

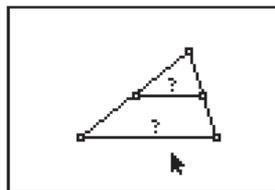
Investigating Lengths of Segments in a Triangle

Approximate
Total Time:
20 minutes

ACTIVITY OVERVIEW:

In this activity we will

- Draw a triangle
- Find the midpoints of two sides of the triangle
- Draw and measure the segment joining the midpoints of these two sides
- Compare the length of this segment to the length of the third side of the triangle

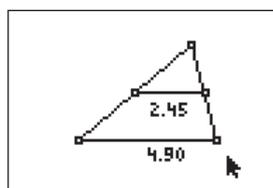


If you connect the midpoints of two sides of a triangle, you have drawn a midsegment of the triangle. How does the length of this segment relate to the third side of the triangle? What if you draw a different midsegment?

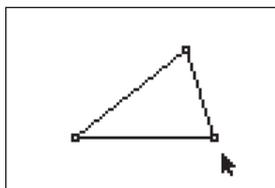
NCTM Geometry Standard: Analyze characteristics and properties of 2- and 3-dimensional geometric shapes and develop mathematical arguments about geometric relationships.



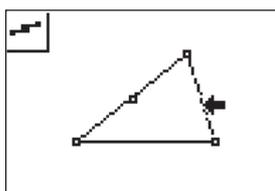
1
Press [APPS]. Move down to the Cabri Jr APP and press [ENTER]. Press [ENTER], or any key, to begin using the application. Press [Y=] for the F1 menu and select **New**. (If asked to **Save changes?** press [↓] [ENTER] to choose “No.”)



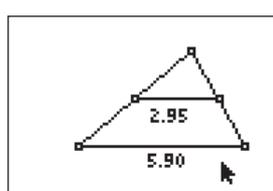
5
Press [GRAPH] for the F5 menu to measure the length of the segment joining the two midpoints. Move down to **Measure** and right to **D & Length**. Press [ENTER]. Move the arrow until the segment joining the midpoints is flashing. Press [ENTER]. Press [+] to see the measurement rounded to hundredths. Move the measurement to a convenient location. Press [CLEAR] to turn off the *hand*. With the measurement tool still active, move until the third side of the triangle is flashing and press [ENTER]. Press [+] for hundredths. Move the measurement to a convenient location. Press [CLEAR] to turn off the *hand*. Press [CLEAR] again to exit the measurement tool.



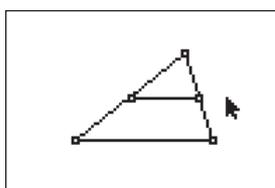
2
Press [WINDOW] for F2, move down to **Triangle** and press [ENTER]. Move to the location of a vertex and press [ENTER]. Move to the second vertex and press [ENTER]. Move to the third vertex and press [ENTER]. Press [CLEAR] to exit the triangle drawing tool.



3
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].

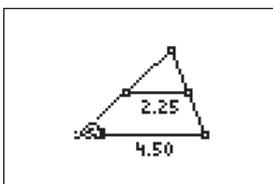


6
How does the length of the segment joining the midpoints of two sides of a triangle compare to the length of the third side? Test this conjecture on other triangles by moving to a vertex, pressing [ALPHA], changing the position of the vertex, and observing the changes in the measurements of the segments.



4
To draw the segment joining the two midpoints, press [WINDOW], move down to **Segment**, and press [ENTER]. Move the pencil until one midpoint is flashing and press [ENTER]. Move the pencil until the other midpoint is flashing and press [ENTER].

Investigating Lengths of Segments in a Triangle



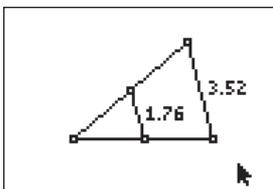
7

“The measure of the segment joining the midpoints of two sides of a triangle is one-half the measure of the third side.”



9

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



8

Test the conjecture using different sides of the triangle.



For TI-Navigator™ Users

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