

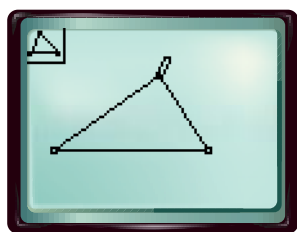


Cabri Jr.

Measuring Polygons

You can use Cabri Junior® to draw and investigate polygons. It can be used to find the measures of the sides and the perimeter of a polygon. You can also find the measures of the angles in a polygon.

Step 1 Draw $\triangle ABC$.

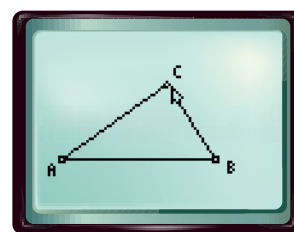


- Select the triangle tool from the toolbar, F2 Triangle, and set the first endpoint A of side \overline{AB} . Then move the cursor and set the other endpoint B .

KEYSTROKES: F2
Use the arrow keys to set point A , then press . Then use the arrow keys to move the cursor to set point B and press .

- Move the cursor from B to set the endpoint C of \overline{BC} . Then complete $\triangle ABC$.

KEYSTROKES: Use the arrow keys to set point C . Then press .



- Use the Alph-Num command to label points A , B , and C .

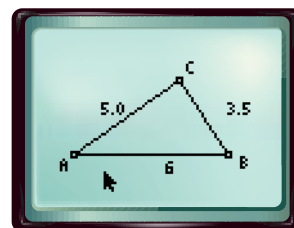
KEYSTROKES: F5

Move the cursor to A and press A . Next, move the cursor to B and press B . Then move the cursor to C and press C .

Step 2 Find AB , BC , and CA .

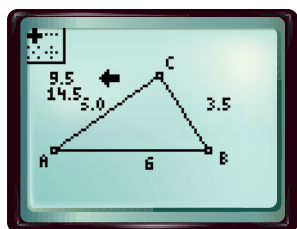
- Use F5 Measure, D. & Length to determine the lengths of AB , BC , and CA .

KEYSTROKES: F5
Move the pointer to vertex A and press . Next, move the pointer to vertex B and press . Then move the measure near \overline{AB} and press . Repeat for \overline{BC} and \overline{CA} . Press once you have all three measures.



Geometry Software Investigation

Step 3 Find the perimeter of $\triangle ABC$.

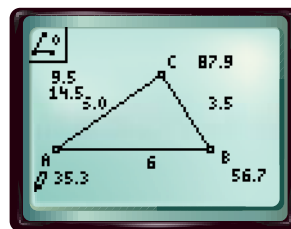


- Use the **Calculate** command to add the measures of the sides.

KEYSTROKES: F5

Move the pointer to the measure of \overline{AB} . Press . Next, move the pointer to the measure of \overline{BC} and press . Move the sum of the measures to an open space on the screen and press . Position the pointer on the sum and press . Then, move the pointer to the measure of \overline{CA} and press . Place the sum in an empty space on the screen and press .

Step 4 Find $m\angle A$, $m\angle B$, and $m\angle C$.



- Recall that $\angle A$ can also be named $\angle BAC$ or $\angle CAB$. Find $m\angle A$ using points B , A , and C in order.

KEYSTROKES: F5

Position the pointer on B and press . Move the pointer to A and press . Then, place the pointer on C and press .

- Find $m\angle B$ using points A , B , and C in order.
- Find $m\angle C$ using points A , C , and B in order.

Analyze

- Add the side measures you found in Activity 2. Compare this sum to the result of Activity 3. How do these compare?
- What is the sum of the angle measures of $\triangle ABC$?
- Repeat the activity for an irregular quadrilateral. Use F2 Quad. to draw the figure.

Make a Conjecture

- Make a conjecture about the sum of the measures of the angles in any triangle.
- What is the sum of the measures of the angles of a quadrilateral? pentagon? hexagon?
- Make a conjecture about how the sums of the measures of the angles of polygons are related to the number of sides.
- Test your conjecture on other polygons. Does your conjecture hold for these polygons? Explain.
- When the sides of a polygon are changed by a common factor, does the perimeter of the polygon change by the same factor as the sides? Explain.