Exploring Trigonometric Ratios

Concepts	Objectives
• Trigonometric Ratios • Similar triangles Materials • TI-Nspire • TI-Nspire document	• Students will calculate sines, cosines and tangents of acute angles in right triangles. • Students will find that similar right triangles have constant trigonometric ratios. • Students will review that similar triangles have angles that are congruent and proportional sides.

1. Down load the TI-Nspire document called *ExploringTrig Ratios* to your handheld. Use TI-Nspire computer link. (Fig 1)

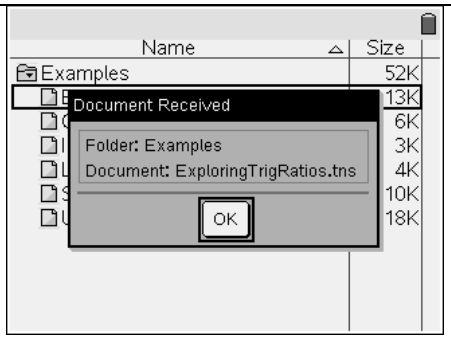

Fig 1

2. Open the document in your handheld. Press Home, 7:MyDocuments, select the document *Exploring Trig Ratios* using the NavPad (arrows), hit enter.(Figs 2-4)

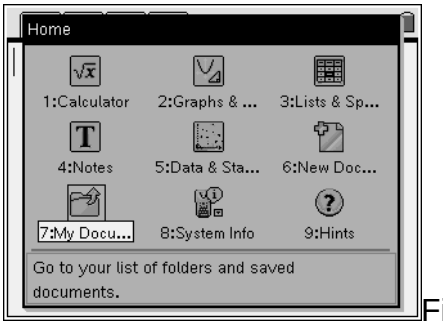

Fig2

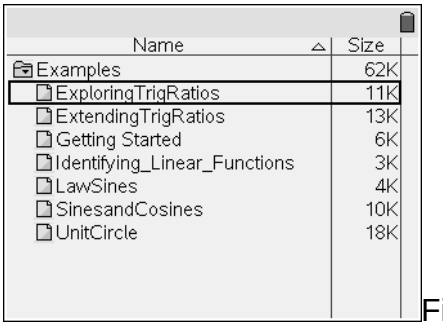

Fig3

Fig4

Exploring Sine

Move to the next page pressing ctrl >

ABC is a right triangle since **m∠ B = 90°**
a, b, and c are the lengths of the sides of the right triangle.

Sin of ∠Θ = length of leg opposite ∠Θ / length of hypotenuse

or

Sin Θ= a / c

3. Now capture the measures of the sides **a**,**b** and **c** in the spreadsheet. To capture a set of data press Ctrl + . (Figs 5-6)

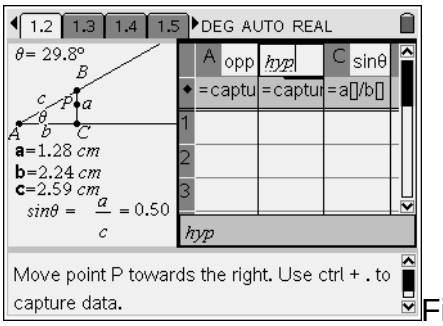

Fig 5

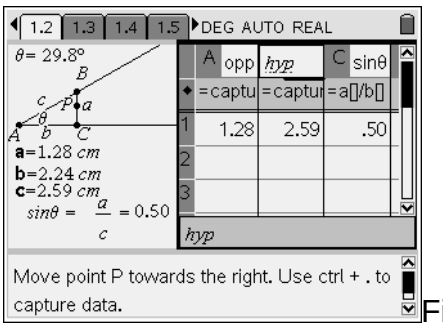

Fig 6

4. Drag side **a** towards the right and capture data again.
   Move the cursor on top of point P. (Fig 7)
   Press ctrl click to hold the point P, use the NavPad (right arrow key) to move side **a** to a new position (Fig 8)
   Press ctlr + . to capture the new set of sides (Fig 9)

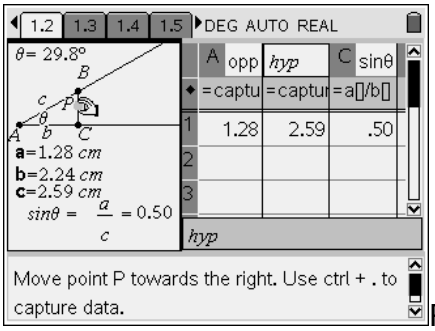

Fig 7

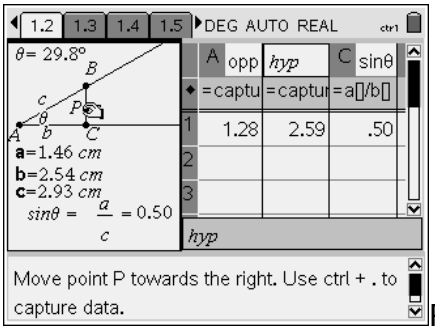

Fig 8

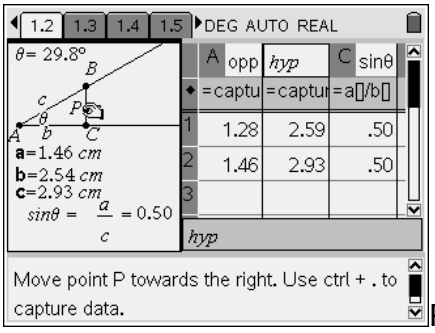

Fig 9

- Repeat step 4 at least 5 times. (Remind students that there are more rows under row 3 on the spreadsheet) (Fig 10)

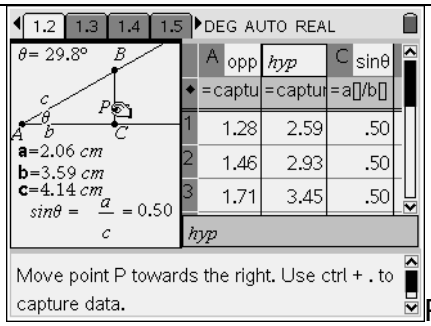

Fig 10

- Move to the next page. Press ctrl and the right arrow key. Answer the questions. (Fig 11)

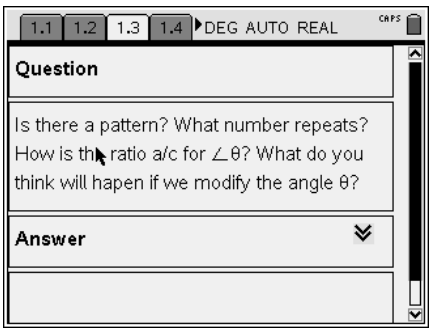

Fig 11

- Move to the next page. Ctrl and right arrow key. (Fig 12)

  To go back to page 1.1 use Ctrl and left arrow key

  To modify the angle move the cursor on top of the hypotenuse, hold it (ctrl click) and move it to a new position, press enter.

  To clear data highlight the cells and press clear and enter.

  To move your cursor between windows pres ctrl tab. (Fig 12)

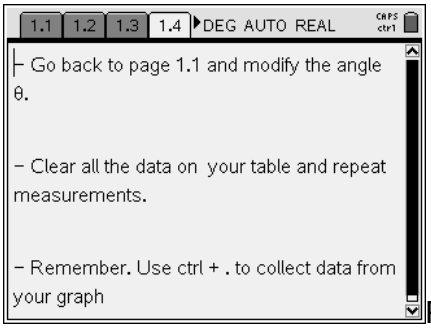

Fig 12

- Move to the next page. Ctrl and right arrow key.

  Answer the questions (Fig 13)

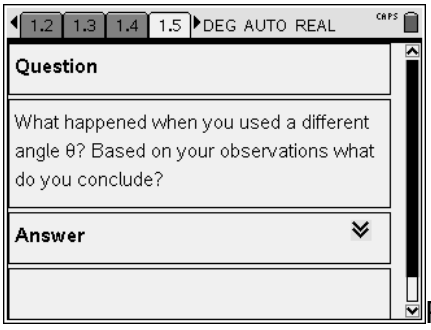

Fig 13

To explore cosine and tangent ratios the procedure are the same than the give to explore the sine ratio.