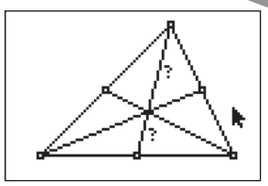
Exploring the Centroid of a Triangle

Approximate Total Time: 25 minutes

ACTIVITY OVERVIEW:

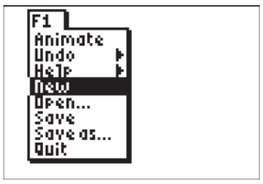
In this activity we will

- Draw a triangle
- Draw the medians of the triangle
- Locate the *centroid*
- Explore measures of the segments in the triangle



The *median* of a triangle is a line segment drawn from one vertex to the midpoint of the opposite side of the triangle. What happens when we draw all three medians of a triangle?

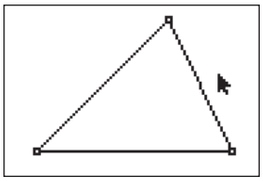
NCTM Geometry Standard: Analyze characteristics and properties of 2- and 3-dimensional geometric shapes and develop mathematical arguments about geometric relationships.



1

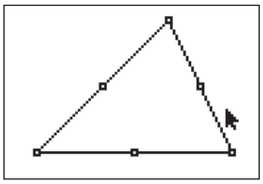
Press APPS. Move down to the CabriJr APP and press ENTER. Press ENTER, or any key, to begin using the application.

Press Y= for the F1 menu and select **New**. (If asked to **Save changes?** press ◄ ENTER to choose "No.")



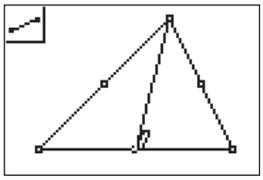
2

Press WINDOW for F2, move down to **Triangle** and press ENTER. Move to the location of a vertex and press ENTER. Move to the second vertex and press ENTER. Move to the third vertex and press ENTER. Press CLEAR to exit the triangle drawing tool.



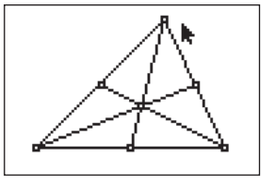
3

To draw the medians we must first locate the midpoints of the sides. Press ZOOM for the F3 menu, move down to **Midpoint** and press ENTER. Move the arrow until a side of the triangle is flashing and press ENTER. Move until another side of the triangle is flashing and press ENTER. Move until the third side of the triangle is flashing and press ENTER.



4

Now we will draw the medians of the triangle. To draw a segment from a vertex to the midpoint of the opposite side press WINDOW for F2. Move to **Segment** and press ENTER. Move the pencil until a vertex is flashing and press ENTER. Move the pencil until the midpoint of the opposite side is flashing and press ENTER .



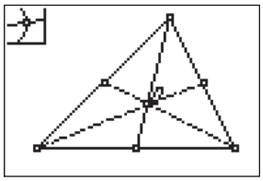
5

With the **Segment** tool still active, draw the other two medians of the triangle.

When all three medians are drawn, press CLEAR to turn off the segment tool.

For TI-Navigator™ Users

Use Screen Capture to observe and assess individual progress in drawing and exploring. For help, see page 56.



6

The medians of the triangle intersect at a common point. This point is called the *centroid* of the triangle.

To mark this point, press WINDOW for the F2 menu. Move to **Point**, then right and down to **Intersection**. Press ENTER. Move the pencil until two of the medians are flashing then press ENTER. How does the length of the segment from a vertex to the centroid compare to the length of the segment from the centroid to the midpoint?

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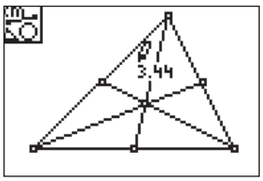
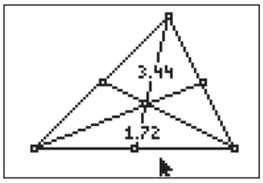


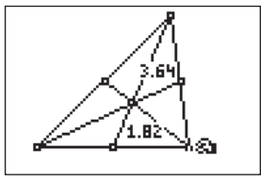
7

Press GRAPH for the F5 menu. Move to **Measure** and **D. & Length**. Press ENTER. Move to a vertex and press ENTER when the point is flashing. Move to the *centroid* and press ENTER when the point is flashing. Press + to display the measurement rounded to hundredths. Move the measurement to a convenient location then press CLEAR to turn off the *hand*.



8

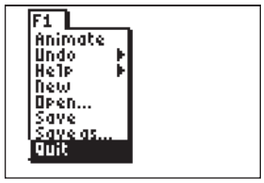
Move the pencil until the *centroid* flashes. Press ENTER. Move until the midpoint is flashing and press ENTER. Press + to display hundredths. Move the measurement, press CLEAR to turn off the *hand*, and then press CLEAR to exit the measurement tool.



9

It appears that the segment from the vertex to the *centroid* is twice the length of the segment from the *centroid* to the midpoint.

Test this conjecture by changing the triangle. Move to a vertex and press ALPHA when the point is blinking. Move the point and observe the changes in the measures of the segments.



10

To exit the APP, press Y= for the F1 menu. Move to **Quit**, then press ENTER. (Or you can press 2nd MODE for QUIT.)

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