Primitive Pythagorean Triplets

Are you familiar with the Pythagorean Theorem: $a^2 + b^2 = c^2$ where a & b are the lengths of the legs of a right triangle and c is hypotenuse?

Did you know the converse is also true:

Pythagorean Theorem converse:

If the square of the length of the longest side of a triangle is equal to the sum of the squares of the lengths of the other two sides, then the triangle is a right triangle.

The ancient Egyptians used to form right angles (what carpenters, pipe fitters, and mechanics today call "square") by taking a rope with 12 equally spaced knots. They would form a triangle with sides of length of 3, 4 and 5 knots assuring them they had a right triangle and thus the work was at right angles.

Many people familiar with the most famous Pythagorean Triplet 3, 4, 5 may know another 5, 12, 13 and they may also know that natural number multiples of these like 6, 8, 10 (double 3, 4, 5) 9,12, 15 (triple 3, 4, 5) and 50, 120, 130 (ten times 5, 12, 13) are also Pythagorean Triplets but they probably don't know **Hall's formulas** for generating Primitive Pythagorean Triplets.

a,b,h	**go up to**	**a-2b+2h**	**2a-b+2h**	**2a-2b+3h**
	go along to	**a+2b+2h**	**2a+b+2h**	**2a+2b+3h**
	go down to	**-a+2b+2h**	**-2a+b+2h**	**-2a+2b+3h**

Then take each of these three new ones to get three more using the same formulas and so on and so on ….

Here are the generations:

1st generation 3 4 5

2nd generation THE THREE CHILDREN

U 5 12 13 A 21 20 29 D 15, 8, 17

3rd generation THE NINE GRANDCHILDREN

7	24	25	UU1	39	80	89	AU4	33	56	65	DU7
55	48	73	UA2	119	120	169	AA5	65	72	97	DA8
45	28	53	UD3	77	36	85	AD6	35	12	37	DD9

Notice each generation has triple the members of the previous generation.

Go to http://www.smile2340.com/primiti ve-pythagorean-triplets.html to witness 9 complete generations of Primitive Pythagorean Triplets, all the smallest Pythagorean Triplets , a Father's Day T-Shirt one, Eight Pythagorean Triplet Days per Year, and much more.