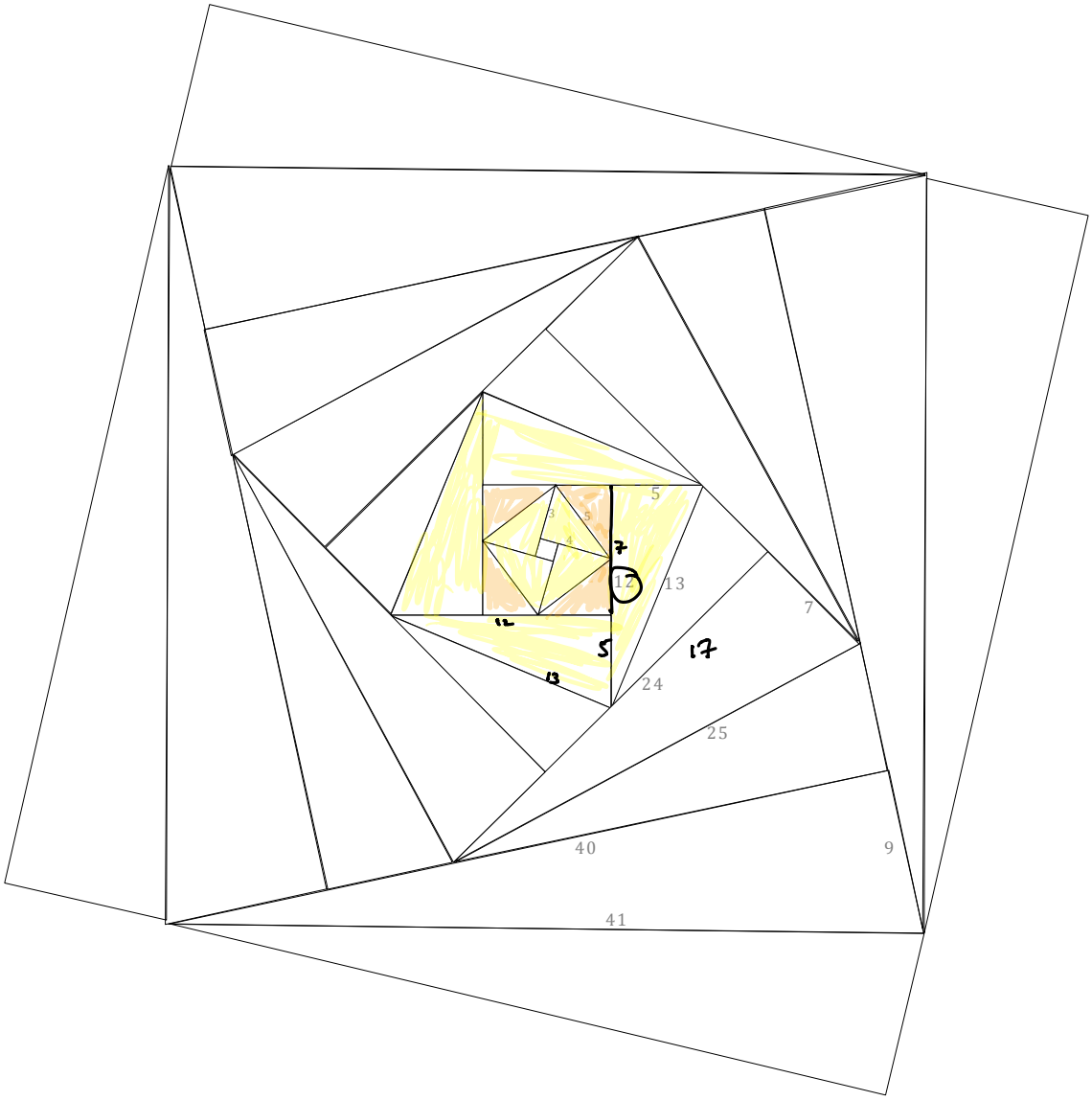
Pythagorean Triples - more coloring



Pythagorean Triples - are integer solutions for the Pythagorean Theorem: $a^2 + b^2 = c^2$

3, 4, 5
5, 12, 13
7, 24, 25
9, 40, 41
11, 60, 61
13, 84, 85
15, 112, 113
…

If $c = b+1$, then $a^2 = b+c$

plus all multiples of these triples

And there are more…
17, 144, 145
And more…
8, 15, 17
12, 35, 37
16, 63, 65
…
And more…

If $c = b+2$, then $a^2 = (b+c)2$

If $c = b+3$, then $a^2 = 3(b+c)$

1. What patterns can you find in all of these numbers? Think about this as you color the spiraling squares.

2. Can you add the next triple or the next sized square to our lists? Please explain how you are figuring this out.

Triangles shown in this image
3-4-5
5-12-13
7-24-25
9-40-41
11-60-61
13-84-85
15-112-113
17-144-145
19-180-181

Squares shown in this image from the center out.	
1 x 1	
5 x 5	
7 x 7	
13 x 13	
17 x 17	
25 x 25	
31 x 31	
41 x 41	
49 x 49	
61 x 61	

3. Can you figure out the missing triangle side in each of these right triangles? The last side of our list is always the hypotenuse.

   a. 10, 24, _?__

   b. 14, _?__, 50

   c. 16, 30, _?__

   d. 15, _?__, 25

   e. 18, 80, _?__