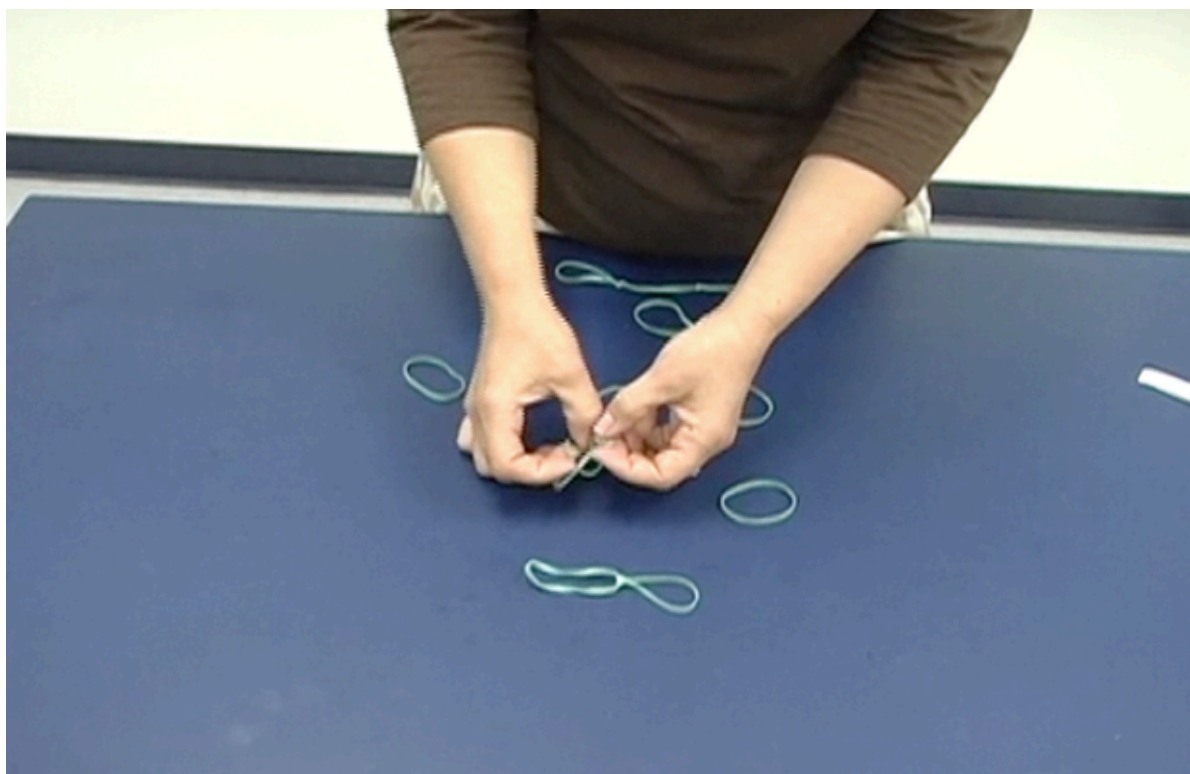
Click on the link below.

[Pantograph Teacher Video](#) 

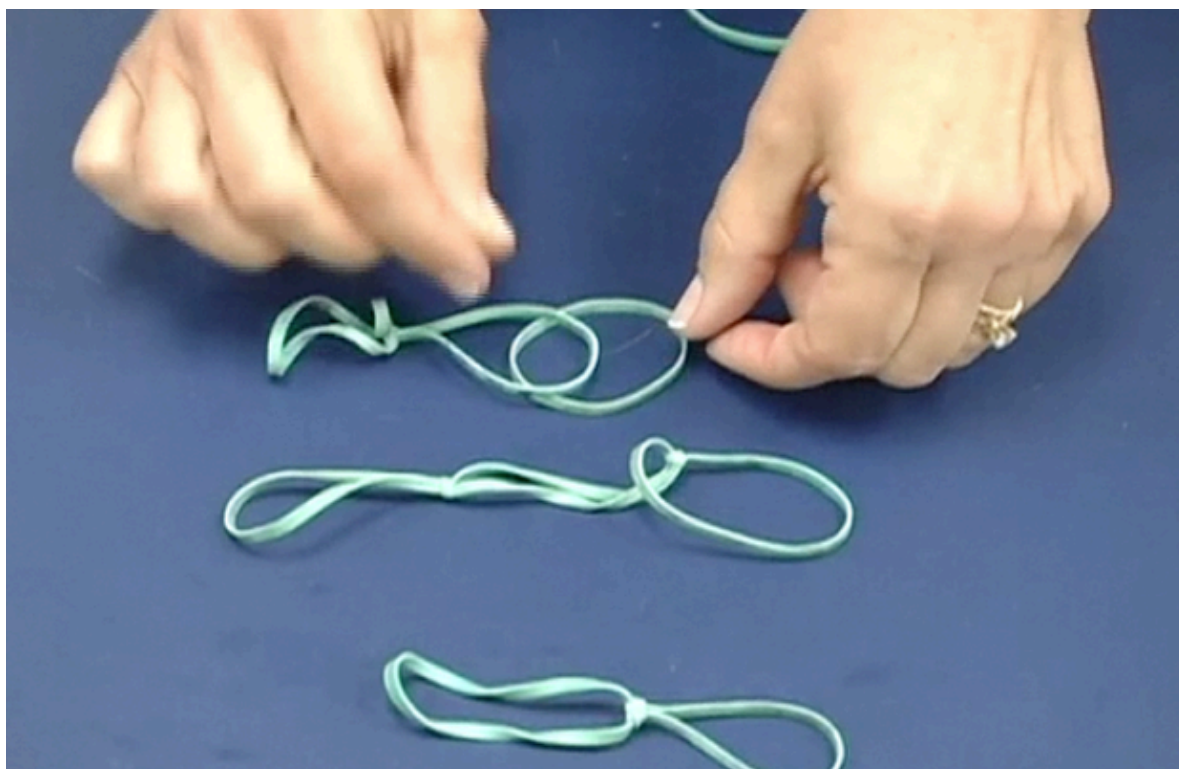
1. Prepare the rubber bands:



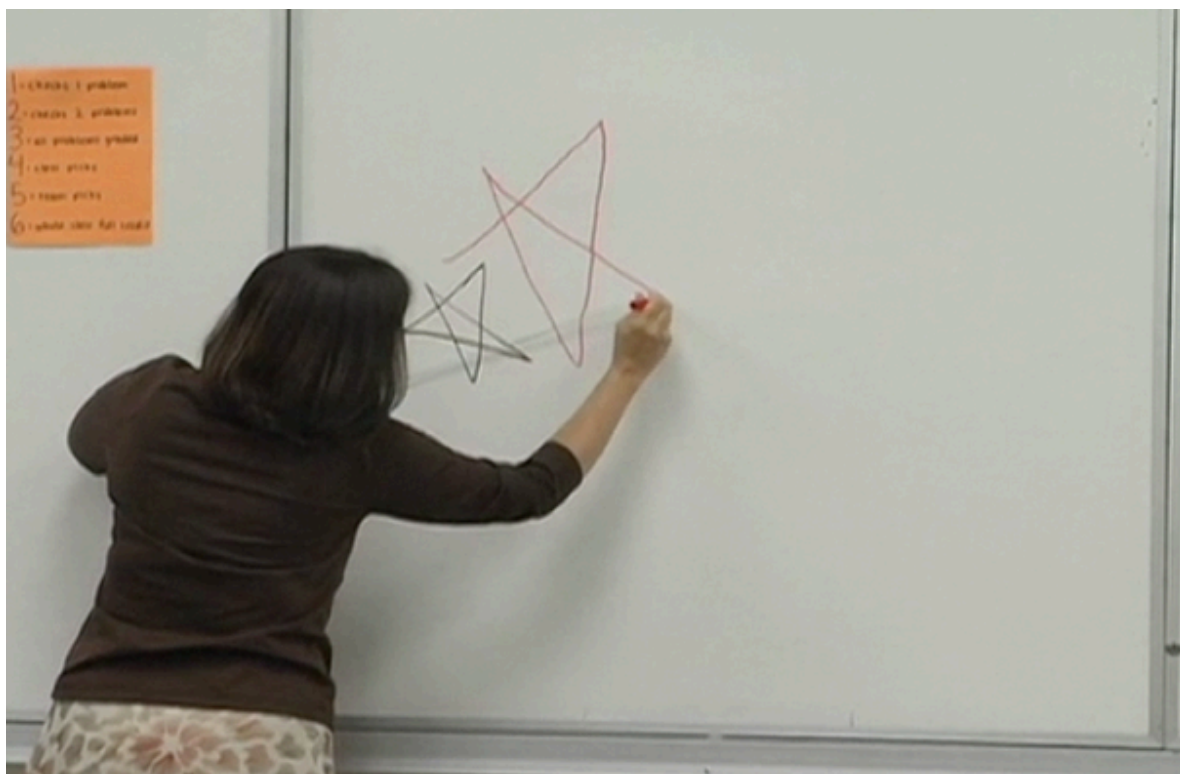
2. Knot two rubber bands:



3. Several rubber bands strung together:



4. White board demonstration:



5. Student demonstration:



CCG 3.1.2: Similarity Stretching Word Document (Doc)

Click on the link below for the "Similarity Stretching Word Document".

[Similarity Stretching Word Document](#)

1. Original:

Lesson 3.2.1

STRETCHING EXERCISE



Original



2. Horizontal Stretch:

Lesson 3.2.1

STRETCHING EXERCISE



Original



3. Vertical Stretch:

Lesson 3.2.1

STRETCHING EXERCISE



Original



CCG 3.1.4: Mt. Rushmore Unveiling Video

Click on the link below for the “Mt. Rushmore Unveiling Video”

[Mt. Rushmore Unveiling](#) 

This video shows historical footage.



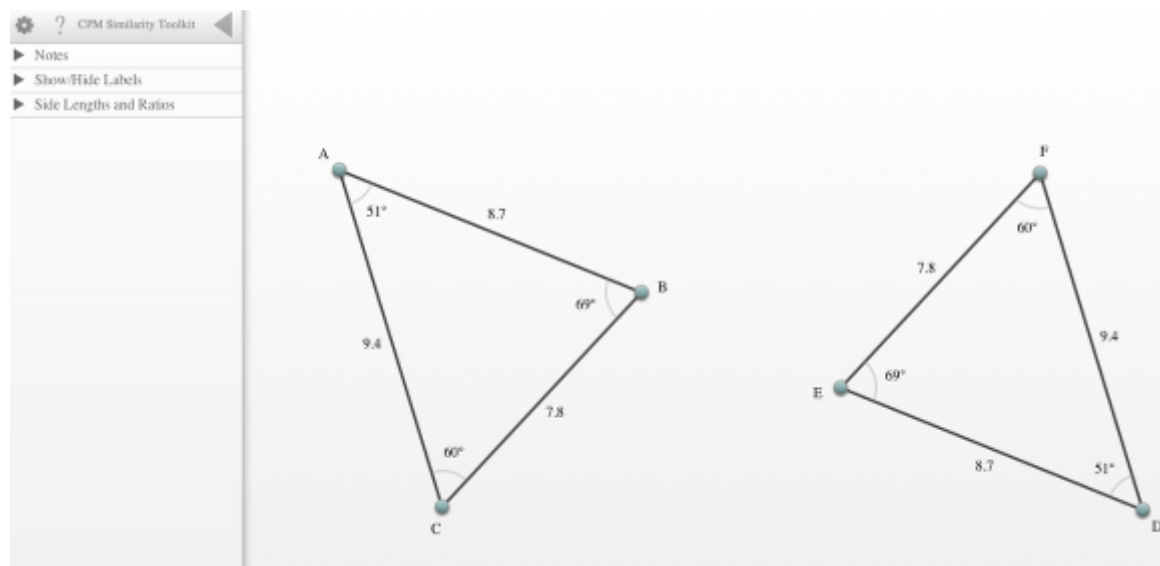
CCG 3.2.1 Similarity Toolkit (CPM) and Video

Click on the link below for the "Similarity Toolkit and Video"

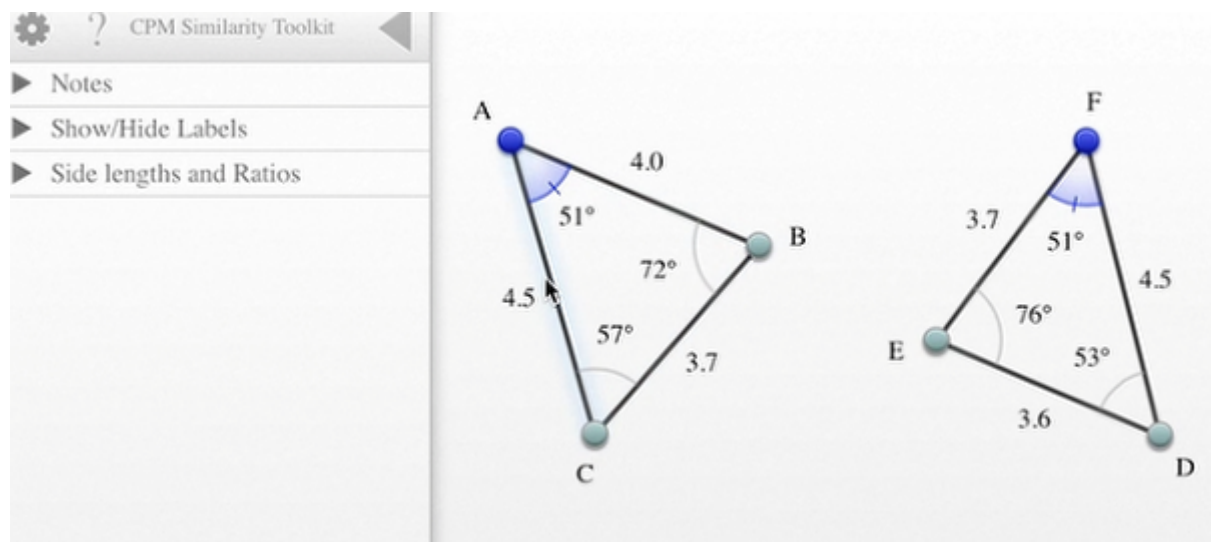
[Similarity Toolkit \(CPM\)](#)

[Similarity Toolkit Video \(CPM\)](#) 

1. Go to "?" for HELP.



2. Link Two Angles:



3. Saved Link:

CPM Similarity Toolkit

Title: SAS Similarity

Labels and Measurements

A	B	C	D	E
a	b	c	d	e

Lock Advanced Settings

Saved!

Bookmark or copy this link:

http://cpm.org/technology/general/similarity/?similaritydata=ahf8acboakladFoaiq0agfjaqeHagijam-jafacapdcacbVc44e4fDirections%3A%0A__pABCDEFSA%20Similarity_DNa

4. Side Lengths and Ratios:

CPM Similarity Toolkit

Notes

Show/Hide Labels

Side lengths and Ratios

$\triangle ABC$	$\triangle DEF$
$a = 4.8$	$d = 4.0$
$b = 5.9$	$e = 4.5$
$c = 5.2$	$f = 3.7$
$\frac{a}{d} = \frac{4.8}{4.0} = 1.2$	
$\frac{b}{e} = \frac{5.9}{4.5} = 1.3$	
$\frac{c}{f} = \frac{5.2}{3.7} = 1.4$	

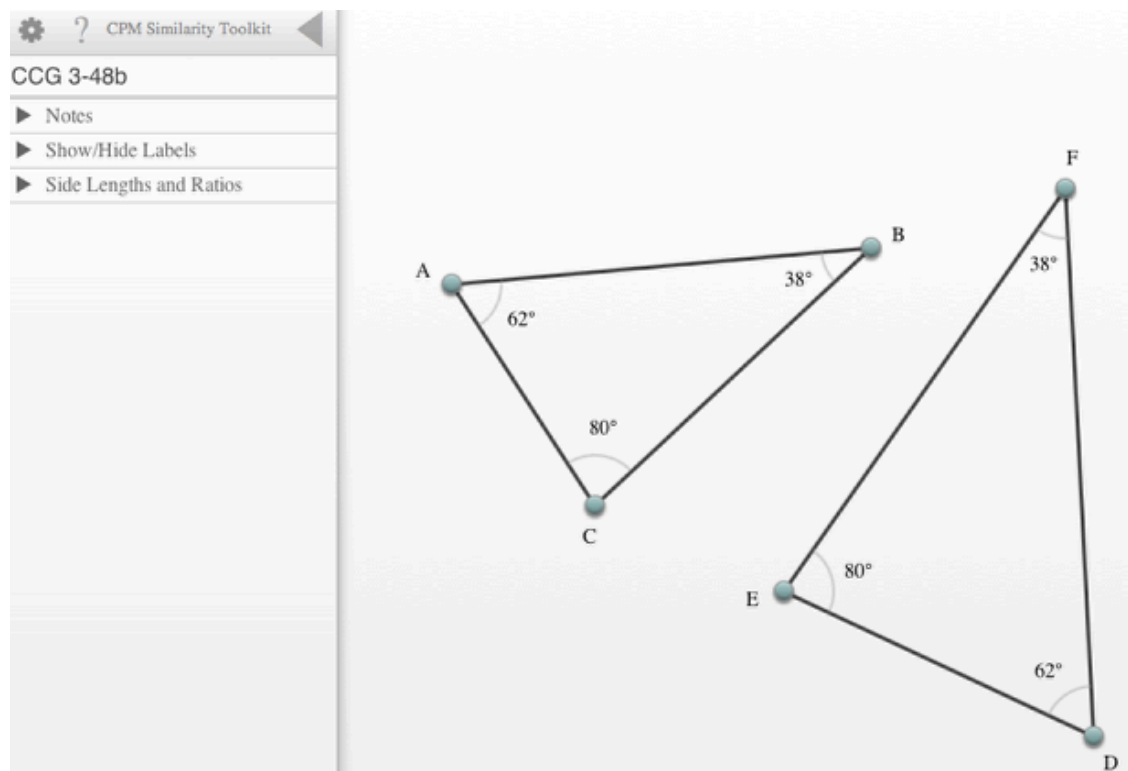
CCG 3.2.1: 3-48b & 3-48c Student eTool (CPM)

Click on the link below for the "3-48b & 3-48c Student eTool (CPM)."

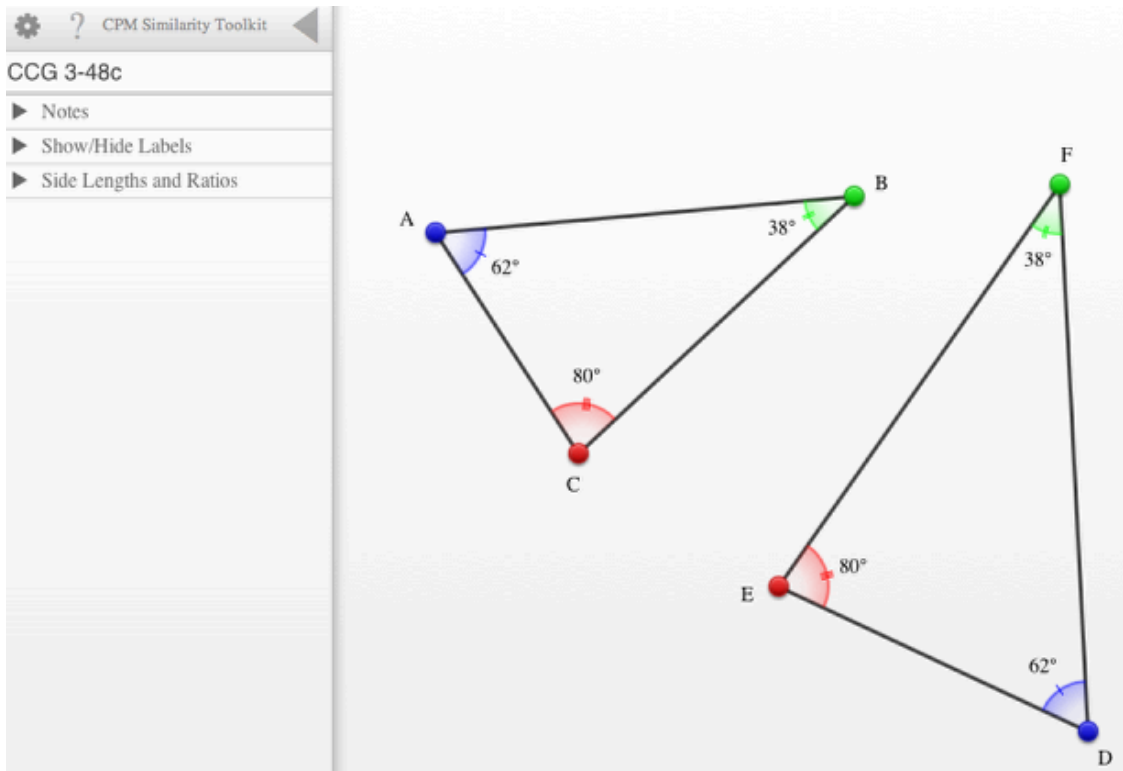
[3-48b Student eTool \(CPM\)](#)

[3-48c Student eTool \(CPM\)](#)

1. 3-48b Student eTool:



2. 3-48c Student eTool:



CCG 3.2.1: 3-50a, 3-50b #1 & #2 Student eTool (CPM)

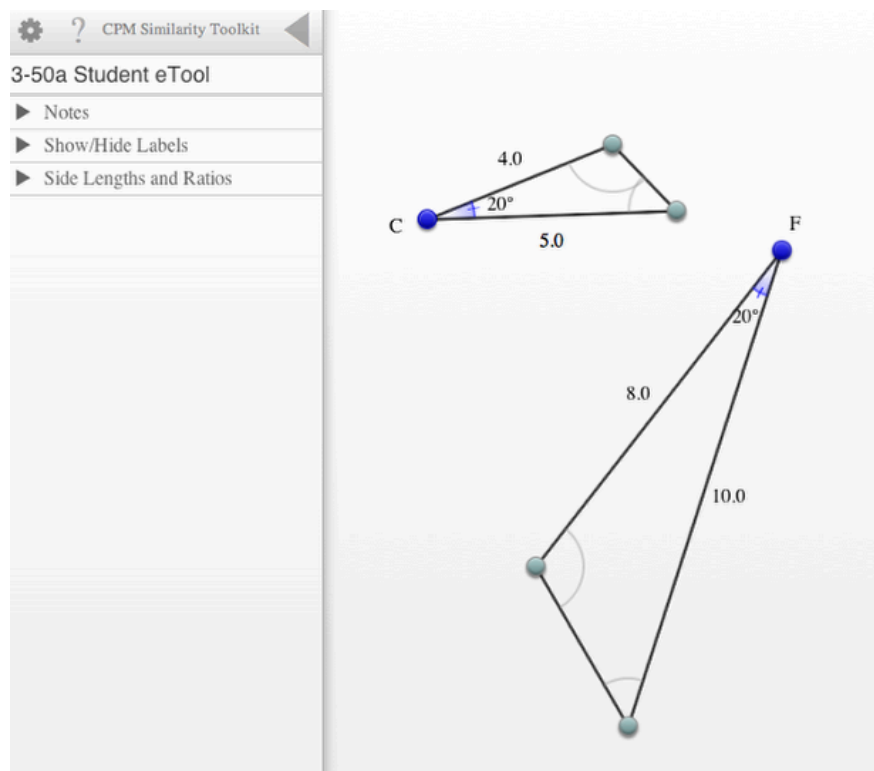
Click on the link below for the "3-50a, 3-50b #1 & #2 Student eTool (CPM)."

[3-50a Student eTool \(CPM\)](#)

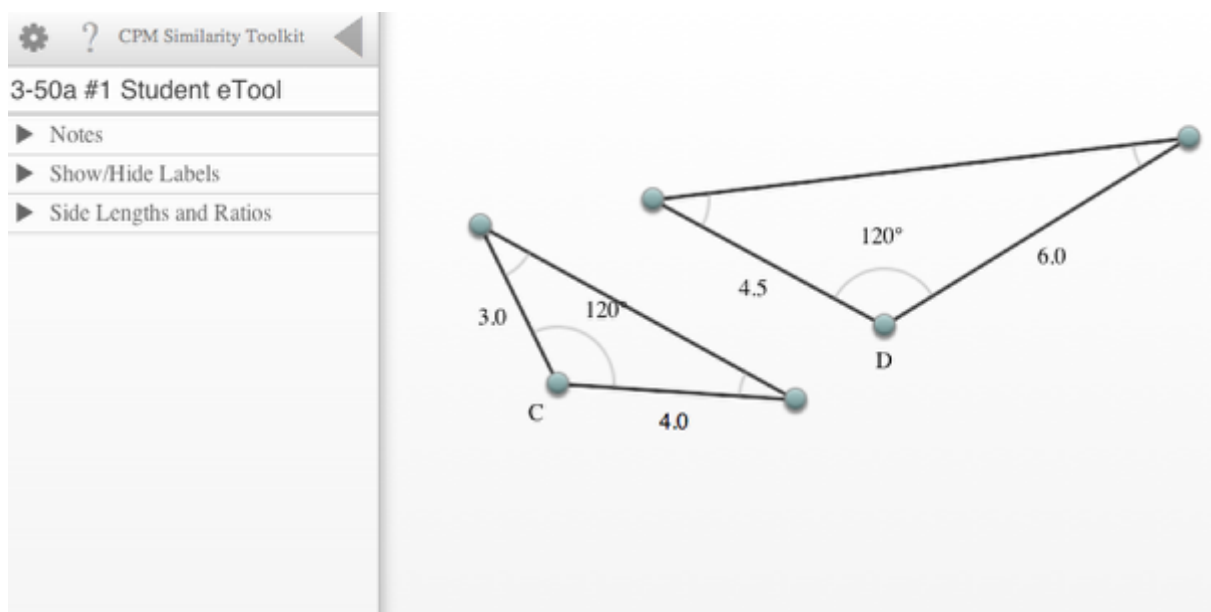
[3-50b #1 Student eTool \(CPM\)](#)

[3-50b #2 Student eTool \(CPM\)](#)

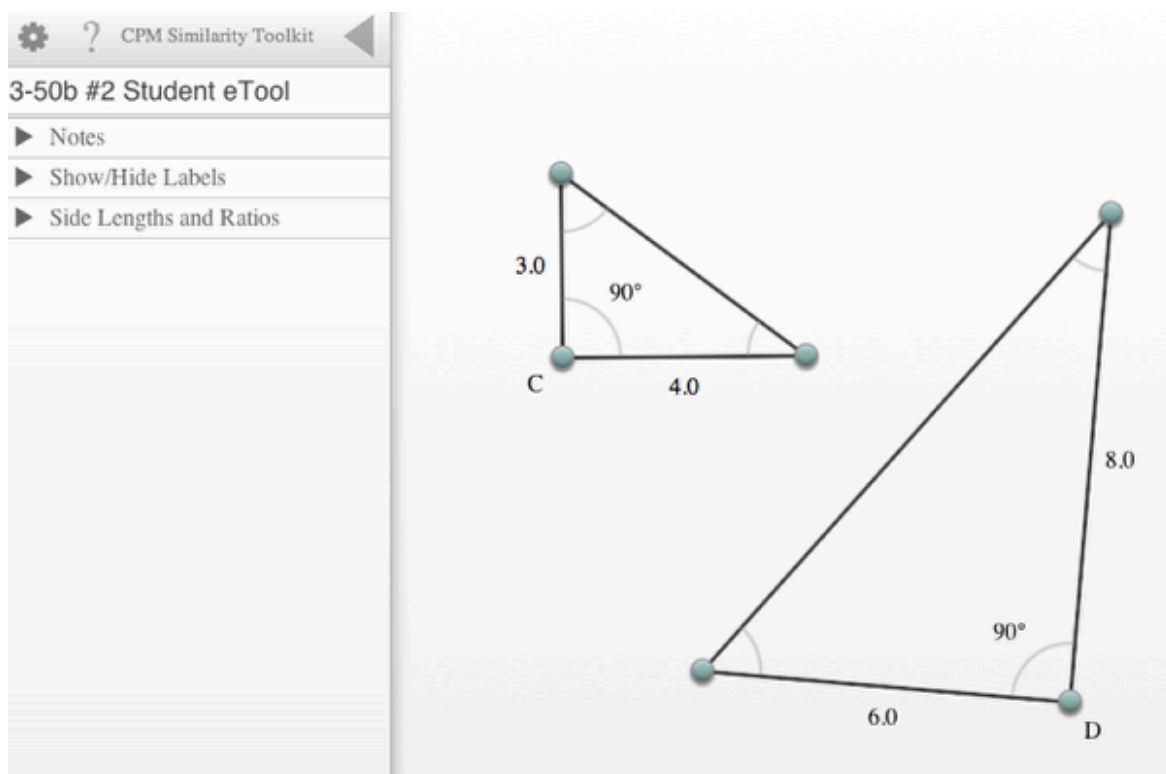
1. 3-50a Student eTool:



2. 3-50a #1 Student eTool:



3. 3-50b #2 Student eTool:



CCG 3.2.4: 3-84b #1 & #2, 3-85b & 3-86 (CPM)

Click on the links below.

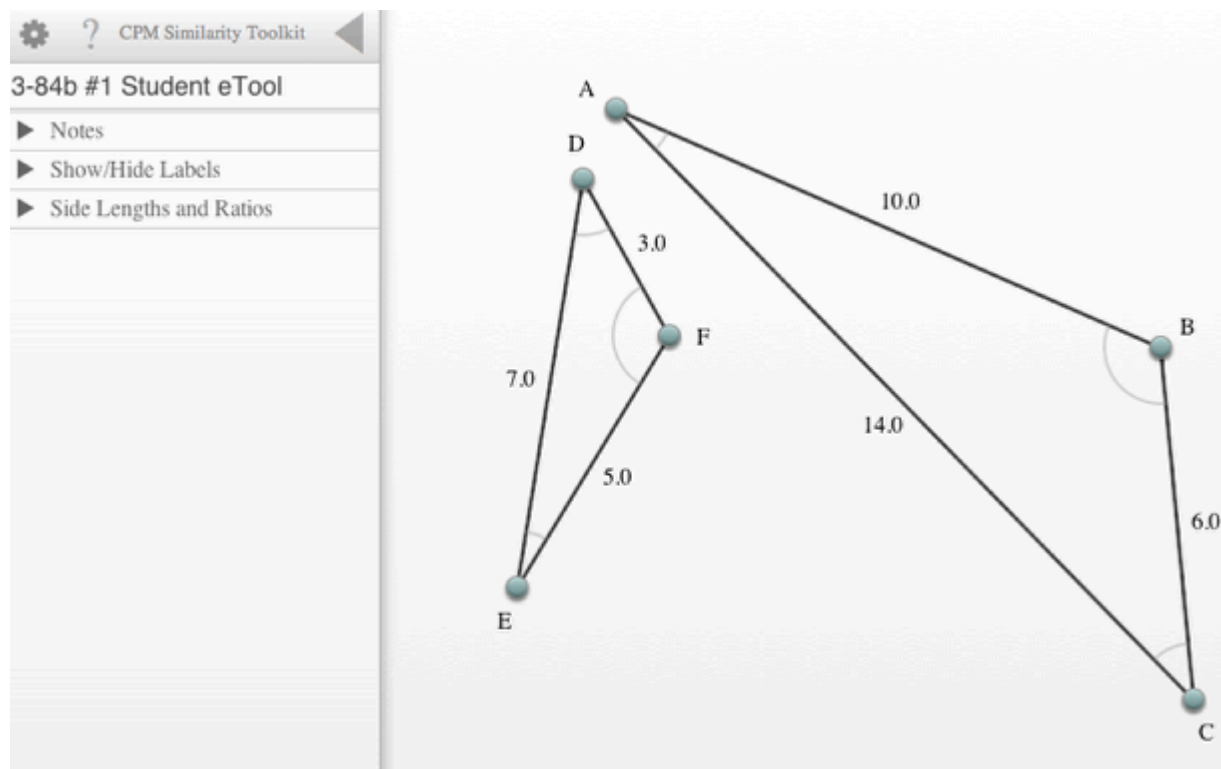
[3-84b #1 Student eTool \(CPM\)](#)

[3-84b #2 Student eTool \(CPM\)](#)

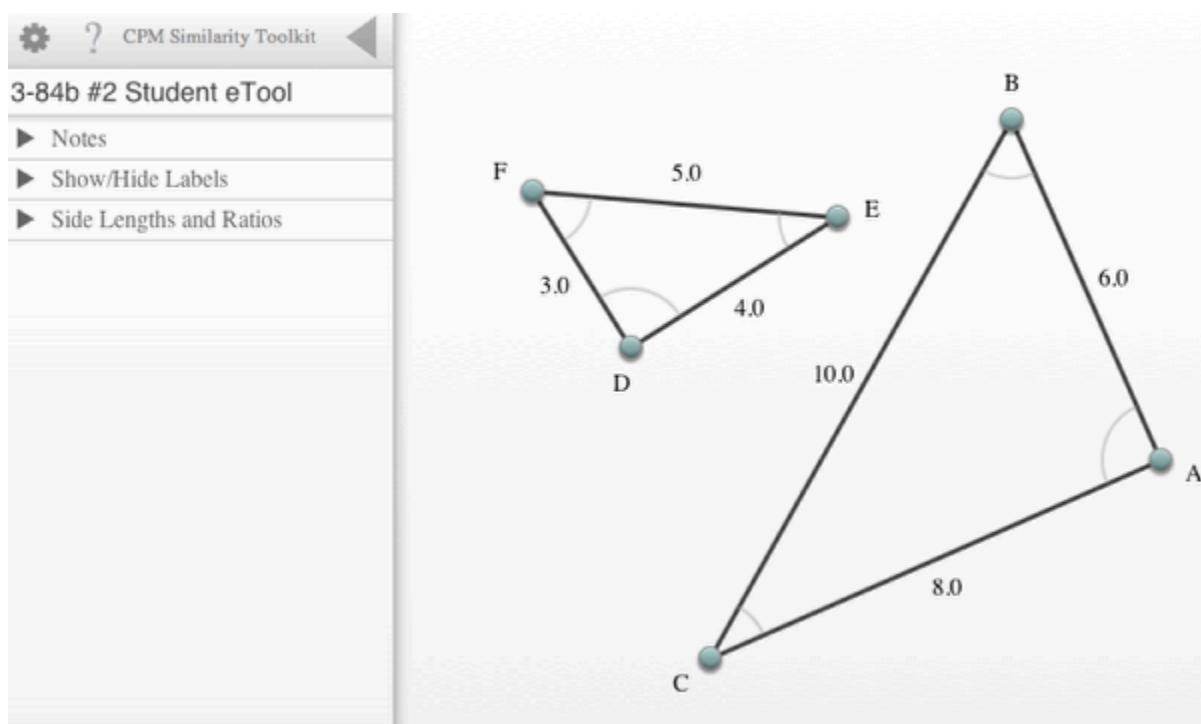
[3-85b Student eTool \(CPM\)](#)

[3-86 Student eTool \(CPM\)](#)

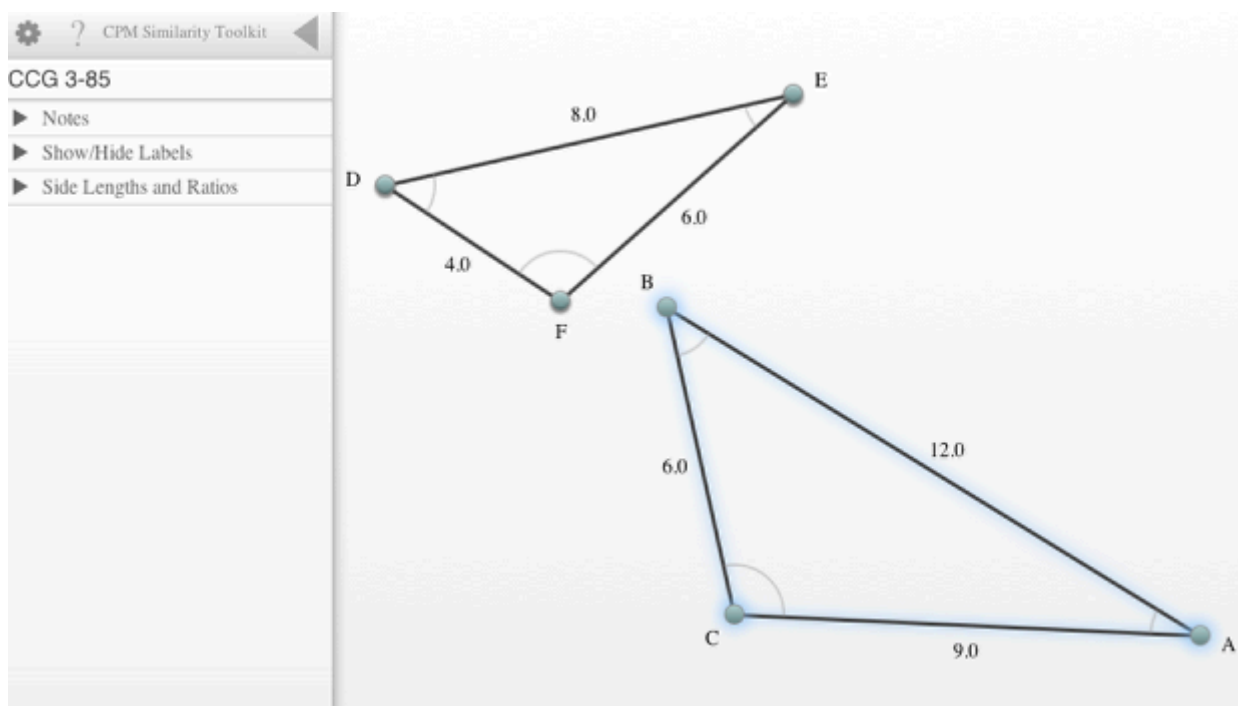
1. 3-84b #1 Student eTool:



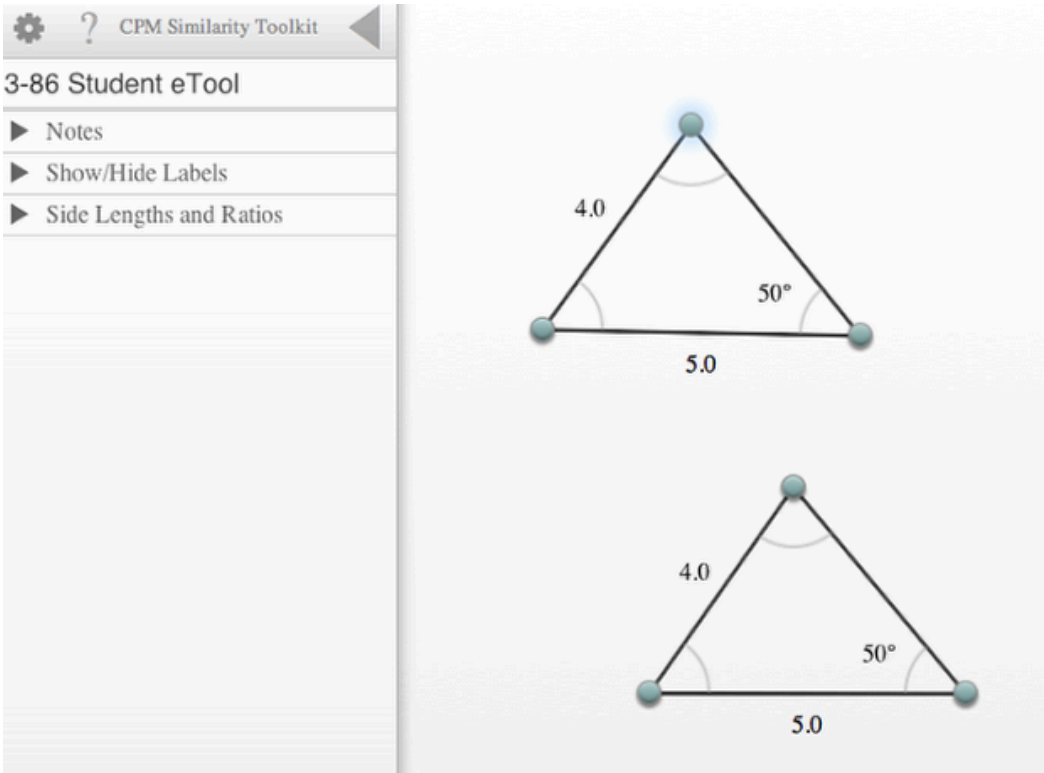
2. 3-84b #2 Student eTool:



3. 3-85 Student eTool:



4. 3-86 Student eTool:

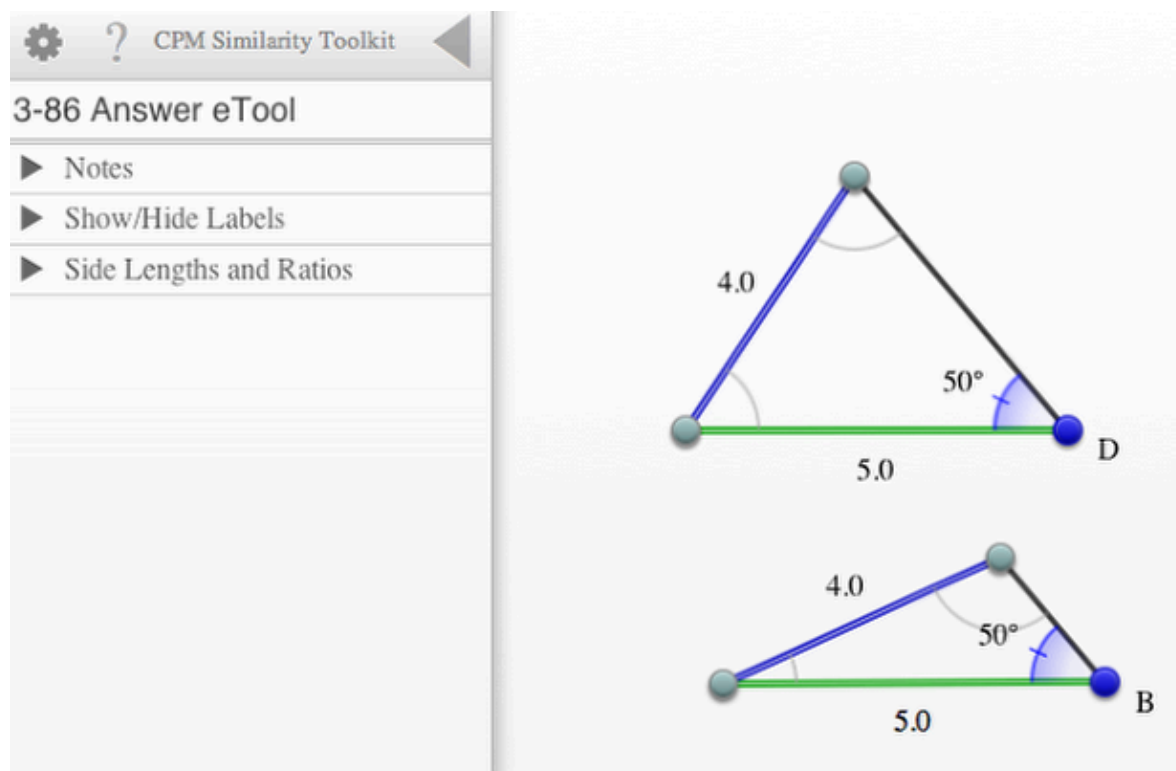


CCG 3.2.4: 3-86 Answer eTool (CPM)

Click on the link below for the "3-86 Answer eTool (CPM)."


[3-86 Answer eTool \(CPM\)](#)

1. 3-86 Answer eTool:



CCG 3.2.6: Squawk Like a Chicken Materials Setup Teacher Video

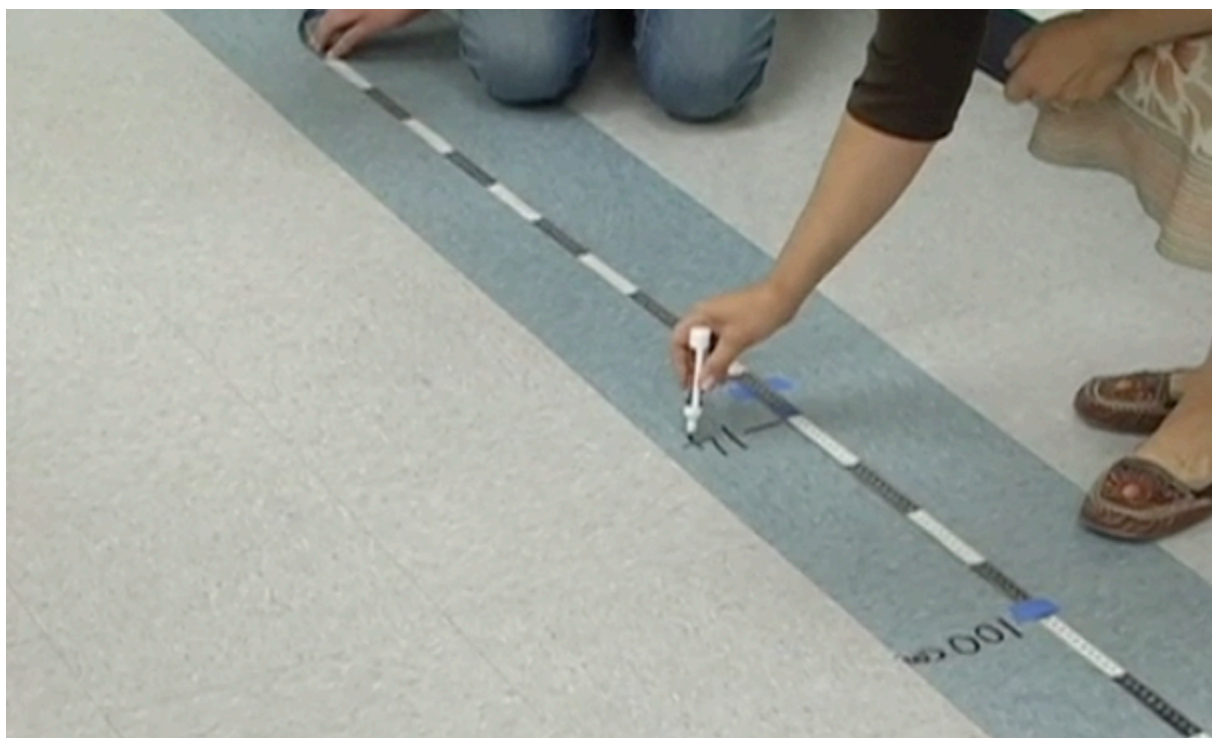
Click on the link below for the "Squawk Like a Chicken Materials Setup"

[Squawk Like a Chicken Materials Setup](#) 

1. Students find their height.



2. Mark distances.





Chapter 4

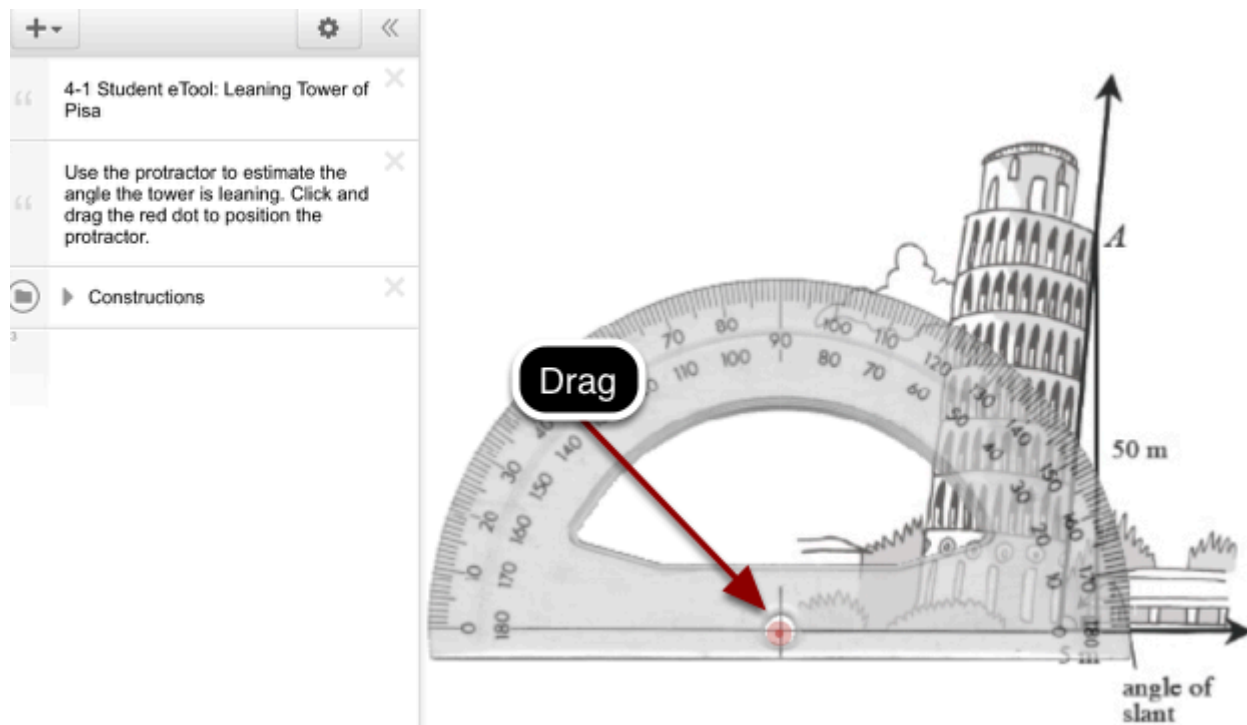
CCG 4.1.1: Leaning Tower of Pisa (Desmos) and Information Video

Click on the link below for the “Leaning Tower of Pisa (Desmos) and Information Video”

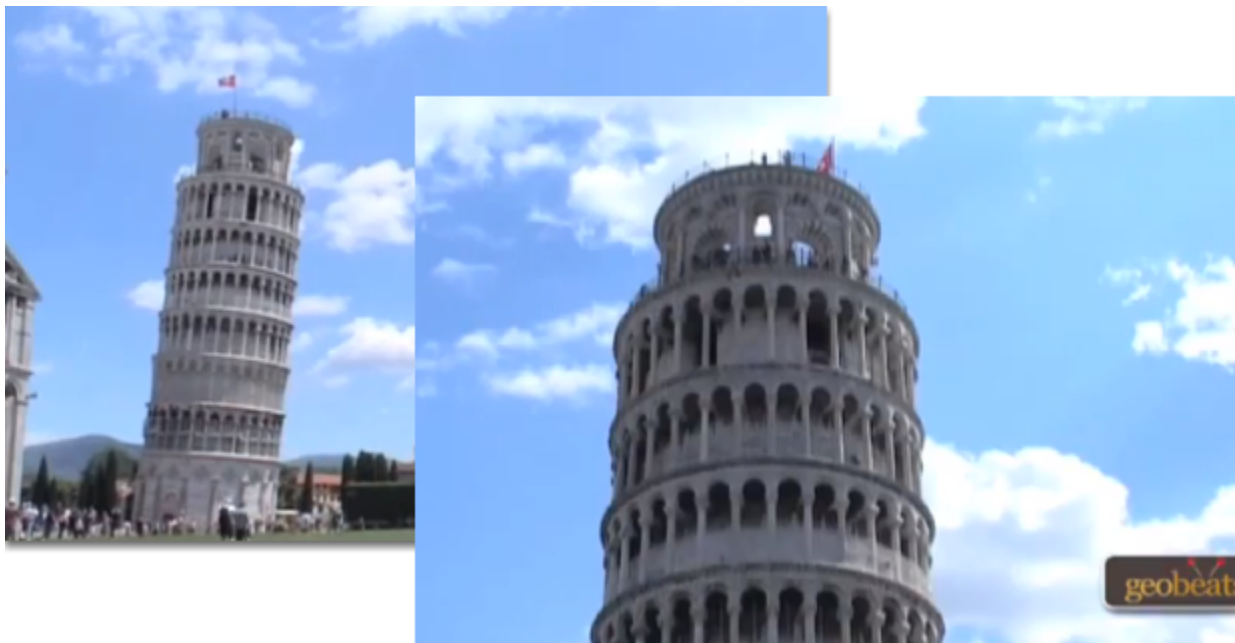
[4-1 Student eTool \(Desmos\)](#)

[Leaning Tower of Pisa Information Video](#)

1. Estimate the angle the tower is leaning using the protractor.



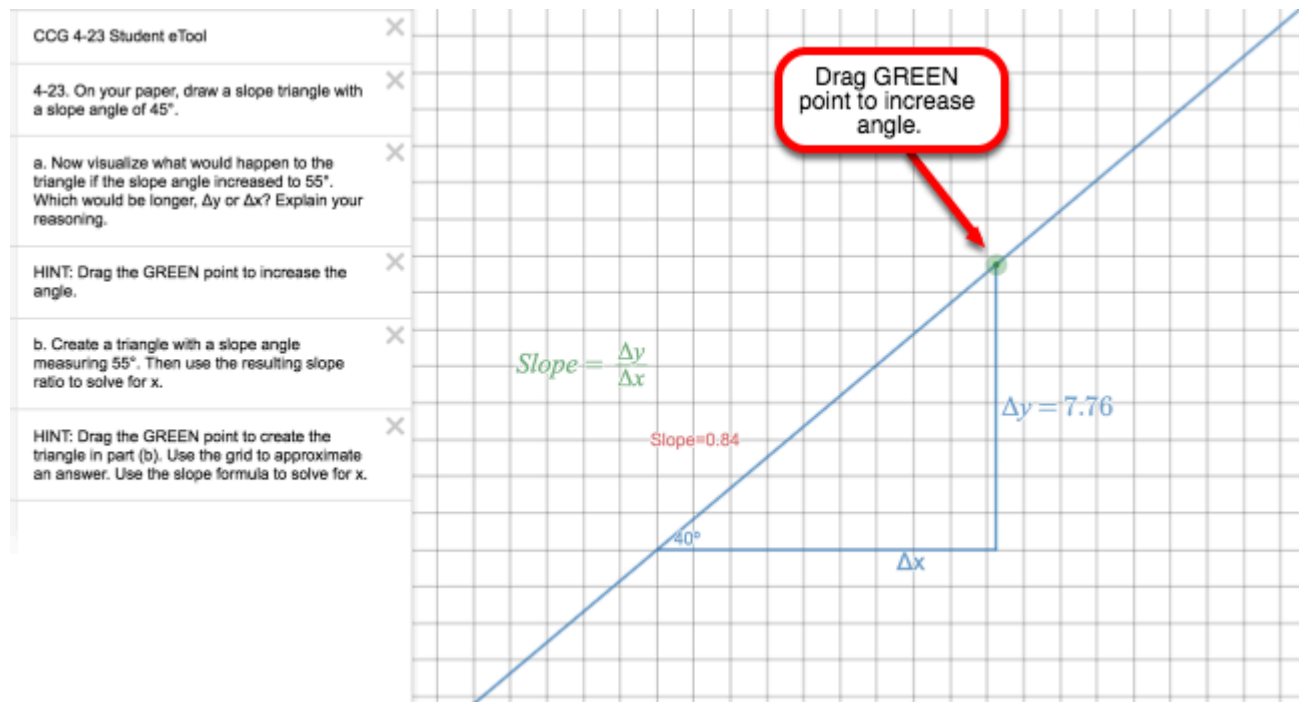
2. This video shows the architecture of the Leaning Tower of Pisa.



CCG 4.1.3: 4-23 Student eTool (Desmos)


Click on the link below for the 4-23 Student eTool.

[Slope Ratios \(Desmos\)](#)




CCG 4.1.5: Clinometer video

Click on the link below for the "Clinometer"

[Clinometer Preparation](#) 

[Clinometer Lesson](#) 

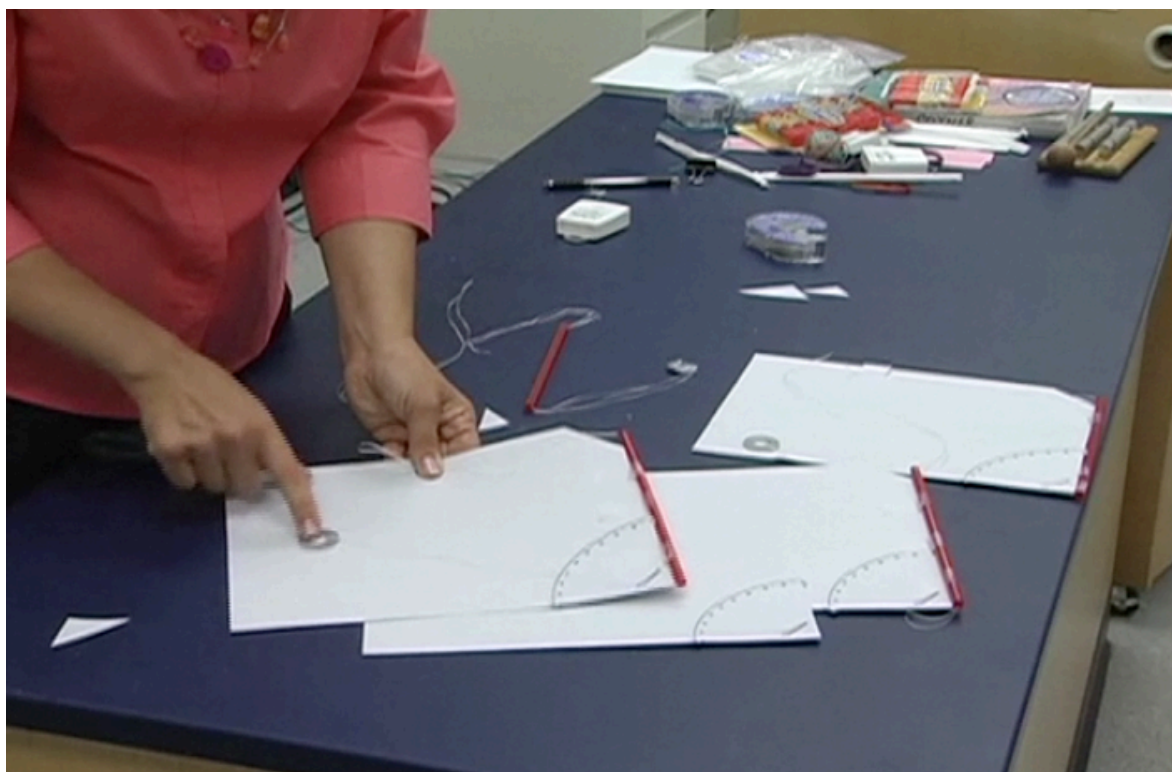
[Study Team Work](#) 

[Closure Lesson](#) 

1.



2.



3.



4-42. HOW TALL IS IT?

How tall is Mount Everest? How tall is the White House? Often we want to know a measurement of something we cannot easily measure with a ruler or tape measure. Today you will work with your team to measure the height of something inside your classroom or on your school's campus in order to apply your new tangent tool.

4.



5.



6.



CCG 4.1.5: History of the Statue of Liberty Video

Click on the link below for the "History of the Statue of Liberty."

[History of the Statue of Liberty](#) 

1.



2.



3.



4.



5.

CCG 4.2.2: 4-64 Student eTool (CPM)

Click on the link below for the "4-64 Student eTool (CPM)."

[4-64 Student eTool \(CPM\)](#)

CCG 4-64 Student eTool (CPM):

CPM Probability

CCG 4-64 Student eTool

Your teacher challenges you to a spinner game.

You spin the two spinners as shown at right. The first letter comes from Spinner #1 and the second letter from Spinner #2.


If the letters can form a two-letter English word, you win. Otherwise, your teacher wins.

► Probability Tools

► General Tools


Click both spinners.

Spinner #1



$P(I) = 1/2$
 $P(U) = 1/6$
 $P(A) = 1/3$

Spinner #2



$P(T) = 1/4$
 $P(F) = 3/4$

CCG 4.2.3: 4-76 Student eTool (CPM)

Click on the link below for the "4-76 Student eTool (CPM)."

[4-76 Student eTool \(CPM\)](#)

CCG 4-76 Student eTool (CPM):

CCG 4-76 Student eTool

4-76. There is a new game at the school fair called "Pick a Tile," in which the player reaches into two bags and chooses one square tile and one circular tile. The bag with squares contains three yellow, one blue, and two red squares. The bag with circles has one yellow and two red circles. In order to win the game (and a large stuffed animal), a player must choose one blue square and one red circle.

Choose one blue square and one red circle to win.

It costs \$2 to play.


a. Make a tree diagram for this situation. Remember to take into account the duplicate tiles in the bags.

b. Find the probability of a player choosing the winning blue square-red circle combination.


c. Should Gerri and Marty play this game? Would you? Why or why not?

Pick a Tile

Square Tiles



Circular Tiles





CCG 4.2.4: 4-94 Student eTool (CPM)

Click on the link below for the "4-94 Student eTool (CPM)."

[4-94 Student eTool \(CPM\)](#)

CCG 4-94 Student eTool (CPM):

4-94 Student eTool

4-94. Sometimes it is easier to figure out the probability that something will not happen than the probability that it will. When finding the probability that something will not happen, you are looking at the complement of an event. The complement is the set of all outcomes in the sample space that are not included in the event.


Show two ways to solve the problem below, then decide which way you prefer and explain why.

a. Crystal is spinning the spinner at right and claims she has a good chance of having the spinner land on red at least once in three tries. What is the probability that the spinner will land on red at least once in three tries?

b. If the probability of an event A is represented symbolically as $P(A)$, how can you symbolically represent the probability of the complement of event A?

► Probability Tools

► General Tools





CCG 4.2.4: Random Number Generator (random.org)

Click on the link below for the "Random Number Generator."

[Random Number Generator online](#)

1.

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.

Random Integer Generator

Here are your random numbers:

68	94	43	46	94
57	35	39	76	72
99	11	4	43	46
70	30	12	40	32
50	87	74	80	7
29	47	18	52	17
50	7	26	42	57
86	74	98	65	82
29	24	35	26	85
36	4	50	19	74
99	61	21	73	79
67	34	96	4	90
69	52	58	28	4
14	18	56	98	51
89	85	43	37	86
81	14	60	7	7
90	22	44	18	4
29	50	85	77	16
68	12	77	93	99
30	45	95	98	97

Timestamp: 2014-02-12 23:41:36 UTC

Note: The numbers are generated left to right, i.e., [across columns](#).

3.

4.

CCG 4.2.5: 4-101, 4-102 & 4-103 Spinner (CPM)

Click on the link below for the "4-101, 4-102 & 4-103 Spinner (CPM)."

[4-101 Spinner \(CPM\)](#)

[4-102 Spinner \(CPM\)](#)

[4-103 Spinner \(CPM\)](#)

Take A Spin Games

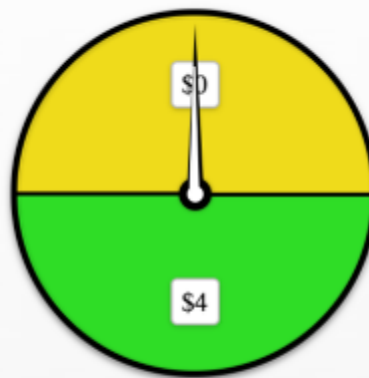
4-101: Take A Spin

4-101. TAKE A SPIN

Consider the following game: After clicking the wheel at right, you win the amount spun.

- If you play the game 10 times, how much money would you expect to win? What if you played the game 30 times? 100 times? Explain your process.
- What if you played the game n times? Write an equation for how much money someone can expect to win after playing the game n times.
- If you were to play only once, what would you expect to earn according to your equation in part (b)? Is it actually possible to win that amount? Explain why or why not.

Take A Spin #1



4-102: Take A Spin

CCG 4-102 Student eTool

4-102. What if the spinner looks like the one at right instead?

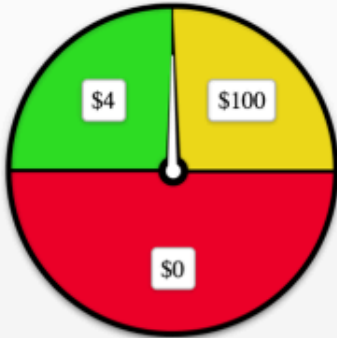
Click the wheel to spin. Total your winnings from each spin.

a. If you win the amount that comes up on each spin, how much would you expect to win after 4 spins? What about after 100 spins?

b. Find this spinner's expected value. That is, what is the expected amount you will win for each spin? Be ready to justify your answer.

c. Gustavo describes his thinking this way: "Half the time, I'll earn nothing. One-fourth the time, I'll earn \$4, and the other one-fourth of the time I'll earn \$100. So, for one spin, I can expect to win $(1/2)(0) + (1/4)(\$4) + (1/4)(\$100)$." Calculate Gustavo's expression. Does his result match your result from part (b)?

Take A Spin #2



4-103: Take A Spin

CCG 4-103 Student eTool

4-103. Jesse has created the spinner at right. This time, if you land on a positive number, you win that amount of money. However, if you land on a negative number, you lose that amount of money! Want to try it?


a. Before analyzing the spinner, predict whether a person would win money or lose money after many spins.

b. Now calculate the actual expected value. How does the result compare to your estimate from part (a)?

c. What would the expected value be if this spinner were fair? Discuss this with your team. What does it mean for a spinner to be fair?

d. How could you change the spinner to make it fair? Draw your new spinner and show why it is fair.

Take A Spin #3



Chapter 5

CCG 5.1.4: El Capitan Climber Video

Click on the link below for the “El Capitan Climber Video”

[El Capitan Climber](#) 

1.



2.



3.



4.

5.

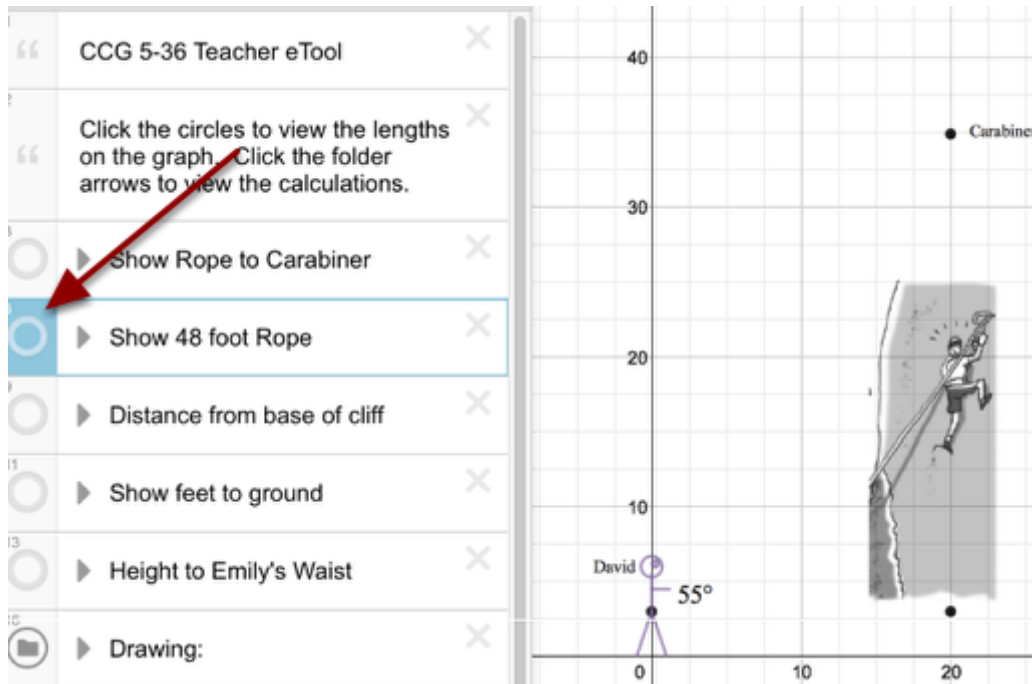
CCG 5.1.4: 5-36 Teacher eTool (Desmos)

Click on the link below.

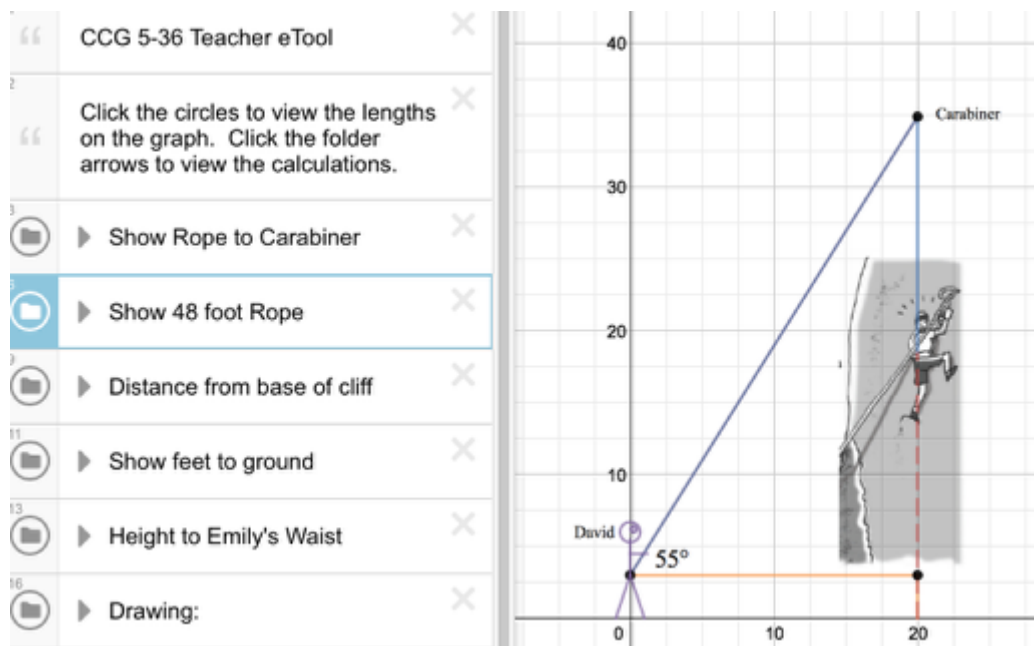
[5-36 Teacher eTool \(Desmos\)](#)

1. This tool is designed to clarify problem 5-36.

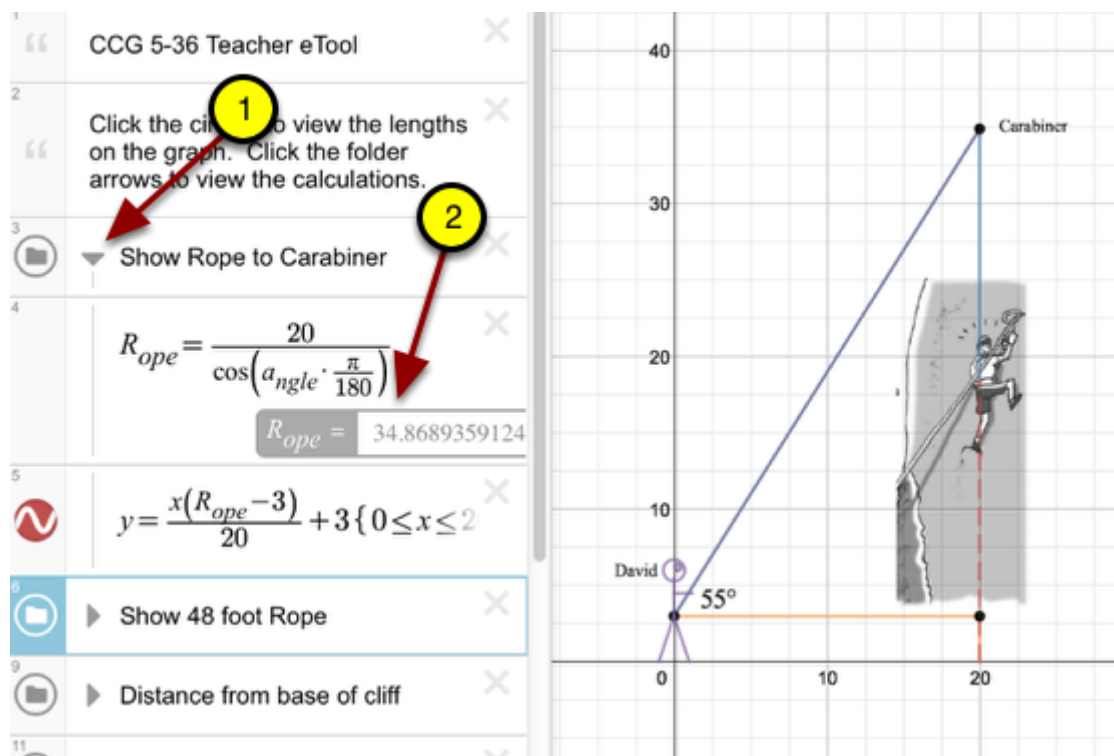
- Use as a whole class discussion tool if your students are struggling with their drawings.
- Click the circles on the left to view lines.



2. In this view, all of the circles are selected.



3. Click arrows to view the contents inside of the folders.



CCG 5.1.4: 5-38 Student eTool (Desmos)

Click on the link below for the "5-38 Student eTool (Desmos)."

[5-38 Student eTool \(Desmos\)](#)

1. Move the slider to the desired angle. Use the diagram and your knowledge of trigonometry to solve the parts in problem 5-38.

1 CCG 5-38 Student eTool

2 4-91. Nathan is standing in a meadow, exactly 185 feet from the base of El Capitan. At 11:00 a.m., he observes Emily climbing up the wall and determines that his angle of sight up to Emily is about 10° .

3 a. If Nathan's eyes are about 6 feet above the ground, about how high is Emily at 11:00 a.m.?

4 b. At 11:30 a.m., Emily has climbed some more, and Nathan's angle of sight to her is now 25° . How far has Emily climbed in the past 30 minutes?

5 c. If Emily climbs 32 feet higher in ten more minutes, at what angle will Nathan have to look in order to see Emily?

6 HINT: Move the slider below to adjust Nathan's angle of sight.

7 Angle of Sight:

8 $\alpha = 30$

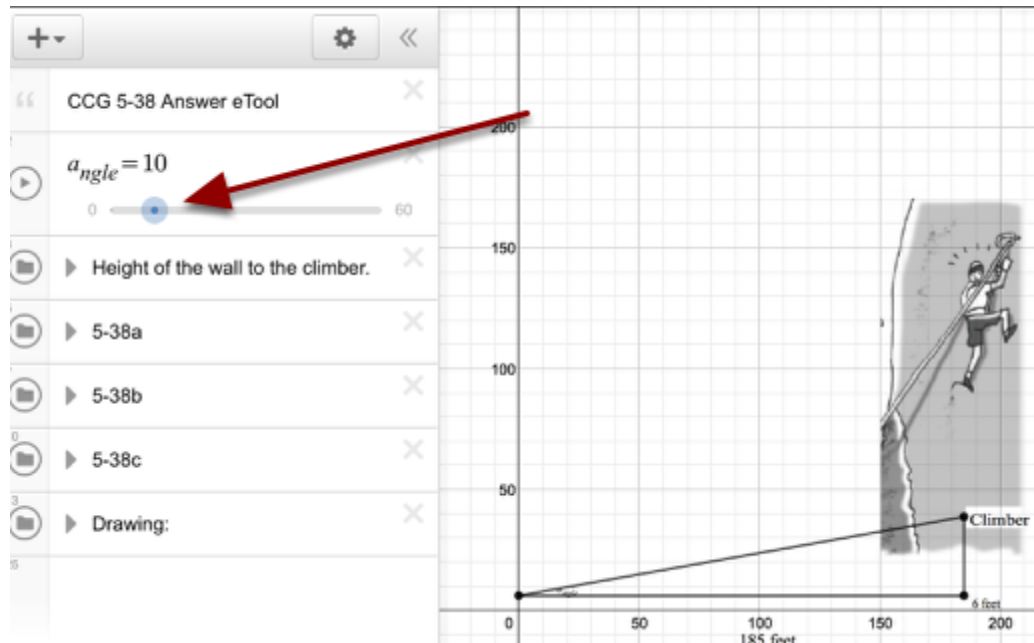
9

CCG 5.1.4: 5-38 Answer eTool (Desmos)

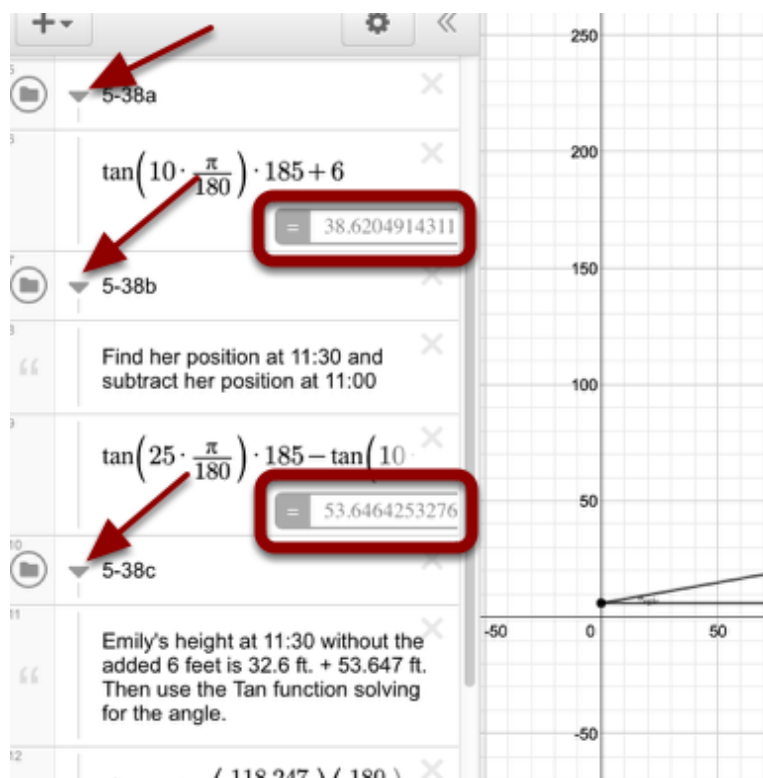
Click on the link below for the "5-38 Answer eTool (Desmos)."

[5-38 Answer eTool \(Desmos\)](#)

1. Move the slider for the various desired angles.



2. Click the folder arrows for answers to the various parts of problem 5-38.



CCG 5.3.4: 5-107c Student eTool (Desmos)

Click on the link below for the “5-107c Student eTool (Desmos).”

[5-107c Student eTool \(Desmos\)](#)

Use slider to change $m\angle B$.

5-107. In problem 5-106, you determined that it was possible to create two different triangles because you were given only two side lengths and an angle not between them. When this happens, it is called triangle ambiguity since you cannot tell which triangle was the one you were supposed to find. Will there always be two possible triangles? Can there ever be more than two possible triangles? Think about this as you answer the questions below.

c. Test your conjectures from part (b). Try to learn everything you can about SSA triangles. Use the questions below to guide your investigation.

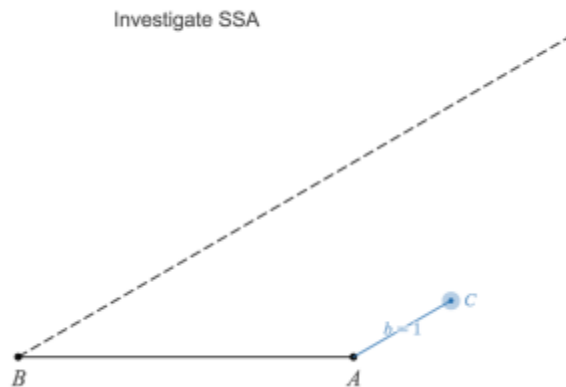
- Can you find a way to create three possible triangles with one set of SSA information?
- Is it ever impossible to form a triangle?
- Is it possible to choose SSA information that will create only one triangle? How?

HINT: Drag the BLUE point to test your conjectures from part (b).

HINT: Use the slider below to change the $m\angle B$.

$B = 30$

0
100

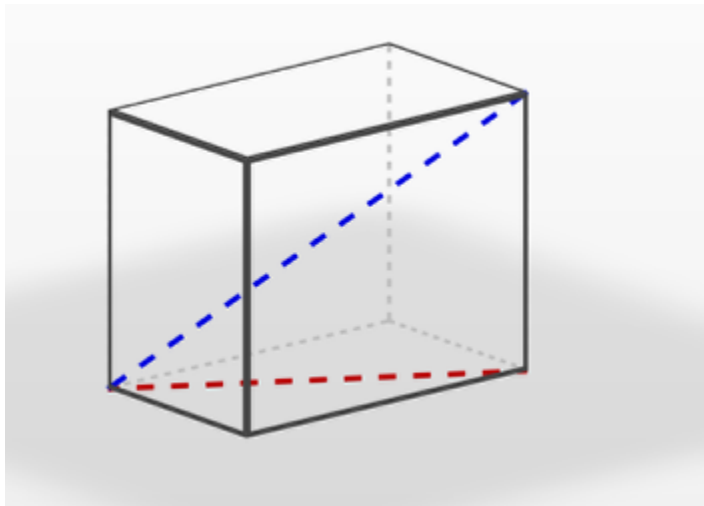


CCG 5.3.5: 3D Model Box (CPM)

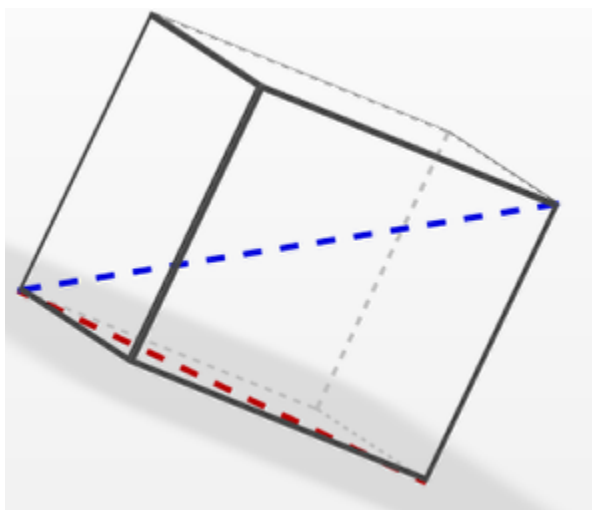
Click on the "3D Model Box (CPM)" link below.

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

Click on the box and drag.



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



Chapter 6

CCG 6.1.1: 6-1 Student eTool (CPM)

Click on the link below to access the eTool.

[6-1 Student eTool \(CPM\)](#)

HINT: Use the transformation tools to translate, rotate, and reflect the triangles to explore your idea. Click the center of each triangle to access these tools. For more directions, click the "?" icon above.

CCG 6-1 Student eTool

▼ Notes

6-1. Examine the triangles at right.

b. Are these triangles also congruent? Explain how you know.

HINT: Use the transformation tools to translate, rotate, and reflect the triangles to explore your idea. Click the center of each triangle to access these tools. For more directions, click the "?" icon above.

► Show/Hide Labels

► Side Lengths and Ratios

CCG 6.1.3: 6-20a, 6-20b & 6-21 (CPM)

Click on the links below to access eTools.

[6-20a \(CPM\)](#)

[6-20b \(CPM\)](#)

[6-21 \(CPM\)](#)

Use the eTools to prove triangle congruence. Move triangle ABC onto triangle DEF to prove the triangles are congruent.

CCG 6-20a Student eTool

▼ Notes

6-20. A team is working together to try to prove SAS \cong . Given the triangles shown below, they want to prove that $\triangle ABC \cong \triangle DEF$.

a. Use the eTool to move $\triangle ABC$ onto $\triangle DEF$ to prove these triangles are congruent.

► Show/Hide Labels

► Side Lengths and Ratios

Drag the triangles from the center to translate. Click on the center of the triangle to access rotation tools.

6-20b Student eTool

▼ Notes

CCG 6-20b

a. Drag triangles from the center to translate.

b. Click on the center of a triangle to access the rotate, reflect, and dilate tools.

c. Click on the "?" above for more directions.

► Show/Hide Labels

► Side Lengths and Ratios

Drag the triangles from the center to translate. Click on the center of the triangle to access rotation tools.

6-21 Student eTool

Notes

CCG 6-21

a. Given: Green Sides and Red and Blue

Angles

b. Drag triangles from the center to translate.

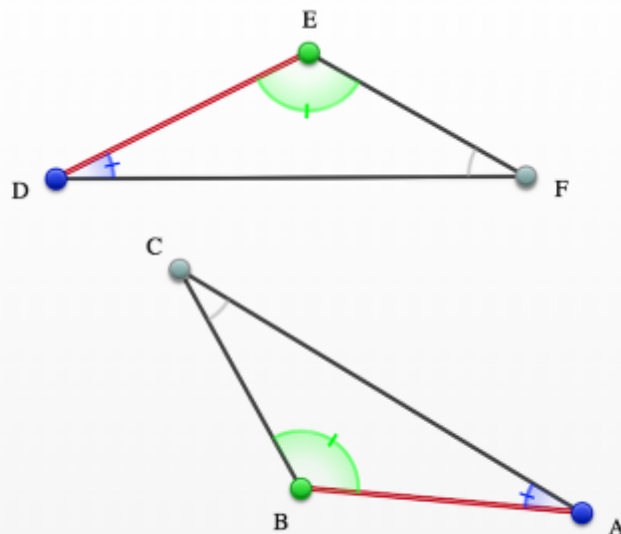
c. Click on the center of a triangle to access

the rotate, reflect, and dilate tools.

d. Click on the "?" above for more directions.

► Show/Hide Labels

► Side Lengths and Ratios



CCG 6.2.4: Monty Hall Technology Tool

Click on the link below for the “Monty Hall Technology Tool”

[Monty Hall Technology Tool](#)

1.



The image shows the Monty Hall Technology Tool interface. At the top, there are three gray boxes, each containing a large white question mark. Below these boxes is the instruction "Select one of the three boxes above". Underneath the instruction, there are two columns of statistics. The left column is for the "Keep choice" strategy, showing 0 wins (0% cars) and 0 losses (0% goats). The right column is for the "Change choice" strategy, also showing 0 wins (0% cars) and 0 losses (0% goats). At the bottom, there is a row of controls: a "Run" button with a dropdown set to "100", followed by "times and", a "keep" dropdown, "the choice:", a "Start" button, a checkbox for "Cheat", a "Clear result" button, and a "Help" button.

Select one of the three boxes above

Keep choice: 0 times	Change choice: 0 times
Wins: 0 cars (0%)	Wins: 0 cars (0%)
Losses: 0 goats (0%)	Losses: 0 goats (0%)

Run times and the choice: ☐ Cheat

2.





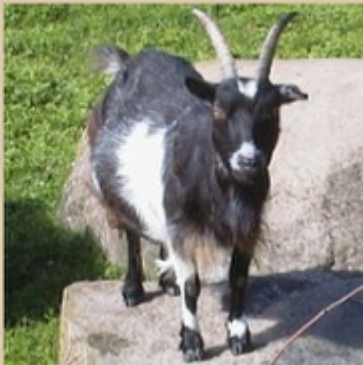


Click '!' to keep your first choice or '?' to change it

Keep choice: 100 times	Change choice: 0 times
Wins: 32 cars (32%)	Wins: 0 cars (0%)
Losses: 68 goats (68%)	Losses: 0 goats (0%)

Run times and the choice: ☐ Cheat

3.








You kept your choice, You lose

Keep choice: 101 times	Change choice: 1 time
Wins: 32 cars (31%)	Wins: 1 car (100%)
Losses: 69 goats (69%)	Losses: 0 goats (0%)

Run times and the choice: ☐ Cheat

4.

You changed your choice, You win the car !

Keep choice: 102 times	Change choice: 2 times
Wins: 33 cars (32%)	Wins: 2 cars (100%)
Losses: 69 goats (68%)	Losses: 0 goats (0%)


Run times and the choice:


☐ Cheat

5.

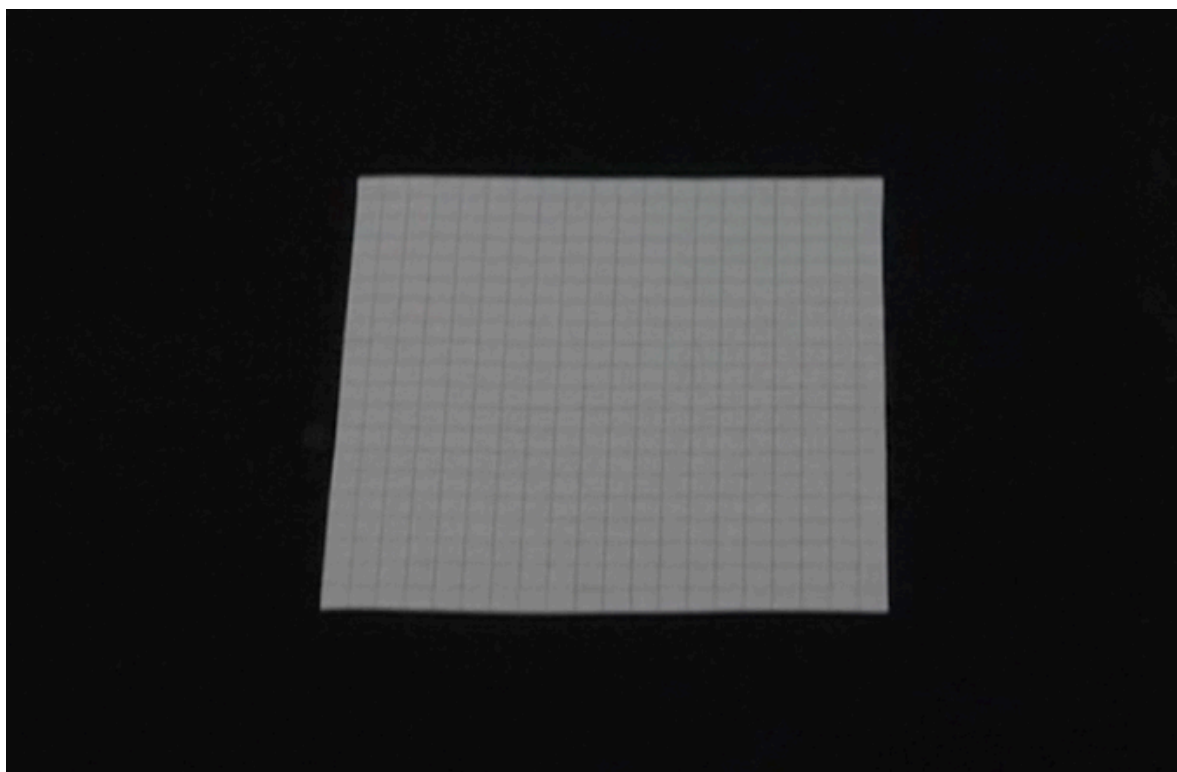
CCG 6.2.5: Snowflake Videos

Click on the links below for the “Snowflake Videos (Vimeo)”

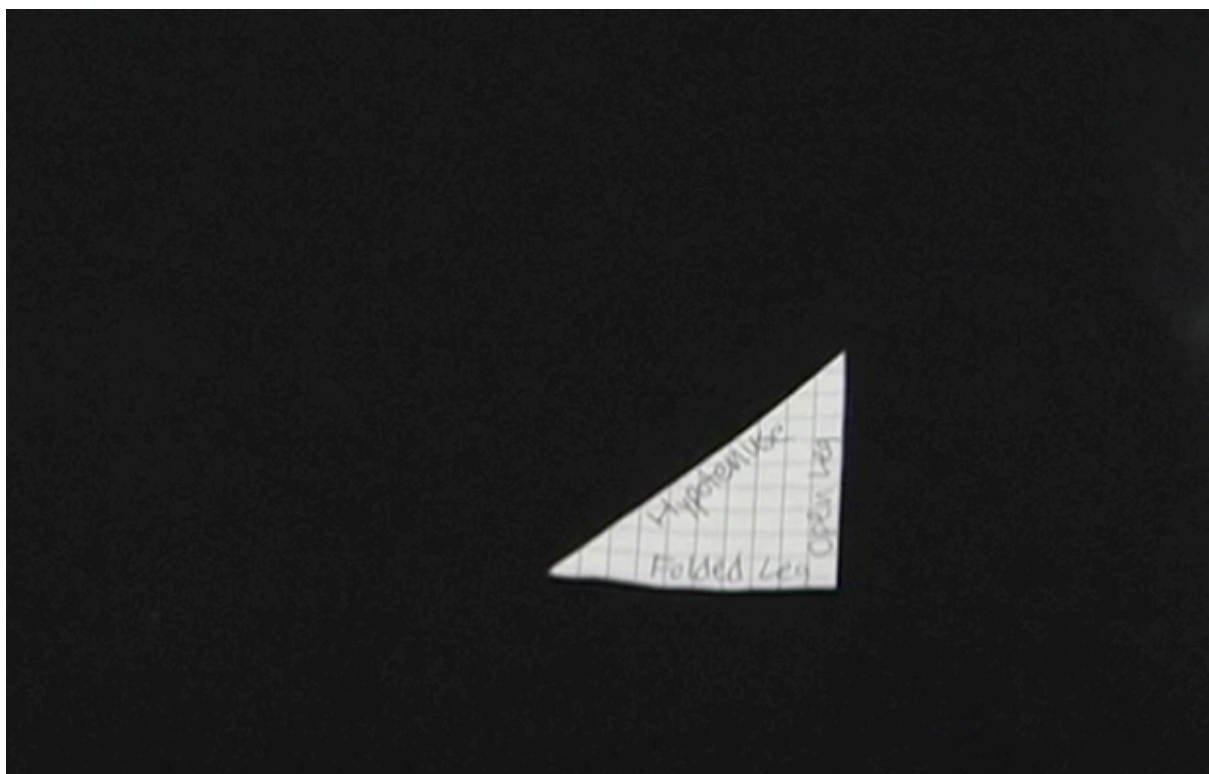
[Snowflake Materials Preparation \(Vimeo\)](#) 

[Using Transformations & Symmetry to Create a Snowflake \(Vimeo\)](#) 

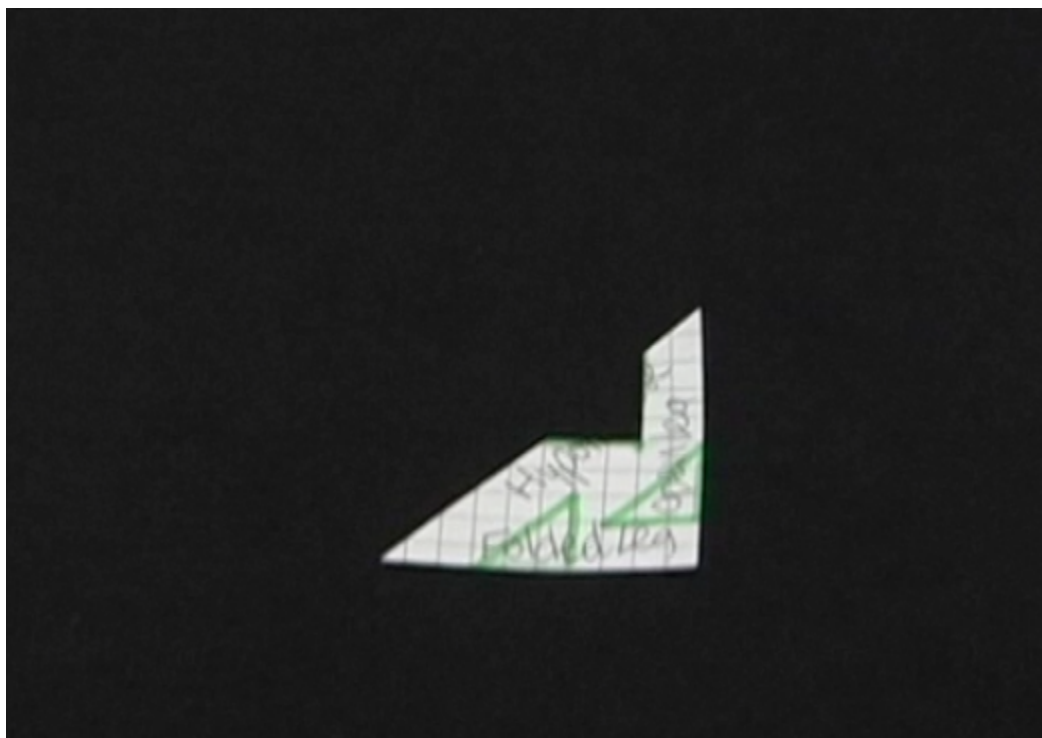
1.



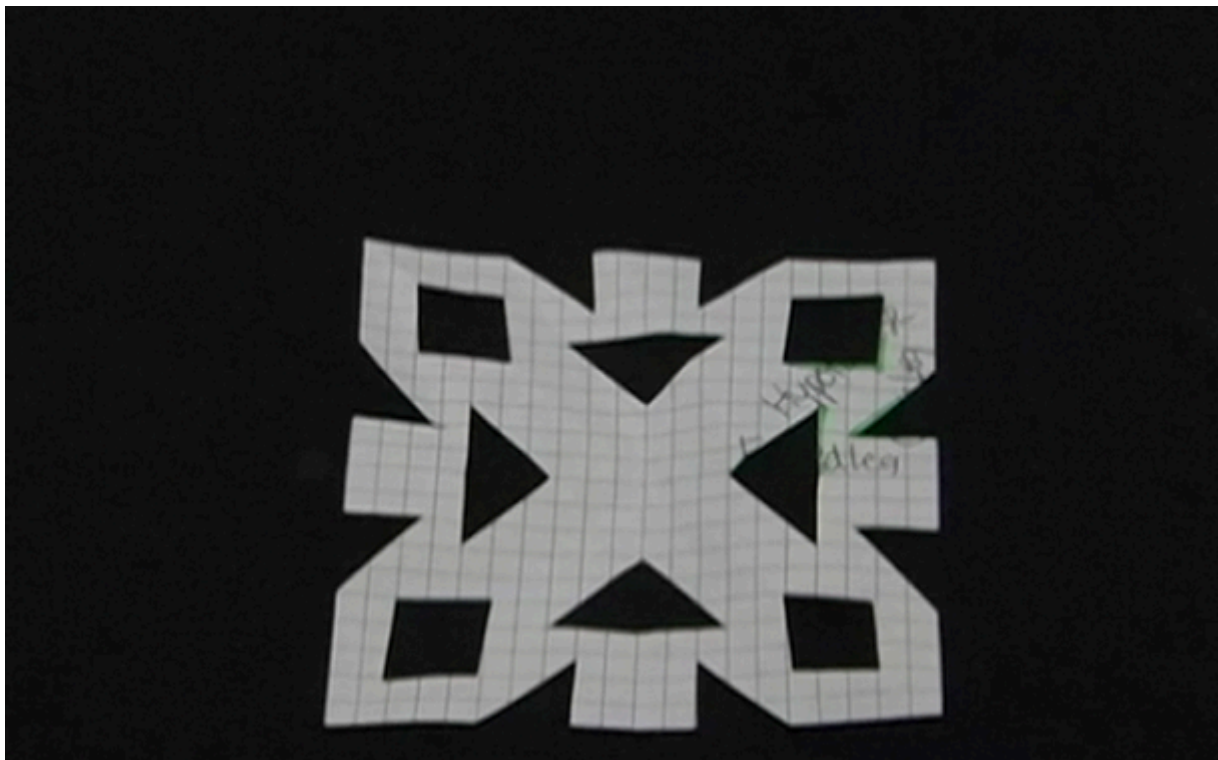
2.



3.



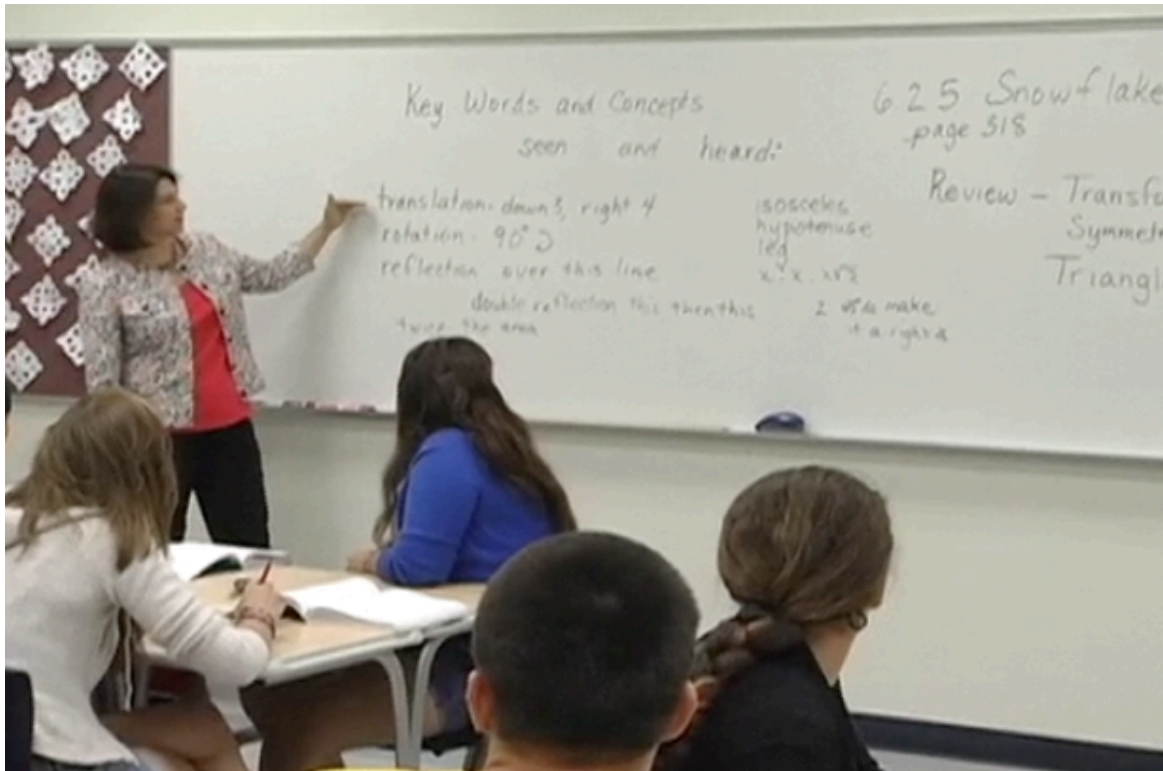
4.



5.



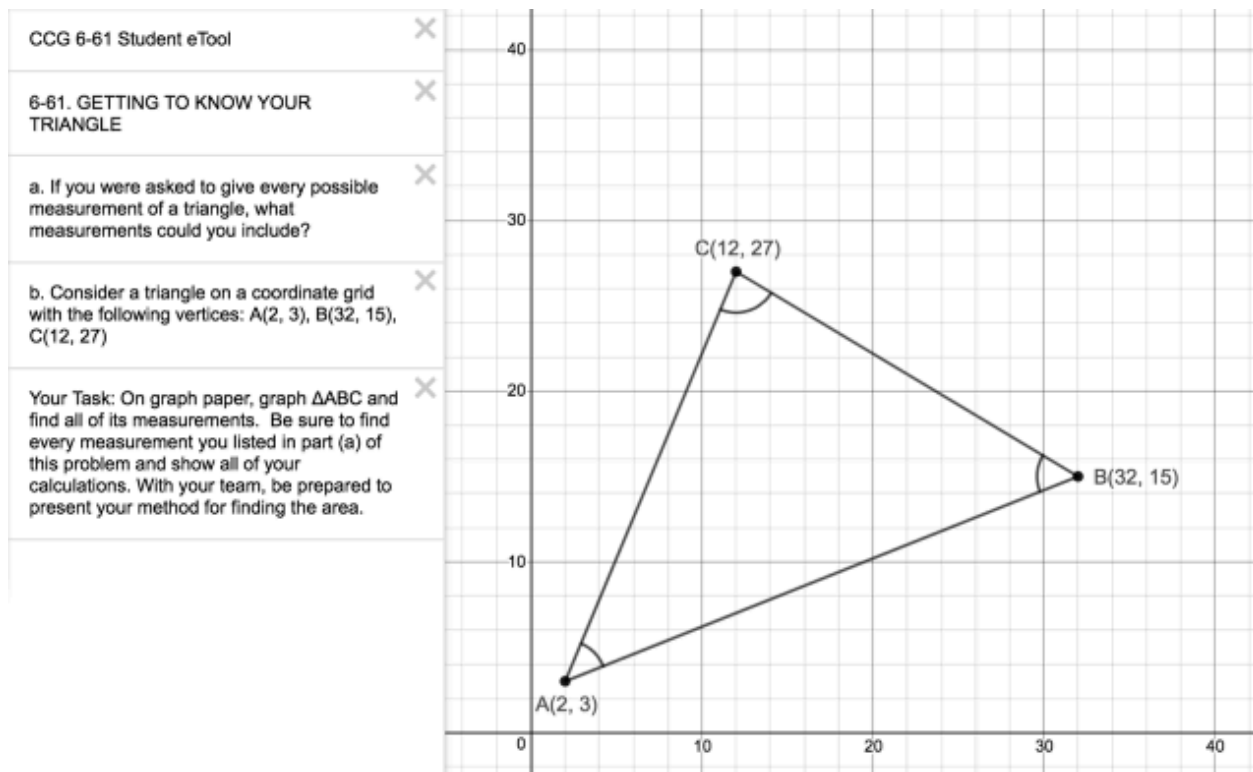
6.



CCG 6.2.2: 6-61 Student eTool (Desmos)

Click on the links below to access eTool.

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



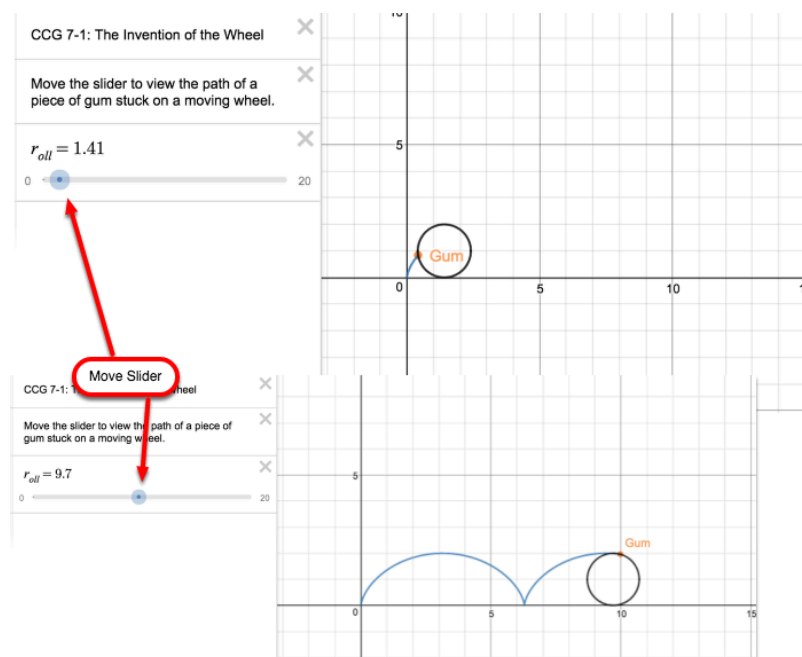
Chapter 7

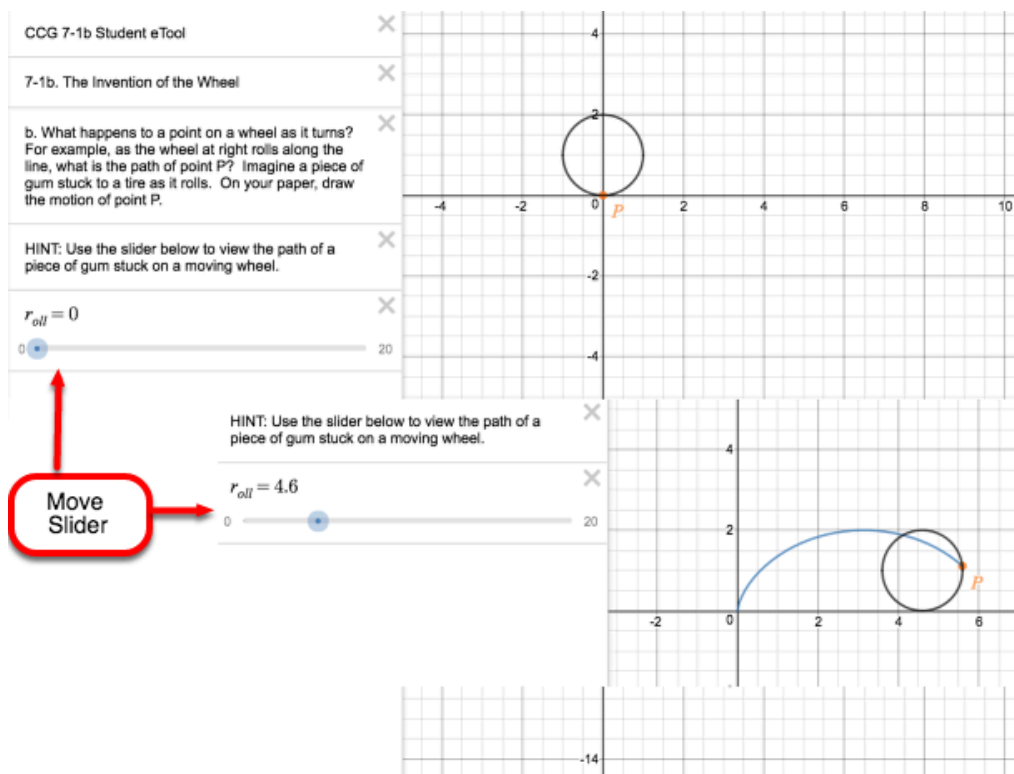
CCG 7.1.1: 7-1b Student eTool (Desmos)

Click on the links below to access eTool.

[7-1b Student eTool](#) (Desmos)

Use the eTool for problem 7-1 to see what happens to a point on a wheel as it turns.



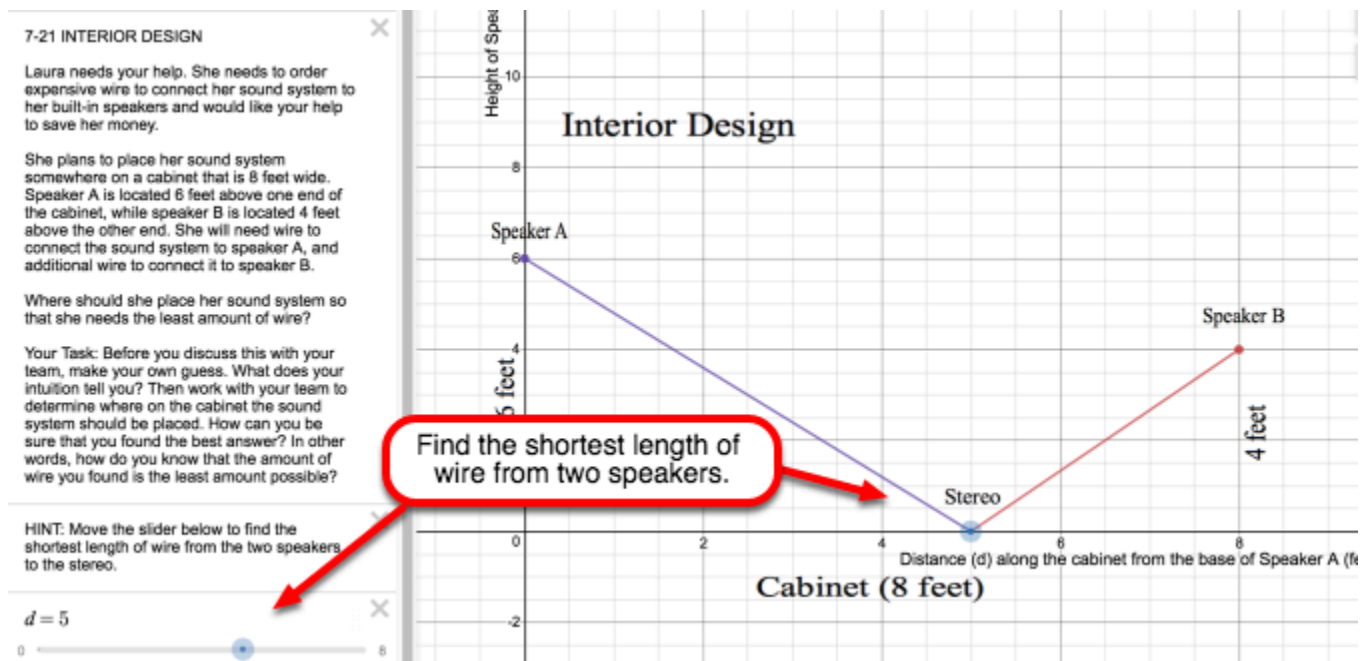
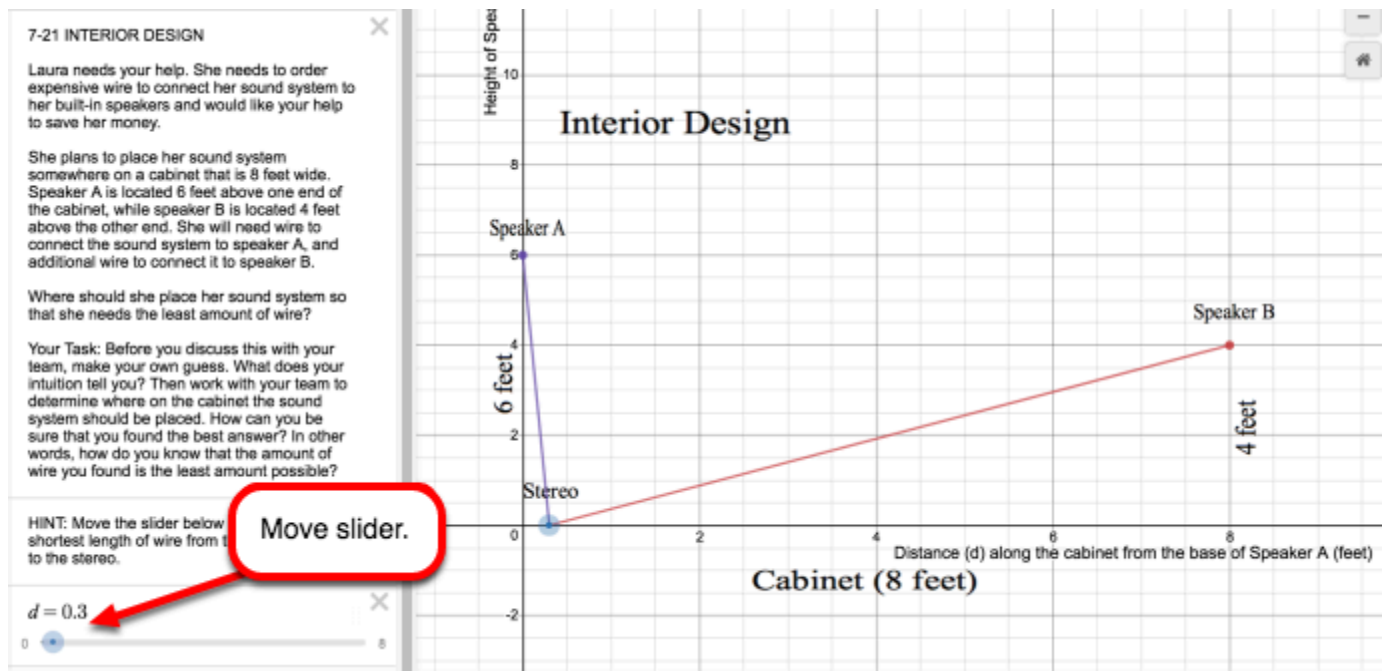


CCG 7.1.3: 7-21 Student eTool (Desmos)

Click on the link below to access eTool.

[7-21 Student eTool \(Desmos\)](#)

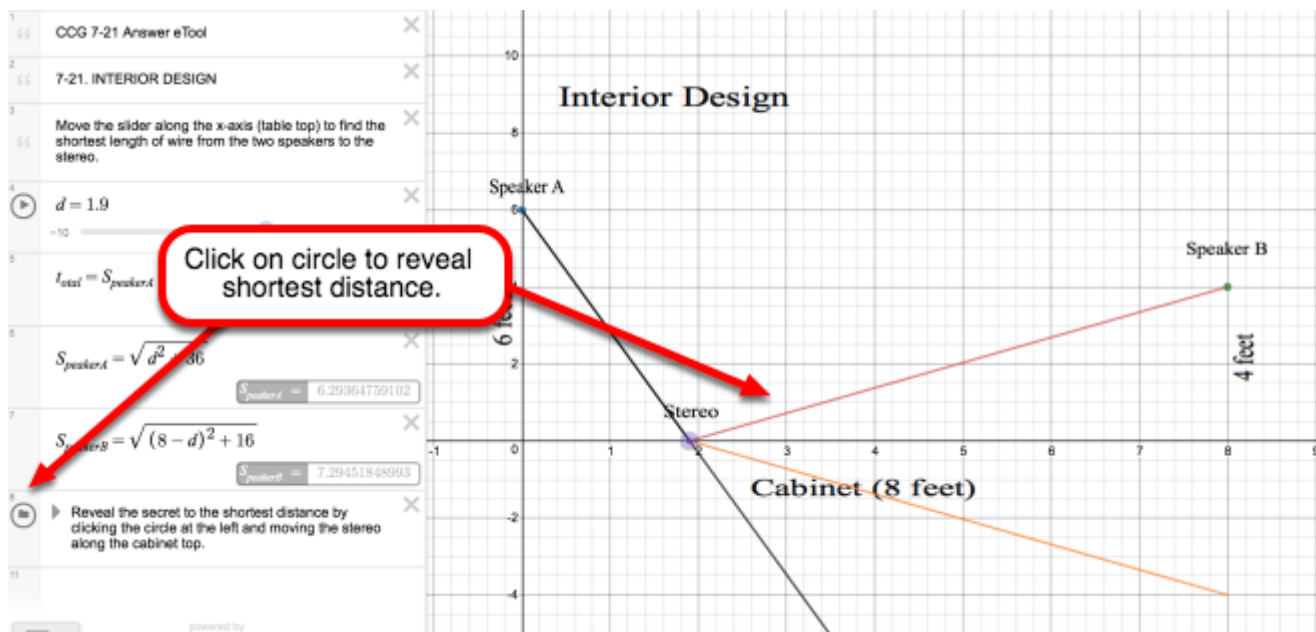
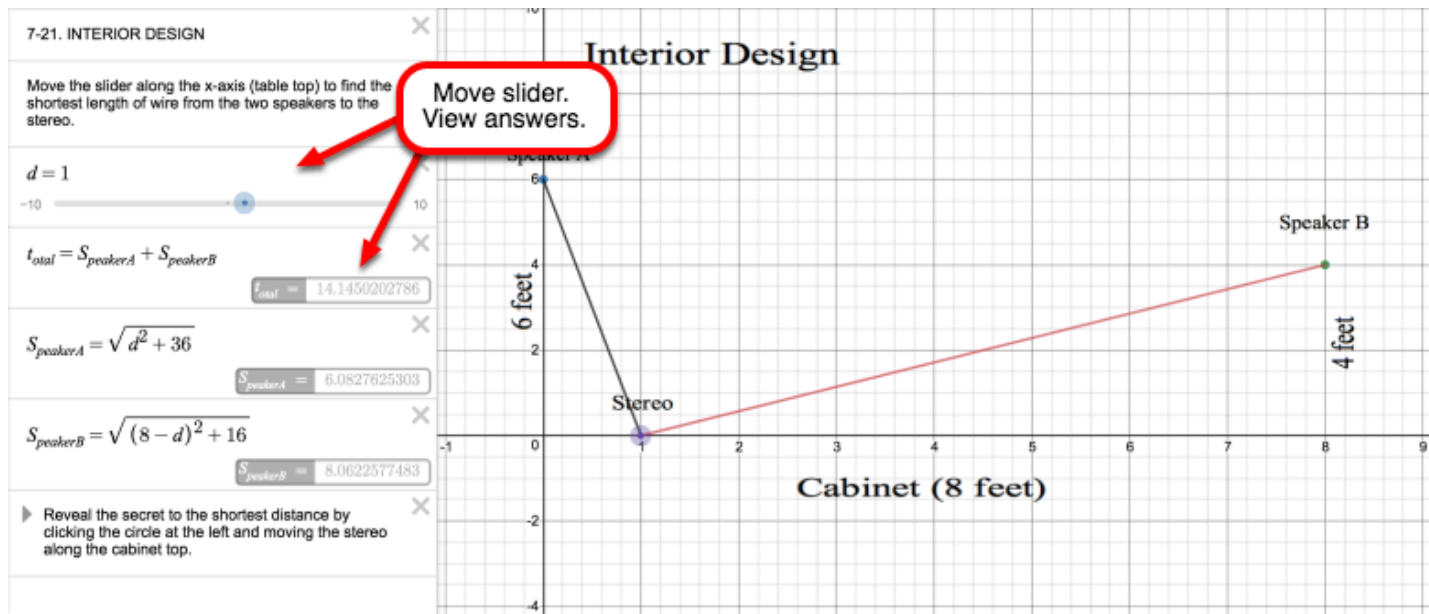
Move the slider or the stereo along the cabinet to determine where the sound system should be placed.



CCG 7.1.3: 7-21 Answer eTool (Desmos)

Click on the link below to access Answer eTool.

[7-21 Answer eTool \(Desmos\)](#)



Chapter 8

CCG 8.1.3: Exterior Angles (Desmos)

Click on the links below to access eTools.

[CCG 8-26f1 Student eTool: Exterior Angles: Triangles \(Desmos\)](#)

[CCG 8-26f2 Student eTool: Quadrilaterals \(Desmos\)](#)

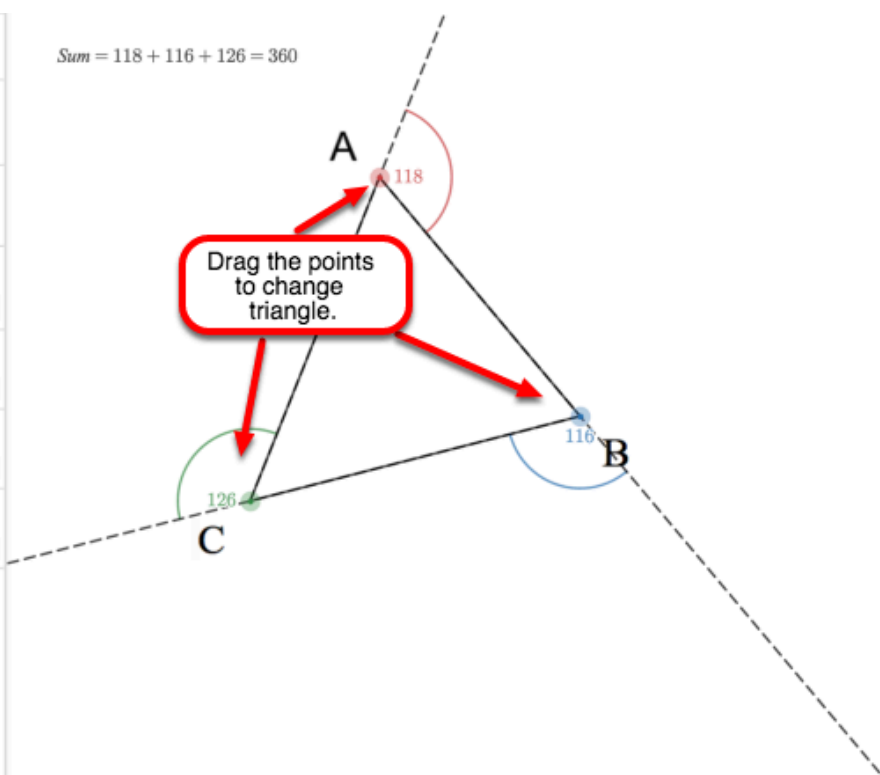
[CCG 8-26f3 Student eTool: Pentagons \(Desmos\)](#)

[CCG 8-26f4 Student eTool: Hexagons \(Desmos\)](#)

1. Triangles:

1	CCG 8-26f1 Student eTool: Exterior Angles - Triangles	X
2	HINT: Drag the points about to change the triangle. Gradually move the Scale below to 0. What do you notice about exterior angles?	X
3	$S_{scale} = 1$	X
4	$S_{sum} = A + B + C$	X
5	$round(A)$	X
6	$round(B)$	X
7	$round(C)$	X
8		

$$Sum = 118 + 116 + 126 = 360$$



2. Quadrilaterals:

CCG 8-2B2 Student eTool: Exterior Angles: Quadrilaterals

HINT: Drag the points about to change the triangle. Gradually move the Scale below to 0. What do you notice about exterior angles?

$S_{\text{ext}} = 1$

$S_{\text{ext}} = A + B + C + D$

$S_{\text{ext}} = 360$

$\text{round}(A)$

$\text{round}(B)$

$\text{round}(C)$

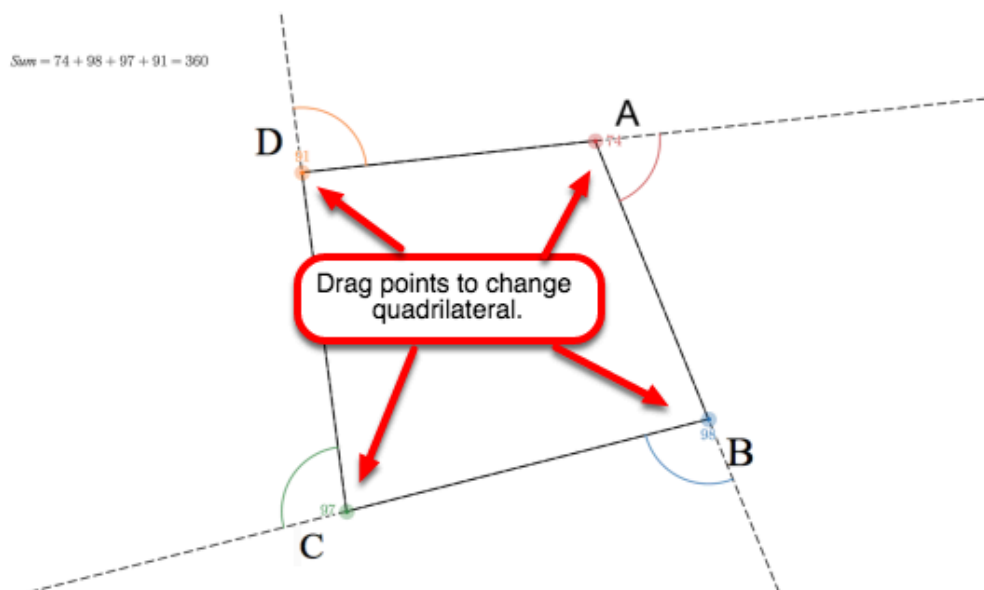
$\text{round}(D)$

$A = 74$

$B = 98$

$C = 97$

$D = 91$



3. Pentagons:

CCG 8-2B3 Student eTool: Exterior Angles - Pentagons

HINT: Drag the points about to change the pentagon. Gradually move the Scale below to 0. What do you notice about exterior angles?

$S_{\text{ext}} = 1$

$S_{\text{ext}} = A + B + C + D + E$

$S_{\text{ext}} = 360$

$\text{round}(A)$

$\text{round}(B)$

$\text{round}(C)$

$\text{round}(D)$

$\text{round}(E)$

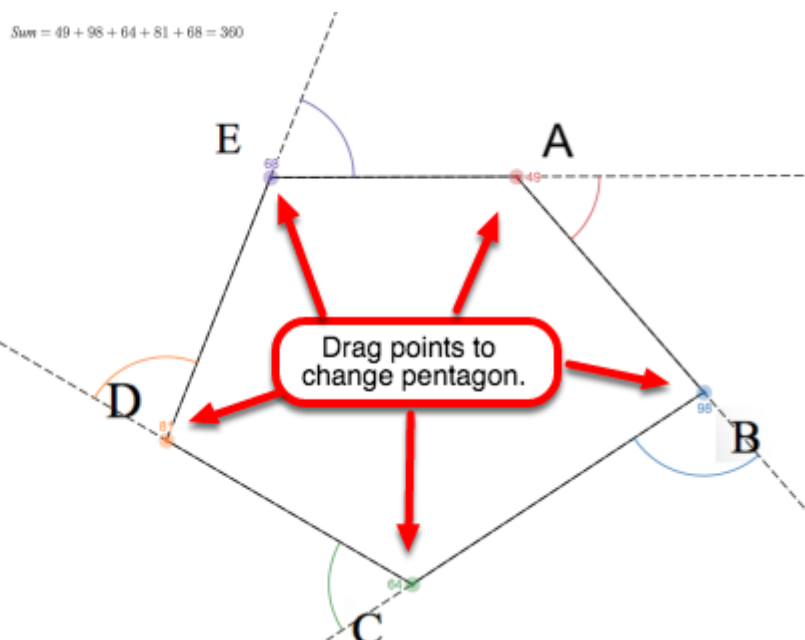
$A = 49$

$B = 98$

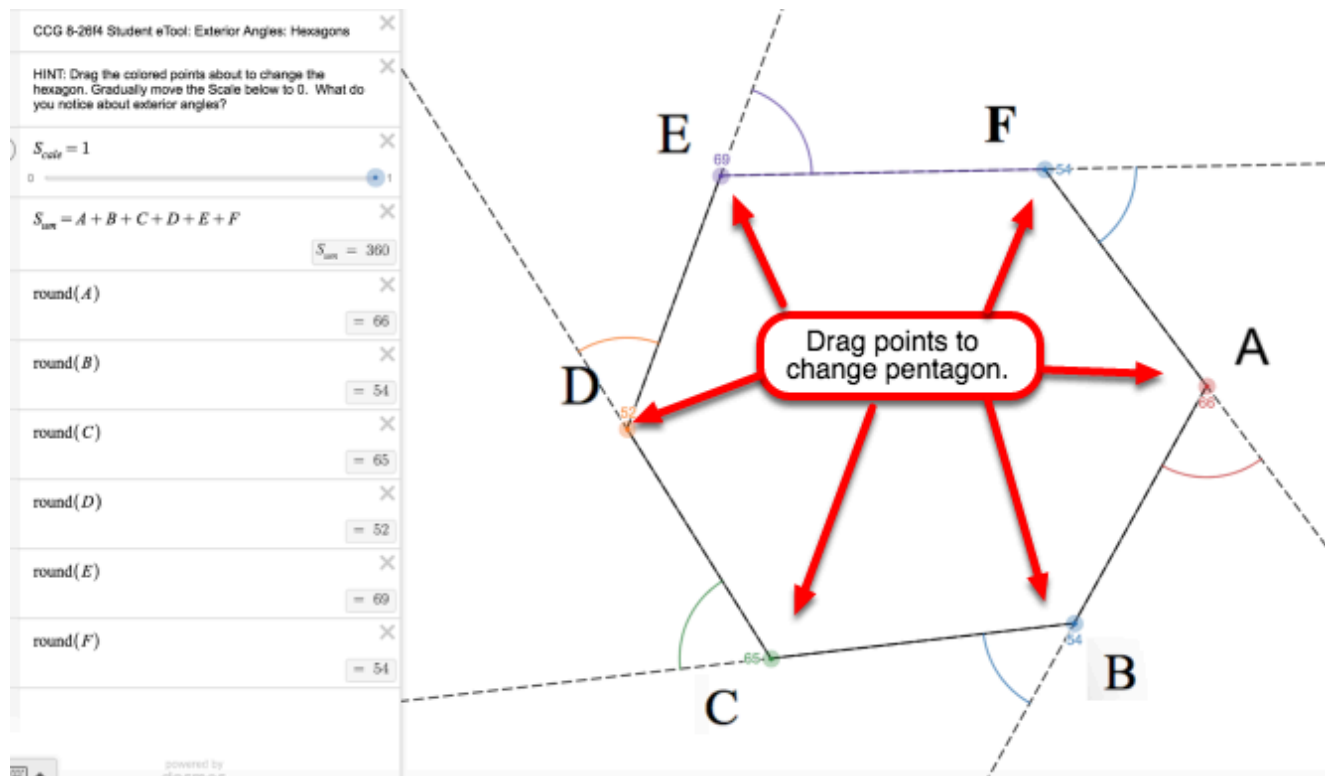
$C = 64$

$D = 81$

$E = 68$



4. Hexagons:

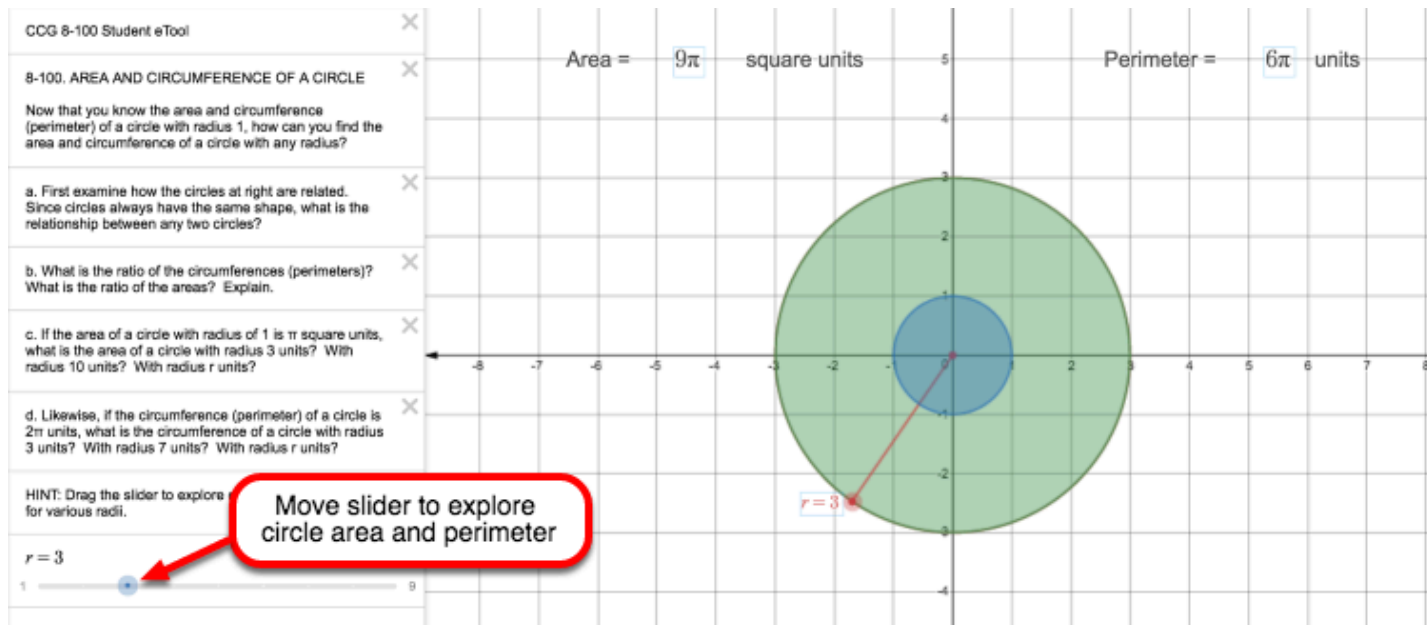


CCG 8.3.2: 8-100 Student eTool (Desmos)

Click on the link below to access eTool.

[8-100 Student eTool \(Desmos\)](#)

Move the slider to explore circle area and perimeter.



Chapter 9

CCG 9.1.1: 9-2 Student eTool (CPM)

Click on the links below to access eTool.

[9-2 Student eTool \(CPM\)](#)

See [3D Blocks eTool](#) for instruction on how to use the blocks.

Use eTool to create solids in problem 9-2.

9-2 Student eTool

View:

Top

Isometric

Front


Right

9-2. Another way to represent a three-dimensional solid is by its side and top views.

For example, the solid from problem 9-1 can also be represented by a top, front, and right-hand view. Each view shows all of the blocks that are visible when looking directly at the solid from that direction.

Examine the diagram of blocks at right. On graph paper, draw the front, right, and top views of this solid. Assume that there are no hidden blocks.

HINT: Click any of the squares on the mat and the top of any block to build. Click the side of any block to remove. Drag about the outside of the model to rotate.



CCG 9.1.1: 9-4 Student eTool (CPM)

Click on the links below to access eTool.

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

See [3D Blocks eTool](#) for instruction on how to use the blocks.

Build Meagan's shape in problem 9-4 with the eTool.

CCG 9-4 Student eTool

View:

Top

Isometric

Front

Right

9-4. Meagan built a shape with blocks and then drew the views shown below.

a. Build Meagan's shape in the 3d view at right. Use as few blocks as possible.

b. What is the volume of Meagan's shape?

c. Draw a mat plan for her shape.

▼ Front View

▼ Right View

▼ Top View

CCG 9.1.2: 9-14 Student eTool (CPM)

Click on the links below to access eTool.

[9-14 Student eTool \(CPM\)](#)

See [3D Blocks eTool](#) for instruction on how to use the blocks.

Build Heidi's solid using the eTool.

9-14. The front, top, and right-hand views of Heidi's solid are shown below.

a. Build Heidi's solid. Use the smallest number of blocks possible. What is the volume of her solid?

b. Draw a mat plan for Heidi's solid. Be sure to indicate where the front and right sides are located.

c. Oh no! Heidi accidentally dropped her entire solid into a bucket of paint! What is the surface area of her solid? That is, what is the area that is now covered in paint?

▼ Front View

▼ Right View

▼ Top View

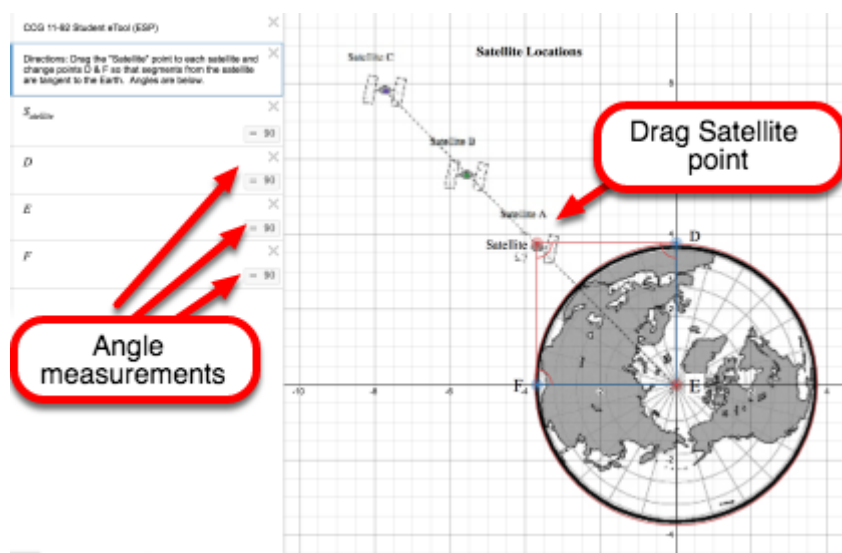
Chapter 11

CCG 11.2.2: 11-92 Student eTool (Desmos)

Click on the link below to access eTool.

[11-92 Student eTool \(Desmos\)](#)

Drag the red 'Satellite' point to each Satellite (A, B and C). The angle measurements for D, E and F will display.



Chapter 12

CCG 12.1.2: 12-16 Student eTool (CPM)

Click the link below to access eTool.

[12-16 Student eTool \(CPM\)](#)

Use the algebra tiles shown at right to complete the square and change $y = x^2 + 8x + 10$ to graphing form.

CCG 12-16 Student eTool

12-16. Diego was at the Musketeers Math Lab struggling with his Algebra I homework. He was supposed to complete the square to change $y = x^2 + 8x + 10$ to graphing form. Katelyn, the math lab assistant, brought over the algebra tiles. Katelyn explained, "y = $x^2 + 8x + 10$ would look like this."

HINT: Use the algebra tiles shown at right so to complete the square and change $y = x^2 + 8x + 10$ to graphing form.

▼ Algebra Tiles

Label: x

x

x^2

CCG 12.1.3: 12-38 Student eTool (Desmos)

Click the link below to access eTool.

[12-38 Student eTool \(Desmos\)](#)

FOCUS AND DIRECTRIX OF A PARABOLA

How does the distance between the focus (the point) and the directrix (the line) affect the shape of the parabola?

The RED Point F is the focus of the parabola. Move it up and down to see how the distance between the focus and directrix affects the shape of the parabola.

