Construction of the "Lute of Pythagoras"
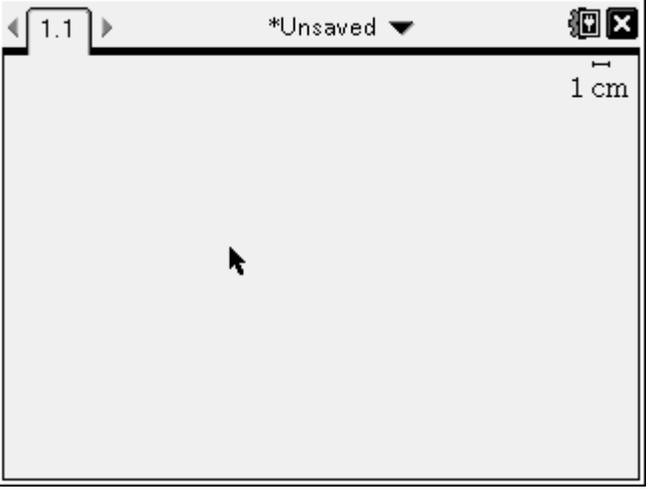# TI-Nspire 2.0 OS

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Activity Overview
1. Students will construct the Lute of Pythagoras.
2. The Learners will identify the different geometric shapes used and created.
3. Extension: Challenge groups to collaborate in completing chart at the end of the worksheet.
4. Option: Have students color a selected design(s) and post around classroom.
5. Option: Use the results from option 2 to create a stained glass window.
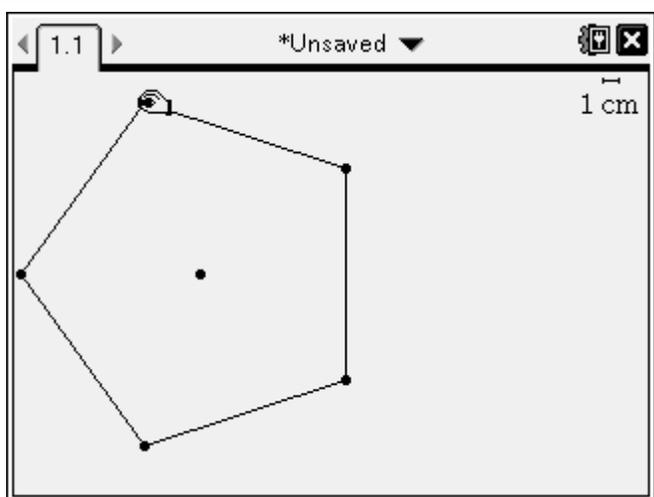
TN State Standard
CLE 3108.4.2 Describe the properties of regular polygons, including comparative classifications …
(Level 3 on Webb's Depth of Knowledge)

From the Home Page: 1:Add Geometry Page Center the cursor vertically and slightly to the left of center.	
Insert a pentagon (menu) 9: Shapes 5:Regular Polygon Click to designate center Move cursor to left edge of screen and click Move the cursor in circular motion until the shape changes from 16 sides to 5.	
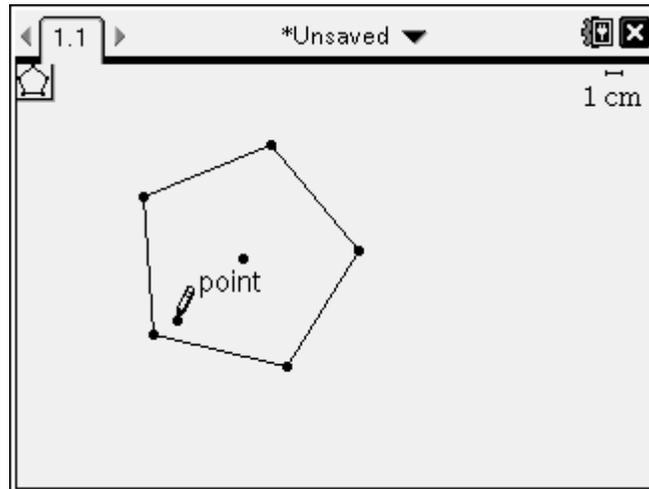
|	
Aligning the pentagon Rotate the pentagon by grabbing a vertex and rotating until the right side is vertical.	
Extending two sides until they cross. (menu) 7:Points & Lines 6: Ray Click on the upper most vertex Move cursor to the top right vertex and click Click on the lowest vertex Move cursor to the bottom right vertex and click (esc) Grab the ends of each ray and extend until they cross	
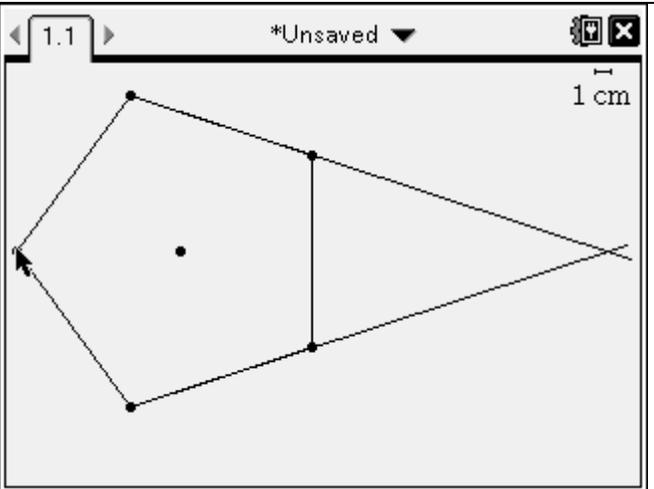
With the rays as guides,
(menu) 7:Points & Lines
    5: Segment
Click on the upper left point, then on intersection of rays
Click on the intersection of rays, the on the lower left point.
(menu) 1: Actions
    3: Hide/Show
    Click on the exposed ends of the rays
    (Make sure the word "ray" is visible.)
    Hide the center point of the pentagon	
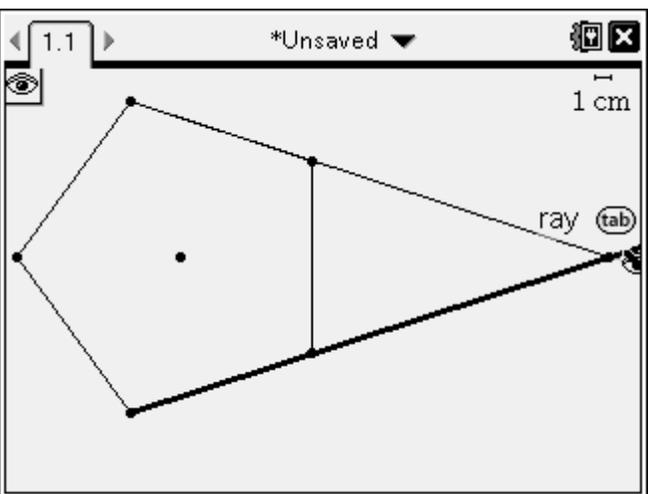
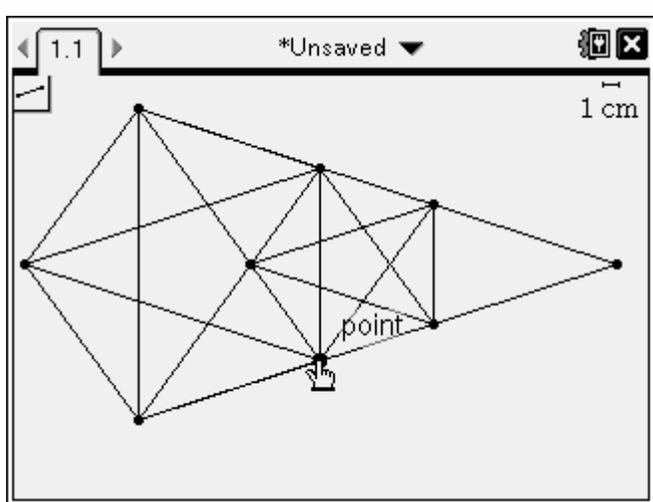|	
Connect all the vertices of the pentagon with line segments: (menu) 7:Points & Lines 5: Segment	1.1 *Unsaved ▼ 1 cm point
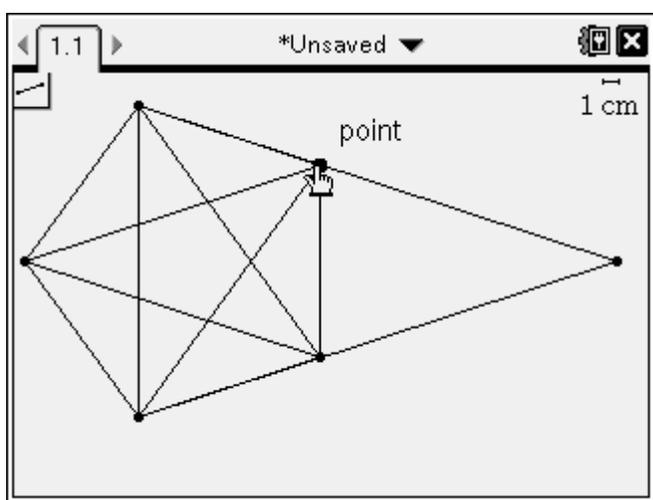
Mark each side of kite equal distances.
 	
Use the right most vertices as center of circles with a radius extending to the right intersection of the star.
(menu) 9:Shapes
    1: Circle
    Click on the top right vertex, then intersection point of right line segments
Repeat using the lower right vertex, also to same intersection point.
	1.1 *Unsaved ▼ 1 cm
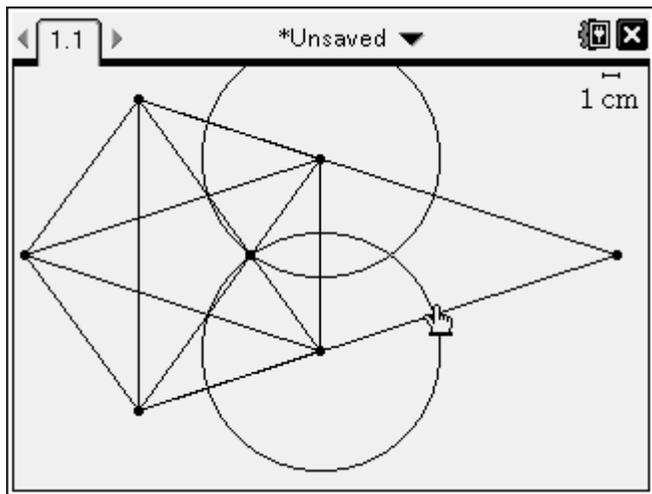
Complete the second, nested pentagon.
 	
Connect where the circles intersect the sides of the kite by:
(menu) 7:Points & Lines
    5: Segment
 	
Hide the circles
(menu) 1: Actions
    3: Hide/Show
    Click on each circle
	1.1 *Unsaved ▼ 1 cm
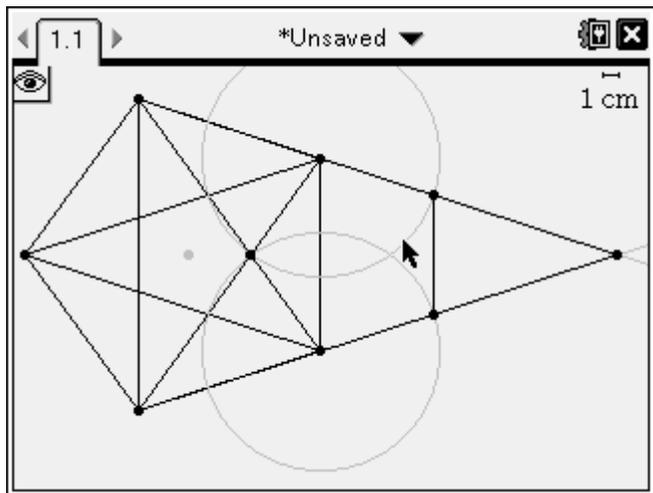
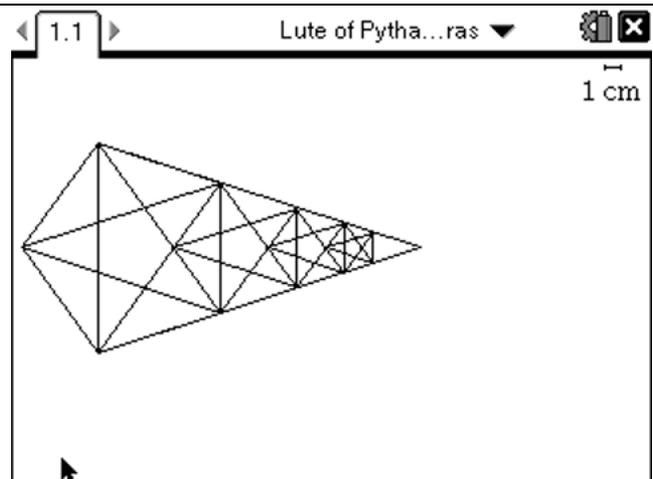|	
Complete the second, nested star. Connect the vertices of the new pentagon to form a second star.	
Finish the Lute. Repeat the steps in the above two frames to construct a third star and fourth star.	
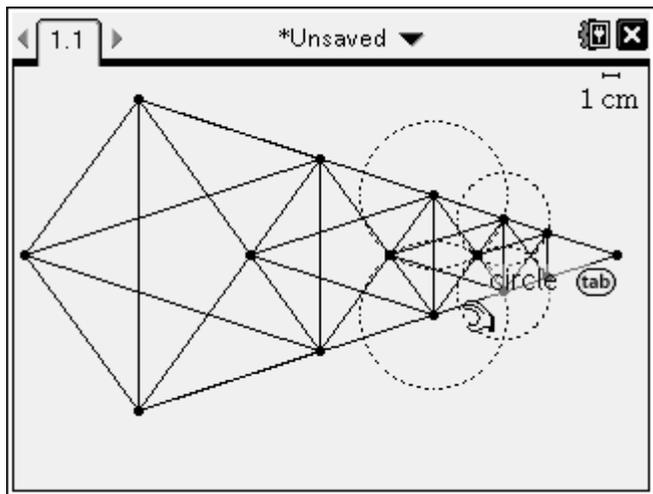
Remove reference points.
 	
Hide the points
(menu) 1: Actions
    3: Hide/Show
    Click on each point	

	Pentagons	Stars	Triangles	Parallelograms	Trapezoids	Kites	Rhombus	Line Segments	Intersection Points
Characteristics Sides: Angles:									
With 1st Pentagon									
2nd									
3rd									
4th									

What patterns do you see?_____

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