

CC INTEGRATED II ETOOLS -  
T

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# General Tools

# Algebra Tiles (CPM)

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

**Click on the link below to access eTool.**

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

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

1. Select the Pen & Paper Icon to:

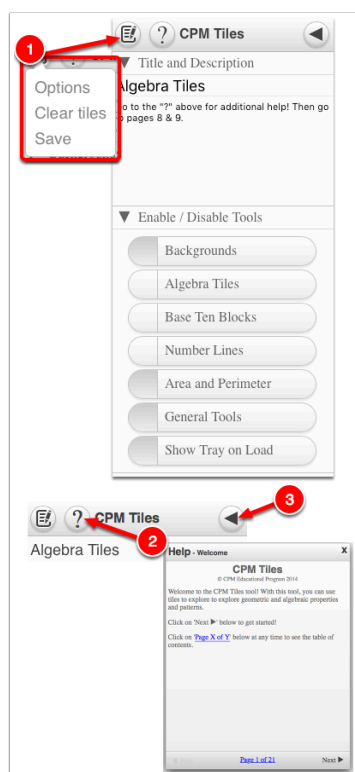
Options - Add Title and Description and Enable/Disable Tools.

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

Save - This will save all the changes made.

2. Select the '?' icon for directions.

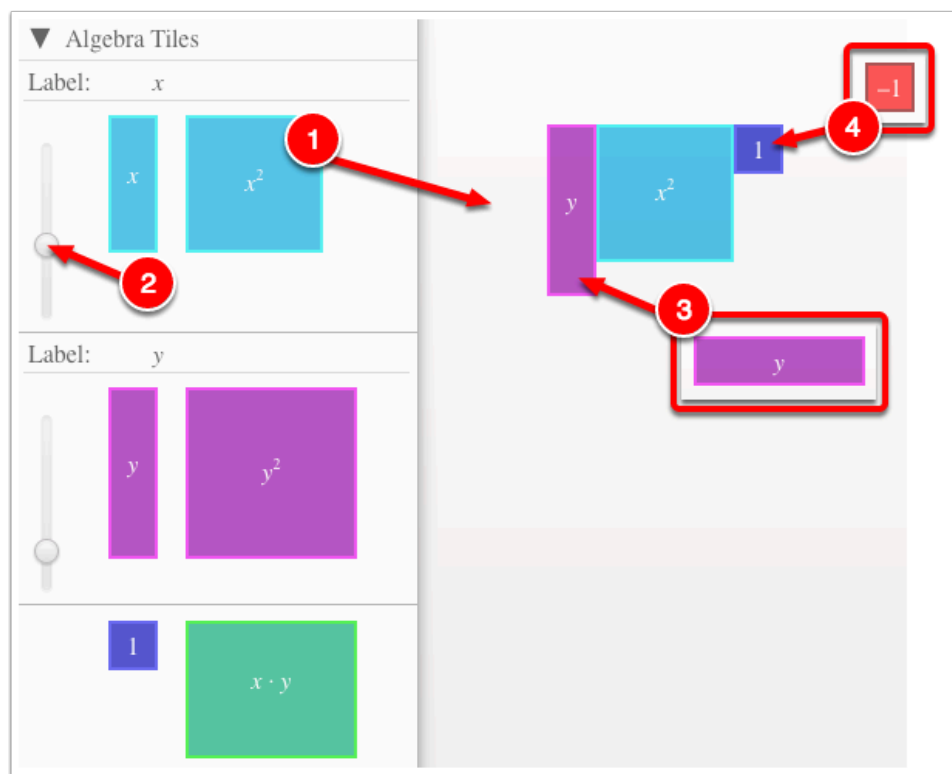
3. Select the Arrow Icon at the right to open and close the tray.



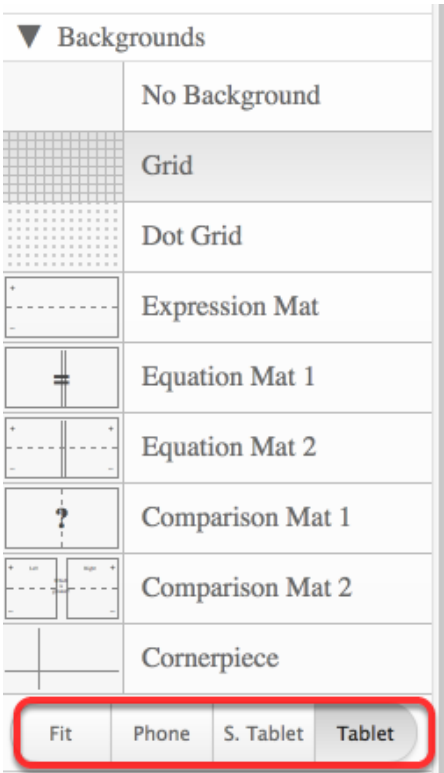
## 2. Drag tiles from the tray at the left to the display area at the right.

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

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

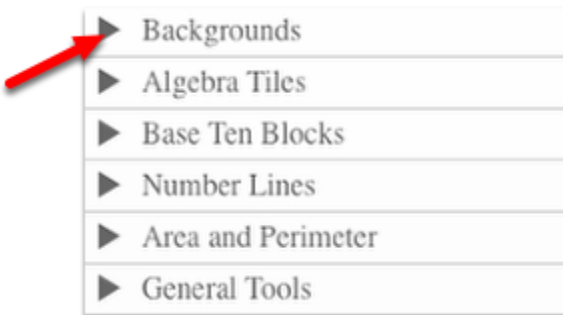


**3. Choose from a variety of different mats. Also choose from a variety of sizes to fit on various devices.**



**4. Choose from a variety of different tiles:**

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



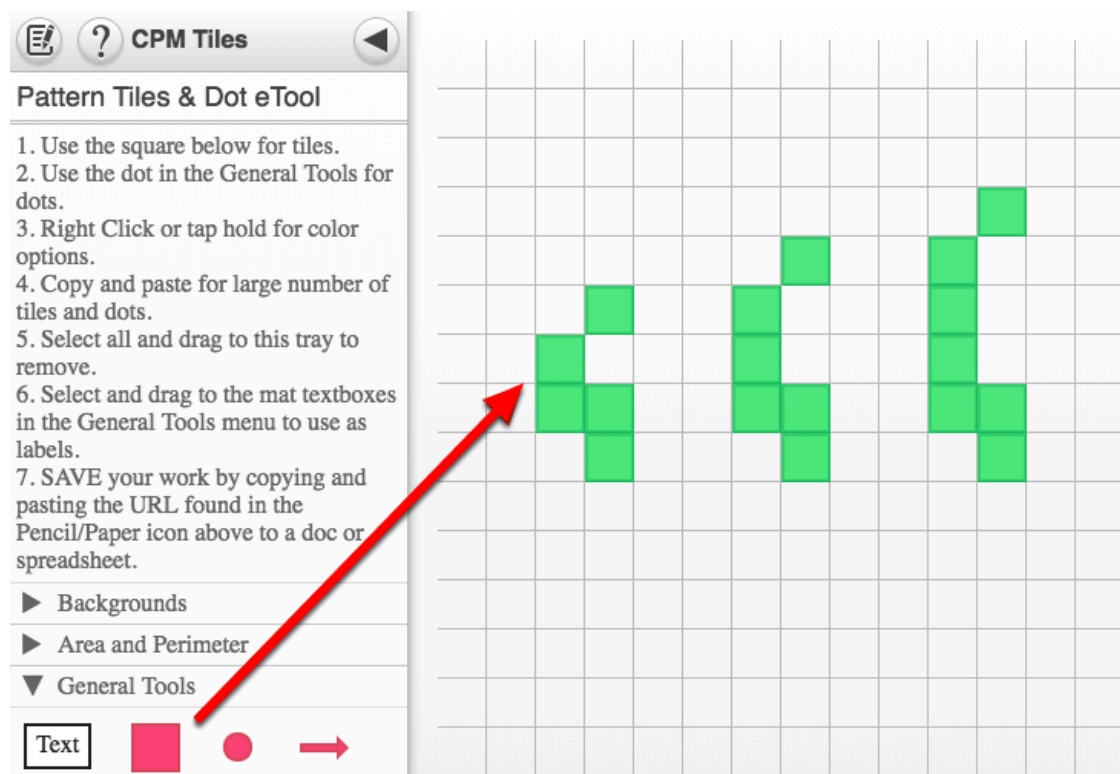
# Pattern Tile & Dot Tool (CPM)

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

# 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 side lengths and angles displayed.

**Controls in the sidebar:**

- Notes:** A text area with a red arrow pointing to it.
- Show/Hide Labels:**
  - Points:** A button labeled "Show Angle Measures" with a red arrow pointing to it.
  - Sides:** Buttons for "None", "Lengths", and "Names". "Lengths" is selected.
  - Other:** A button labeled "Visual Effects".
- Side Lengths and Ratios:** A table showing side lengths for  $\triangle ABC$  and  $\triangle DEF$  with a red arrow pointing to it.

**Triangle Data:**

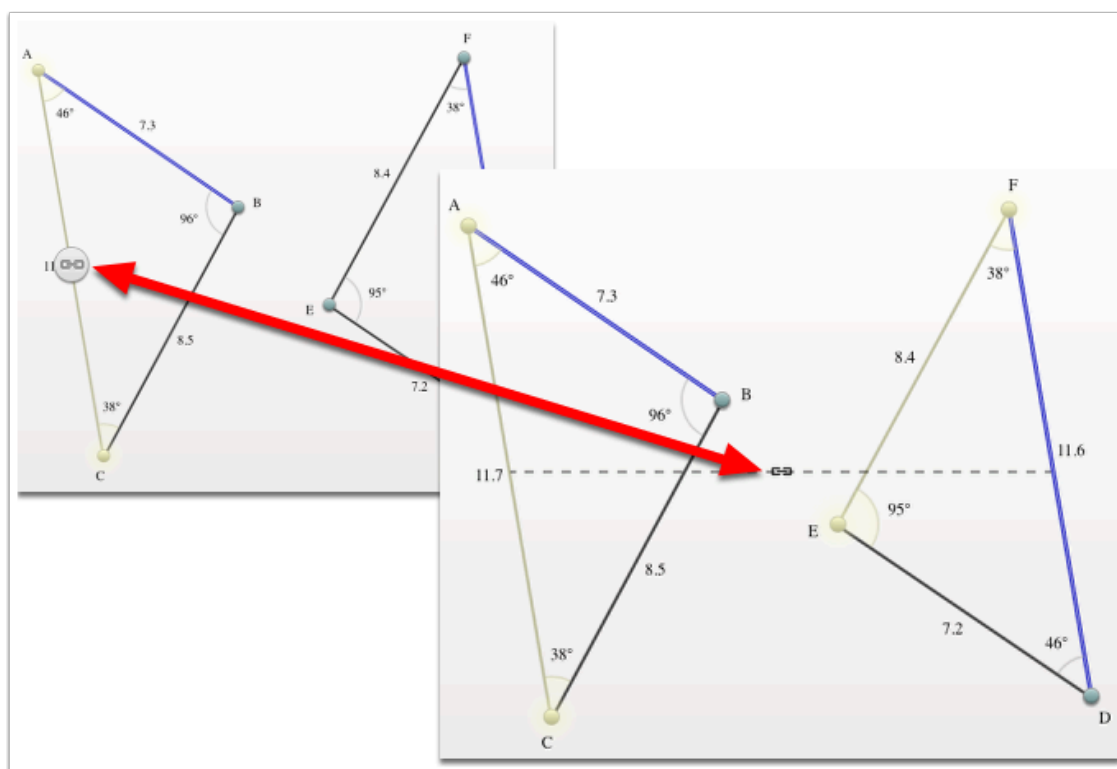
$\triangle ABC$	$\triangle DEF$
a = 8.5	d = 8.5
b = 11.7	e = 11.7
c = 7.3	f = 7.3

Link more elements to see side length ratios.

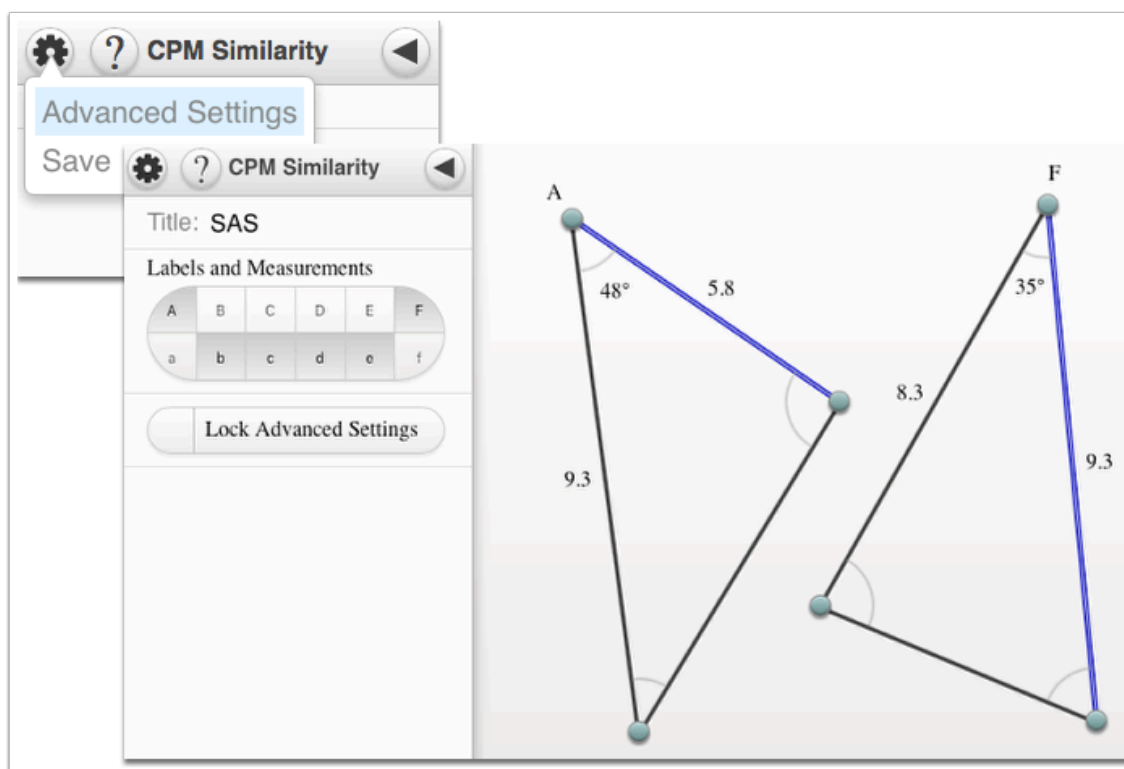
**Triangle Details:**

- $\triangle ABC$ : Angles are  $46^\circ$  at A,  $96^\circ$  at B, and  $38^\circ$  at C. Side lengths are AB = 7.3, BC = 8.5, and AC = 11.7.
- $\triangle DEF$ : Angles are  $38^\circ$  at F,  $96^\circ$  at E, and  $46^\circ$  at 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!





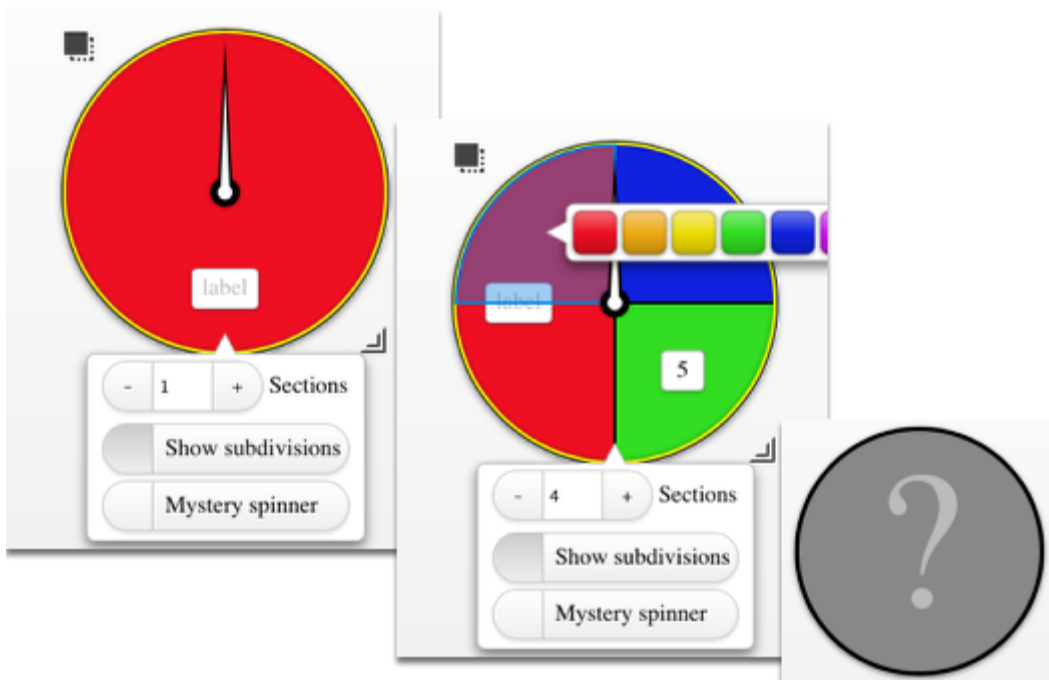
# Probability Tools (CPM)

Click on the link below.

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

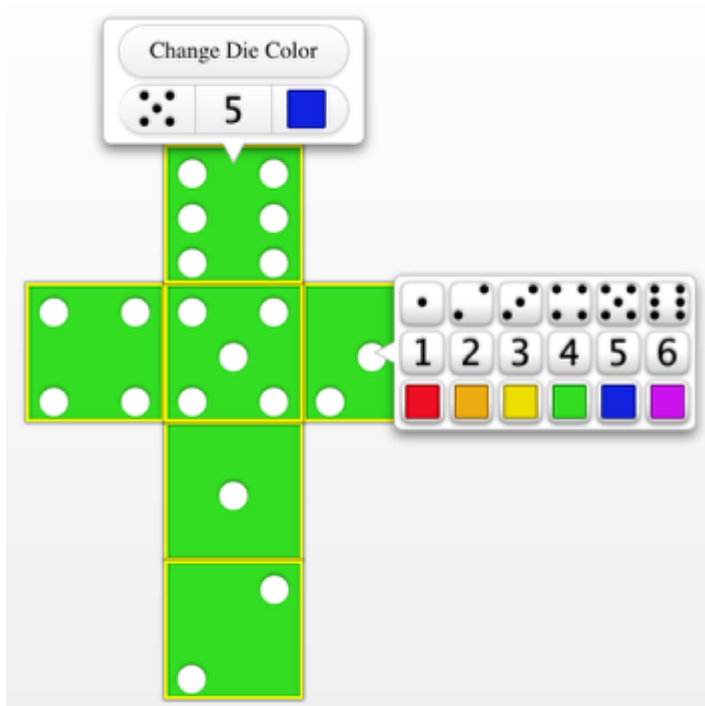
## 1. Spinners:

- 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.



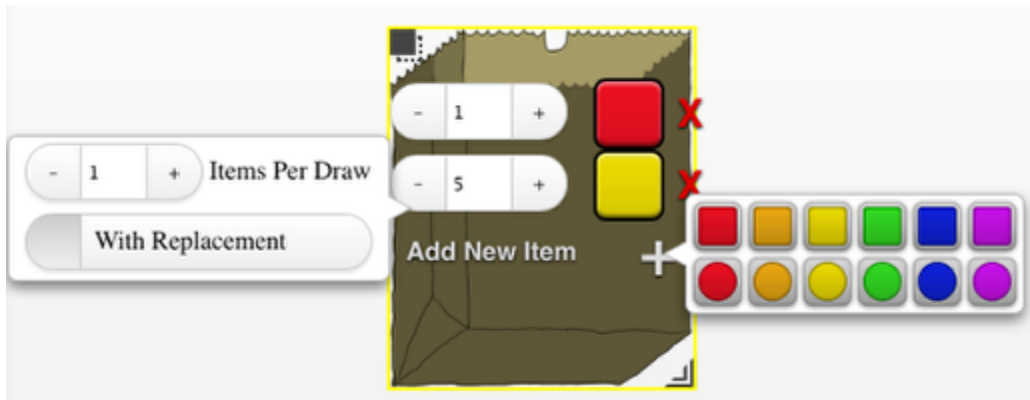
## 2. Dice:

- 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

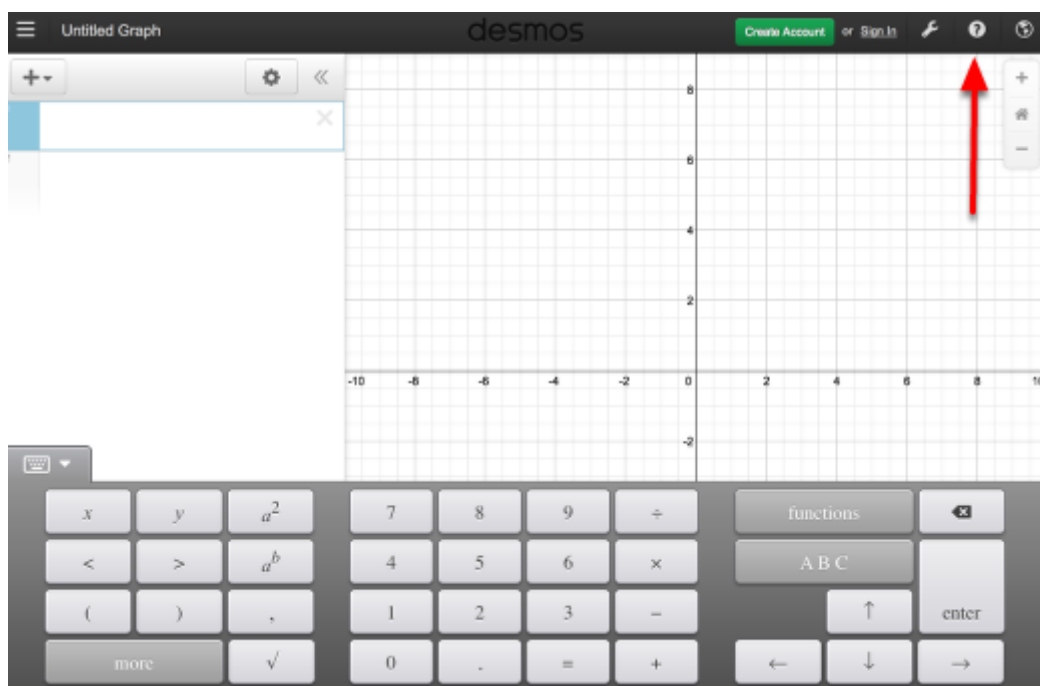
# Desmos Graphing Calculator

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!

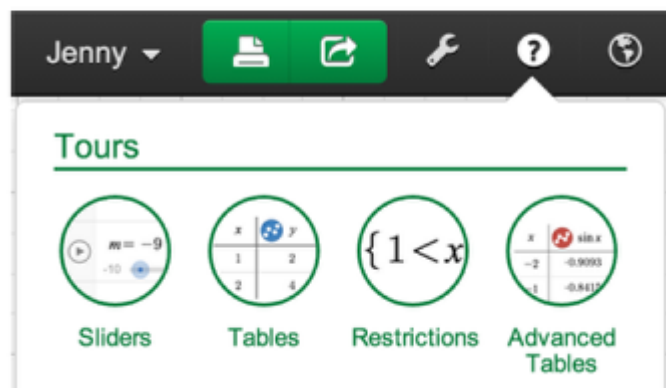
#### Interactive Tours



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!

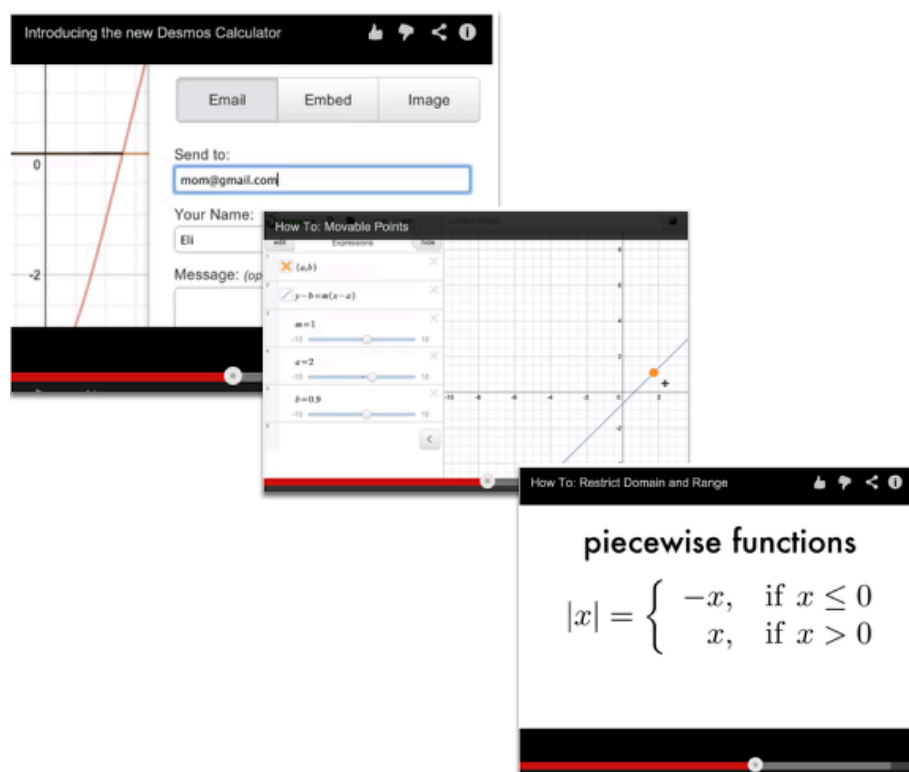
[Desmos Introduction](#)

[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](#)

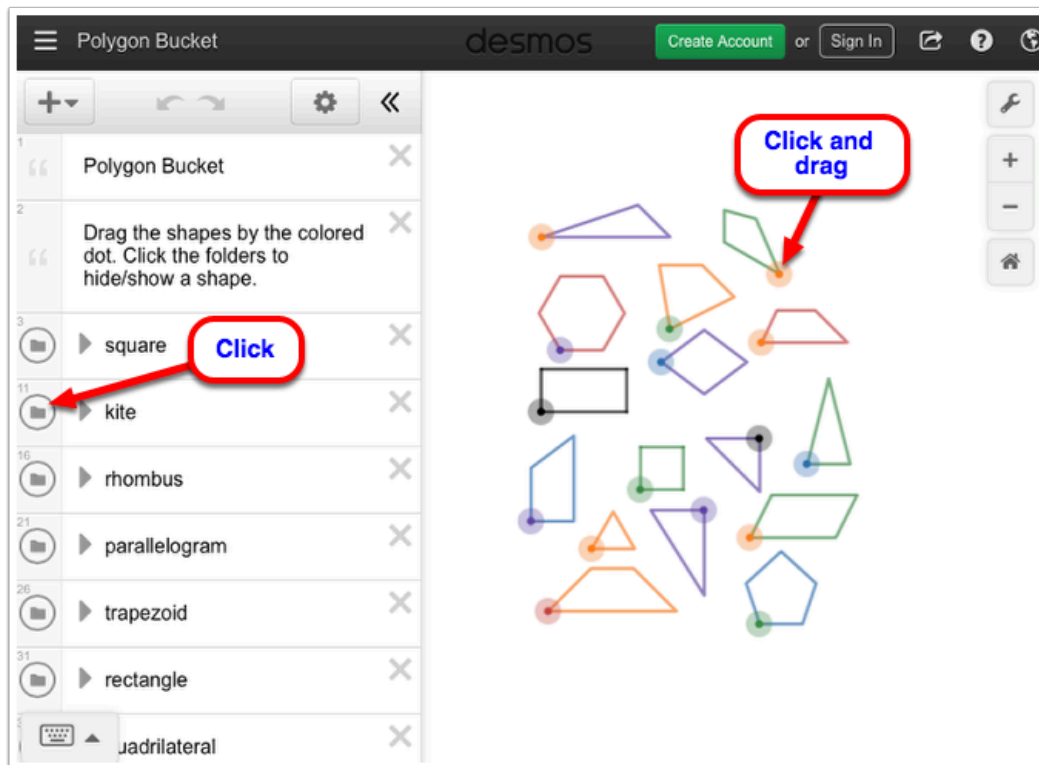
## Polygon Bucket eTool (Desmos)

Click on the link below to access eTool.

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

Use this eTool to explore polygons.

- To move a shape, click the colored dot and drag the shape to where you want to move it.
- To hide/show a shape, click the folder icon before the name of the shape.





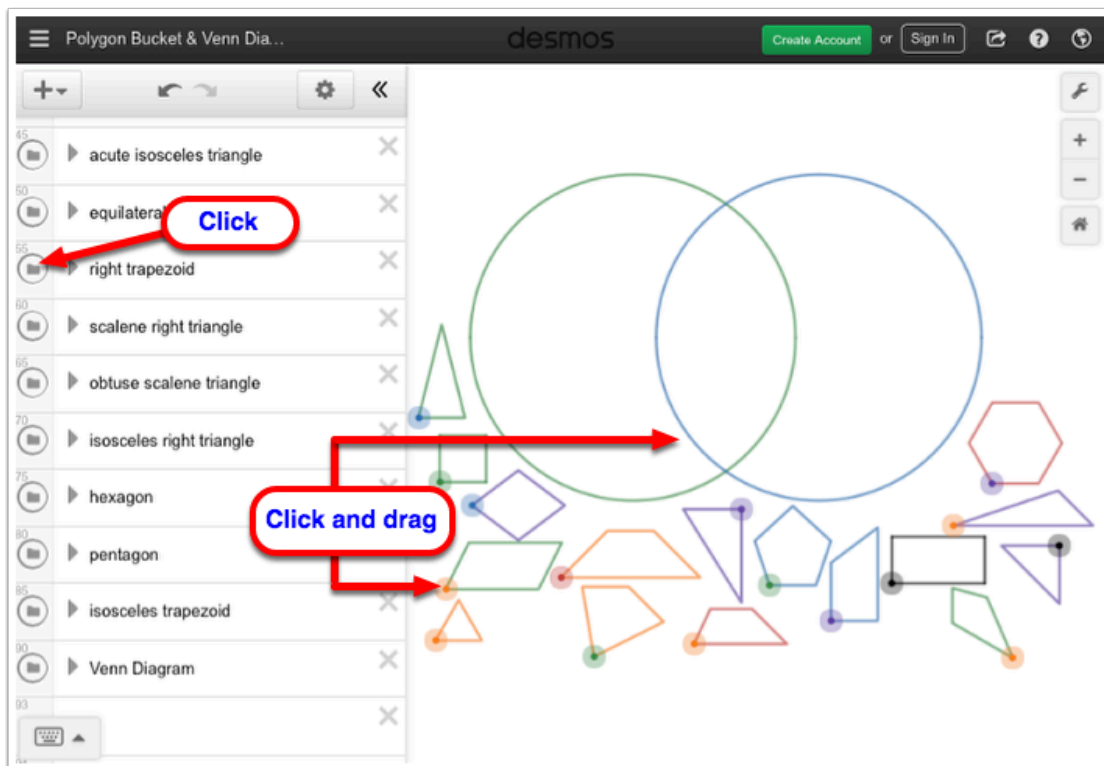
# Polygon Bucket and Venn Diagram Practice eTool (Desmos)

Click on the link below to access eTool.

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

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.



# Table Tool (CPM)

Click on the link below to access the eTool.

[CPM Table eTool](#)

## 1. CPM Table eTool

- Find patterns
- Highlight cells
- Highlight rows

Table												Directions		Reset	Save
© 2016 CPM Educational Program. All rights reserved.															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
3	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45
4	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60
5	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
6	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90
7	7	14	21	28	35	42	49	56	63	70	77	84	91	98	105
8	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120
9	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135
10	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
11	11	22	33	44	55	66	77	88	99	110	121	132	143	154	165
12	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180
13	13	26	39	52	65	78	91	104	117	130	143	156	169	182	195
14	14	28	42	56	70	84	98	112	126	140	154	168	182	196	210
15	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225

## 2. Highlight

- Click on a row or column and highlight.
- Click on a cell and choose the color.

Highlight column

Clear cell

Clear column

**Table**  
© 2016 CPM Educational Program. All rights reserved.

	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	4	6	8	10	12	14	16	18
3	3	6	9	12	15	18	21	24	27
4	4	8	12	16	20	24	28	32	36
5	5	10	15	20	25	30	35	40	45
6	6	12	18	24	30	36	42	48	54
7	7	14	21	28	35	42	49	56	63

3	4	5	6	7	8	9
3	4	5				
6	8	10				
9	12	15				
12	16	20				
15	20	25	30	35	40	45
18	24	30	36	42	48	54
21	28	35	42	49	56	63


Clear





# Chapter 1

## INT2 1.1.1: Teacher Mobius Strip Setup, Lesson, & Closure Video

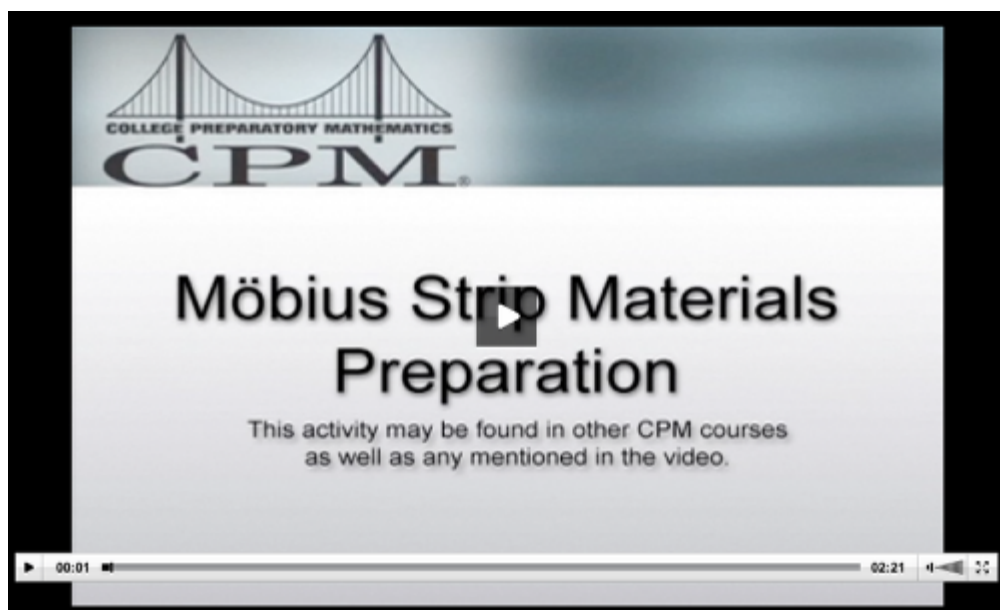
Click on the links below for the "Mobius" videos

[Möbius Strip Setup](#) 

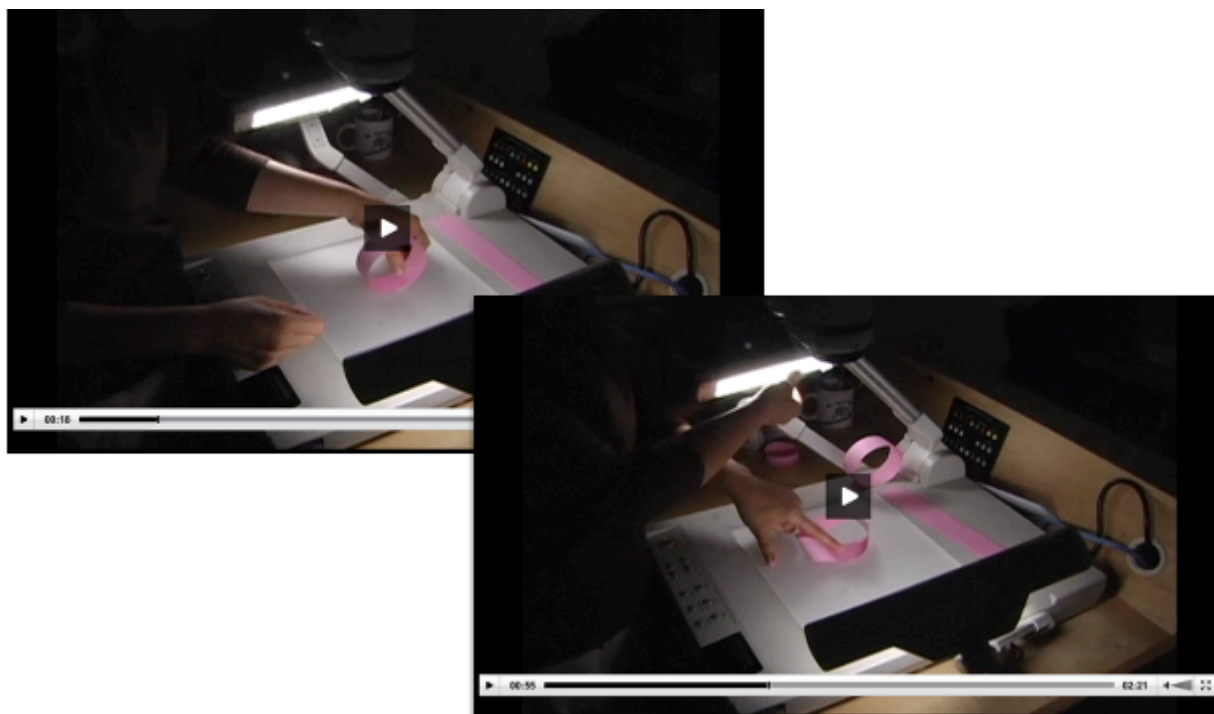
[Möbius Strip classroom Lesson](#) 

[Möbius Strip Closure](#) 

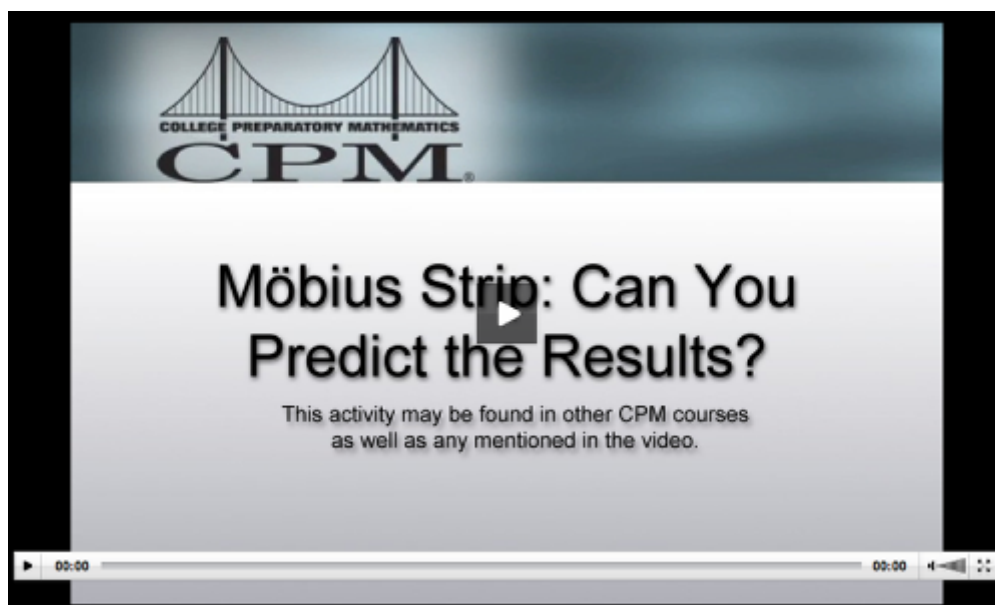
### 1. Materials Preparation:



## 2. Using the strips:



## 3. Predicting results:



#### 4. Closure:



## INT2 1.1.1 1-3 Venn Diagrams Student eTools (Desmos)

Click on the links below to access eTools.

[1-3 Venn Diagram A: Student eTool\(Desmos\)](#)

[1-3 Venn Diagram B: Student eTool\(Desmos\)](#)

[1-3 Venn Diagram C: Student eTool\(Desmos\)](#)

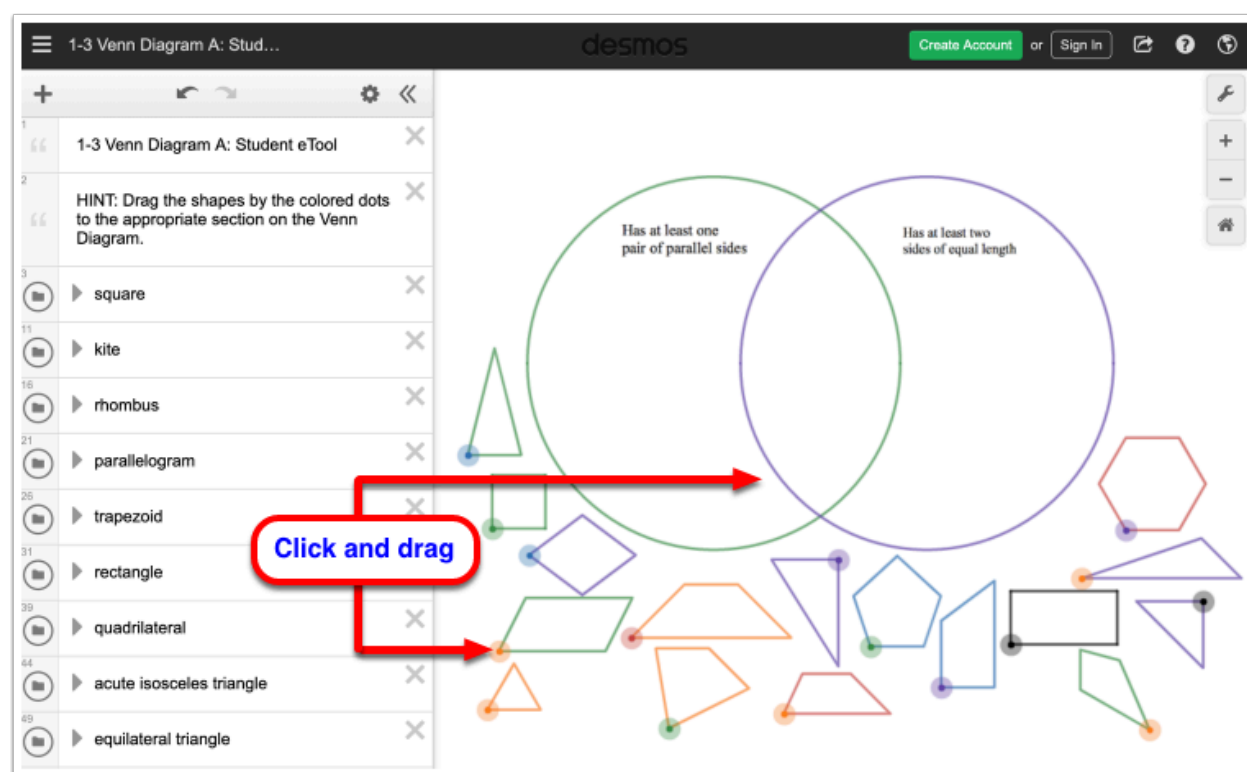
**A Venn diagram is a tool used to classify objects. An item is placed in the Venn diagram in the appropriate region based on the conditions it meets.**

### 1-3 Venn Diagram A

The *left* circle of the Venn diagram, Circle #1, represents the condition “has at least one pair of parallel sides” and the *right* side, Circle #2, represents the condition “has at least two sides of equal length” as shown below.

Sort through the polygons in the Polygon Bucket and decide as a team where each polygon belongs.

- Click on the colored points on each shape and drag it to the appropriate section on the Venn Diagram.



### 1-3 Venn Diagram B

Next, reclassify the polygons for the new Venn diagram shown below.



- Click on the colored points on each shape and drag it to the appropriate section on the Venn Diagram.

1-3 Venn Diagram B: Student eTool

desmos

Create Account or Sign In

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

Has only three sides

Has a right angle

Has only three sides and Has a right angle

square

kite

rhombus

parallelogram

trapezoid

rectangle

quadrilateral

acute isosceles triangle

equilateral triangle

Click and drag

## 1-3 Venn Diagram C

Finally, reclassify the polygons for the new Venn diagram shown below.

- Click on the colored points on each shape and drag it to the appropriate section on the Venn Diagram.

1-3 Venn Diagram C: Student eTool

desmos

Create Account or Sign In

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

Has reflection symmetry

Has 180° rotation symmetry

square

kite

rhombus

parallelogram

trapezoid

rectangle

quadrilateral

acute isosceles triangle

equilateral triangle

Click and drag

## INT2: 1.1.1 1-3 Venn Diagrams Answer eTools (Desmos)

Click on the links below to access eTools.

[1-3 Venn Diagram A: Answer eTool\(Desmos\)](#)

[1-3 Venn Diagram B: Answer eTool\(Desmos\)](#)

[1-3 Venn Diagram C: Answer eTool\(Desmos\)](#)

### 1-3 Venn Diagram A Answer

The screenshot displays the Desmos eTool interface for '1-3 Venn Diagram A: Answer eTool'. The tool features a Venn diagram with two overlapping circles. The left circle is labeled 'Has at least one pair of parallel sides' and the right circle is labeled 'Has at least two sides of equal length'. Various geometric shapes are placed within the circles and their intersection. A list of shapes is on the left: square, kite, rhombus, parallelogram, trapezoid, rectangle, quadrilateral, acute isosceles triangle, and equilateral triangle. Each shape has a colored dot (green, orange, or purple) for dragging.

## 1-3 Venn Diagram B Answer

1-3 Venn Diagram B: Student eTool

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

- square
- kite
- rhombus
- parallelogram
- trapezoid
- rectangle

## 1-3 Venn Diagram C Answer

1-3 Venn Diagram C: Answer eTool

Directions: 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

## INT2: 1.1.2 1-10 Student eTool (Desmos)

Click on the link below to access eTool.

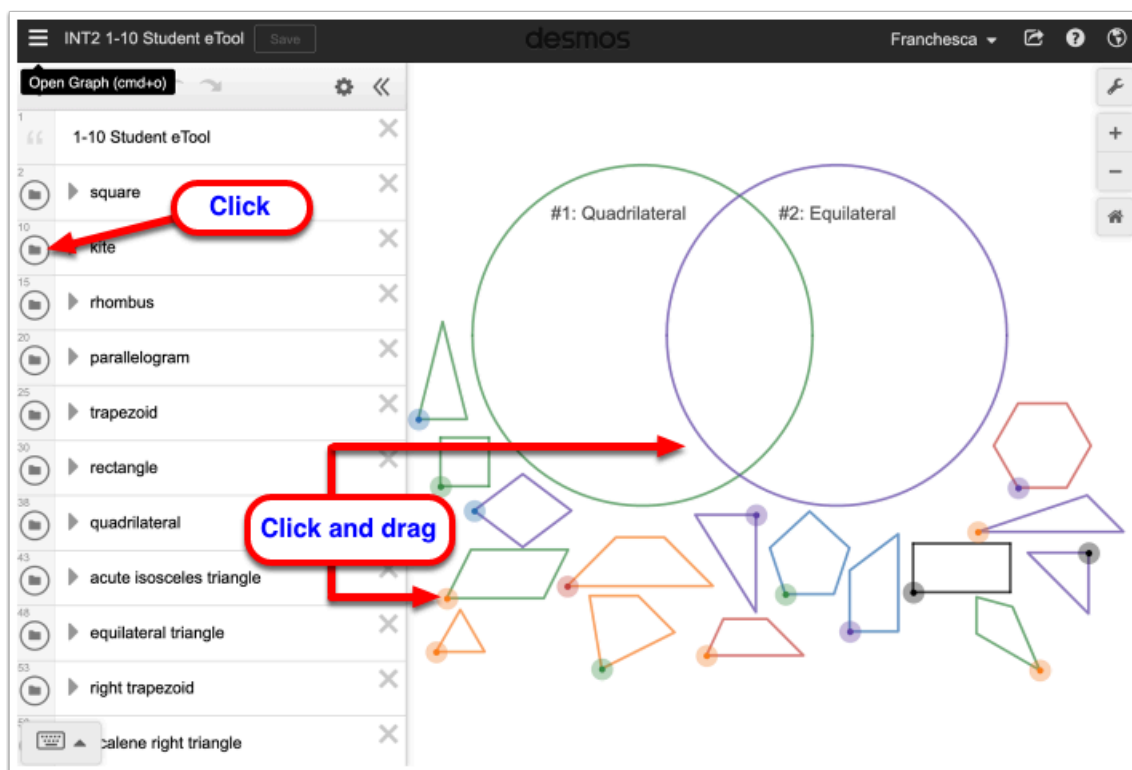
[1-10 Student eTool \(Desmos\)](#)

Use this eTool to learn 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.



## INT2 1.2.1: 1-52 Venn Diagrams Shape A, B & C eTools (Desmos)

Click on the links below.

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

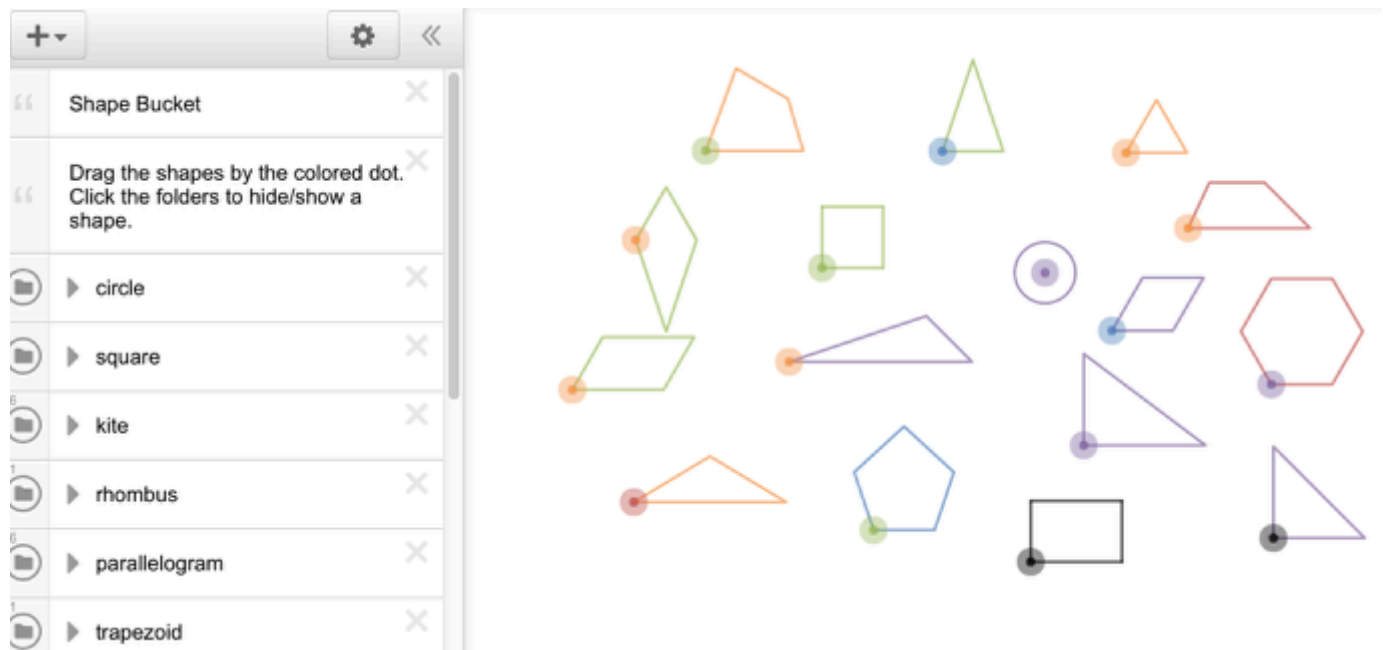
[Generic Venn Diagram\(Desmos\)](#)

[1-52 Venn Diagram A: Student eTool\(Desmos\)](#)

[1-52 Venn Diagram B: Student eTool\(Desmos\)](#)

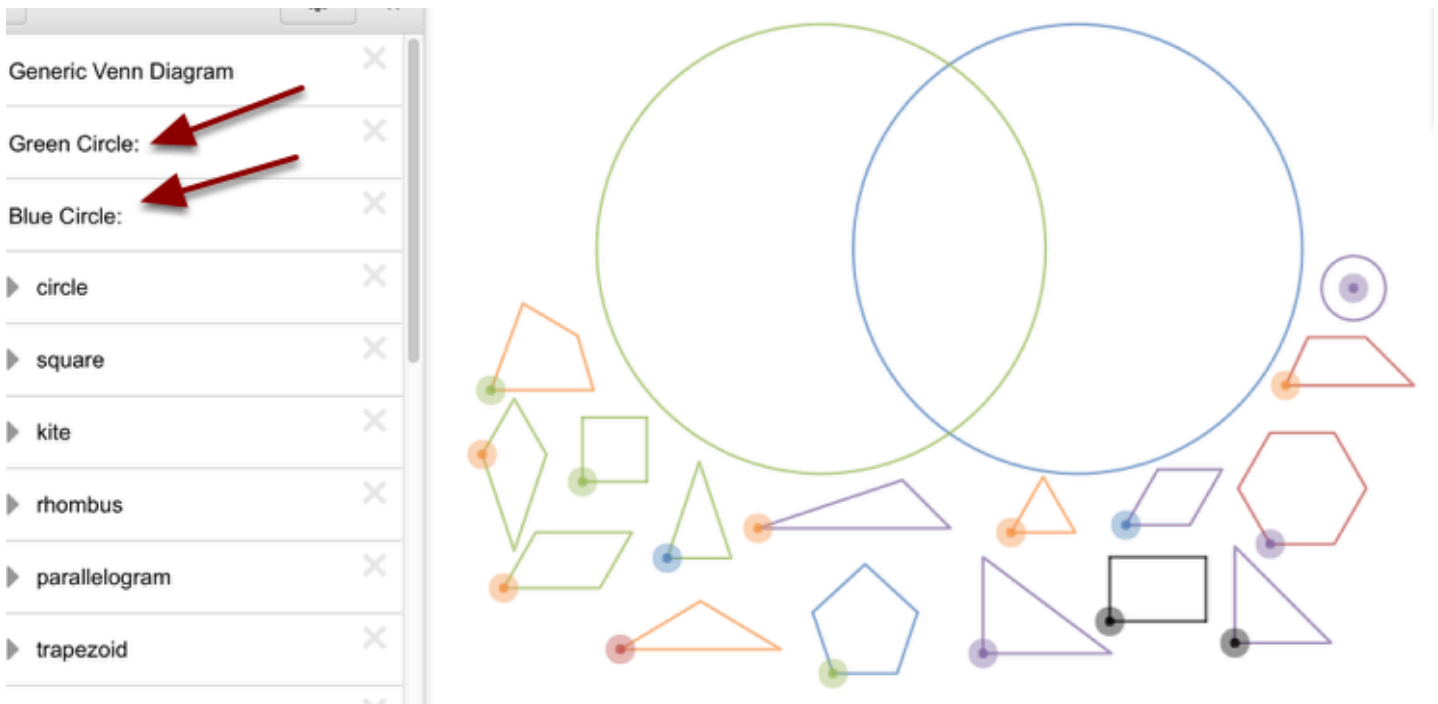
[1-52 Venn Diagram C: Student eTool\(Desmos\)](#)

### 1. Shape Bucket



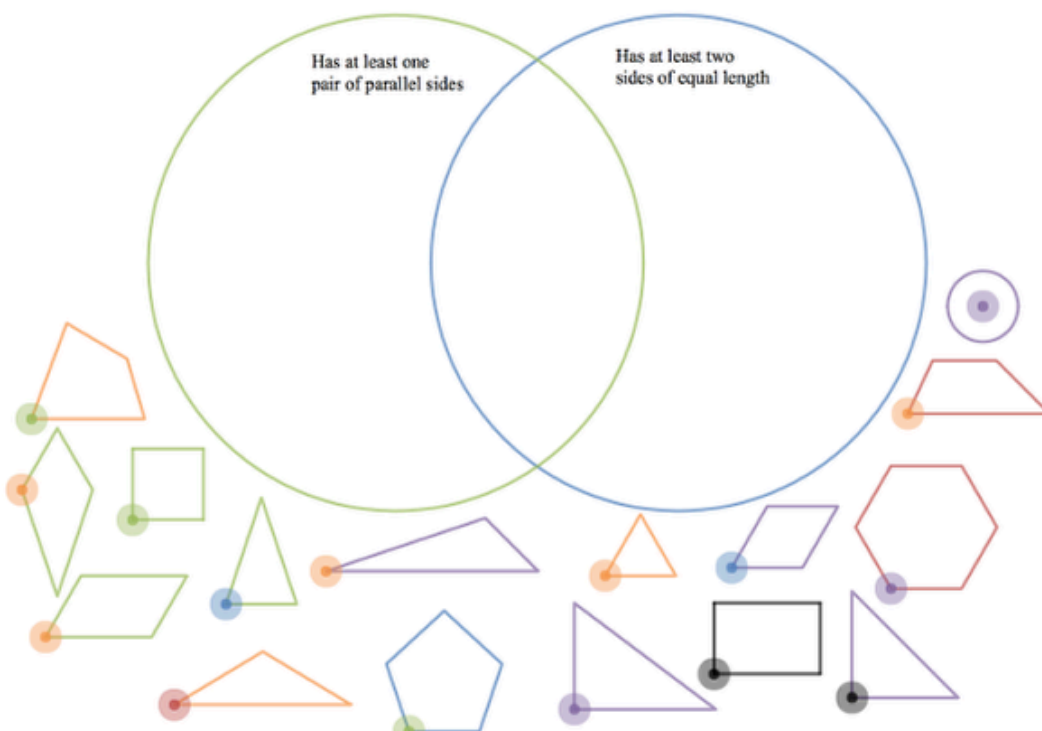
### 2. Generic Venn Diagram

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



### 3. 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.

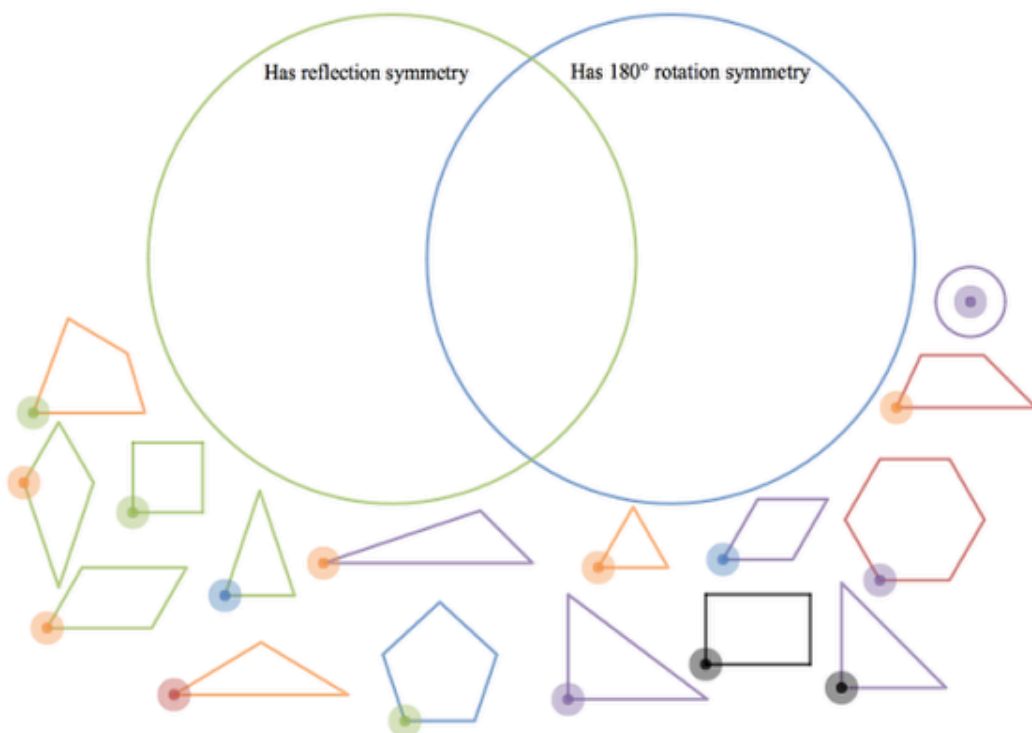


### 4. Venn Diagram B:

- Hide the tray for more room to move the shapes.

- 

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





## INT2 1.2.1: 1-52 Venn Diagrams Shape A, B & C Answer eTools

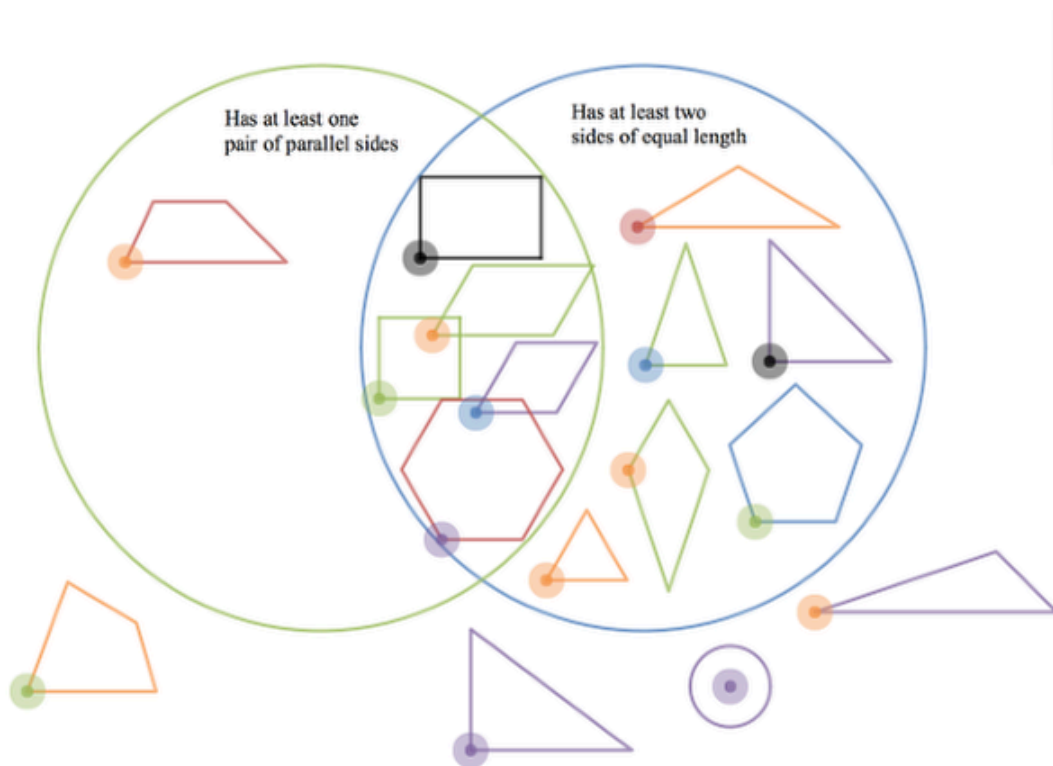
Click on the link below for the "Shape A, B & C Answer eTools"

[1-52 Venn Diagram A: Answer eTool](#)

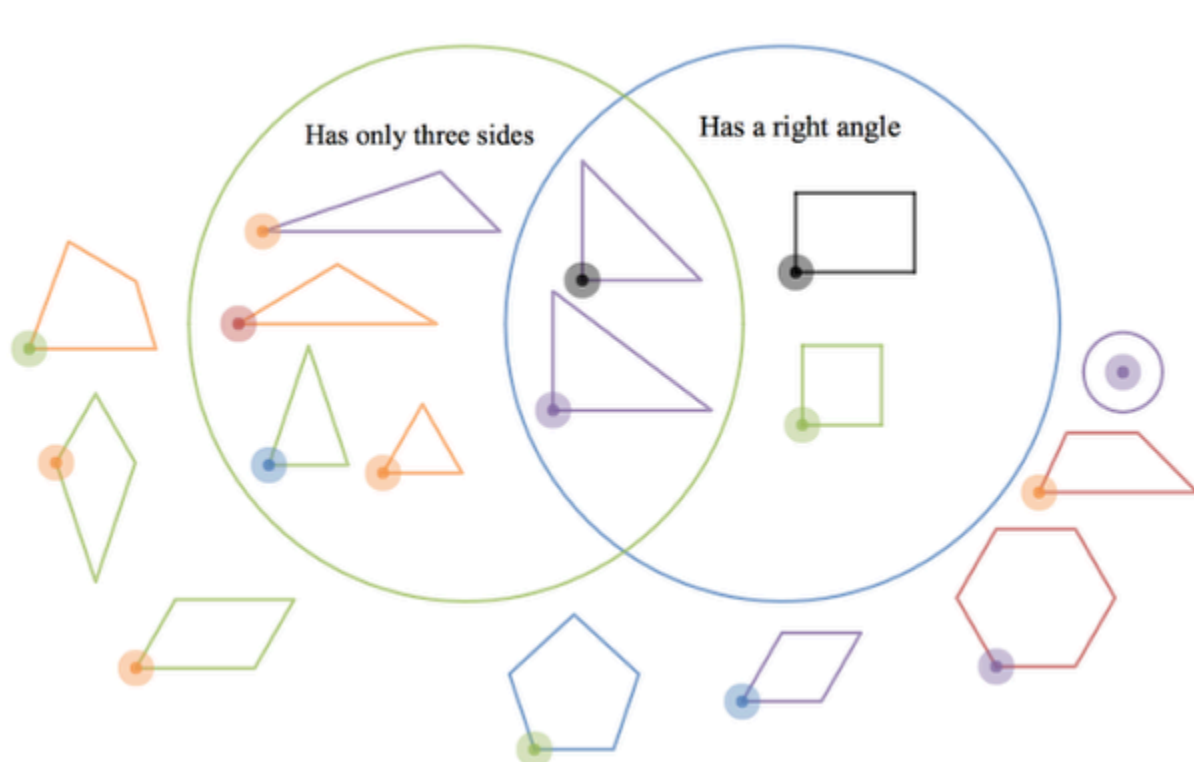
[1-52 Venn Diagram B: Answer eTool](#)

[1-52 Venn Diagram C: Answer eTool](#)

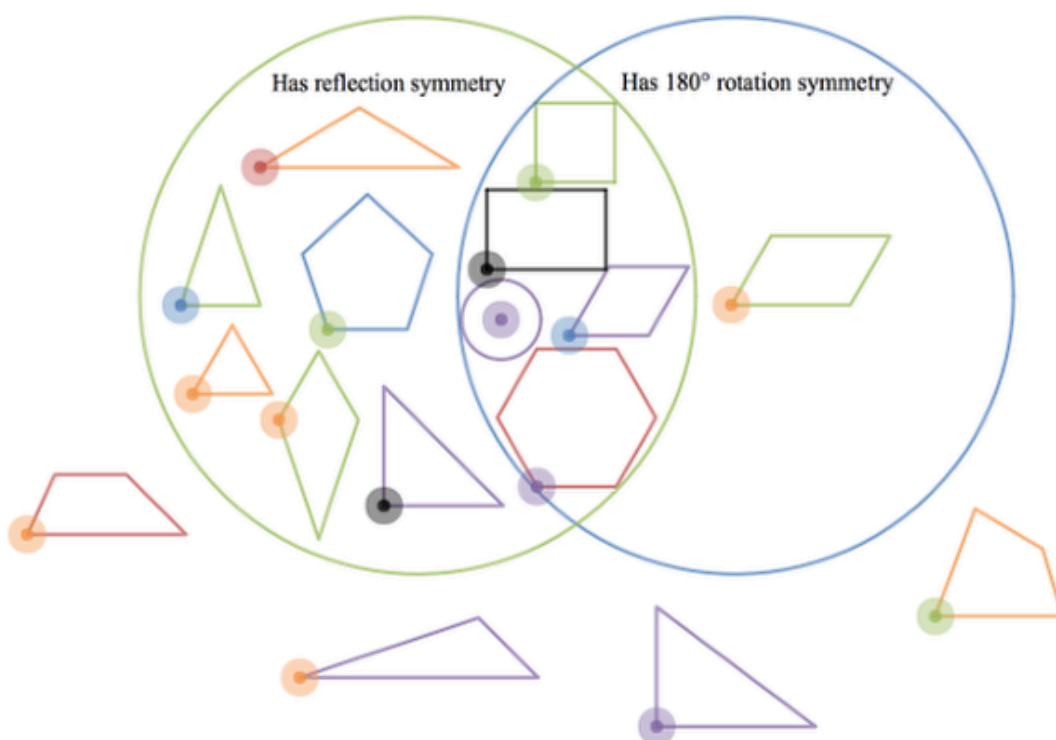
1. Venn Diagram Answer A: See below for the placement of shapes.



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



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



## INT2 1.3.2: Marcos' Tile Pattern (CPM)

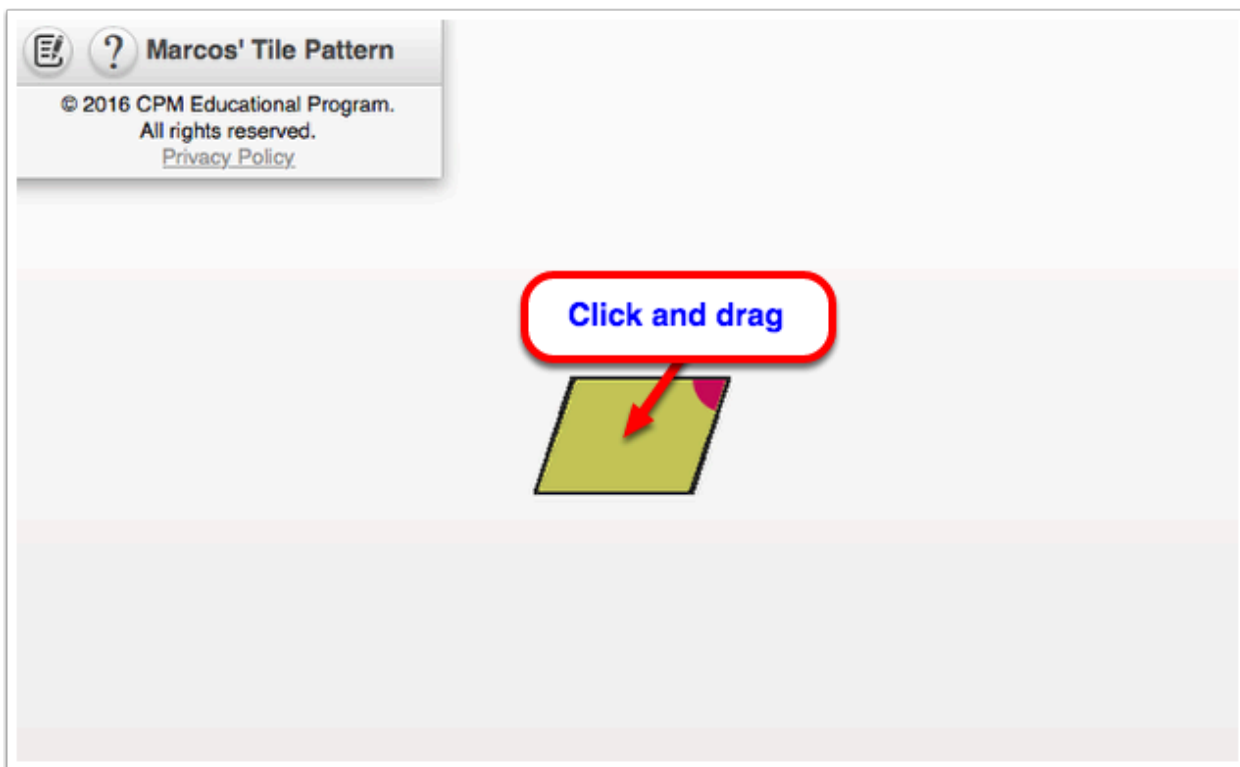
Tessellate the parallelograms by sliding them up, down, or sideways. Double click the yellow parallelogram to rotate.

**Click the link below.**

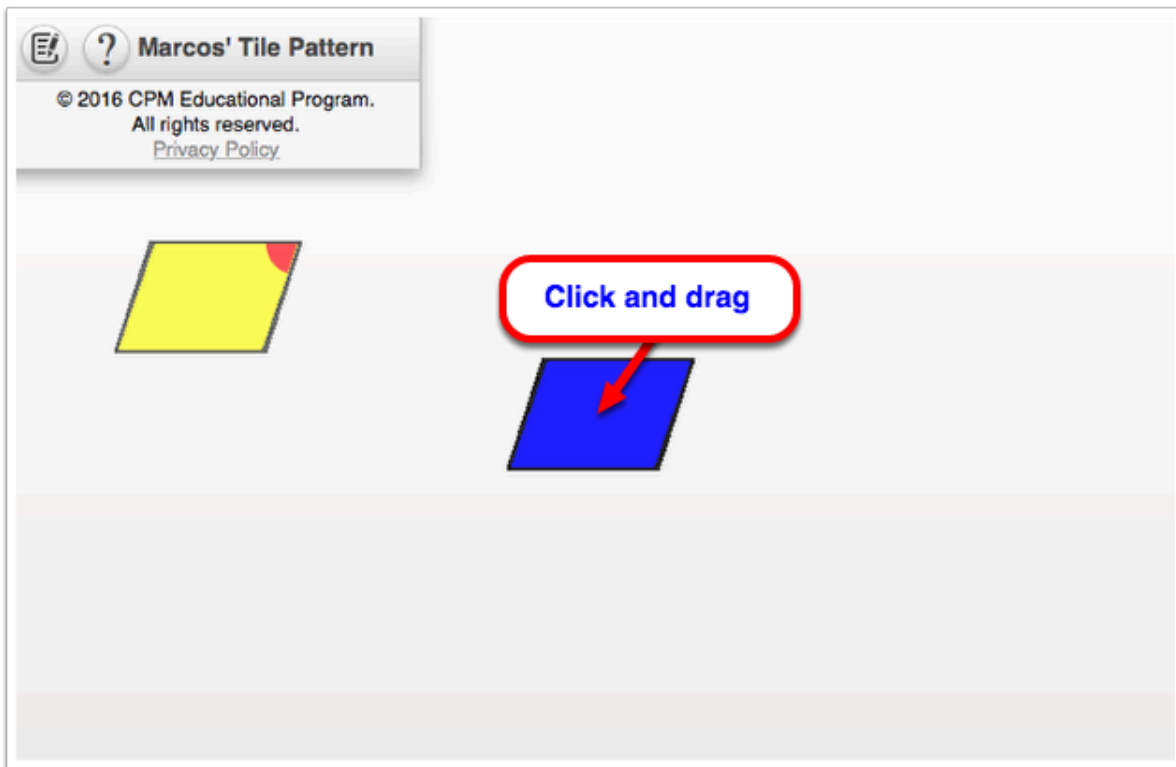
[Marcos' Tile Pattern \(CPM\)](#)

**This is an interactive eTool about Marcos's Tile Pattern.**

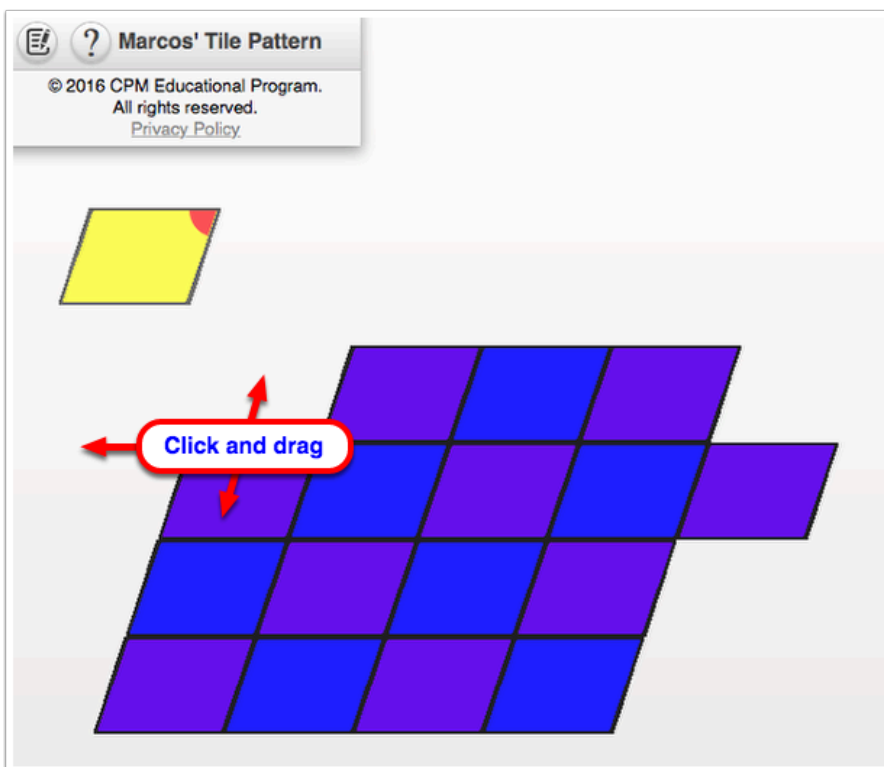
**1. Click on the yellow tile and drag it away from the blue tile.**



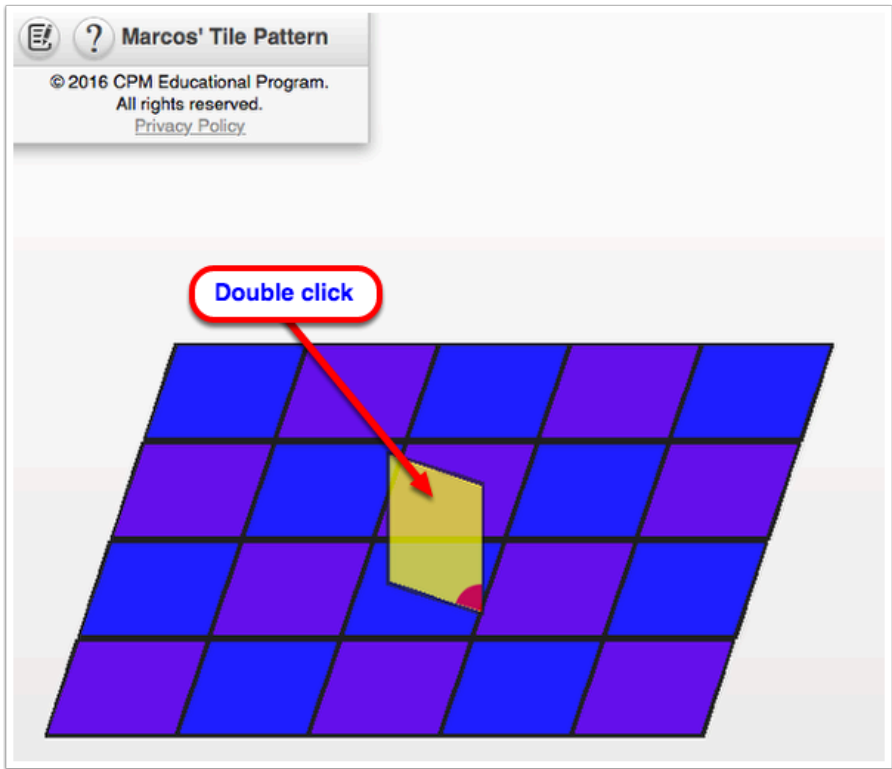
2. Click the blue tile and drag horizontally or vertically to tessellate.



3. Click and drag until the entire space is covered.



4. Double click on the yellow tile to rotate at 90 degree intervals.

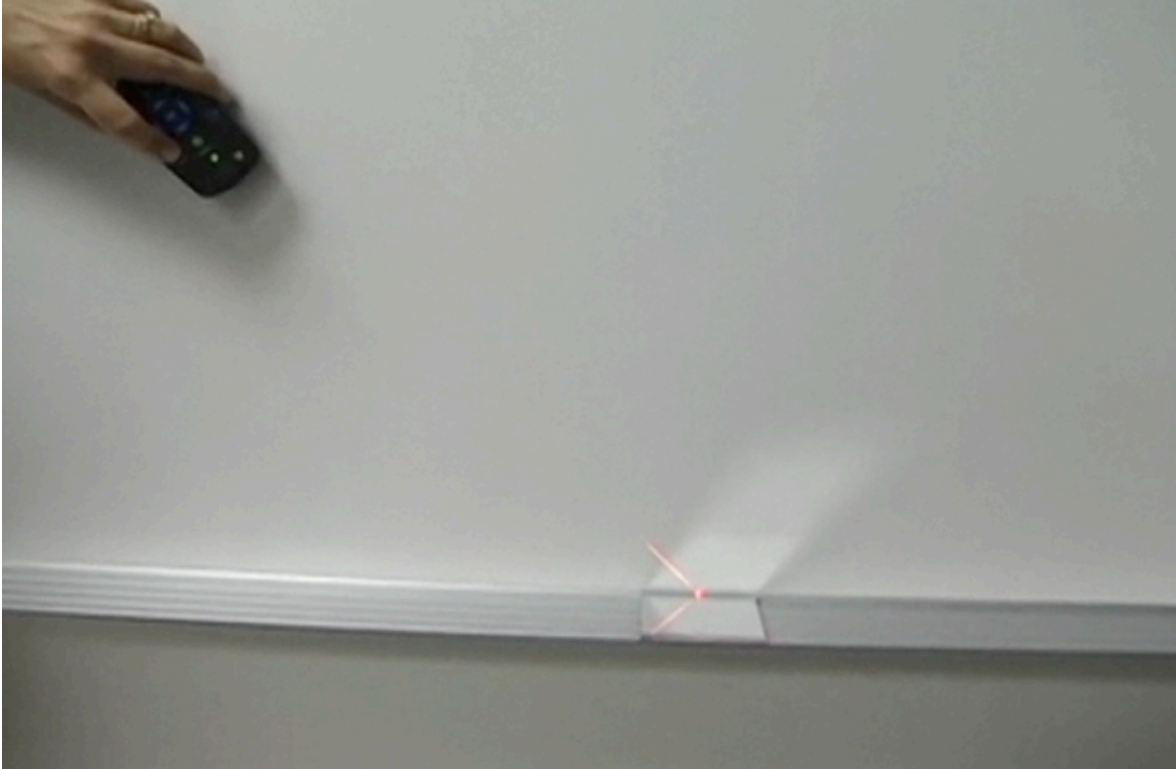


## INT2 1.3.2: Reflection of Light Teacher Demonstration

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

[Reflection of Light Demonstration](#) 

1. The laser is pointing at the mirror on the chalk board tray.



**2. The laser and chalk dust show the reflection of the laser beam.**



## INT2 1.3.4: Triangle Sum Theorem (Desmos)

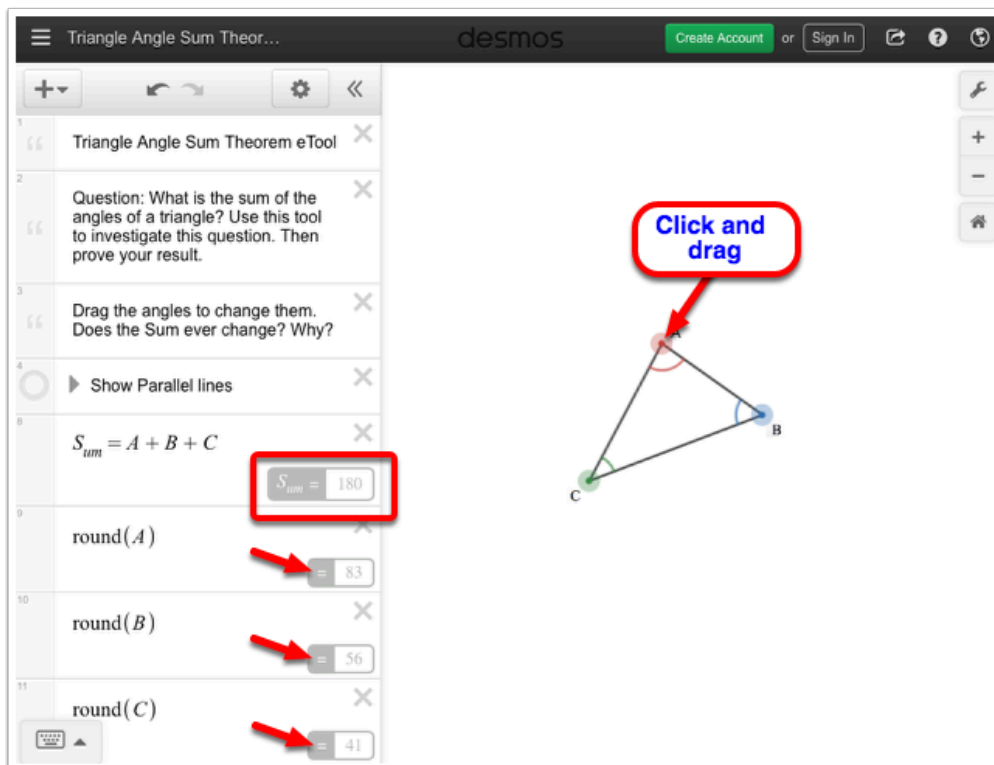
Click on the link below to access eTool.

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

### 1. Triangle Sum Theorem:

- Click the points and drag to change the angles.

NOTE: The Sum and values of round (A) to (C) change when the points are moved.



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

- Click the folder icon in Line for to show the Parallel Lines.



Triangle Angle Sum Theor...

desmos

Create Account or Sign In

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.

Click

Show Parallel lines

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

$S_{sum} = 180$

$round(A)$

$= 59$

$round(B)$

$= 60$

$round(C)$

$= 62$

Parallel Lines

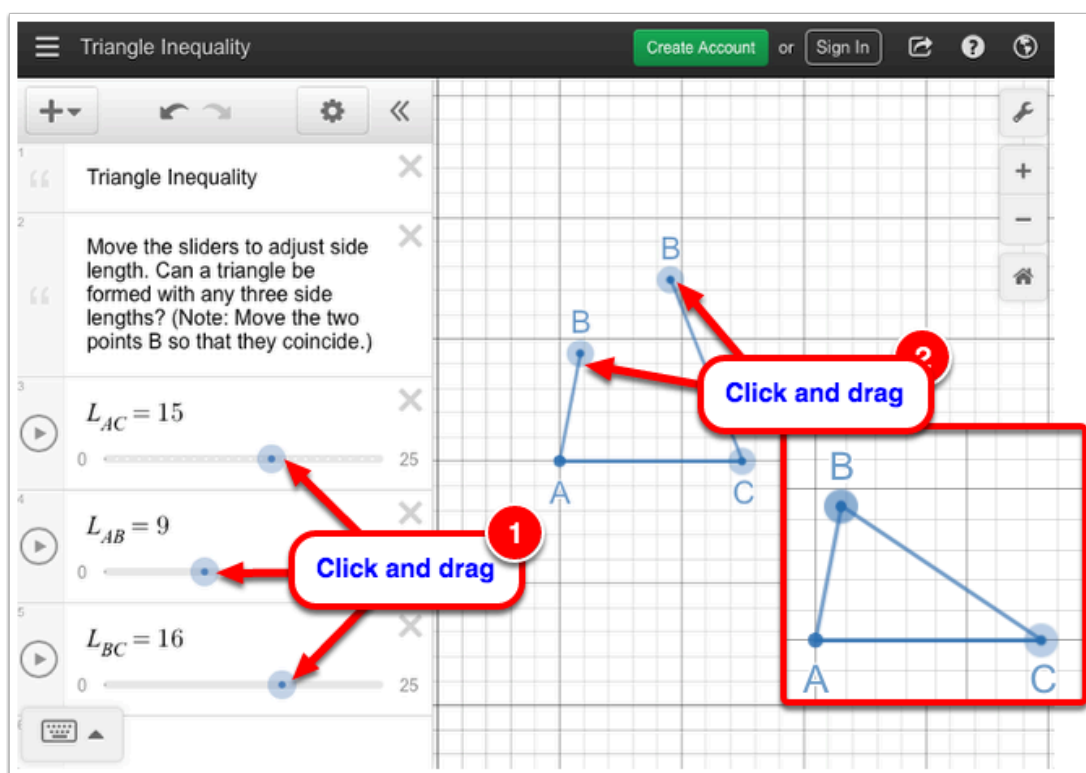
## INT2 1.3.4: Triangle Inequality eTool (Desmos)

Click on the link below to access eTool.

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

Use this eTool to determine the length of the third side of a triangle if the length of the two other sides are given.

- Adjust the the side lengths of the triangles.
  - Click the blue points (horizontally) on the sliders and drag it to the desired length.
- Move the two points B to coincide.
  - Click the points B one at a time and drag it to where they both coincide.






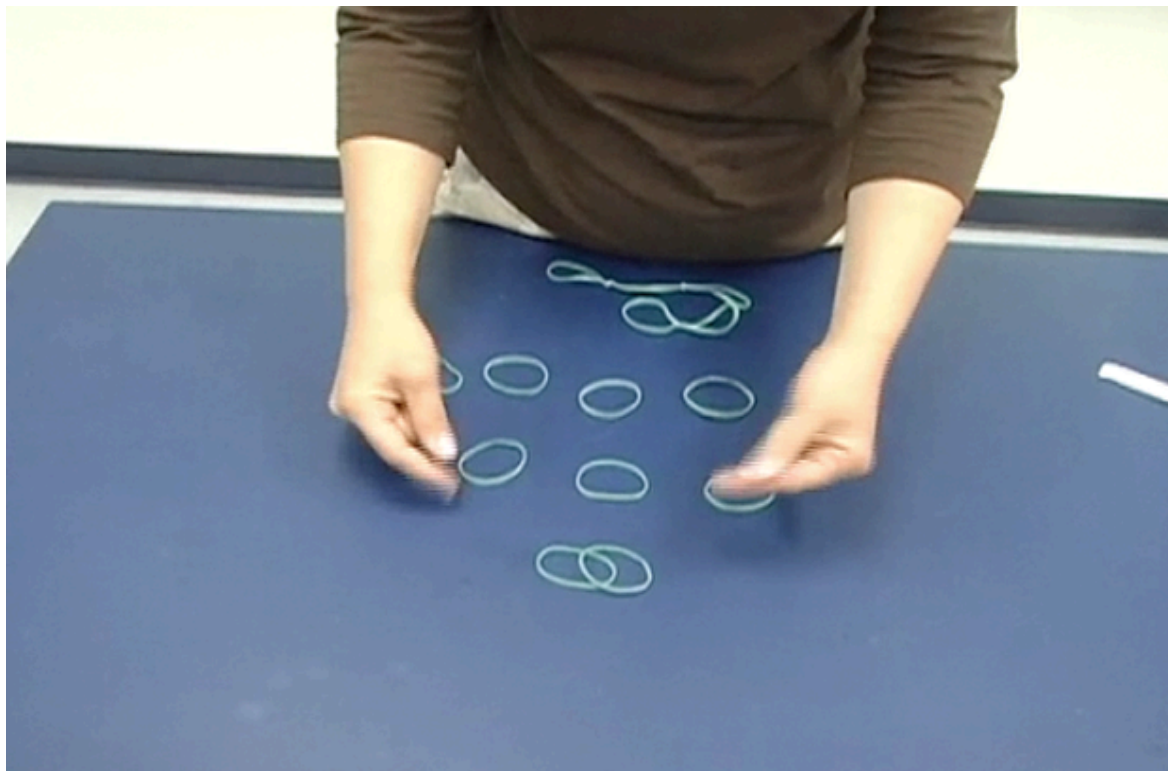
## Chapter 2

## INT2 2.1.1: Pantograph Teacher Video

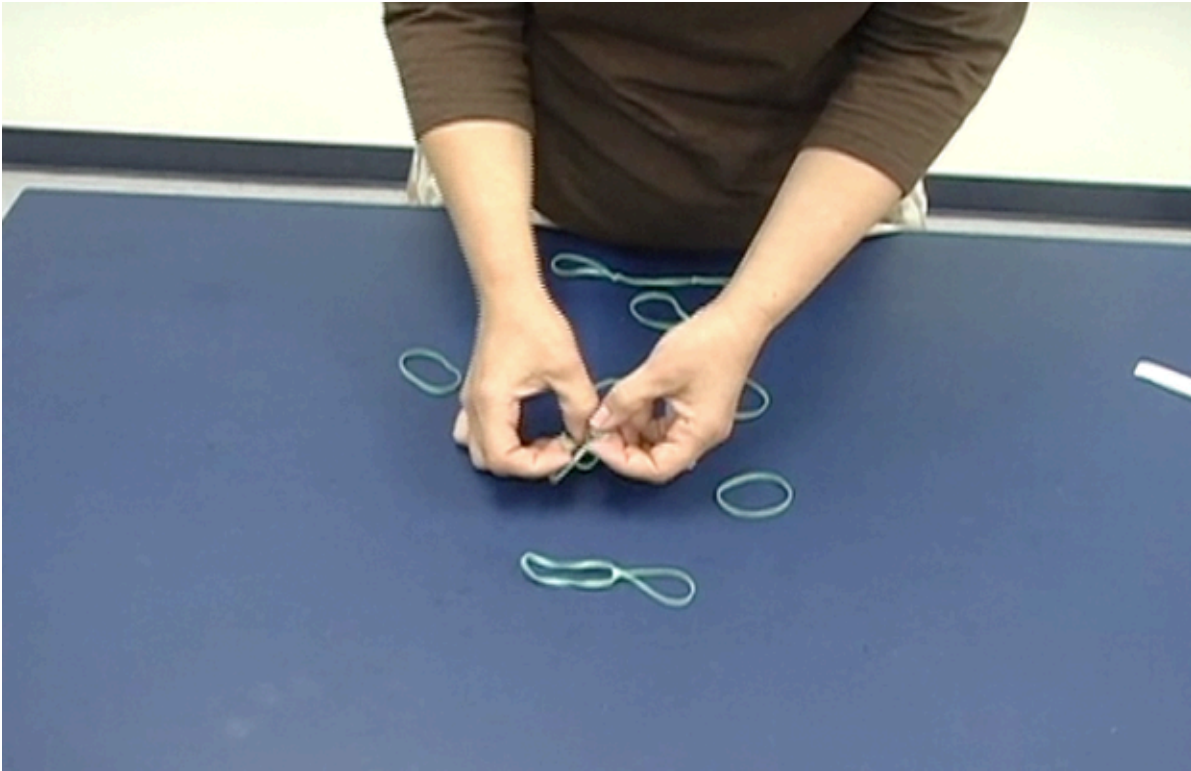
Click on the link below.

[Pantograph Teacher Video](#) 

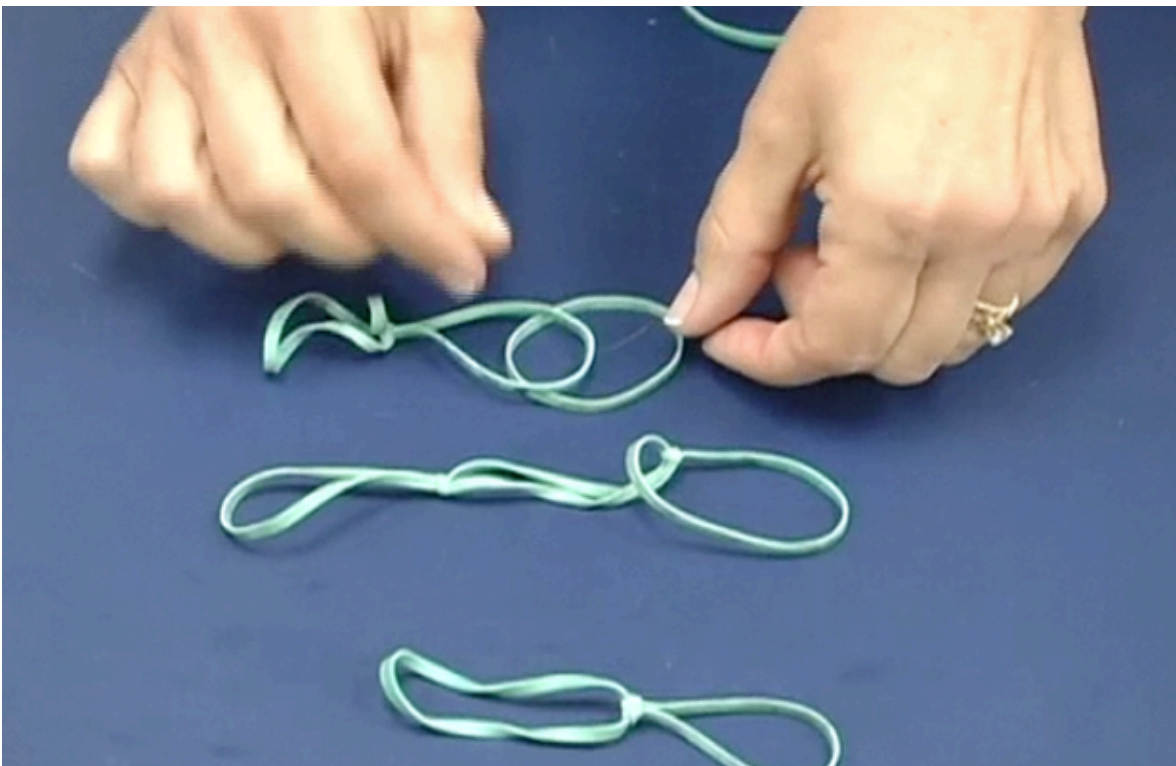
### 1. Prepare the rubber bands:



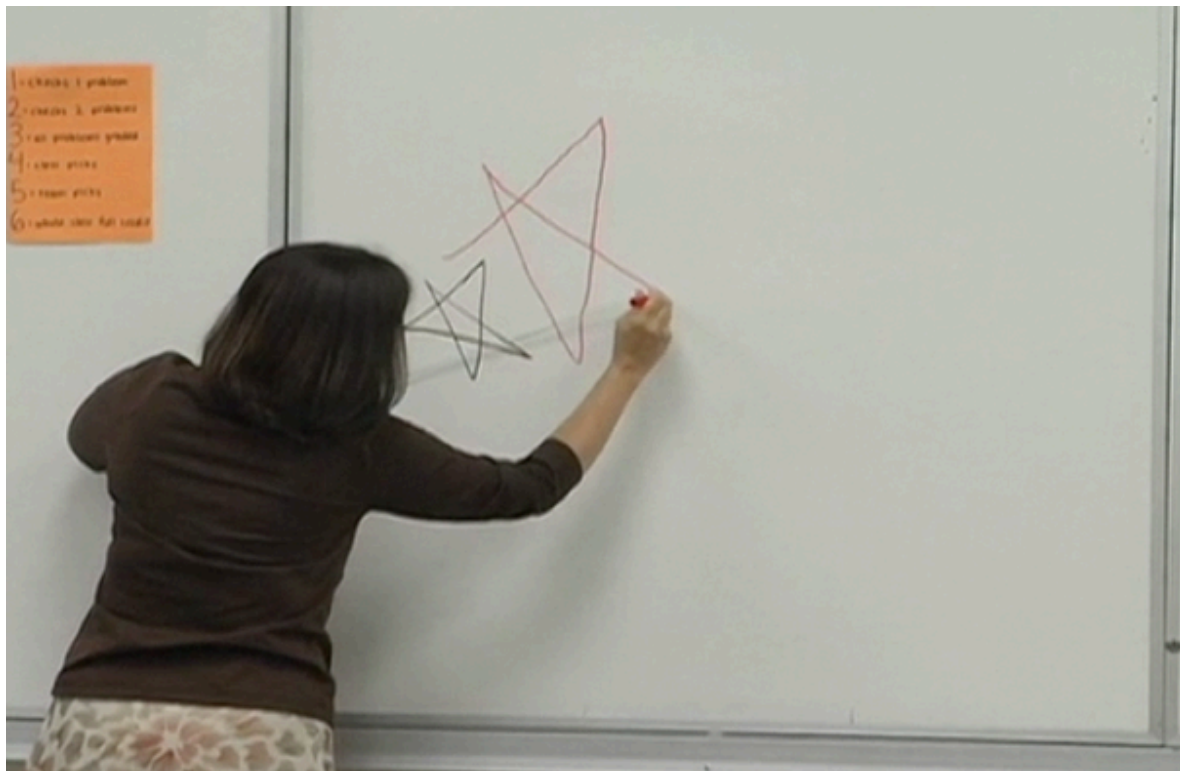
## 2. Knot two rubber bands:



## 3. Several rubber bands strung together:



#### 4. White board demonstration:



#### 5. Student demonstration:





## INT2 2.1.2: Similarity Stretching Word Document (CPM)

This document will download to your computer.

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

[Similarity Stretching Word Document](#)

### STRETCHING EXERCISE



**Original**



## INT2 2.2.1: 2-33b, 2-33c, 2-35a, 2-35b#1,& 2-35b#2 Student eTools

Click on the links below.

[2-33b Student eTool \(CPM\)](#)

[2-33c Student eTool \(CPM\)](#)

[2-35a Student eTool \(CPM\)](#)

[2-35b #1 Student eTool \(CPM\)](#)

[2-35b #2 Student eTool \(CPM\)](#)

### 1. INT2 2-33b:

INT2 2-33b

▼ Notes

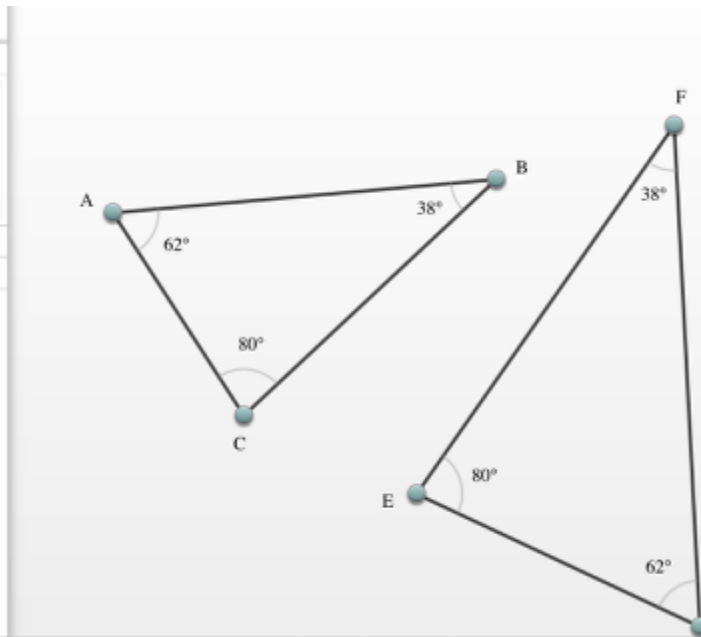
INT2 2-33b

b) Can you make another triangle, with the same angles, that is not similar to your original triangle? Can you create any two triangles with the same three angle measures that are not similar?

Tip: Test your ideas with transformations!

► Show/Hide Labels

► Side Lengths and Ratios





## 2. INT2 2-33c:

**CPM Similarity**

INT2 2-33c

▼ Notes

INT2 2-33c

c) Describe a sequence of transformations to show that two triangles that have the same three angles are similar.

Transformations:  
Drag triangles from the center to translate.  
Click on the center of a triangle to access the

► Show/Hide Labels

► Side Lengths and Ratios

## 3. INT2 2-35a:

**CPM Similarity**

2-35a Student eTool

▼ Notes

INT2 2-35a

Is it possible to make a second triangle with two sides proportional to 4 cm and 5 cm, and an included angle of  $20^\circ$  that is not similar?

Note: A possible second triangle with sides 8 cm and 10 cm, and an included angle of  $20^\circ$  is given for you to test!

► Show/Hide Labels

► Side Lengths and Ratios

## 4. INT2 2-35b #1:

### 2-35b #1 Student eTool

#### ▼ Notes

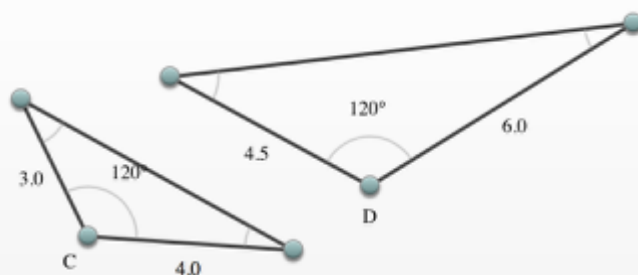
#### INT2 2-35b #1

Is it possible to make a second triangle with two sides proportional to 3 cm and 4 cm, and an included angle of  $120^\circ$  that is not similar?

Note: A possible second triangle with sides 6 cm and 8 cm, and an included angle of  $120^\circ$  is given for you to test!

► Show/Hide Labels

► Side Lengths and Ratios



## 5. INT2 2-35b #2:

### CPM Similarity

### 2-35b #2 Student eTool

#### ▼ Notes

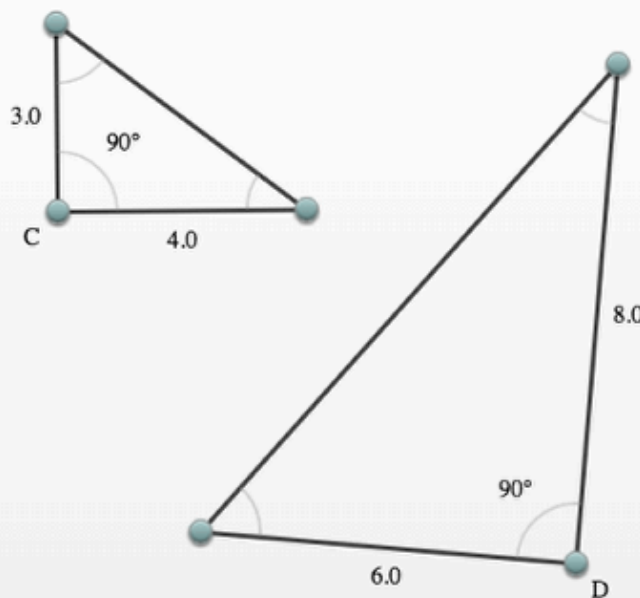
#### INT2 2-35b #2

Is it possible to make a second triangle with two sides proportional to 3 cm and 4 cm, and an included angle of  $90^\circ$  that is not similar?

Note: A possible second triangle with sides 6 cm and 8 cm, and an included angle of  $90^\circ$  is given for you to test!

► Show/Hide Labels

► Side Lengths and Ratios



## INT2 2.2.2: 2-46b #1, 2-46b #2 eTool, & 2-47 Student eTools

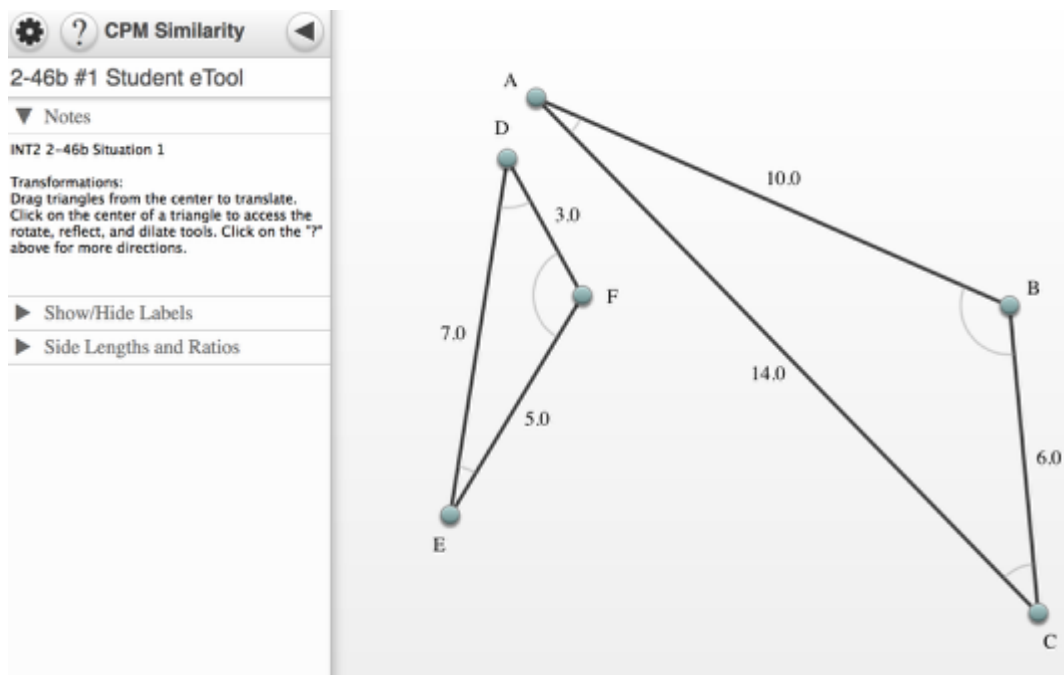
Click on the links below.

[2-46b #1 eTool \(CPM\)](#)

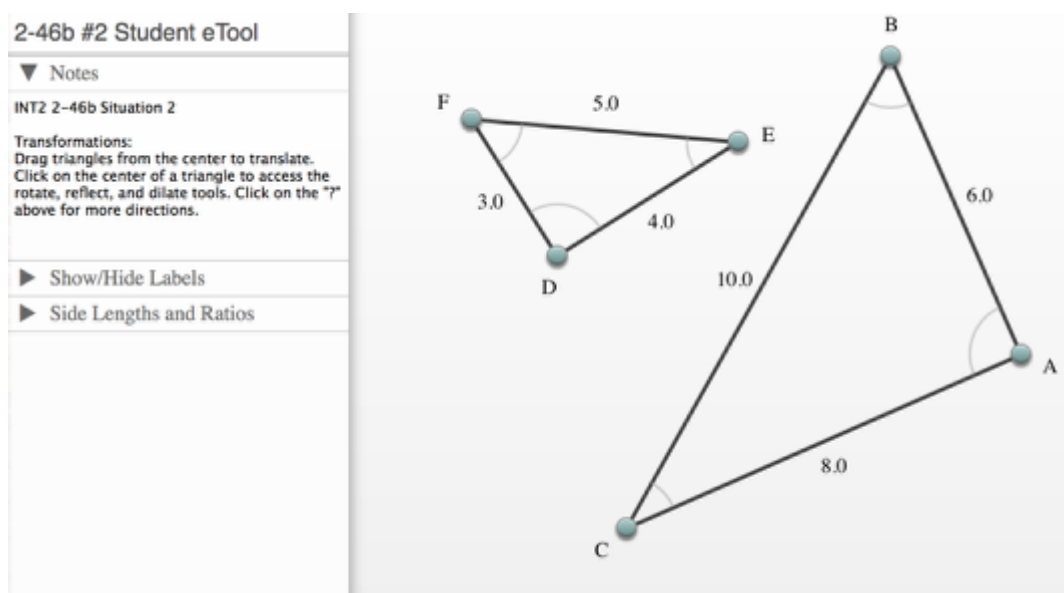
[2-46b #2 eTool \(CPM\)](#)

[2-47 Student eTool \(CPM\)](#)

### 1. INT2 2-46b#1



### 2. INT2 2-46b #2



### 3. INT 2 2-47:



#### 2-47 Student eTool

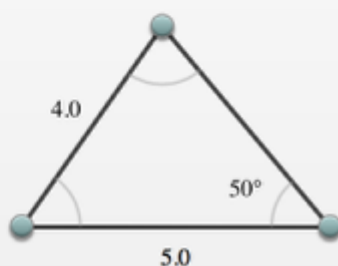
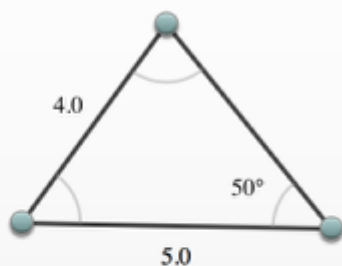
##### Notes

INT2 2-47

Transformations:  
Drag triangles from the center to translate.  
Click on the center of a triangle to access the rotate, reflect, and dilate tools. Click on the "?" above for more directions.

► Show/Hide Labels

► Side Lengths and Ratios



## INT2 2.2.2: 2-47 Answer eTool

Click on the link below.

[2-47 Answer eTool \(CPM\)](#)

### 2-47 Answer eTool

#### ▼ Notes

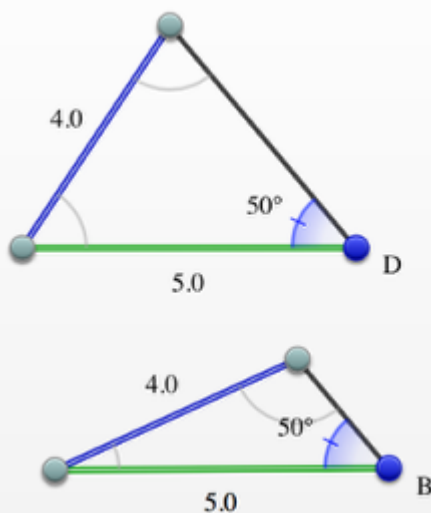
#### INT2 2-47 Answer

The smaller triangle has the sides 4 and 5 with an angle of 49 which is not similar to the larger triangle.

Transformations:  
Drag triangles from the center to translate.  
Click on the center of a triangle to access


► Show/Hide Labels

► Side Lengths and Ratios



## INT2 2.2.4: Squawk Like a Chicken Teacher Materials Setup

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

[Squawk Like a Chicken Materials Setup](#) 

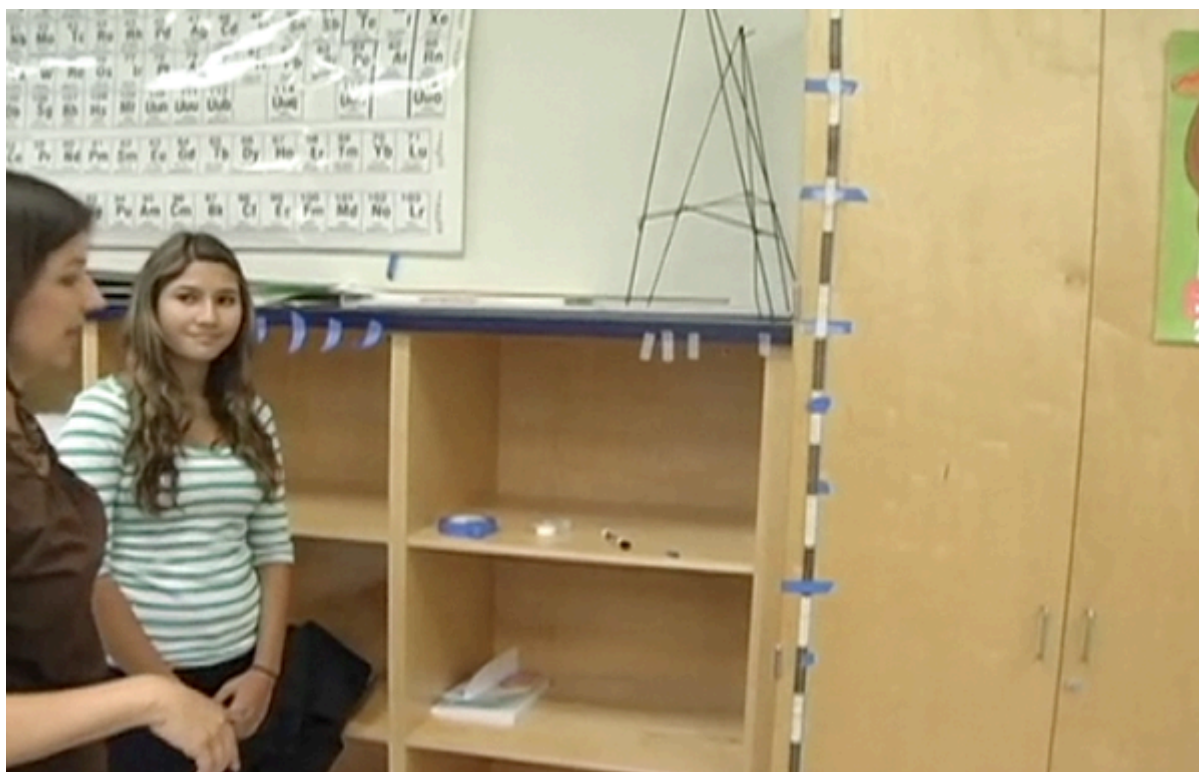
1.



2.



3.

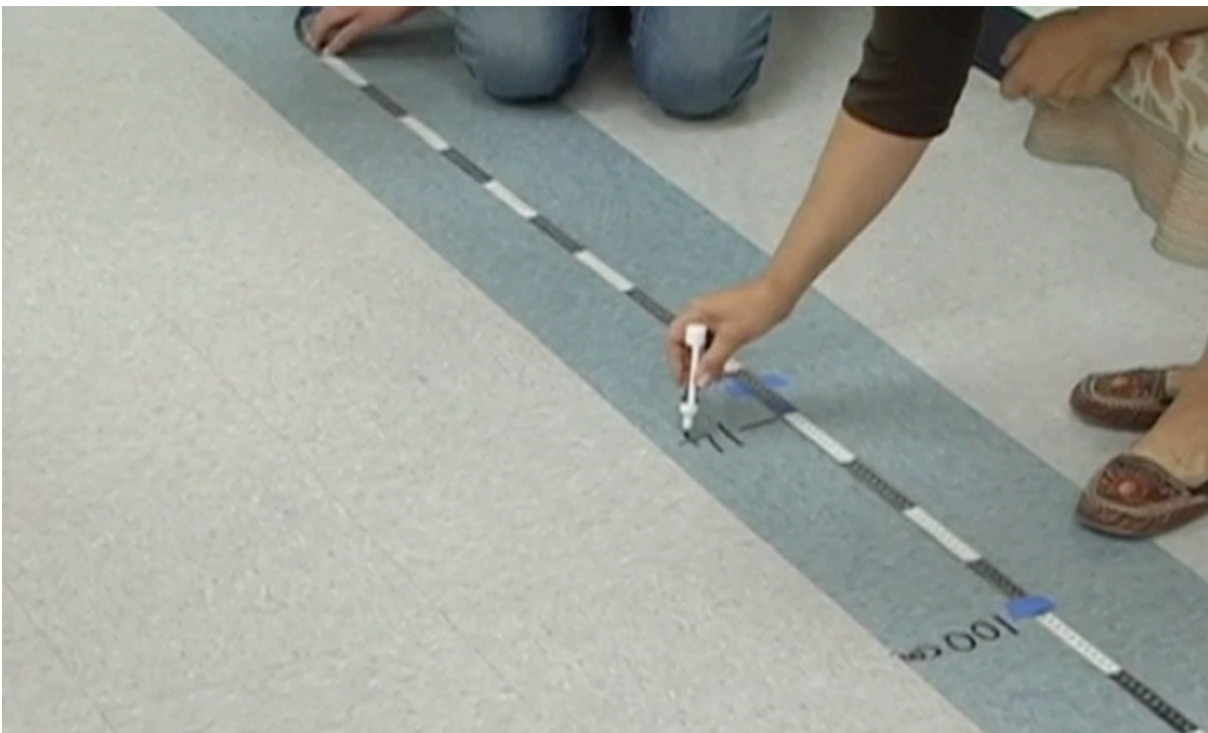




4.



5.





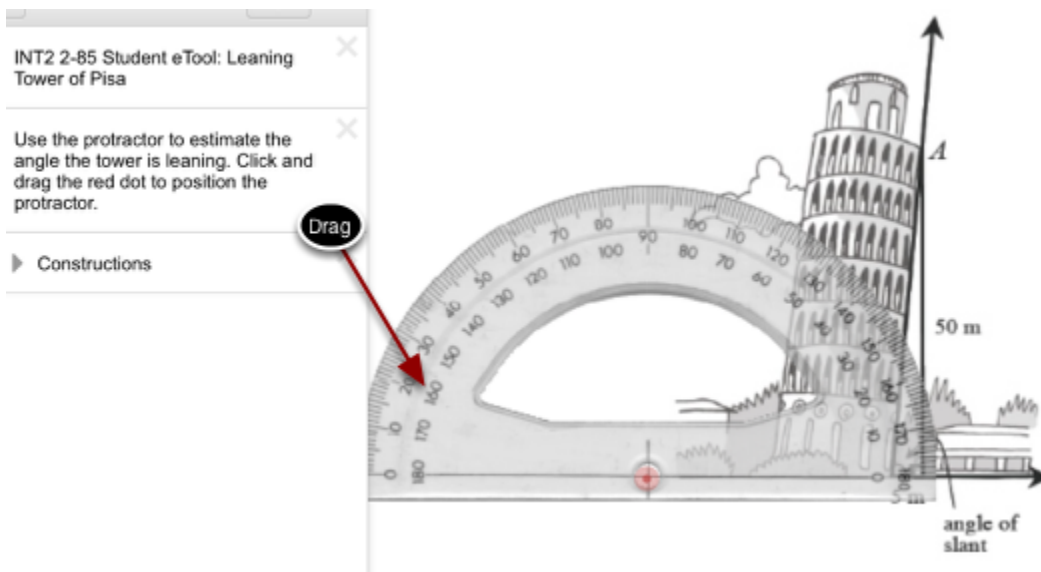
## INT2 2.3.1: 2-85 Student eTool & Leaning Tower of Pisa Video

Click on the link below for the "Leaning Tower of Pisa and Information Video"

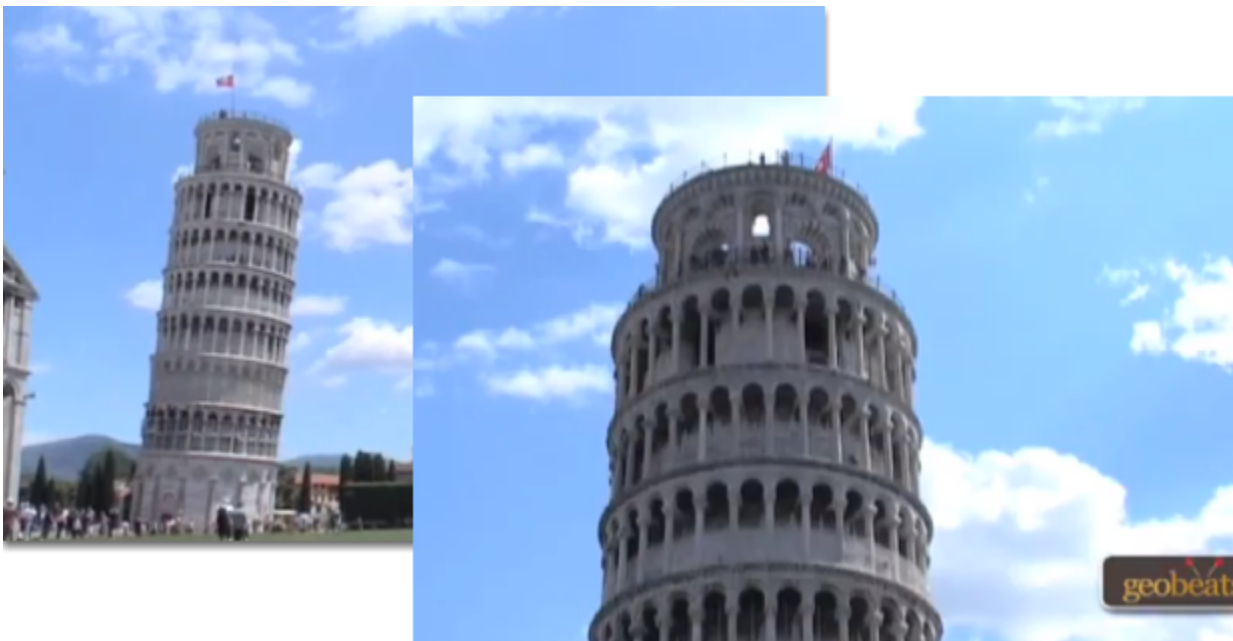
[2-85 Student eTool \(Desmos\)](#)

[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.



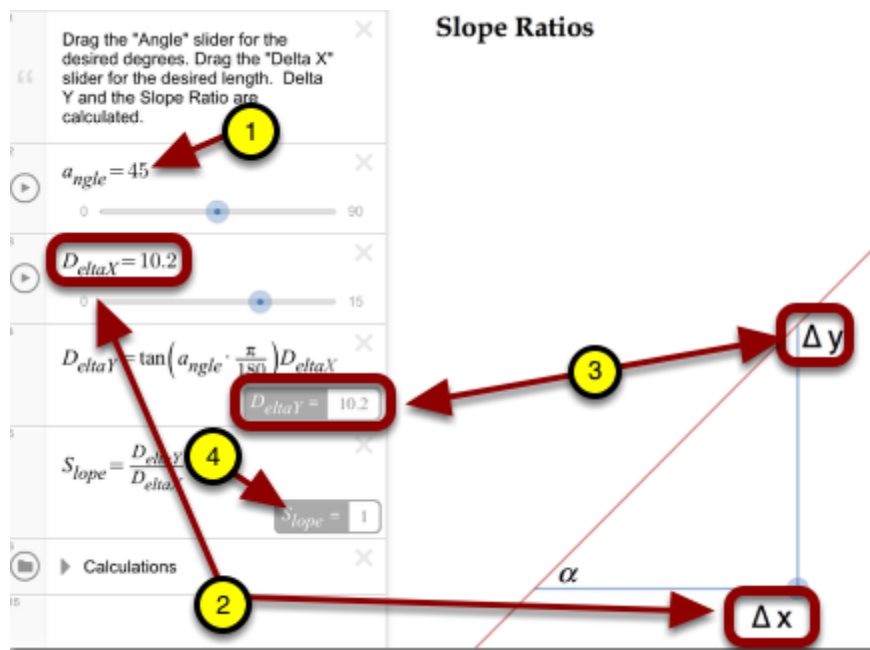
## INT2 2.3.3: Slope Ratios

Click on the link below for the "Slope Ratios" eTool.

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

### 1. Use the sliders to:

- Select an angle.
- Change the length of the adjacent side, delta x.
- The opposite side length, delta y, and the slope are calculated below.




## INT2 2.3.5: Clinometer Teacher Videos

Click on the links below.

[Clinometer Preparation](#) 

[Clinometer Lesson](#) 

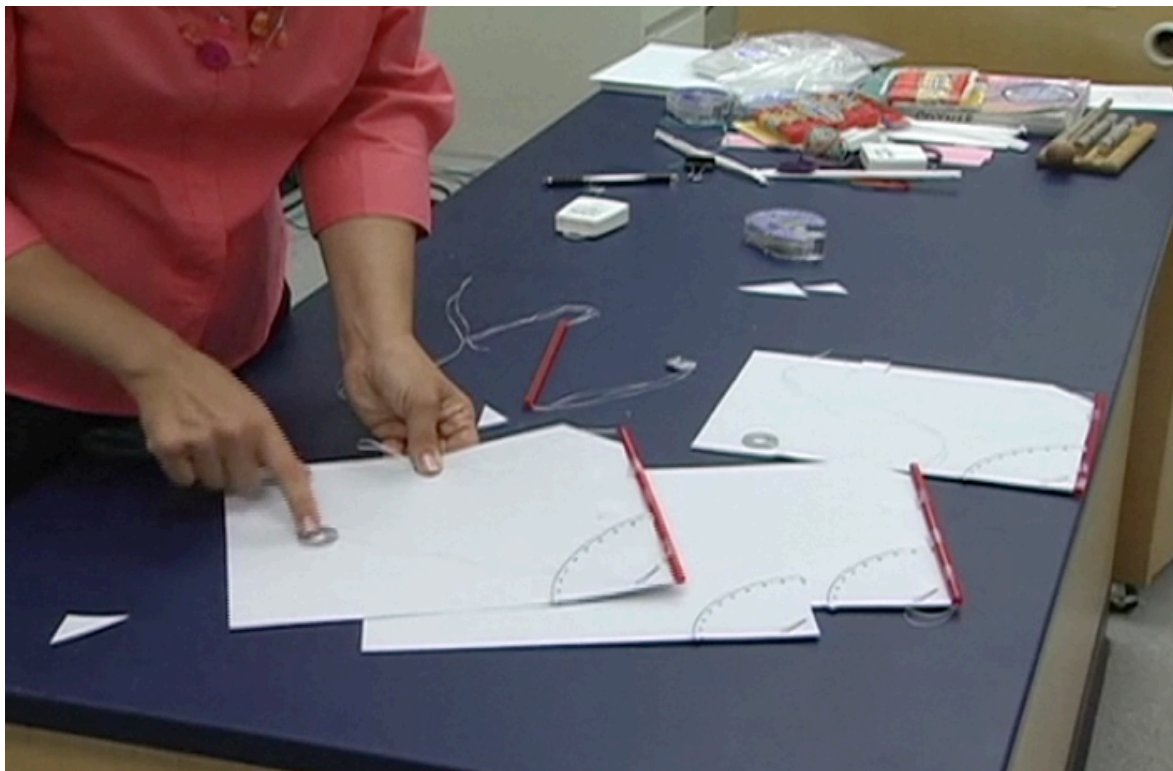
[Study Team Work](#) 

[Closure Lesson](#) 

### 1. Assembly:



## 2. More assembly:



## 3. Introduction:



### 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. Collecting data:



#### 5. Team discussion:



## 6. Closure:



## INT2 2.3.5: History of the Statue of Liberty

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

[History of the Statue of Liberty](#) 

1.



2.



3.



4.







## Chapter 3

## INT2 3.1.2: 3-12 Student eTool (CPM)

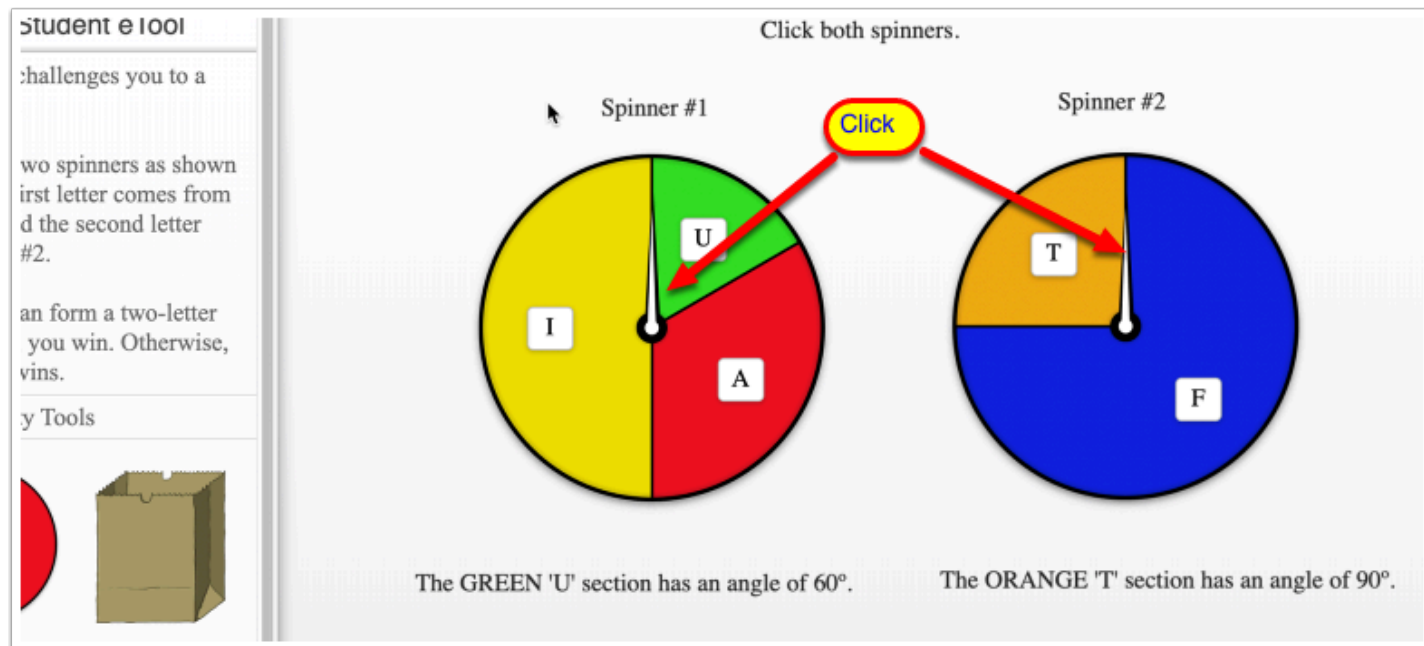
Click on the link below to access eTool.

[3-12 Student eTool \(CPM\)](#)

Use this eTool to play the spinner game.

- Click each spinner to select random letter.

Note: Spinner #1 is for the first letter and Spinner #2 is for the second letter.





## INT2 3.1.3: 3-24 Student eTool (CPM)

Click on the link below to access eTool.

[3-24 Student eTool \(CPM\)](#)

### Pick a Tile Game

 CPM Probability

INT2 3-24 Student eTool

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.

Choose one BLUE SQUARE and one RED CIRCLE to win.

It costs \$2 to play.

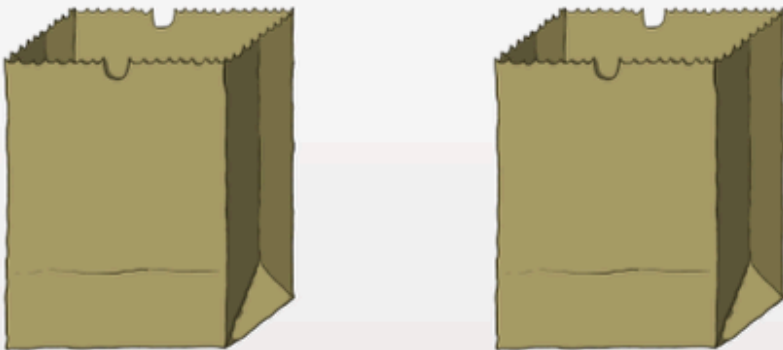
► Probability Tools

► General Tools

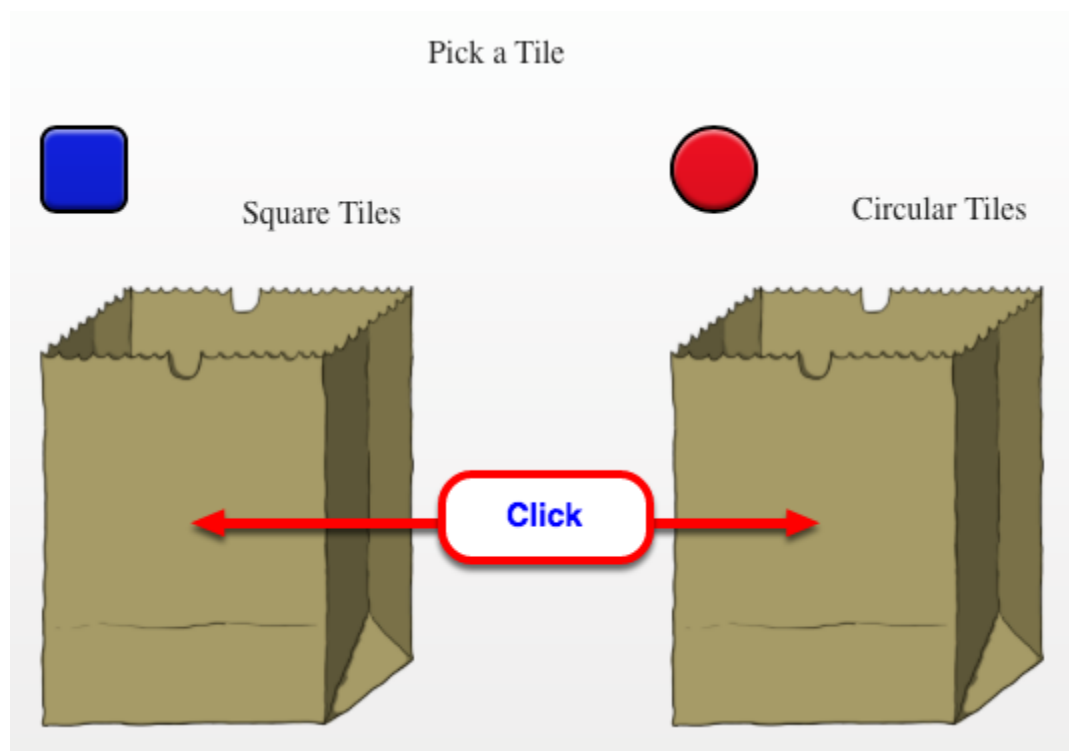
Pick a Tile

Square Tiles

Circular Tiles



Click each bag to pick a square tile and a circle tile randomly.



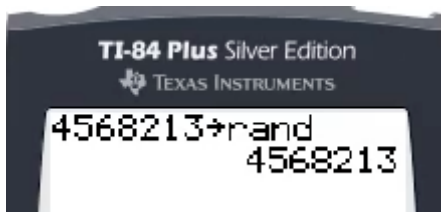
## TI-84: Generating Random Numbers



TI-84 Video: Generating Random Numbers [\(YouTube\)](#) [\(Vimeo\)](#)

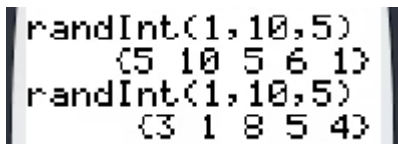
**1. Be sure you "seed" your calculator. This will ensure that the same random numbers do not appear on everyone's calculator. Enter a random number in the calculator such as the student ID number or telephone number. Then press [STO->] [MATH] "PRB" "1:rand".**

Note: This step only needs to be completed once unless you reset the calculator! And you will not get the same numbers!



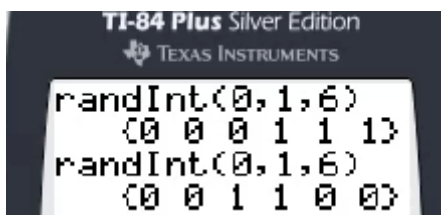
**2. Specify the minimum and maximum integers possible, and how many random integers to generate. For example, [MATH] "PRB" "5:randInt(1,10,5)" [ENTER] generates 5 numbers between 1 and 10.**

Note: Hit [Enter] to get 5 more random numbers between 1 and 10. Of course, you will not likely get the same random numbers.



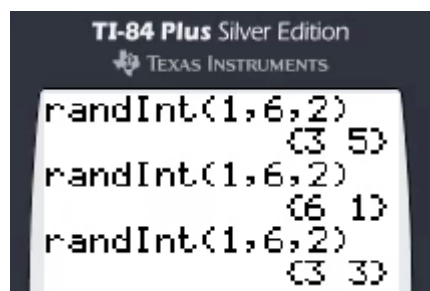
**3. To simulate flipping a coin, let '0' be heads and '1' be tails. For example, [MATH] "PRB" "5:randInt(0,1,6)" [ENTER] generates 6 numbers between 0 and 1. All of the '0's are Heads. All of the '1's are Tails!**

The image below shows 3 heads and 3 tails. Then it shows 4 heads and 2 tails.

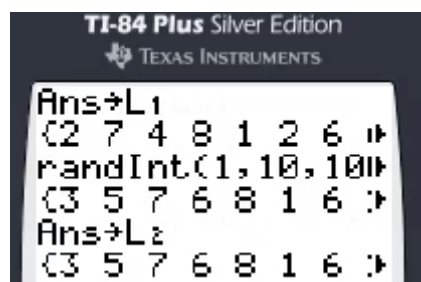


**4. To simulate rolling dice, go to [MATH] "PRB" "5:randInt(1,6,2)" [ENTER] generates 2 numbers between 1 and 6.**

The image below shows rolling a die three times and the results.



**5. You could also generate a lot of numbers and store them in a list. For example, [MATH] "PRB" "5:randInt(1,10,100)" [ENTER] generates 100 numbers between 1 and 10. Then [STO->] [2nd] 'L1' will place the numbers in List 1.**



## INT2 3-36 & 3-43 Student eTools

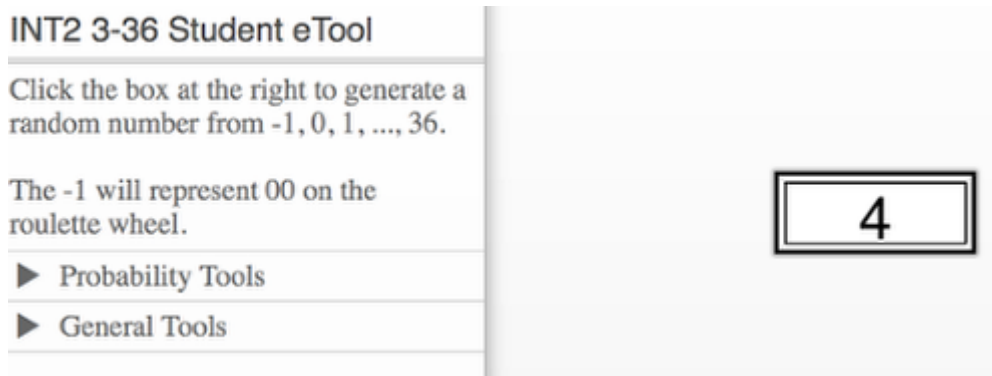
Click on the links below.

[3-36 Student eTool \(CPM\)](#)

[3-43 Student eTool \(CPM\)](#)

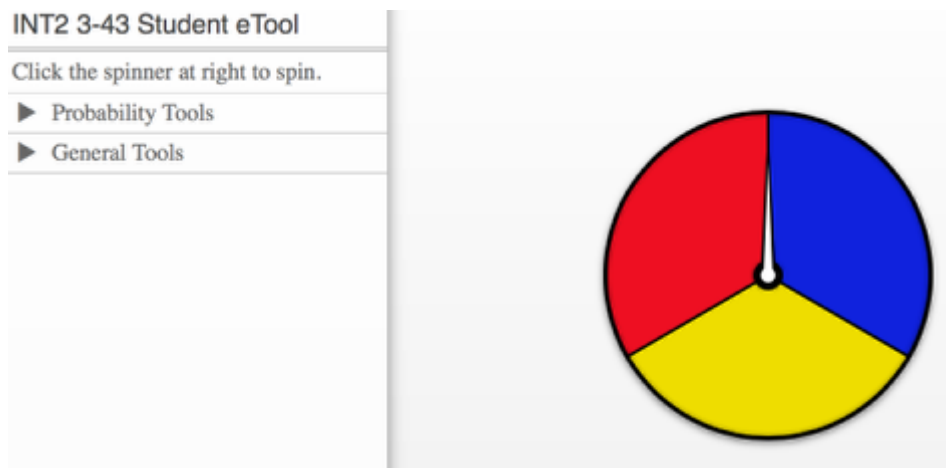
### 1. INT2 3-36 Student eTool:

- Click on the number box to generate a new random number
- The numbers will simulate numbers on a roulette wheel.
- "00" will be represented by a -1 on the random generator.



### 2. INT2 3-43 Student eTool:

- Click the spinner to spin.



## INT2 3.1.5: 3-47, 3-48, and 3-49 Student eTools (CPM)

Click on the links below to access eTools.

[3-47 Student eTool \(CPM\)](#)

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

[3-49 Student eTool \(CPM\)](#)

### Take A Spin Games

#### 3-47: Take A Spin #1

- Click on the wheel to spin.

The screenshot shows the CPM Probability eTool interface. On the left is a sidebar with a settings icon, a help icon, and the title 'CPM Probability'. Below this is the title 'INT2 3-47 Student eTool' and the section '3-47. TAKE A SPIN'. The text describes a game: 'Consider the following game: After clicking the wheel at right, you win the amount spun.' It then lists two questions: (a) '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.' and (b) 'If you were to play only once, what would you expect to earn according to your answers in part (a)? Is it actually possible to win that amount? Explain why or why not.' At the bottom of the sidebar is a 'Probability Tools' button. On the right is the main area titled 'Take A Spin #1', which features a circular wheel divided into two equal halves: yellow (top) and green (bottom). The yellow half is labeled '\$0' and the green half is labeled '\$4'. A red arrow points from a red-outlined button labeled 'Click' to the center of the wheel.

#### 3-48: Take A Spin #2

- Click on the wheel to spin.



CPM Probability

**INT2 3-48 Student eTool**

3-48. 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. Calculate this spinner's expected value. That is, what are the expected winnings for each spin? Be ready to justify your answer.

c. Gustavo described his thinking for part (b) 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

### 3-49: Take A Spin #3

- Click on the wheel to spin.

CPM Probability

**INT2 3-49 Student eTool**

3-49. 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

## INT2 3.1.5: 3-50, 3-51 & 3-52 Spinners

Click on the links below.

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

[3-51 Student eTool \(CPM\)](#)

[3-52 Student eTool \(CPM\)](#)

### 1. Int2 3-50 Student eTool:

#### INT2 3-50 Student eTool

Game Rules:

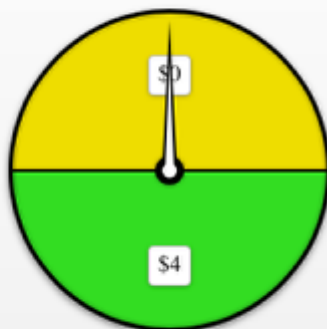
After clicking the wheel at right, you win the amount spun.

a. 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.

b. 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.

c. 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



### 2. Int2 3-51 Student eTool:

#### INT2 3-51 Student eTool

Game Rules:

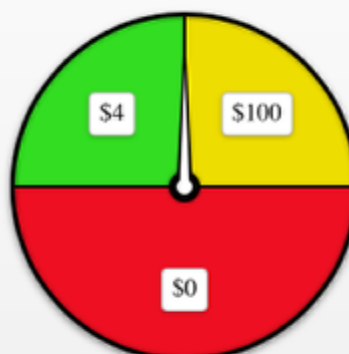
Click the wheel to spin. Total your winnings from each spin.

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  $.5(0) + .25(\$4) + .25(\$100)$ ." Calculate Gustavo's expression. Does his result match your result from part (b)?

Take A Spin #2



### 3. Int2 3-52 Student eTool:



**CPM Probability**


**INT2 3-52 Student eTool**

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!


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



## INT2 3.2.3: 3-89 and 3-90 Student eTools (Desmos)

Click on the links below to access eTools.

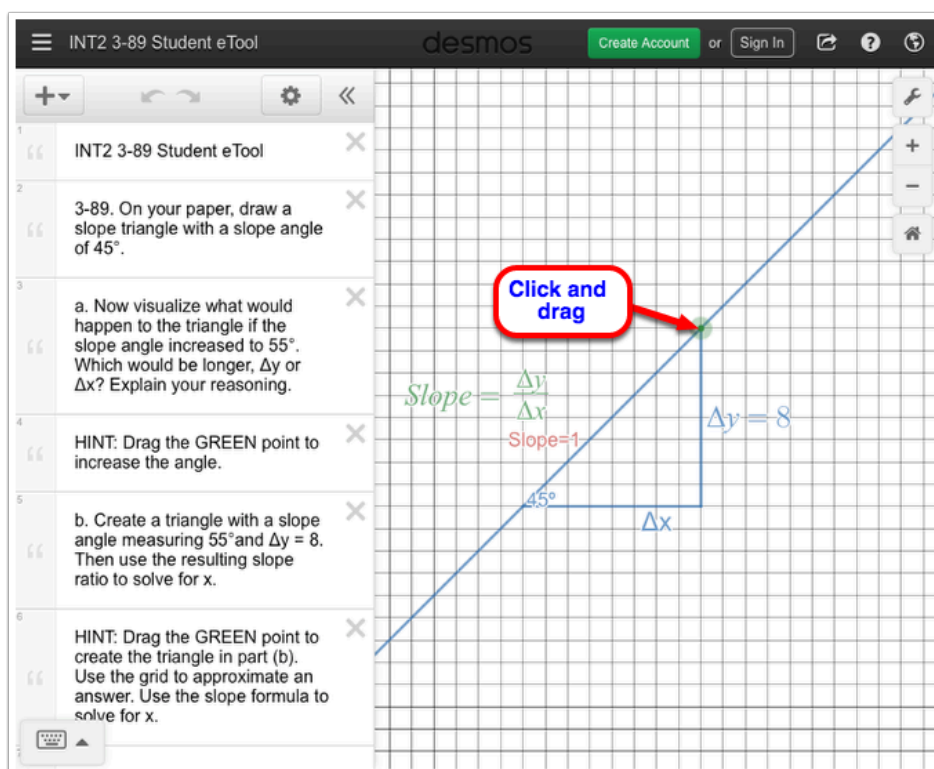
[3-89 Student eTool \(Desmos\)](#)

[3-90 Student eTool \(Desmos\)](#)

### Slope Ratios

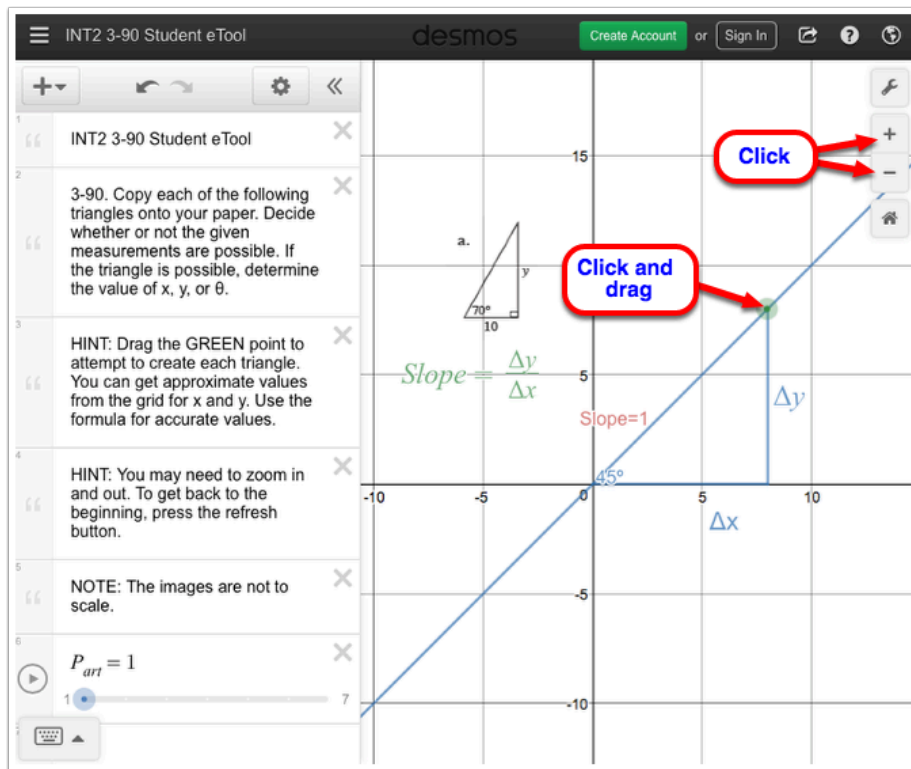
#### 3-89

- Click on the green point on the graph and drag it to increase the angle.



#### 3-90

- Click on the green point on the graph and drag it to create triangle.
- Click on the "+" and "-" on the upper right corner of the eTool to Zoom In and Zoom Out the graph.

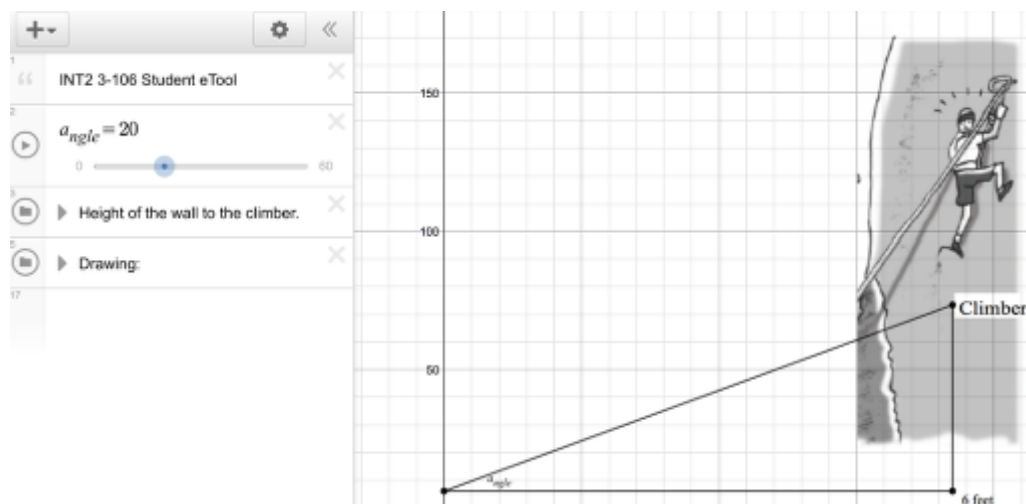


## INT2 3.2.4: 3-106 Student eTool

Click on the link below.

[Int2 3-106 Student eTool \(Desmos\)](#)

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



## INT2 3.2.4: 3-104 Teacher eTool & 3-106 Answer eTool

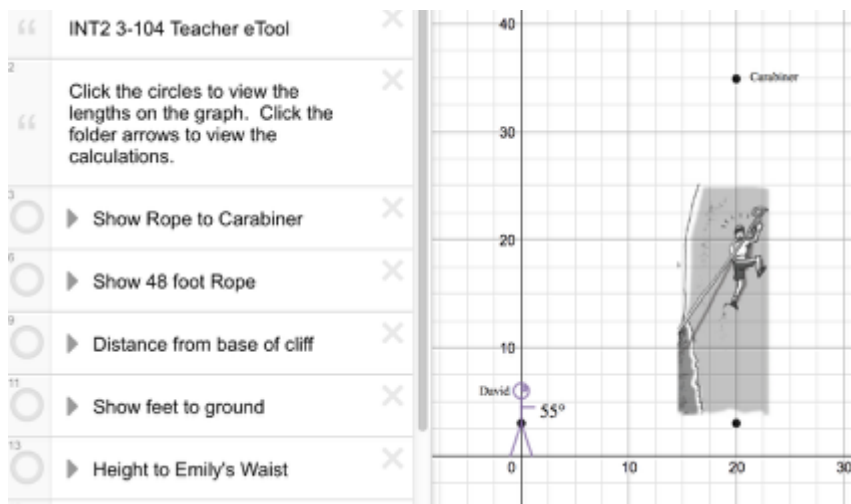
Click on the link below for the "3-106 Answer eTool".

[3-104 Teacher eTool \(Desmos\)](#)

[3-106 Answer eTool \(Desmos\)](#)

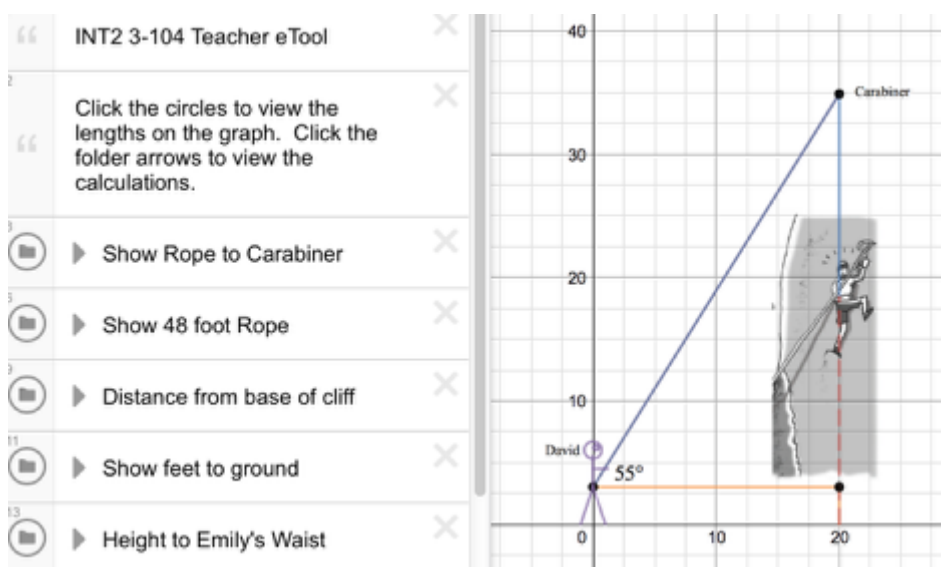
### 1. Int2 3-104 Teacher eTool

- Use as a closure activity.
- Students come to the board and discuss each part.



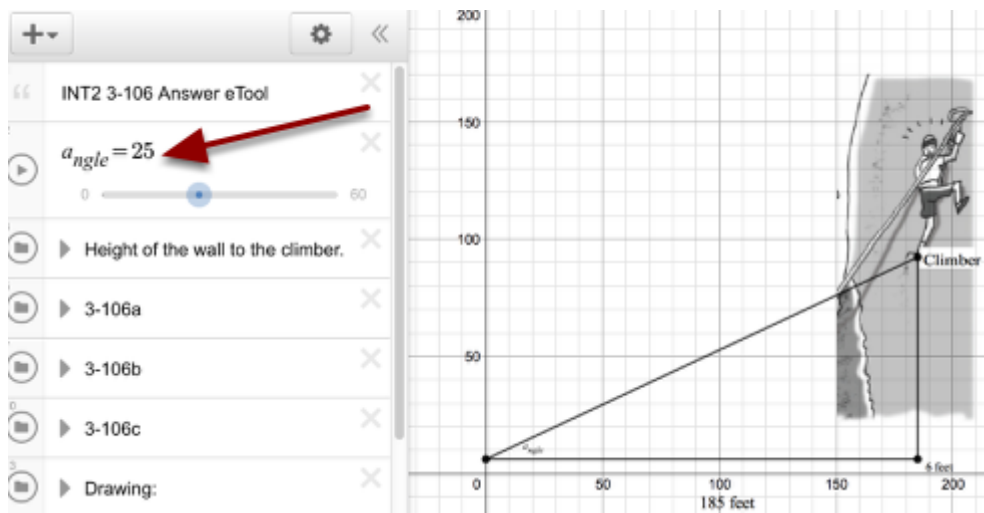
### 2. Int2 3-104 Teacher eTool:

- Click on each circle in front of each step to show the part in the diagram.
- Click on the arrows to show the calculations.



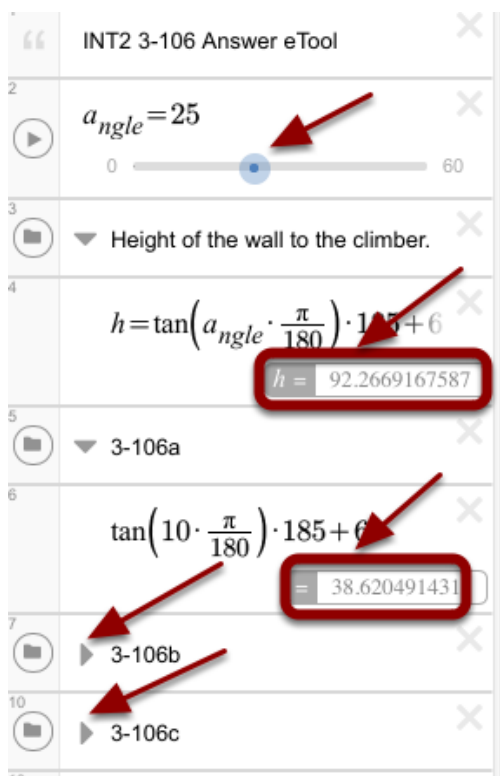
### 3. Int2 3-106 Answer eTool:

- Move the slider for the various desired angles.



### 4. Int2 3-106 Answer eTool:

- Click the folder arrows for answers to the various parts of this problem.







# Chapter 4

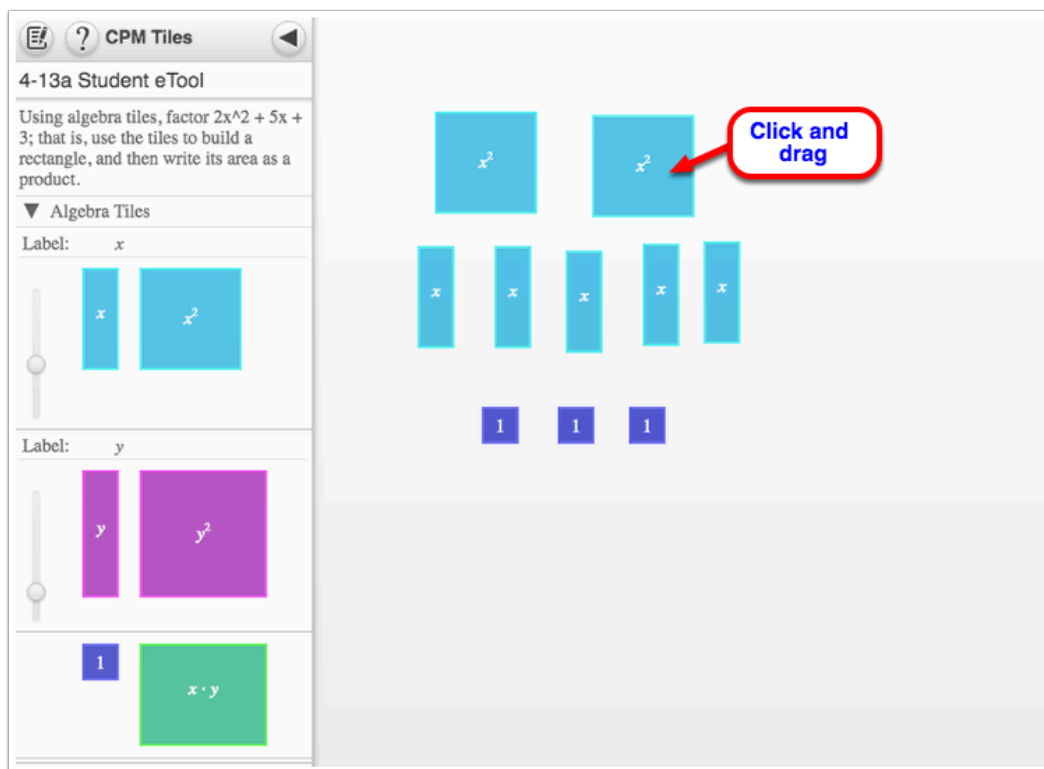
## INT2 4.1.2: 4-13a Student eTool (CPM)

Click on the link below to access eTool.

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

Use this eTool to build a rectangle from the given tiles for problem 4-13a.

- Click each tile and drag it to the desire location.



## Int2 4.2.2: 4-46a Student eTool (CPM)

Click on the link below.

[4-46a Student eTool](#) (CPM)

### 4-46a Student eTool:

**Int2 4-46a Student eTool**

1. Go to the "?" above for additional help! Then go to pages 8 & 9.
2. Move the algebra tiles to form a rectangle.
3. Double click the "x's" to rotate them.

► Backgrounds

▼ Algebra Tiles

Label:

$x$

$x^2$

$x^2$

$x^2$

$x$

$x$

$x$

$x$

$x$

1

1

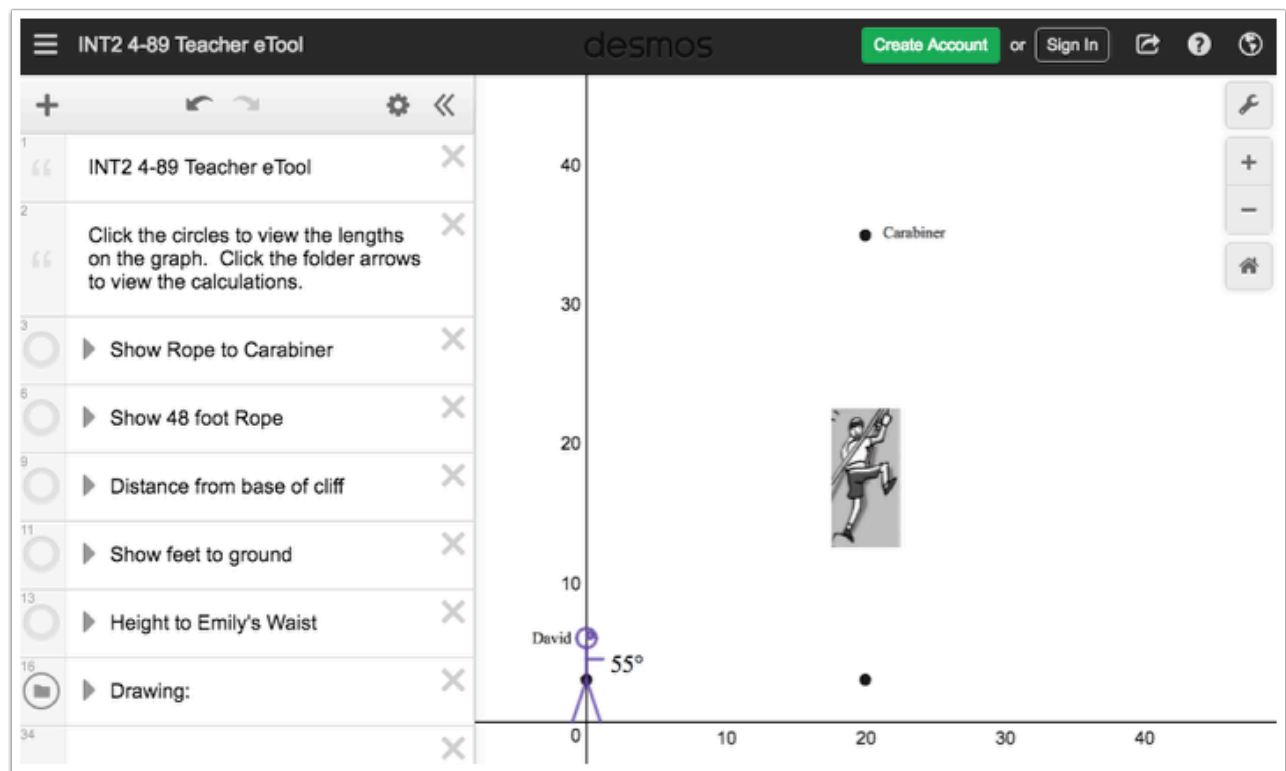
1

## INT2 4.2.4: 4-89 Teacher eTool (Desmos)

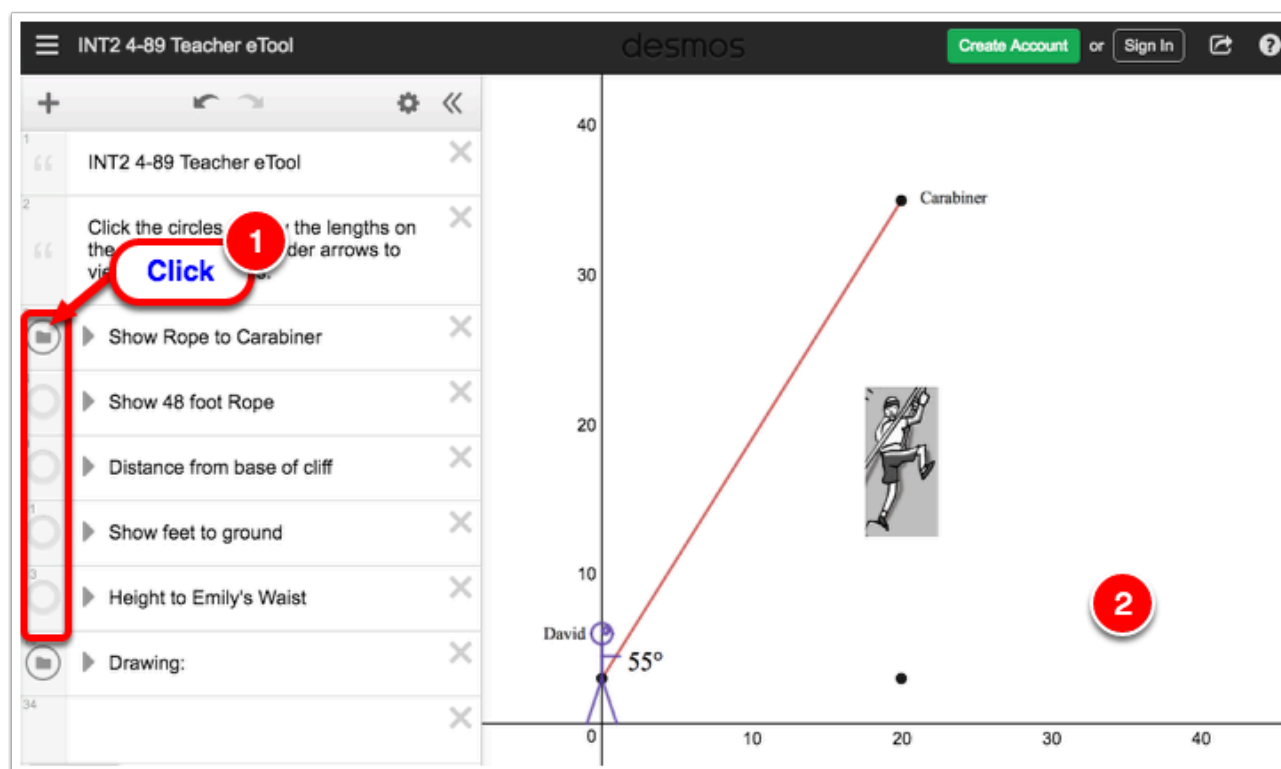
Click on the link below to access the eTool.

[4-89 Teacher eTool \(Desmos\)](#)

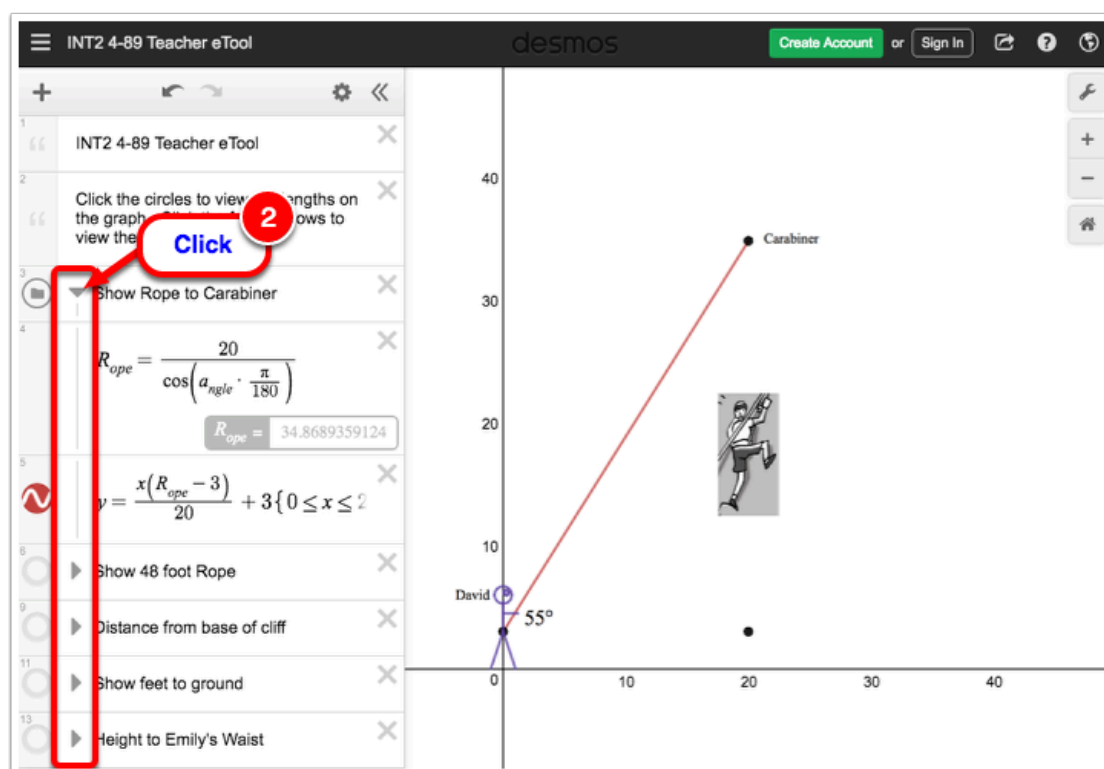
Use this eTool to discuss problem 4-89.



1. Click the circle on the left to view/hide the lengths of the graph.



2. Click the arrows to view/hide the calculations in each folder.



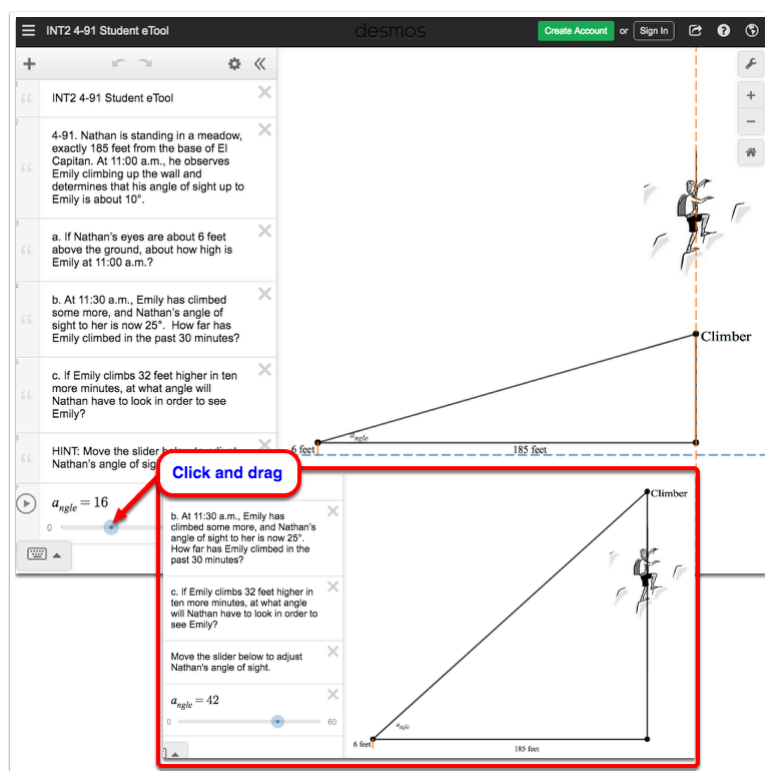
## INT2 4.1.2: 4-91 Student eTool (Desmos)

Click on the link below to access the eTool.

[4-91 Student eTool \(Desmos\)](#)

Use this eTool to visualize problem 4-91.

- Click on the angle slider and drag (horizontally) to adjust the angle.

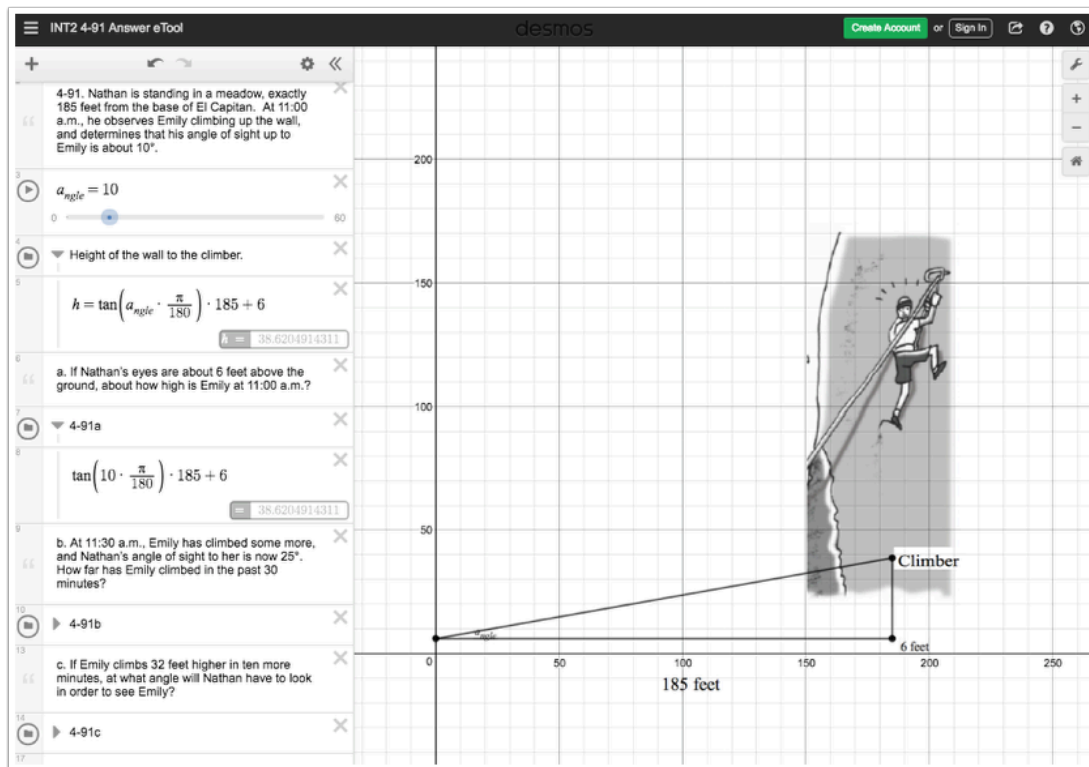


## INT2 4.2.4: 4-91 Answer eTool (Desmos)

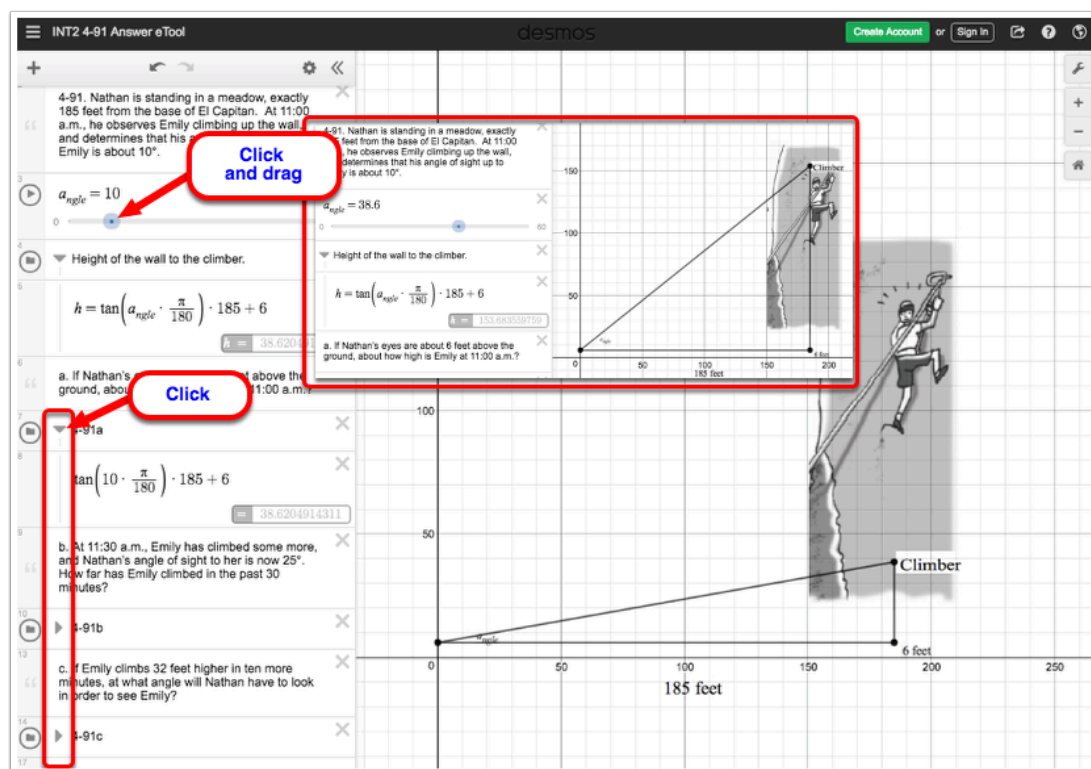
Click on the link below to access eTool.

[4-91 Answer eTool \(Desmos\)](#)

### 4-91 Answer graph



1. Click the **BLUE** point (Angle slider) and drag (horizontally) to adjust the angle.
2. Click the arrow before parts (a), (b), and (c) to view/hide the folder content.







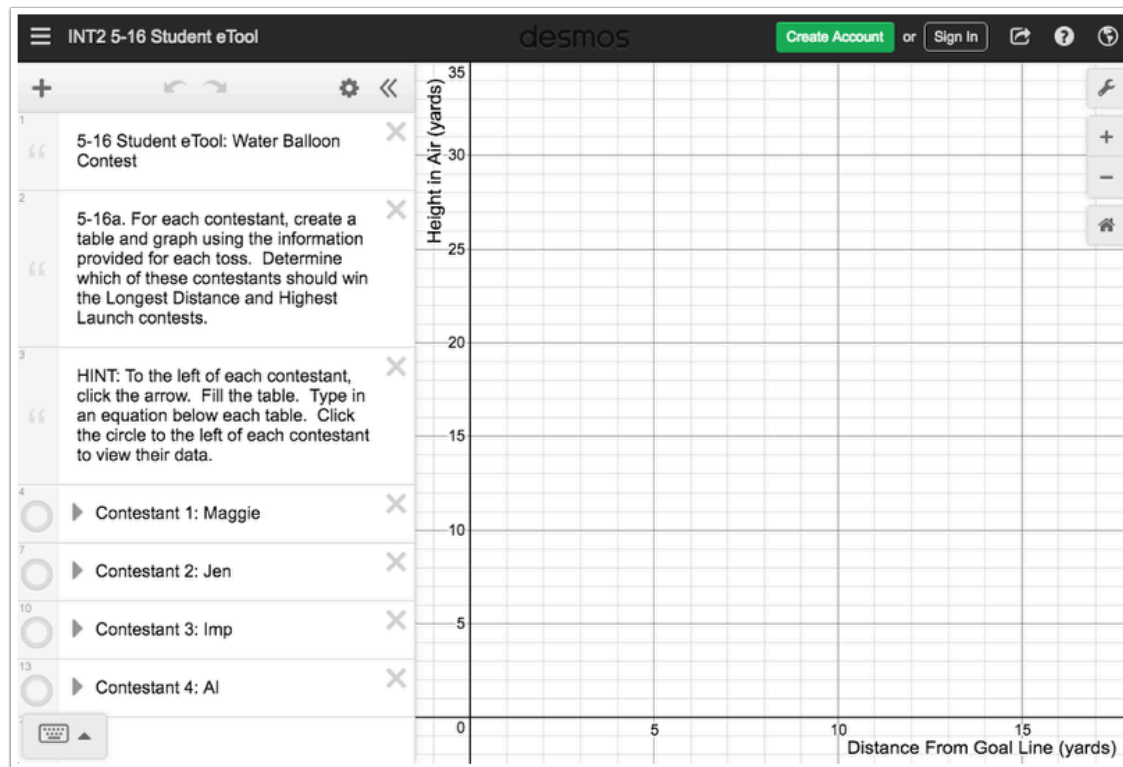
# Chapter 5

## INT2 5.1.2: 5-16 Student eTool (Desmos)

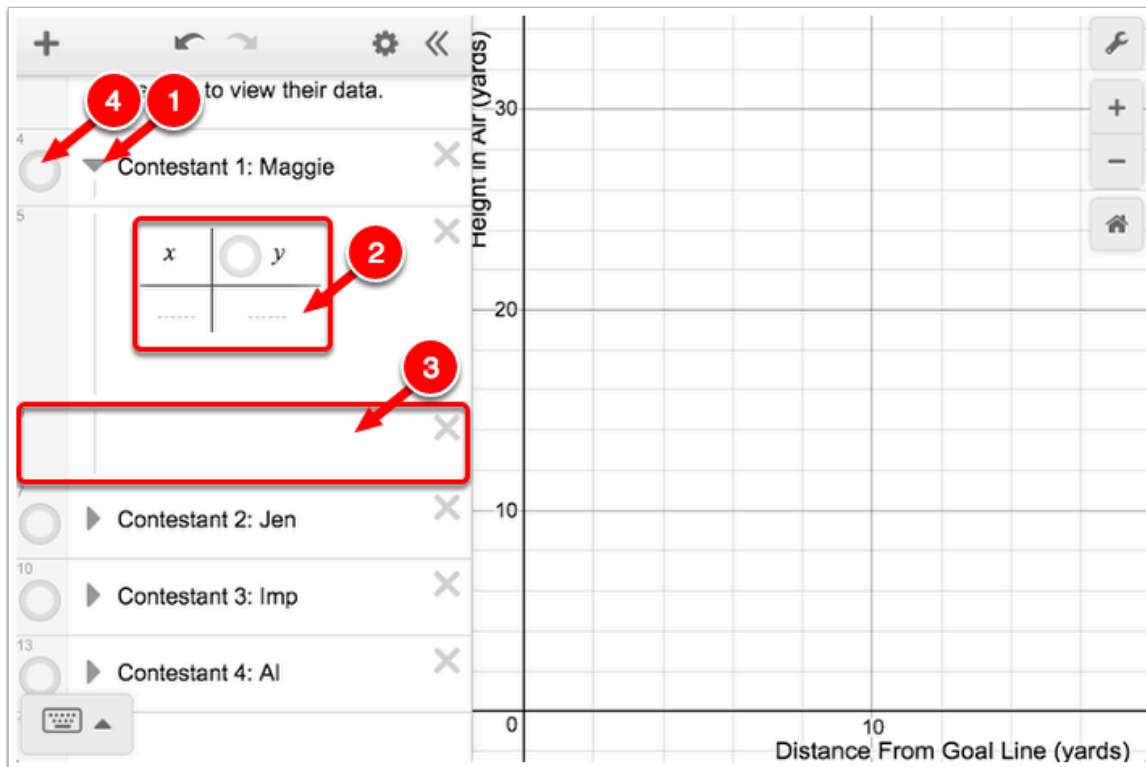
Click on the link below to access eTool.

[5-16 Student eTool \(Desmos\)](#)

Use this eTool to complete part (a) of problem 5-16.



1. Click the arrow to the left of each contestant the view the folder content.
2. Enter the 'x' and 'y' values in each table.
3. Type in an equation below each table.
4. Click the circle to the left of each contestant to view their data.

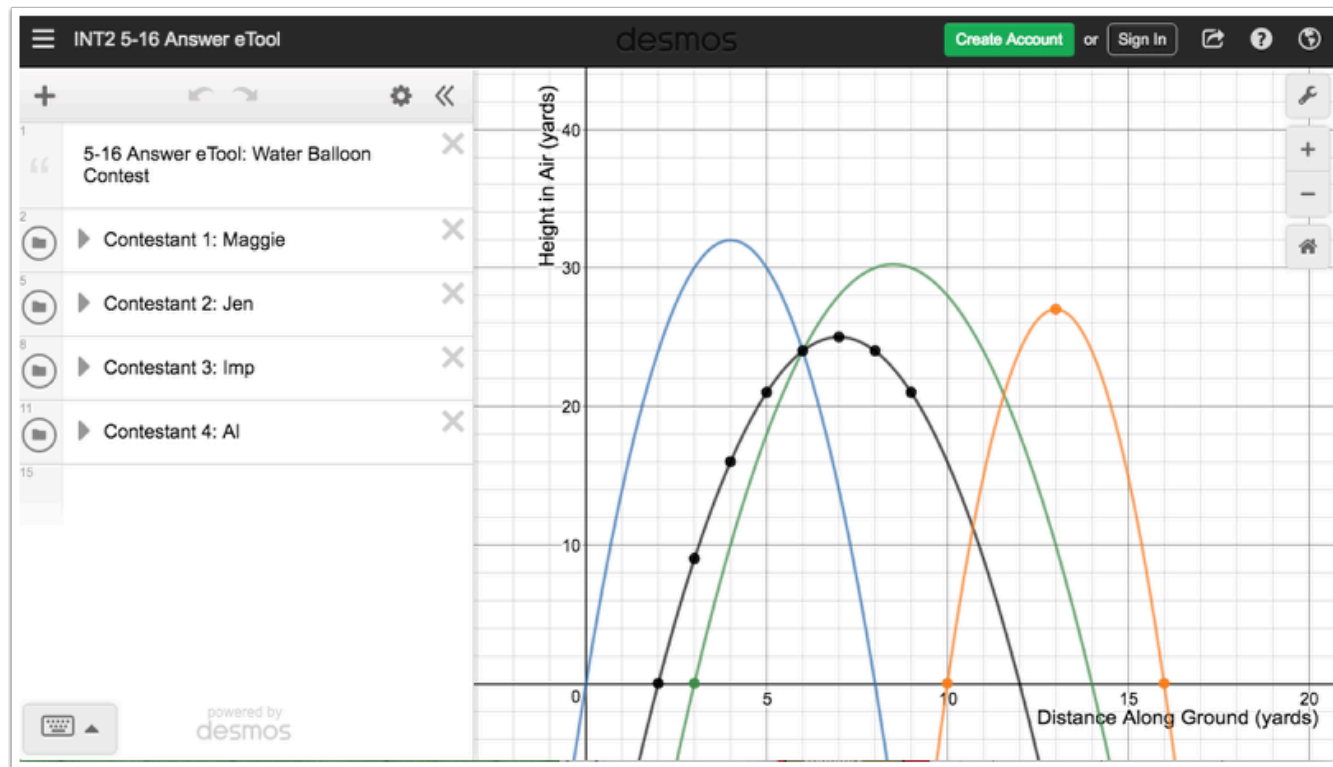


## INT2 5.1.2: 5-16 Answer eTool (Desmos)

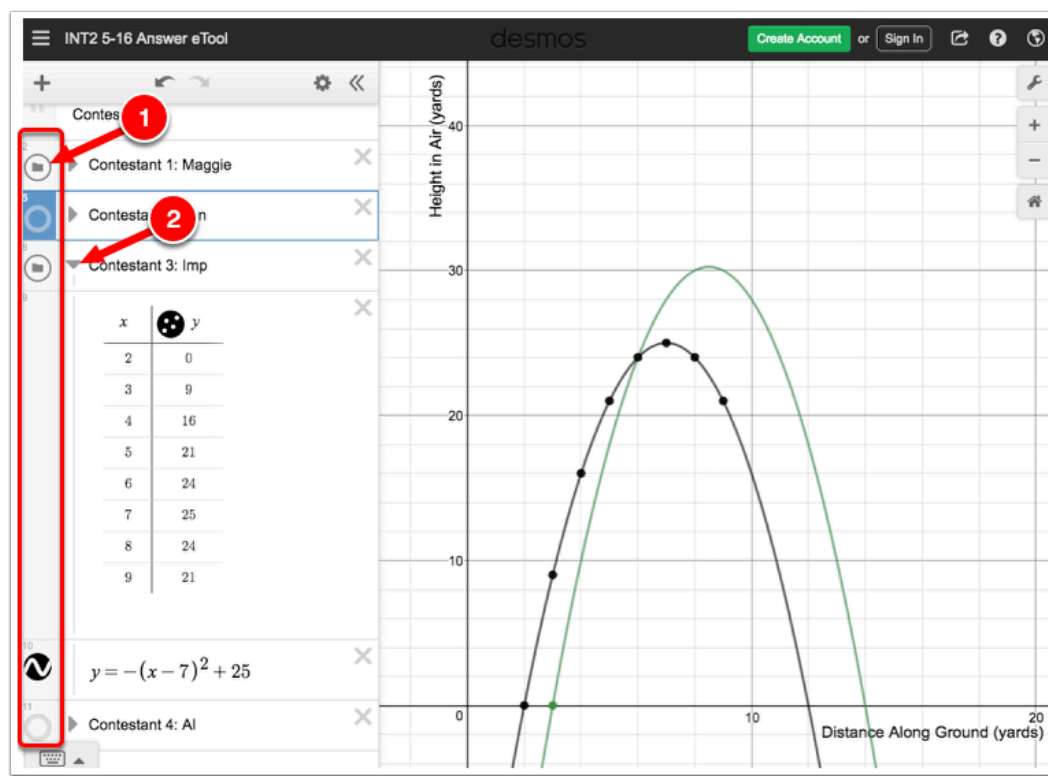
Click on the link below to access eTool.

[5-16 Answer eTool \(Desmos\)](#)

### 5-16 Answer Graphs:



1. Click on the folder icon to hide/view contestant's graph.
2. Click the arrow to the left of each contestant to view/hide the folder content.



## INT2 5.2.3: 5-83 Student eTool (CPM)

Click on the link below to access eTool.

[5-83 Student eTool \(CPM\)](#)

Use this eTool to help you solve each quadratic equation below by completing the square.

a.  $x^2 - 6x + 7 = 0$

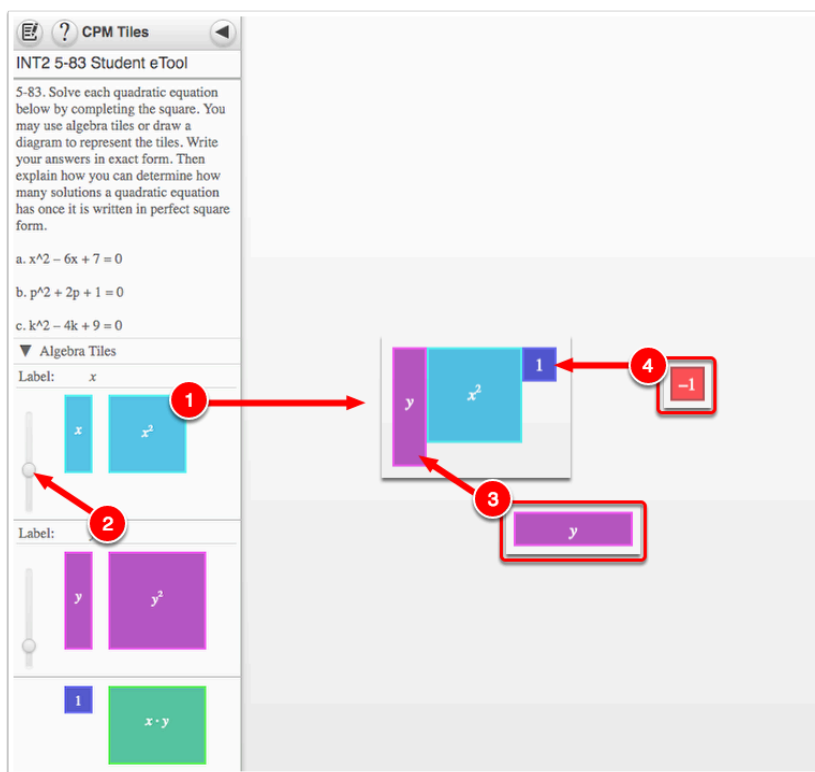
b.  $p^2 + 2p + 1 = 0$

c.  $k^2 - 4k + 9 = 0$

Use the algebra tiles to represent the tiles.

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.





## Chapter 6

## INT2 6.2.3: 6-68 Student eTool (Desmos)

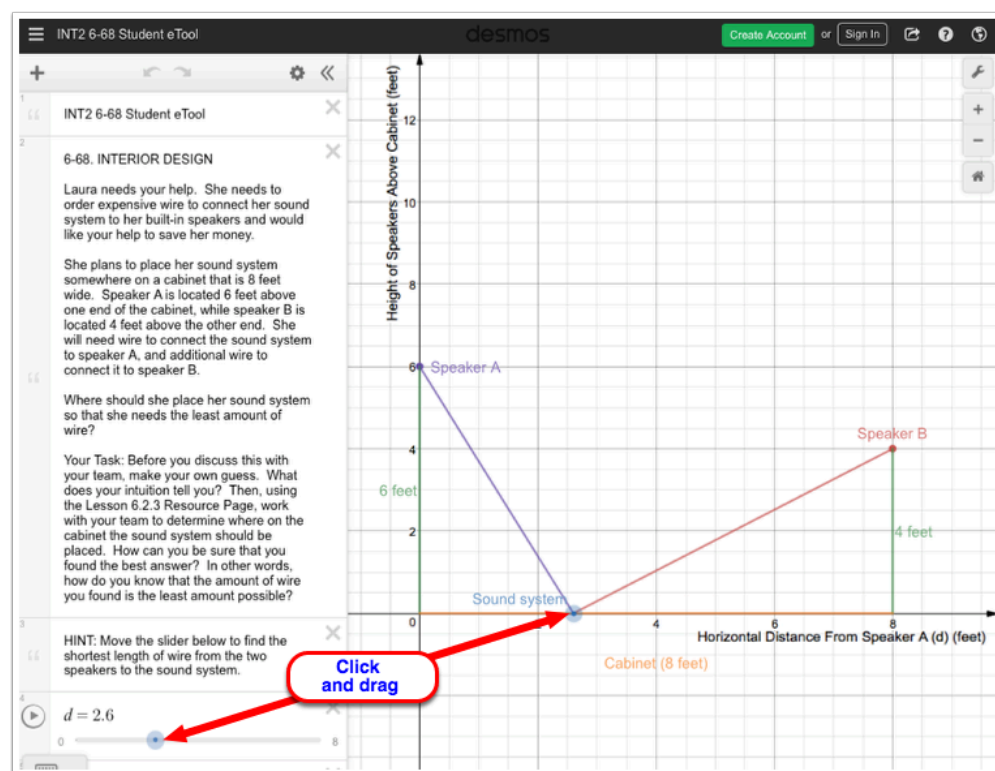
Click on the link below to access eTool.

[6-68 Student eTool \(Desmos\)](#)

Use this eTool to help you determine where on the cabinet the sound system should be placed.

Move the slider below to find the shortest length of wire from the two speakers to the stereo.

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





## INT2 6.2.3: 6-68 Answer eTool (Desmos)

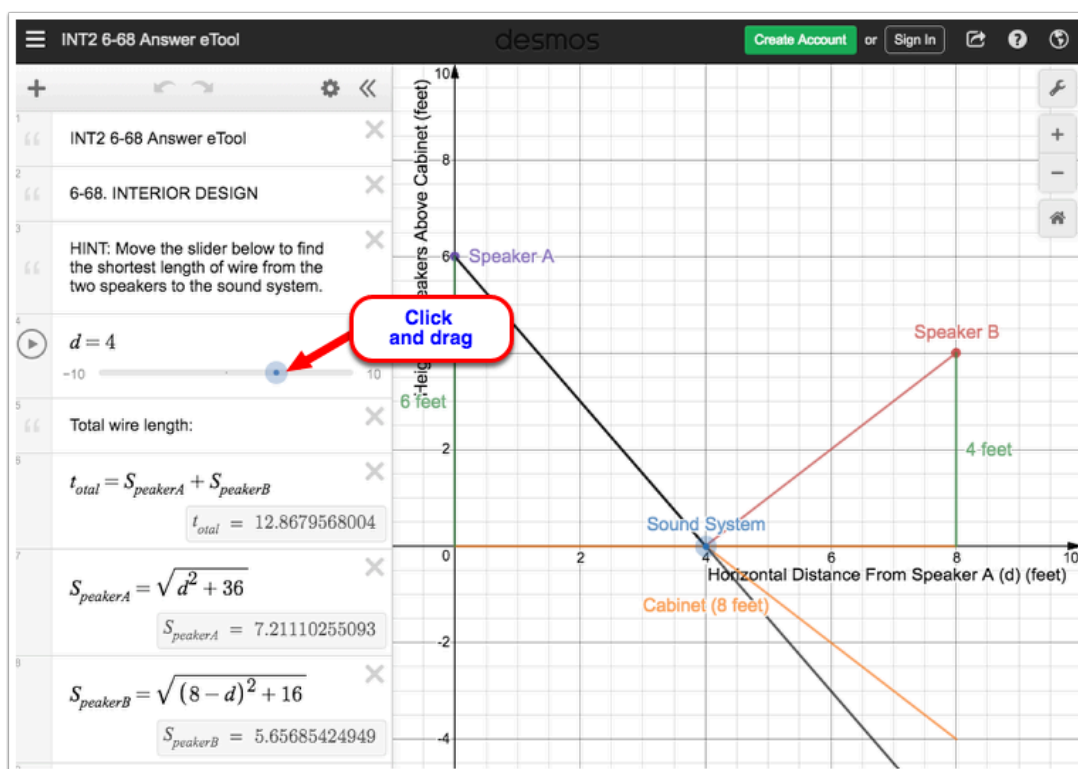
Click on the link below to access eTool.

[6-68 Answer eTool \(Desmos\)](#)

### 6-68 Answer:

Move the slider along the x-axis (table top) to find the shortest length of wire from the two speakers to the sound system.

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





## INT2 6.2.5: 6-90 Student eTool (CPM)

Click on the link below to access eTool.

[6-90 Teacher eTool \(CPM\)](#)

Use this eTool to complete the task in problem 6-90.

- Create a poster showing all four representations of this situation.
- On your poster, include a drawing of the pen with the largest possible area. State its dimensions (width and length) and its area.
- Use multiple representations to justify your conclusion that this is the largest pen.

CPM Tiles

INT2 6-90 Student eTool

6-90. FENCING LESSONS

Lucy wants to be a farmer, just like her dad. Her father says he will give her some cows to raise if she can build them a good pen. Lucy saves her money and buys 30 meters of fencing material. She will use it to build a rectangular pen against one wall of her family's barn, as shown in the picture at right.

Lucy has come to you for help. She wants to build a pen for her cows that gives them the most possible area to roam. How long should each side of the fence be to give the cows as much roaming area as possible? How can you convince Lucy that the pen you suggest has the largest roaming area?

Your Task:

- Create a poster showing all four representations of this situation.
- On your poster, include a drawing of the pen with the largest possible area. State its dimensions (width and length) and its area.
- Use multiple representations to justify your conclusion that this is the largest pen.

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1. Click the arrows on the left of 'Area and Perimeter' and 'General Tools' to view/hide the tools.

2. Click the tool to be used and drag it to the tile area.

The screenshot shows the CPM Tiles software interface. On the left, there is a sidebar with a problem statement, a task description, and tool controls. The main area is a large grid where a red barn is placed. Two red callouts with numbered circles (1 and 2) point to specific controls. Callout 1 points to the 'Area and Perimeter' section, which is currently expanded. Callout 2 points to the 'Dim Area Tiles' button, which is currently selected. The barn is a red rectangle labeled 'Barn'.

CPM Tiles

wants to build a pen for her cows that gives them the most possible area to roam. How long should each side of the fence be to give the cows as much roaming area as possible? How can you convince Lucy that the pen you suggest has the largest roaming area?

Your Task:

- Create a poster showing all four representations of this situation.
- On your poster, include a drawing of the pen with the largest possible area. State its dimensions (width and length) and its area.
- Use multiple representations to justify your conclusion for the largest pen.

Area and Perimeter

Dim Area Tiles

General Tools

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1 Click

2 Click and drag

Barn



# Chapter 7

## INT2 7.2.1: 7-67 Student eTool (CPM)

Click on the link below to access eTool.

[7-67 Student eTool \(CPM\)](#)

Use this eTool to create a table for part (a) of problem 7-67.

Click on a cell and enter the value.

Table							Directions	Reset	Save
	1	2	3	4	5	6			
1									
2									
3									
4									
5									
6									

Click on "Directions" for more information.

Table							Directions	Reset	Save
	1	2	3	4	5	6			
1	2								
2									
3									
4									
5									
6									

## INT2 7.2.1: 7-67 Answer eTool (CPM)

Click on the link below to access eTool.

[7-67 Answer eTool \(CPM\)](#)

**7-67 Answer:**

Table							© 2016 CPM Educational Program. All rights reserved.										Directions	Reset	Save
	1	2	3	4	5	6													
1	2	3	4	5	6	7													
2	3	4	5	6	7	8													
3	4	5	6	7	8	9													
4	5	6	7	8	9	10													
5	6	7	8	9	10	11													
6	7	8	9	10	11	12													



## Chapter 8

## INT2 8.2.1: 8-24 Student eTools (Desmos)

Click on the links below to access eTools.

[8-24f1 Student eTool \(Desmos\)](#)

[8-24f2 Student eTool \(Desmos\)](#)

[8-24f3 Student eTool \(Desmos\)](#)

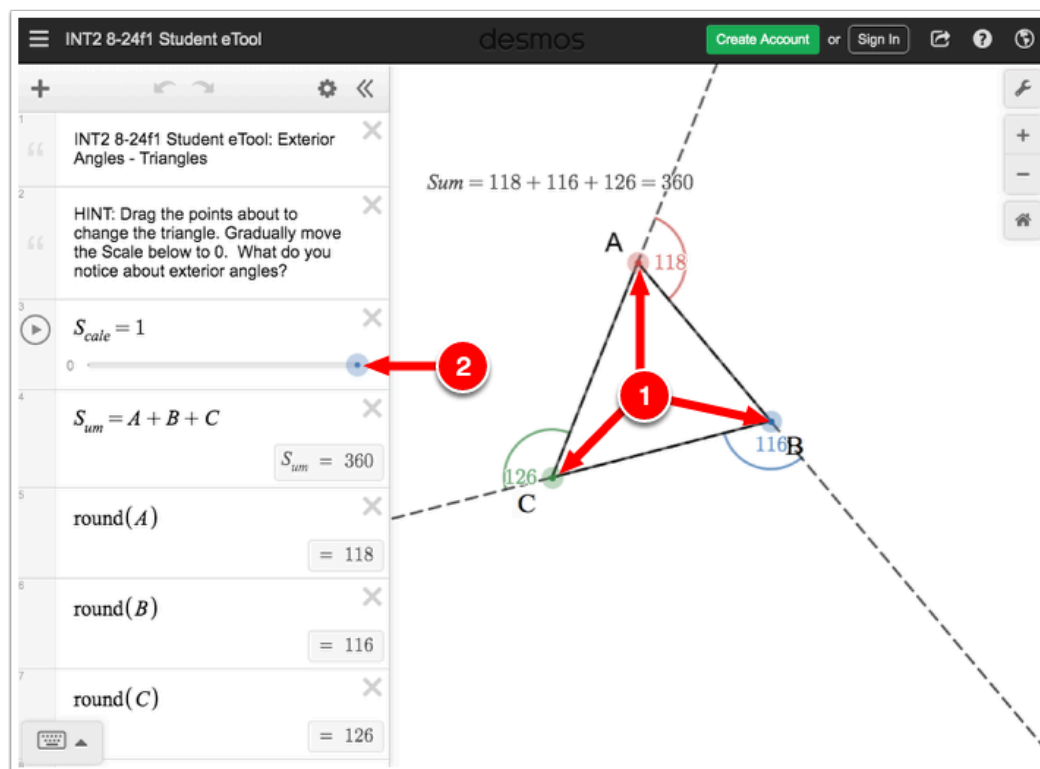
[8-24f4 Student eTool \(Desmos\)](#)

Use these eTools to help students confirm their conjectures about the exterior angles of various polygons.

With these eTools, students will notice that the sum of the exterior angles of a convex polygon will be  $360^\circ$  regardless of whether or not the polygon is regular.

8-24f1: Exterior Angles - Triangles

1. Click the colored points and drag to change the triangle.
2. Click the BLUE point (slider) and drag horizontally to change the scale of exterior angles.

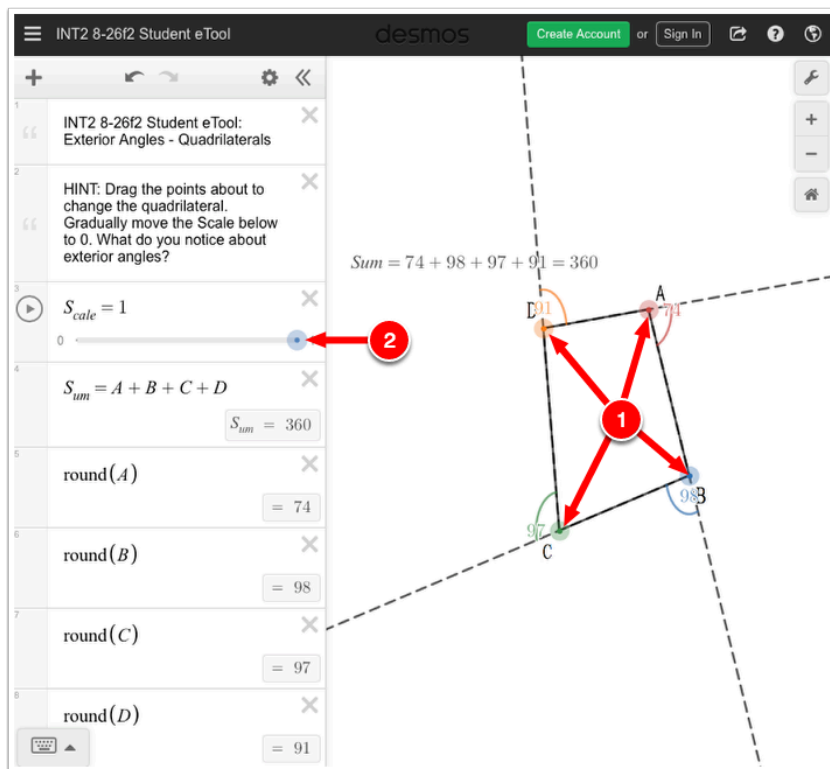




## 8-24f2: Exterior Angles - Quadrilaterals

1. Click the colored points and drag to change the quadrilateral.

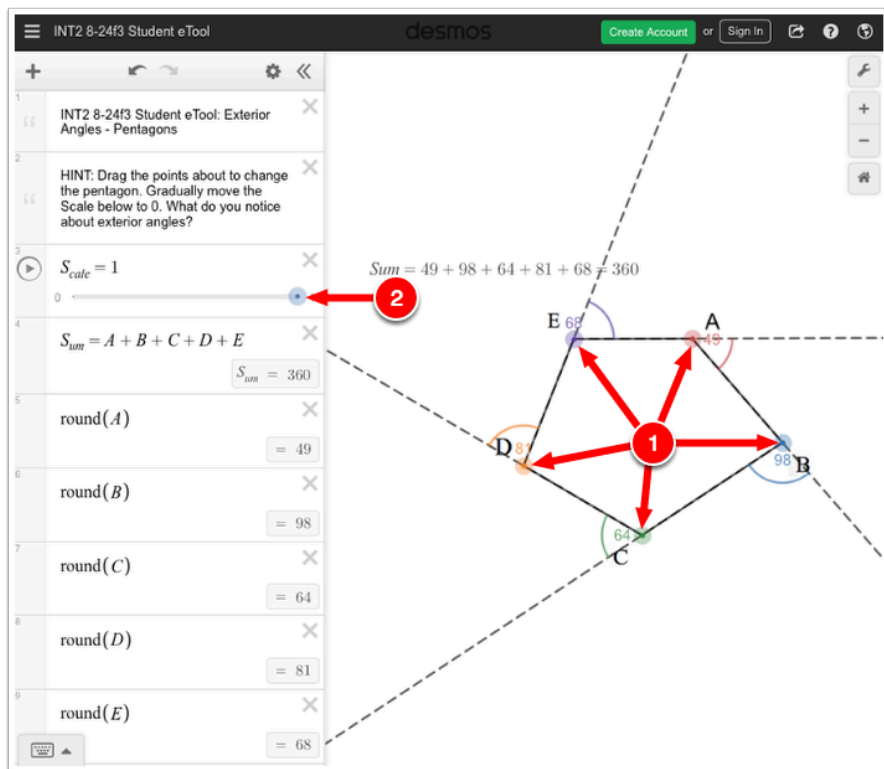
2. Click the BLUE point (slider) and drag horizontally to change the scale of exterior angles.



## 8-24f3: Exterior Angles - Pentagons

1. Click the colored points and drag to change the pentagon.

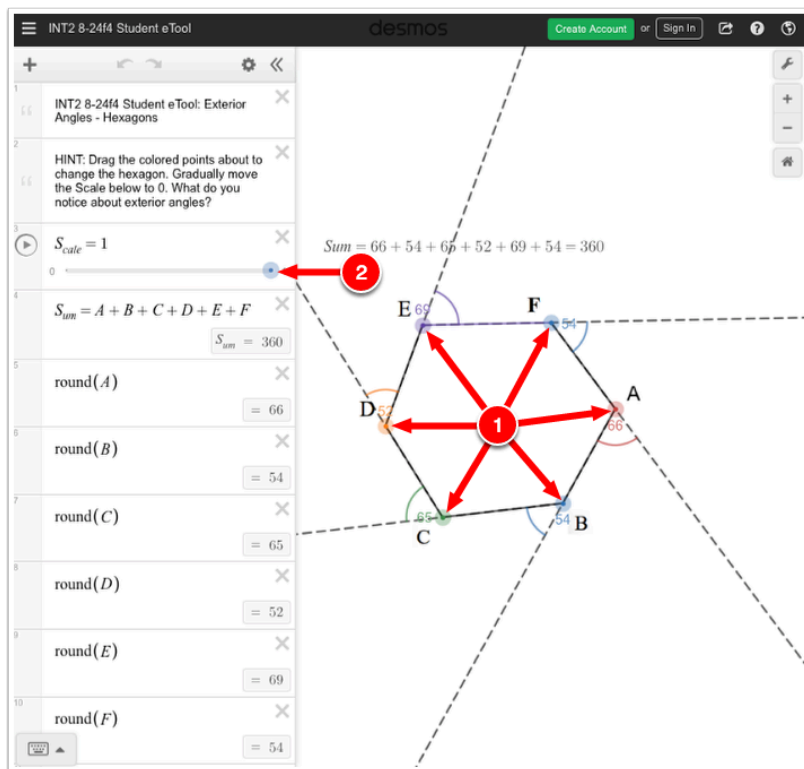
2. Click the BLUE point (slider) and drag horizontally to change the scale of exterior angles.



## 8-24f4: Exterior Angles - Hexagons

1. Click the colored points and drag to change the hexagon.

2. Click the BLUE point (slider) and drag horizontally to change the scale of exterior angles.



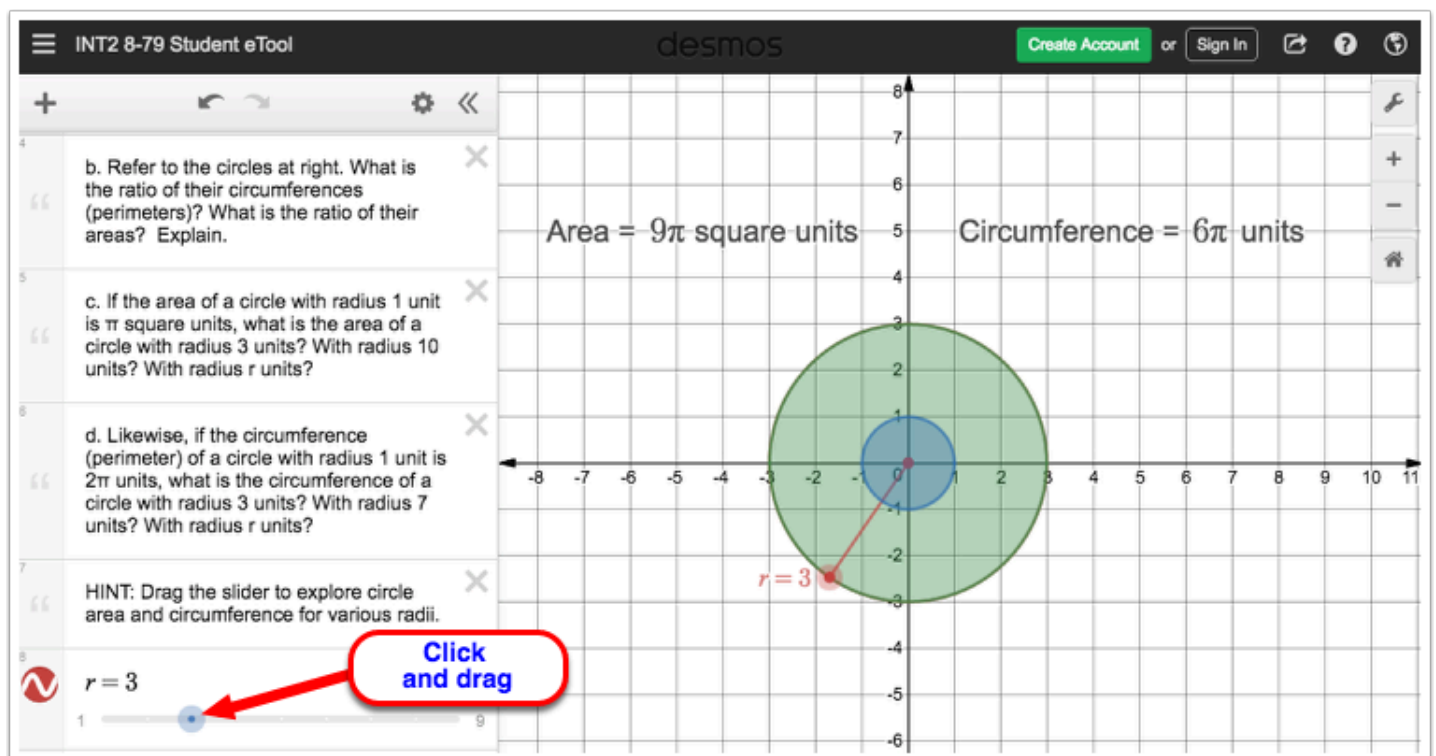
## INT2 8.4.1: 8-79 Student eTool (Desmos)

Click on the link below to access eTool.

[8-79 Student eTool \(Desmos\)](#)

Use this eTool to explore the Area and Circumference of a Circle.

Click on the **BLUE** point (slider) and drag horizontally to change the length of the radius.



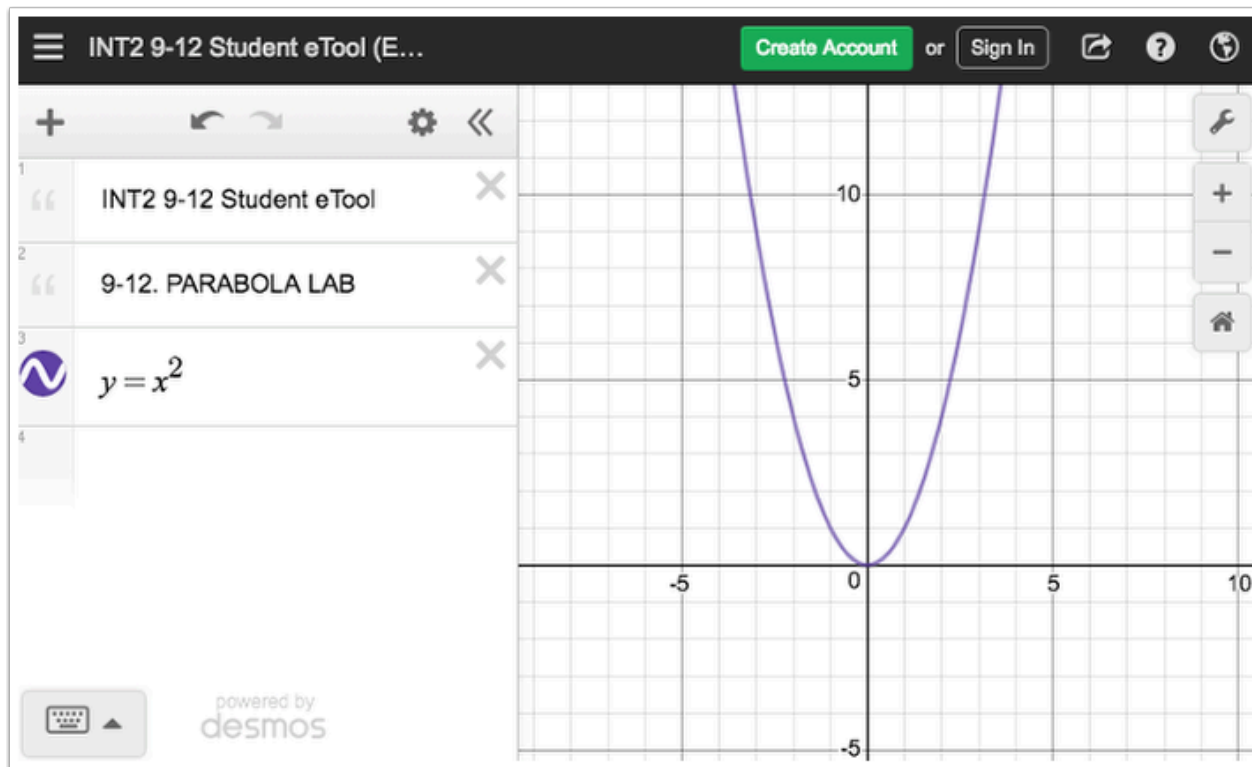
# Chapter 9

## INT2 9.1.2: 9-12 Student eTool (Desmos)

Click on the link below to access eTool.

[9-12 Student eTool \(Desmos\)](#)

Use this eTool to complete the task in problem 9-12.

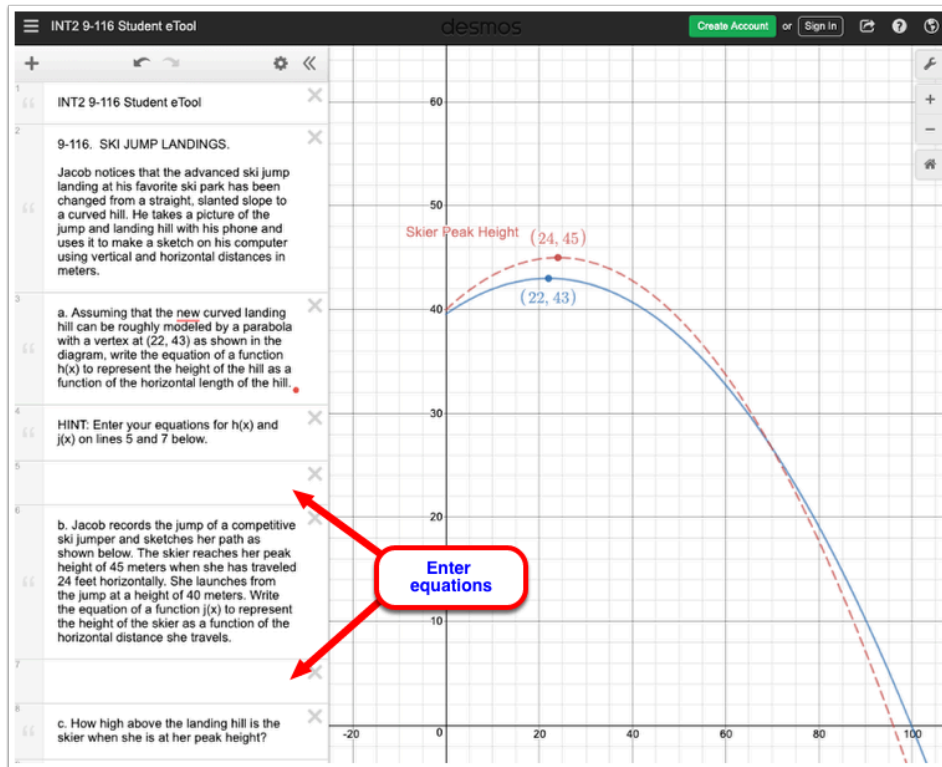


## INT2 9.3.4: 9-116 Student eTool (Desmos)

Click on the link below to access eTool.

[9-116 Student eTool \(Desmos\)](#)

Use this eTool to complete problems 9-116 and 9-117.



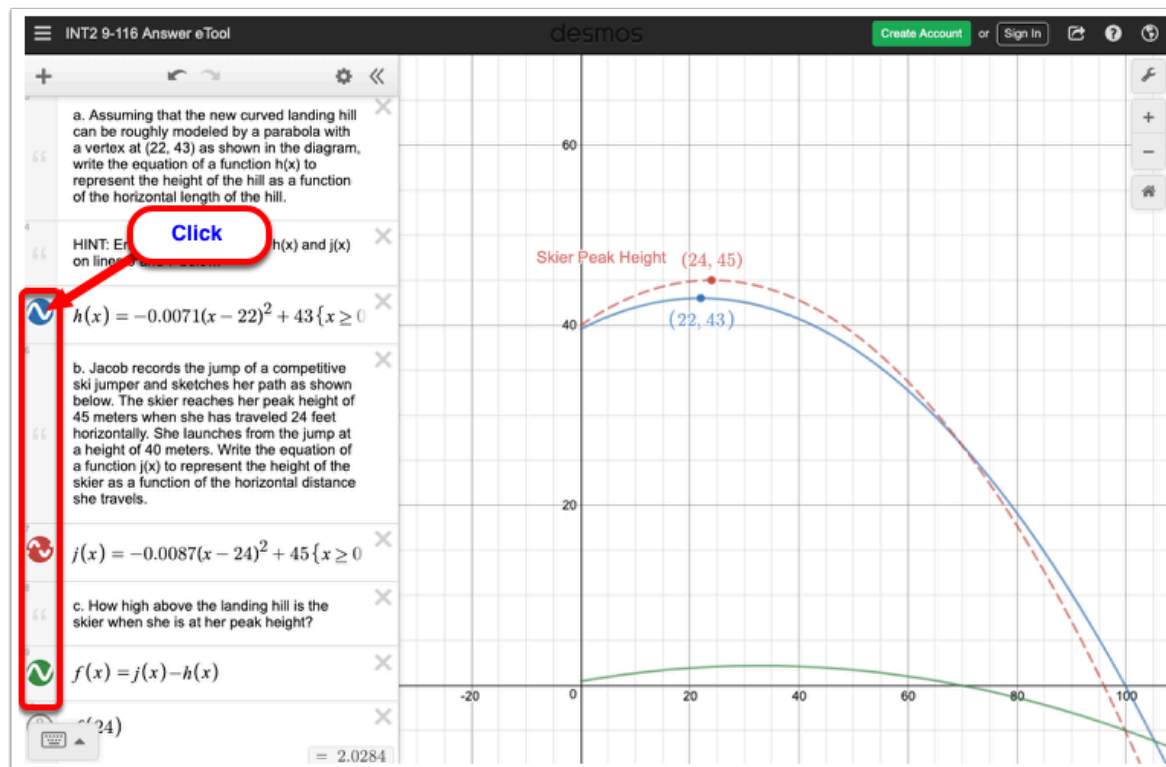
## INT2 9.3.4: 9-116 Answer eTool (Desmos)

Click on the link below to access eTool.

[9-116 Answer eTool \(Desmos\)](#)

### 9-116 Answer:

Click on the circles to the left of lines 5, 7, and 9 to view/hide the graphs.







# Chapter 10

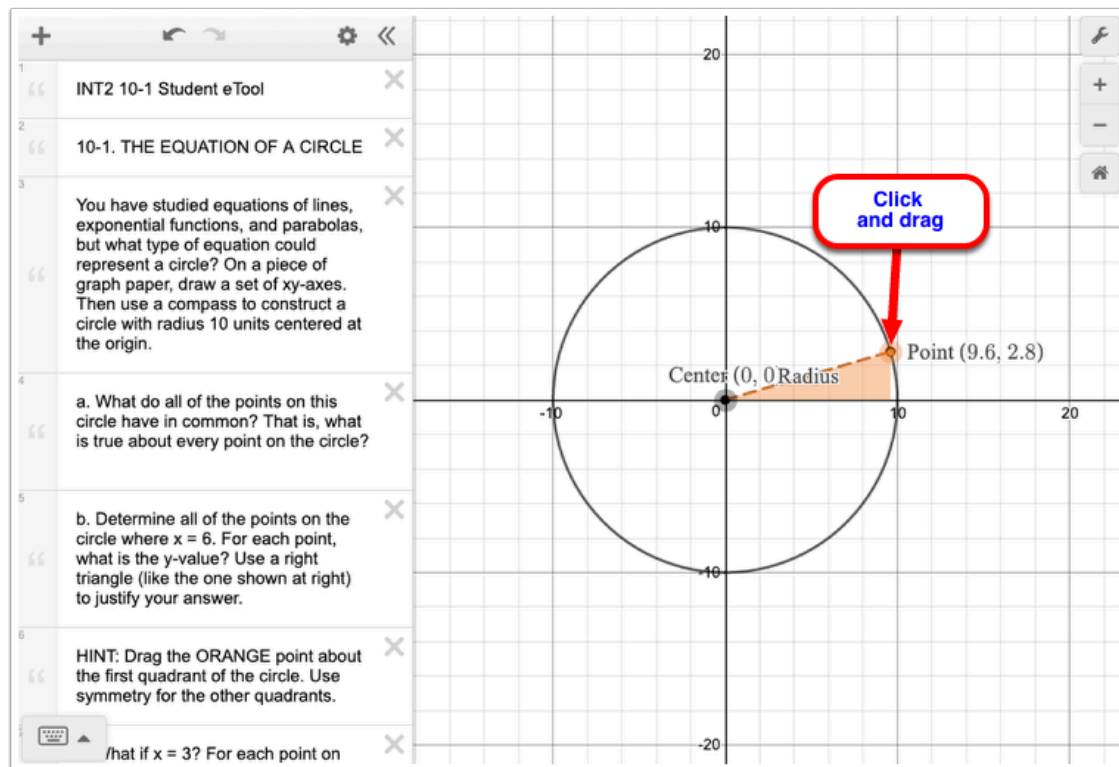
## INT2 10.1.1: 10-1 Student eTool (Desmos)

Click the link below to access to eTool.

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

Use this eTool to explore the equation of a circle.

1. Click the ORANGE point and drag to move.



## INT2 10.1.2: 10-15 Student eTool (CPM)

Click on the link below to access eTool.

[10-15 Student eTool \(CPM\)](#)

Use the algebra tiles to help you rewrite the given equation below.

$$x^2 + y^2 + 4x + 2y = 11$$

1. Click on each tile and drag to the desired location.

The screenshot shows the CPM Tiles eTool interface. On the left, a sidebar contains the title "INT2 10-15 eTool" and a problem description: "10-15. Jessica is working on part (c) of problem 10-14. She does not know how to rewrite the equation  $x^2 + y^2 + 4x + 2y = 11$  in graphing form. She thinks she can use algebra tiles to figure it out, only this time she will need more tiles. She collected the tiles shown in the diagram below." Below the description are four questions (a, b, c, d) and a section for algebra tiles with a label "x".

The main workspace is divided into two panels by a vertical line. The left panel contains several algebra tiles: one large blue square labeled  $x^2$ , one small blue square labeled  $x$ , one small blue square labeled  $x$ , one small blue square labeled  $x$ , one small blue square labeled  $x$ , one small blue square labeled  $x$ , one small blue square labeled  $y$ , and one small blue square labeled  $y$ . The right panel contains several small blue squares labeled "1". A red arrow points from a red box labeled "Click and drag" to the  $y^2$  tile in the left panel.

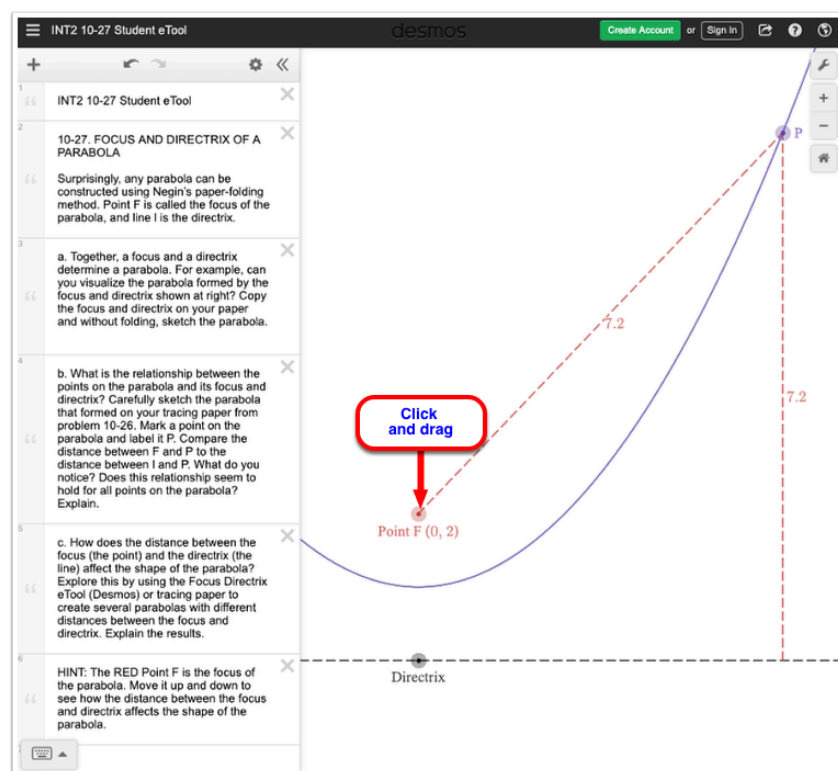
## INT2 10.1.3: 10-27 Student eTool (Desmos)

Click on the link below to access eTool.

[10-27 Student eTool \(Desmos\)](#)

This eTool is designed to move the focus and directrix of a parabola and observe the effect on the shape of the resulting parabola.

1. Click on the RED point (F) and drag up and down to see the distance between the focus and directrix affects the shape of the parabola.





# Chapter 11



## INT2 11.1.2: 11-16 Student eTool (CPM)

Click on the link below to access eTool.

[11-16 Student eTool \(CPM\)](#)

Use this eTool to build 3D block solids.

1. Click on each square to add or remove blocks.

CPM 3D Blocks

INT2 11-16 Student eTool

View:  
Top  
Isometric  
Front  
Right

11-16. Examine the  $1 \times 1 \times 3$  solid.

a. Build this solid or use the one at right. Rotate it sideways to match the picture in your textbook.

b. If this shape is enlarged by a linear scale factor of 2, how wide will the new shape be? How tall? How deep?

c. How many of the  $1 \times 1 \times 3$  would you need to build the enlargement described in part (b) above? Use blocks to prove your answer.

d. What if the  $1 \times 1 \times 3$  solid is enlarged with a linear scale factor of 3? How many times larger will the volume of the new solid be? How many times larger will the surface area be? How did you find your answer?

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11-16. Examine the  $1 \times 1 \times 3$  solid.

a. Build this solid or use the one at right. Rotate it sideways to match the picture in your textbook.

b. If this shape is enlarged by a linear scale factor of 2, how wide will the new shape be? How tall? How deep?

c. How many of the  $1 \times 1 \times 3$  solids would you need to build the enlargement described in part (b) above? Use blocks to prove your answer.

Click

FRONT  
RIGHT