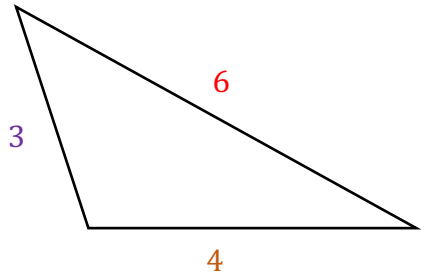
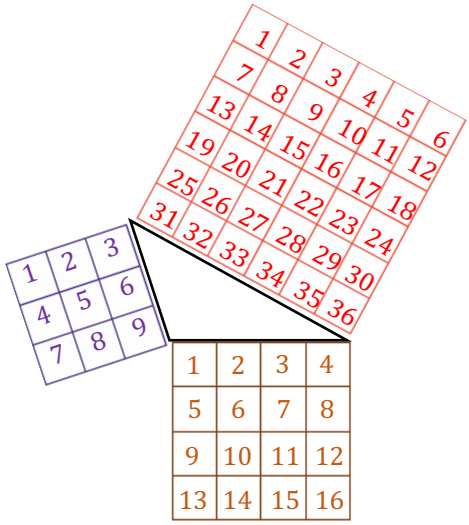
Kaden and Maddie need to figure out when the Pythagorean Theorem works. Kaden uses side lengths from an obtuse triangle. Maddie uses lengths from a right triangle.

Kaden's "Obtuse Triangle" Method

I have an obtuse triangle with side lengths 3, 4, and 6.



I draw a square with each side the same length as the triangle's side. I count how many little squares it takes to fill each big square.



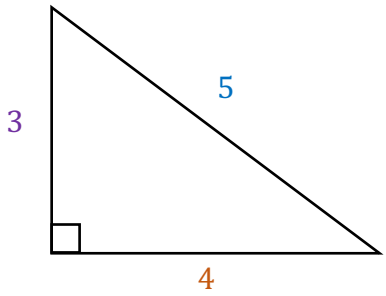
1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	1	2
3	4	5	6	7	8
9					

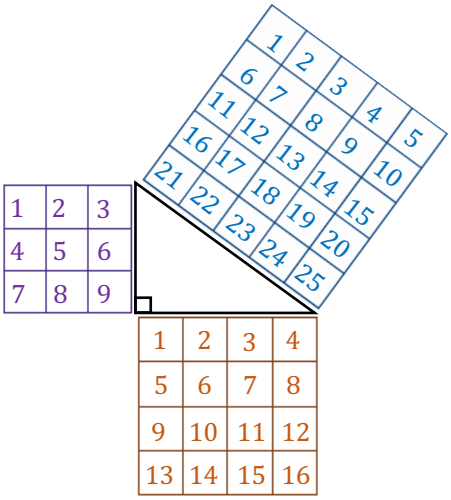
The Pythagorean Theorem didn't work with this triangle.

$3^2 + 4^2 < 6^2$

Kaden and Maddie need to figure out when the Pythagorean Theorem works. Kaden uses side lengths from an obtuse triangle. Maddie uses lengths from a right triangle.

Maddie's "Right Triangle" Method





1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	1	2	3	4
5	6	7	8	9

$3^2 + 4^2 = 5^2$

I have a right triangle with side lengths 3, 4, and 5.

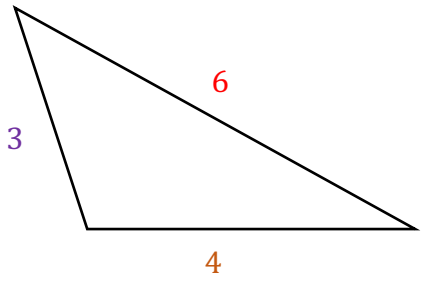
I draw a square with each side the same length as the triangle's side. I count the number of little squares it takes to fill each big square.

The Pythagorean Theorem works for this triangle!

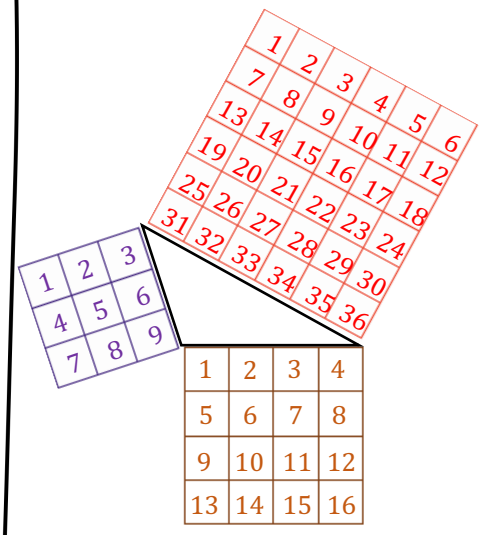
Kaden and Maddie need to figure out when the Pythagorean Theorem works. Kaden uses side lengths from an obtuse triangle. Maddie uses lengths from a right triangle.

Kaden's "Obtuse Triangle" Method

I have an obtuse triangle with side lengths 3, 4, and 6.



I draw a square with each side the same length as the triangle's side. I count how many little squares it takes to fill each big square.



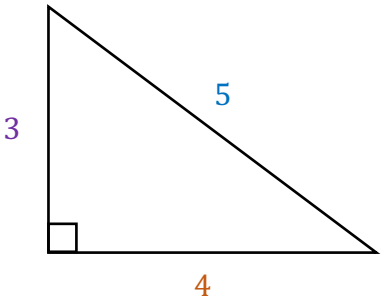
1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	1	2
3	4	5	6	7	8
9					

$3^2 + 4^2 < 6^2$

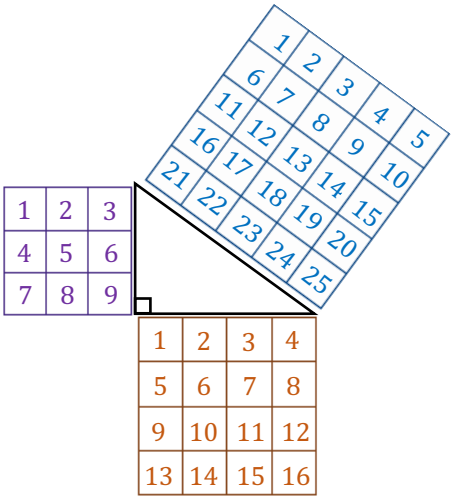
The Pythagorean Theorem didn't work with this triangle.

Maddie's "Right Triangle" Method

I have a right triangle with side lengths 3, 4, and 5.



I draw a square with each side the same length as the triangle's side. I count the number of little squares it takes to fill each big square.



1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	1	2	3	4
5	6	7	8	9

$3^2 + 4^2 = 5^2$

The Pythagorean Theorem works for this triangle!

1) What are the similarities and differences between Kaden and Maddie's methods?

Similarities	Differences

2) Kaden found that the Pythagorean Theorem didn't work for his triangle. Did he do something wrong? Explain.

3) How did Maddie know the Pythagorean Theorem worked for her triangle?

4) Kaden's sister says that side lengths of 5, 7, and 11 form a right triangle. Is she correct? How do you know?

Kaden and Maddie need to f… wh… rem works. Kaden uses side lengths from an… n a right triangle.

Kade… …angle" Method

I h… obtus… wi…

I have a right triangle with side lengths 3, 4, and 5.

Wow! I never thought about the Pythagorean Theorem as squares before. It was neat to *see* it.

With Kaden's obtuse triangle, there weren't enough small squares to fill the big square, but with my right triangle, there were exactly the right number of squares.

So, the Pythagorean Theorem must only work with right triangles!

I draw a square with each side the same length as the triangle's side. I count the number of little squares it takes to fill each big square.

		8			
13	14	15			
3	4	5	6		
9					

1	2	3	
6	7		
11	12		
16	1		
5	6	7	

The Pythagorean Theorem didn't work with this triangle.

The Pythagorean Theorem works for this triangle!

$3^2 + 4^2 < 6^2$

$3^2 + 4^2 = 5^2$