Valerie Hudson
T^3 Regional Instructor

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T^3 Conference Denton, TX

"Nspired" by Numb3rs Activity: Investigating the Pythagorean Theorem

Charlie and Don are investigating a series of seemingly random highway attacks when Charlie determines that a method of cracking the case involves the use of the Pythagorean Theorem.

On page 1.3 of the TI-Nspire™ document Pythag Numb3rs.tns, you will find a triangle which has a square constructed on each side. Use the "Select" feature in the "Actions" menu to grab and move any vertex of the triangle so that the measurements change. Next, press ctrl . to select measurement data.

Be sure to select multiple measurements where $A^2+B^2 > C^2$, $A^2+B^2< C^2$, and $A^2+B^2 = C^2$.

You will see the measurements that you selected on page 1.4 of the .tns document. Column A shows the measurement of Angle C, column B shows the value of A^2+B^2, and column C shows the value of C^2.

Write some of the measurements that you collect on the table below:

Angle "C"	$A^2+ B^2$	C^2

Answer the questions from pages 1.5 - 1.7:

What type of angle does Angle C need to be if $A^2+B^2 > C^2$? _____

What type of angle does Angle C need to be if $A^2+B^2< C^2$? _____

What type of angle does Angle C need to be if $A^2+B^2 = C^2$? _____

From problem 2: What types of triangles will you have if you are given the following six side lengths: (Use the calculator application as well as the Pythagorean Theorem to help you answer the question.)

A) 9, 12, 15 B) 6, 4, 2 C) 10, 11, 14
D) 9, 8, 4 E) 7, 11, 13 F) 25, 24, 7

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From problem 3: One of Don's coworkers in the FBI, Agent 700, has a length of rope that is 75 feet long with a hook attached to one end. Agent 700 is investigating on his own today, and needs to get away from the suspects. To escape through a window onto the roof of the next building, Agent 700 estimates that the building is 40 feet away and that the roof is 60 feet higher than where he is now. Is the rope long enough for Agent 700 to make his escape to the roof of the next building? Draw a sketch of this situation and explain your answer.