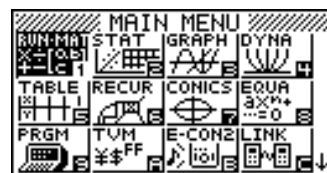


# Natural #'s, Square #'s and Pythagorean Triples

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Select the **Run** icon (or press 1) from the 'Main Menu' **OR** using the arrow keys to highlight the **Run** icon and then press **EXE**.



**Note:**

Natural Numbers are integers,  $n \geq 1$ , e.g. 1, 2, 3, 4, 5, ...

Square numbers are of the form  $n^2$ , e.g.  $1^2, 2^2, 3^2, 4^2, 5^2, \dots$

Pythagorean Triples are of the form  $a^2 + b^2 = c^2$  for any right-angled triangle.

What happens if you take the numbers in each section between consecutive square numbers (boxed in the hundreds chart grid below) and add these together?

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

$2 + 3$	$= 5$	$= 1 \times 5$	
$5 + 6 + 7 + 8$	$= 26$	$= 2 \times 13$	
$10 + 11 + 12 + 13 + 14 + 15$	$= 75$	$= 3 \times 25$	etc.,

**You try:**

- Does this work for the numbers 17 ~ 24, 26 ~ 35, 37 ~ 48, 50 ~ 63, 65 ~ 80, 82 ~ 99? Check these string of numbers to see if the pattern continues.

**Workspace:**

2. Does this pattern work for numbers in each section between consecutive square numbers that are **between 100 and 225** ( $10^2 \sim 15^2$ )?

**Workspace:**

Note the sums generated above, and complete the table below:

Block	Natural numbers to be summed	Sum	Pattern	Pythagorean Triple: $a^2 + b^2 = c^2$
1	2 ~ 3	5	$1 \times 5$	3, 4, <b>5</b>
2	5 ~ 8	26	$2 \times 13$	5, 12, <b>13</b>
3	10 ~ 15	75	$3 \times 25$	7, 24, <b>25</b>
4	17 ~ 24			
5	26 ~ 35			
6	37 ~ 48			
7	26 ~ 35			
8	37 ~ 48			
9	50 ~ 63			
10	50 ~ 63			
11	65 ~ 80			
12	82 ~ 99			
13				
14				
15				
16				
17				
18				
19				
20				
...	...	...	...	...
<i>n</i>				

What do you notice?