Materials

- TI-Nspire Math and Science Learning Handheld
- Side Lengths and Angle Measures worksheet

Introduction

The following activity allows you to investigate triangles and congruence.

In this activity we will use the TI-Nspire handheld to decide which sides and angles are the smallest and largest in a triangle.

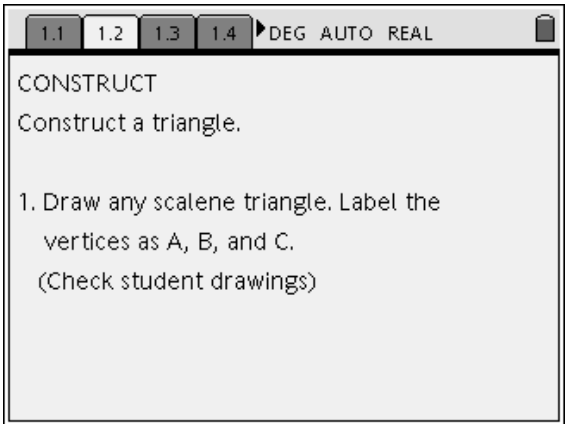


Figure 1

CONSTRUCT

Construct a triangle.

1. Draw any scalene triangle. Label the vertices as A, B, and C

(Follow the steps given next page)

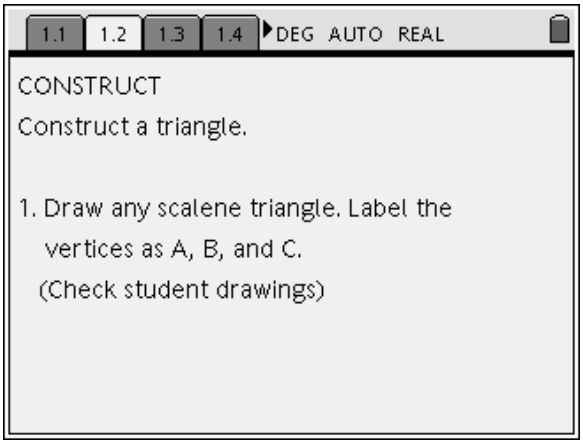


Figure 2

- Press (home) then choose 2: Graphs & Geometry (Figure3& 4).

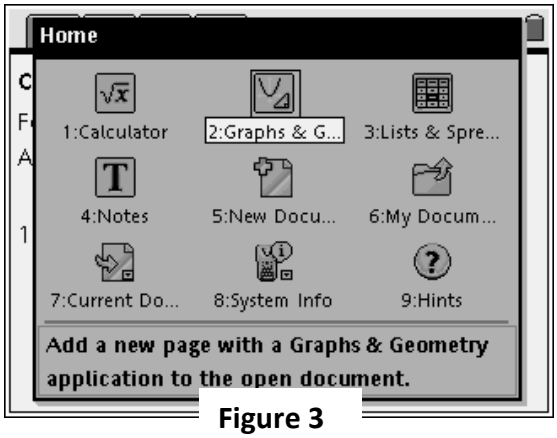


Figure 3

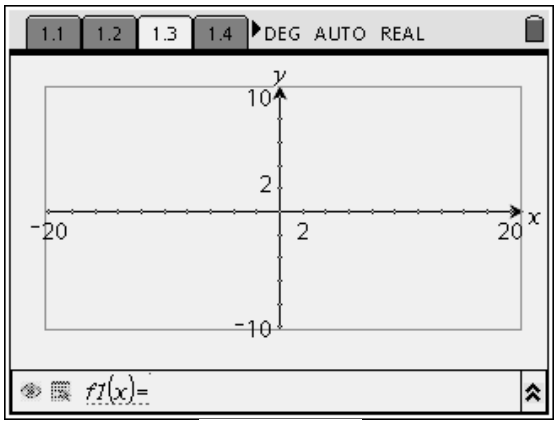


Figure 4

- Press (menu) Choose (2) View, (1)Hide Axes and press (menu)(2)(3)Hide Entry Line. This will allow you to have a blank screen. (Figure 5 & 6)

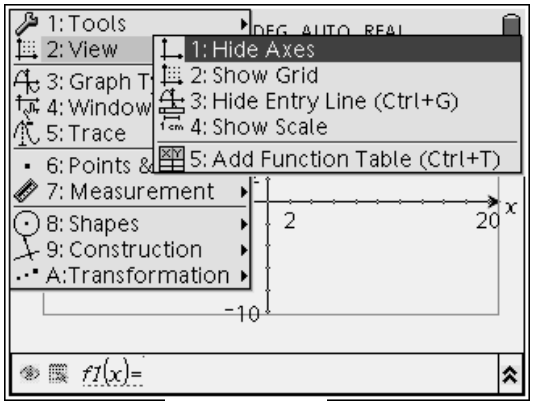


Figure 5

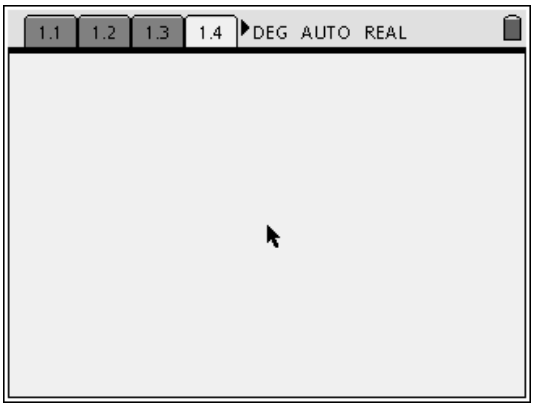


Figure 6

- Press (menu) 8: Shapes ▸ 2: Triangle (Figure 7).

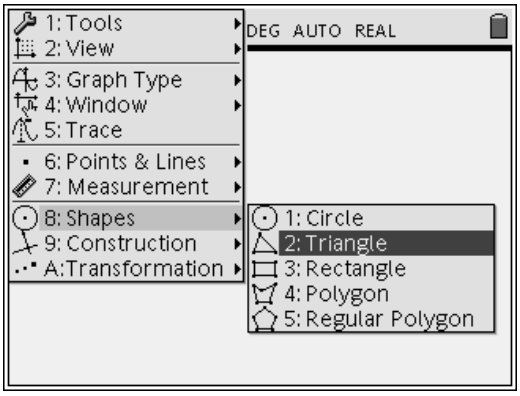


Figure 7

- Move the cursor (pointer) to the left corner of the screen and press (enter) followed by the letter Ⓐ, move the cursor, then press (enter) again followed by the letter Ⓑ and move the cursor again in triangle formation, press (enter) followed by the letter Ⓒ. (Figure 8).

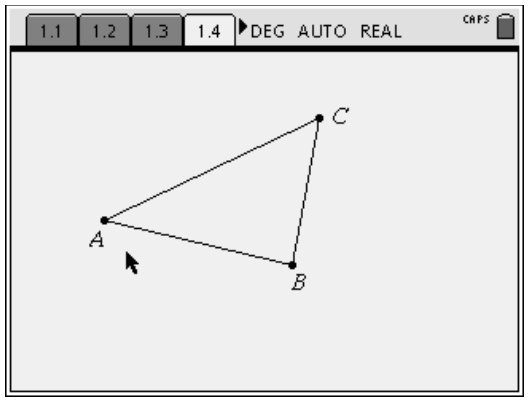


Figure 8

2. Find the measure of each angle of the triangle.
    - Press (menu) Choose 7: Measurement ▸ 4: Angle; to measure the angles. (Figures 9, 10 & 11).

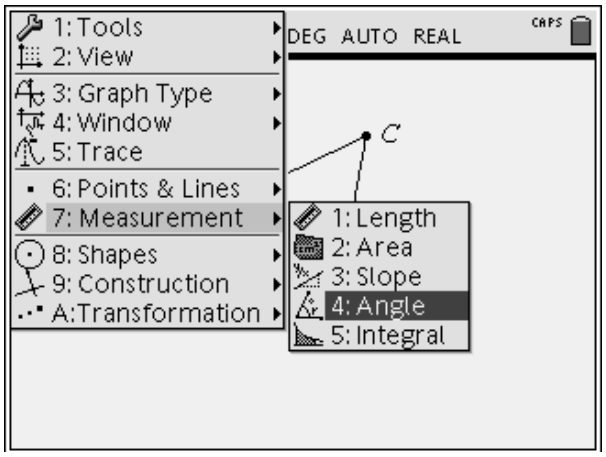
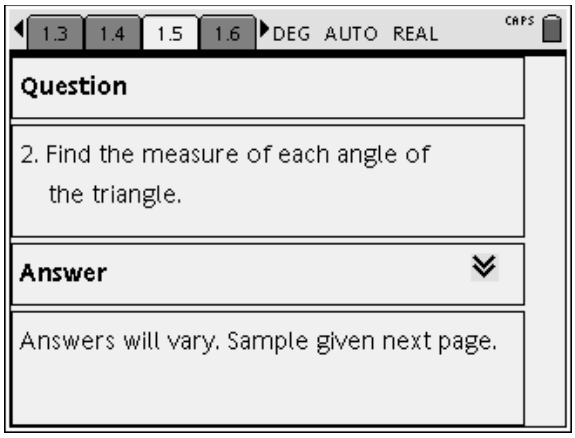


Figure 9



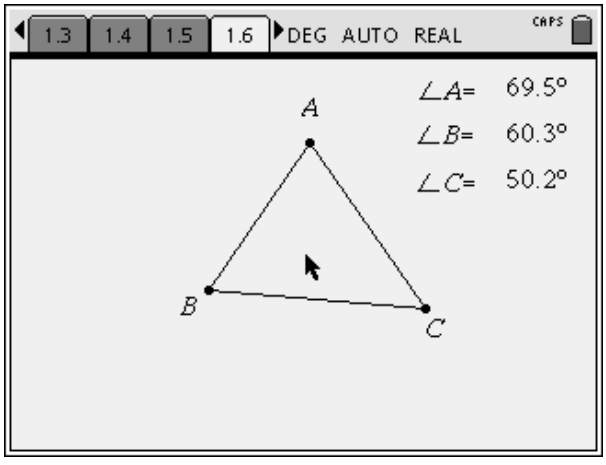


Figure 11

3. Find the length of each side of the triangle.
    - Press (menu) 7: Measurement 1: Length (Figure 12). Press (enter)
    - Move your cursor to point A press (enter) (·) move it to point B, press (enter) to measure side AB. Repeat the process for the other sides. (Figure 13)

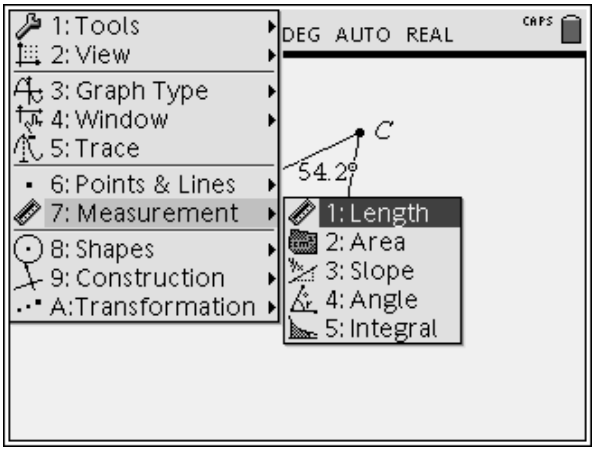


Figure 12

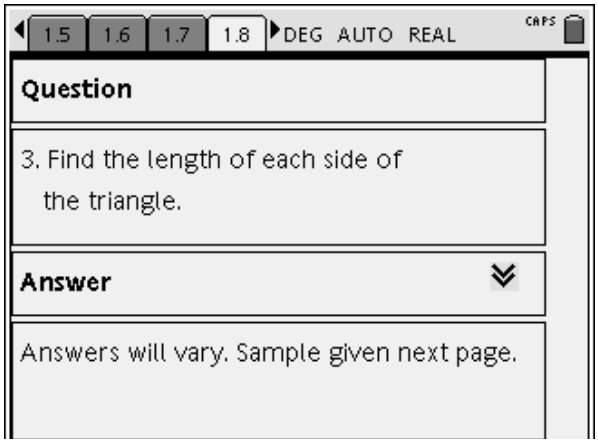


Figure 13

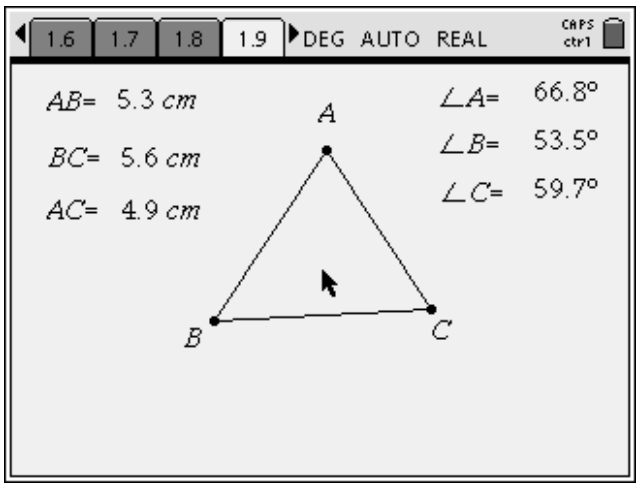


Figure 14

INVESTIGATE

1. In ΔABC, is the longest side adjacent to or opposite the largest angle?

2. In ΔABC, is the shortest side adjacent to or opposite the smallest angle?

3. Drag point A to change the shape and size of ΔABC. Answer the questions in Exercise 1 and 2 for the new triangle.

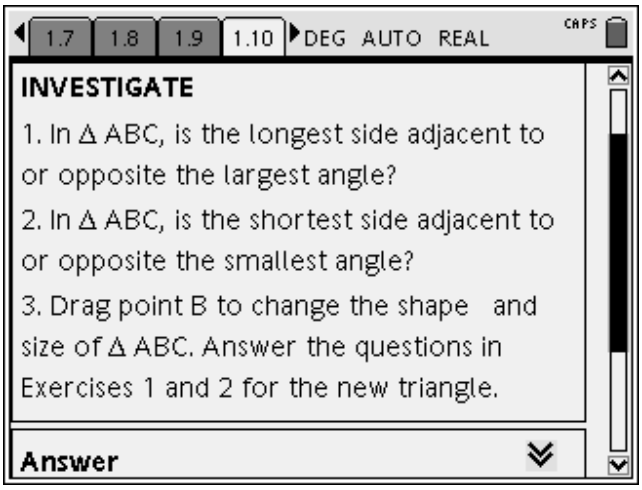


Figure 15

MAKE A CONJECTURE

4. Make a conjecture about how the positions of sides of different lengths in a triangle are related to the positions of the angles of different measures.

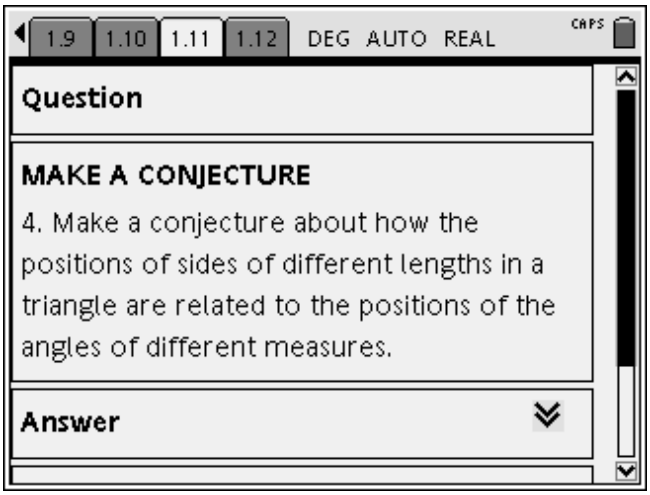


Figure 16

ACTIVITY ASSESSMENT

What happens to the side lengths as the angles of the triangle you draw all get close to 60°?