

STAIRCASES

Picture Puzzles

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This Picture Puzzle is based on
... Task 51, *Staircase*
Teaching Notes
... mathematicscentre.com/picturepuzzles/teachingnotes

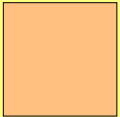
Picture Puzzles

To Do

1. Look at visual patterns to find numbers.
2. Check your answers by calculating in two ways.
3. Learn more about Triangle Numbers.

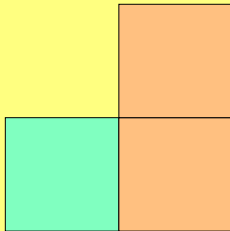
You Need

- Square tiles or cube blocks
- Square graph paper



$$T_1 = 1$$

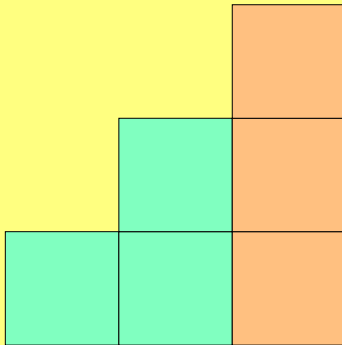
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$$T_2 = 3$$

$$T_1 = 1$$

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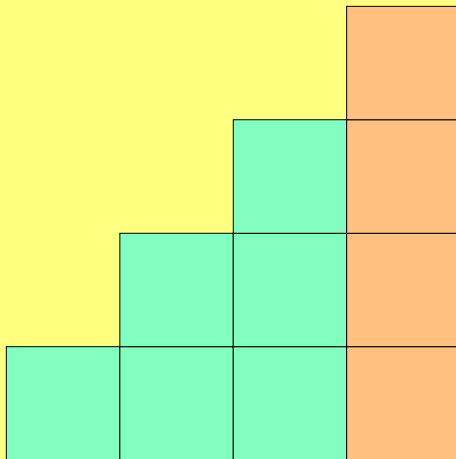


$$T_3 = 6$$

$$T_2 = 3$$

$$T_1 = 1$$

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$$T_4 = 10$$

$$T_3 = 6$$

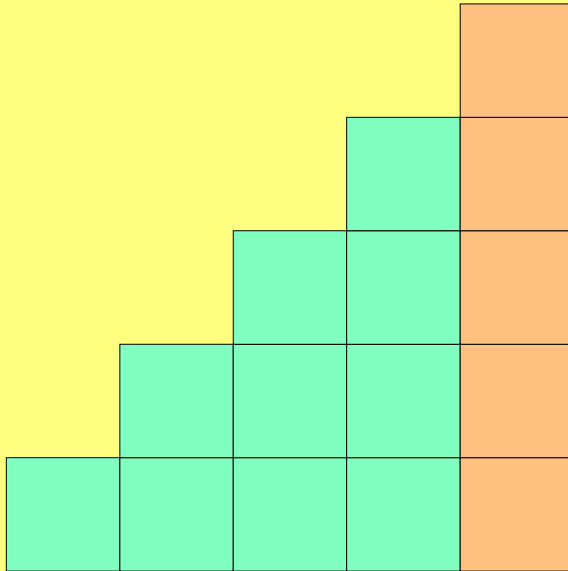
$$T_2 = 3$$

$$T_1 = 1$$

Predict τ_5

Predict T_5 another way.

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$$T_5 = 15$$

$$T_4 = 10$$

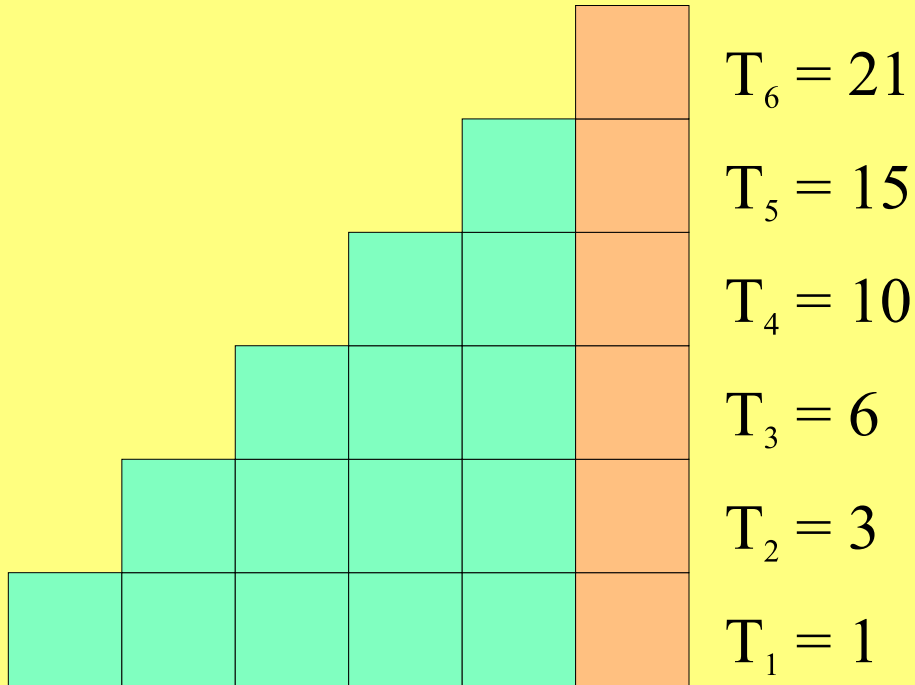
$$T_3 = 6$$

$$T_2 = 3$$

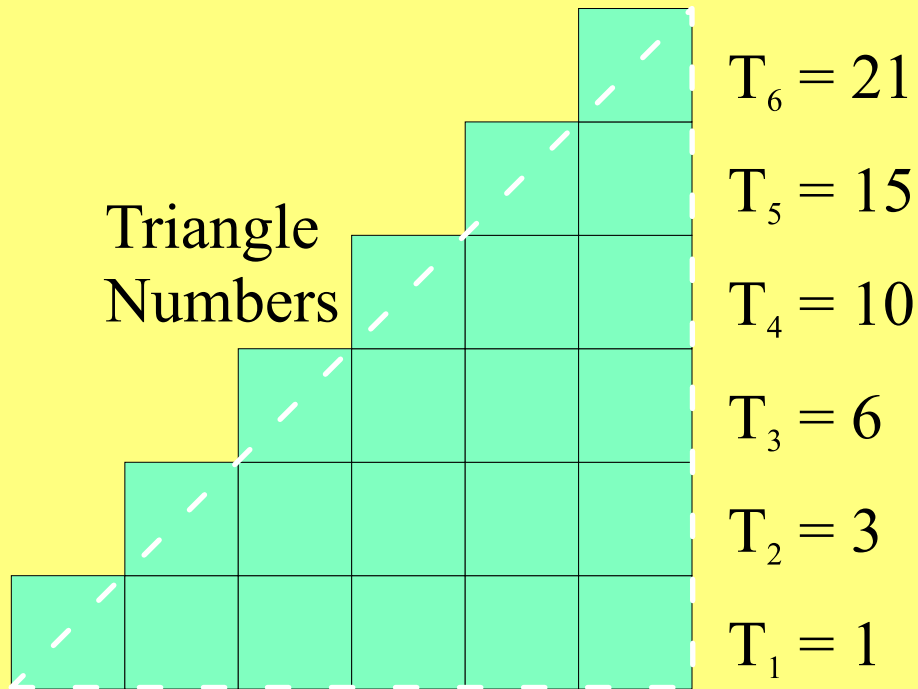
$$T_1 = 1$$

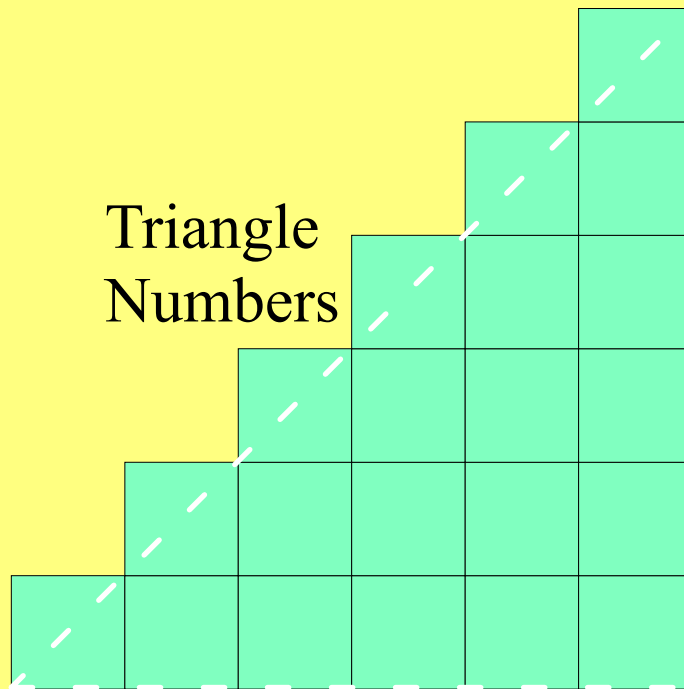
Predict T_6 in two different ways.

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$$T_{20} = ??$$

...

$$T_6 = 21$$

$$T_5 = 15$$

$$T_4 = 10$$

$$T_3 = 6$$

$$T_2 = 3$$

$$T_1 = 1$$

You might be correct for T_{20}

Can you check it another way?

**Choose any size
Triangle Number staircase.
Calculate the number of small
squares in two different ways.**

Hint: Think about moving blocks in the staircase so you make rectangles.

**Picture
Puzzles**

more

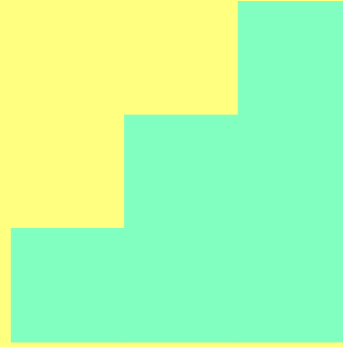
**Picture
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Picture Puzzles

To Do

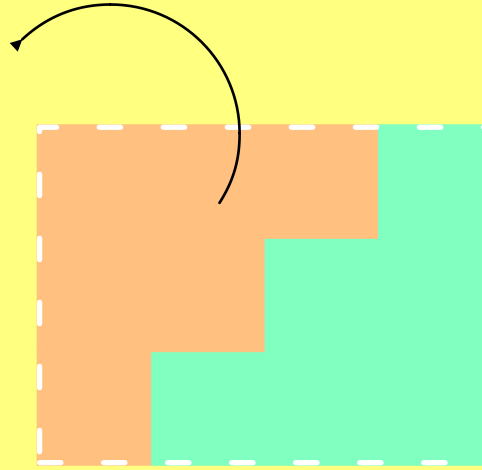
1. Transform a Triangle Number staircase to make a square and discover something.
2. Check your discovery by calculating with Triangle Numbers.

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Picture Puzzles

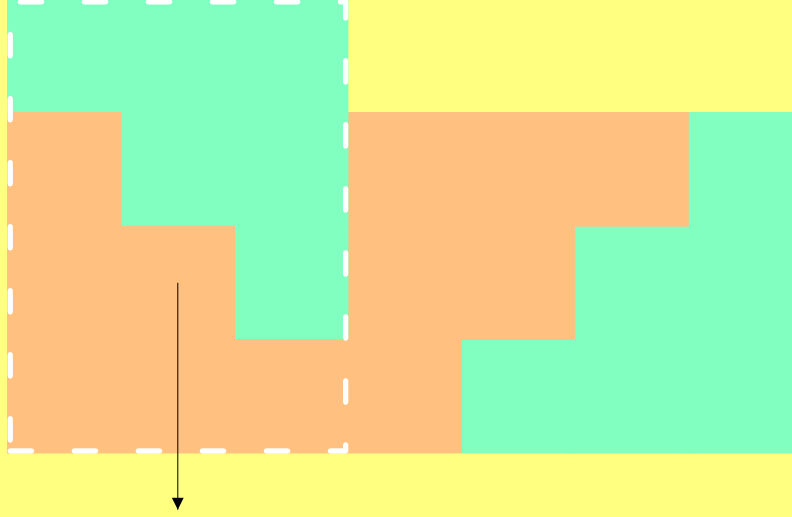




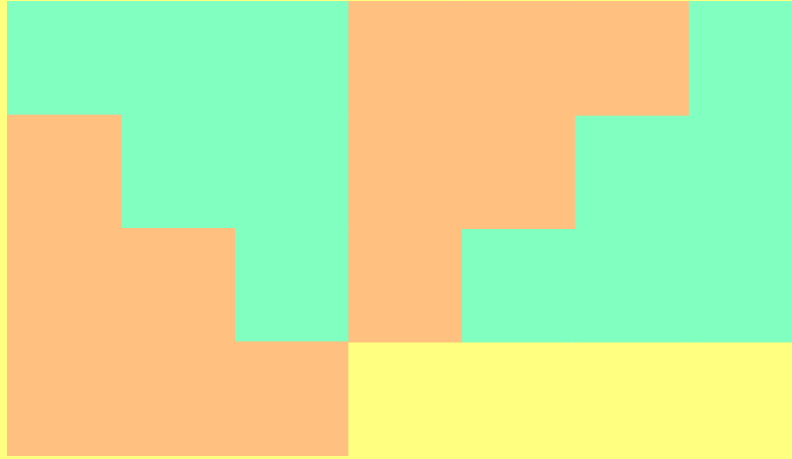
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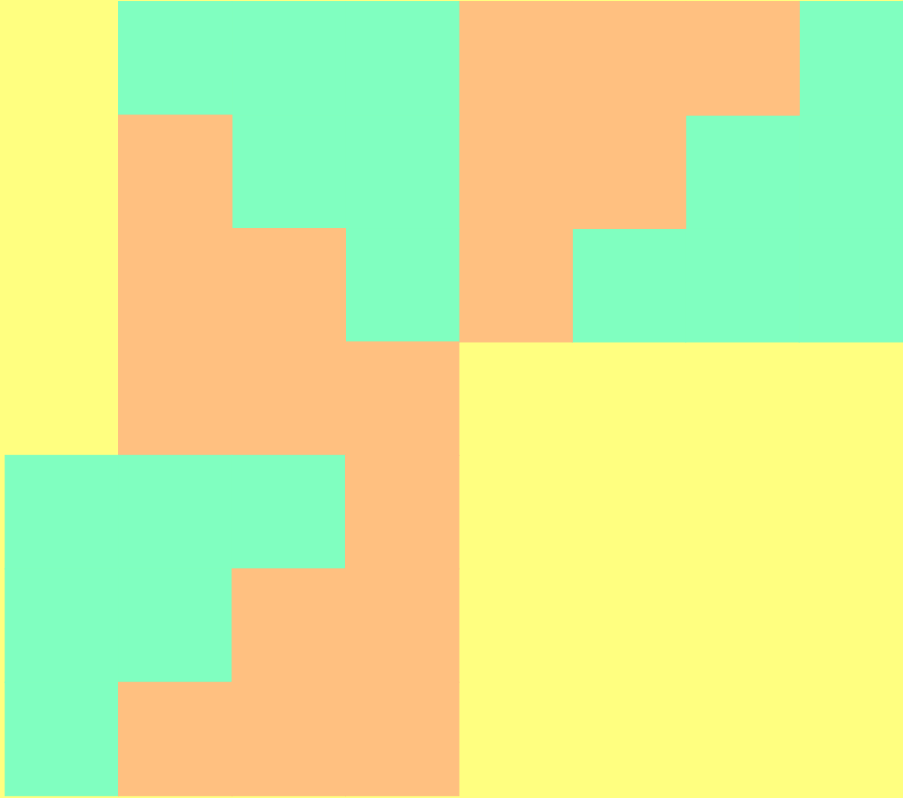
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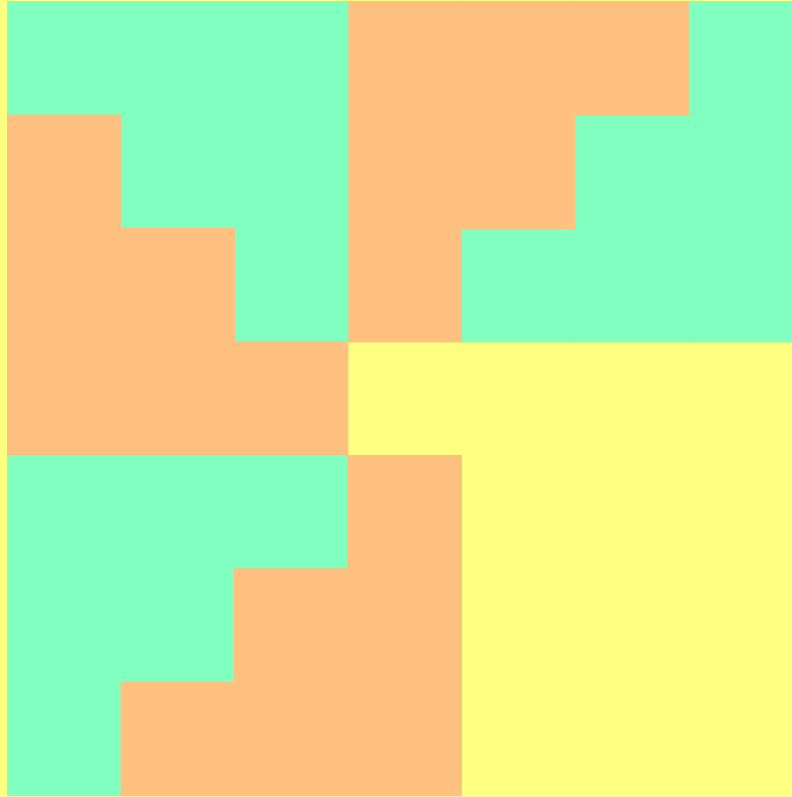
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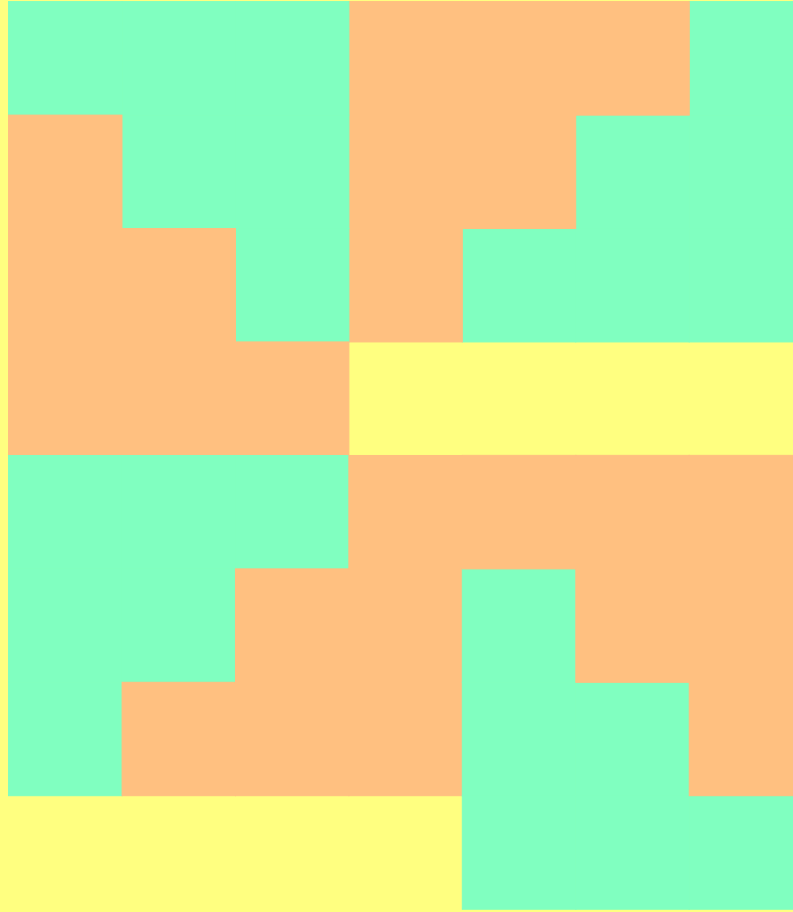
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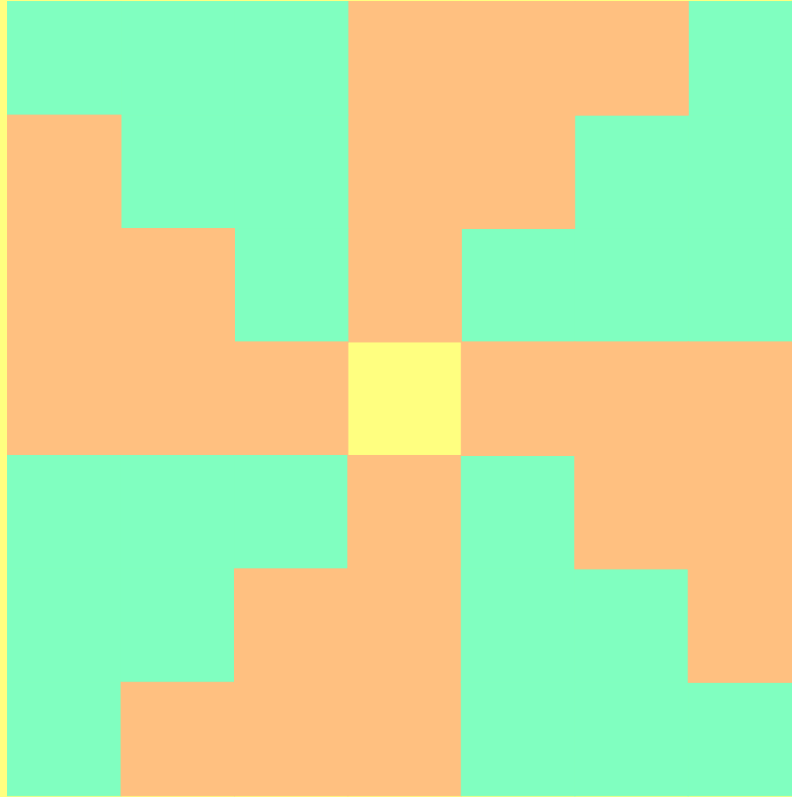


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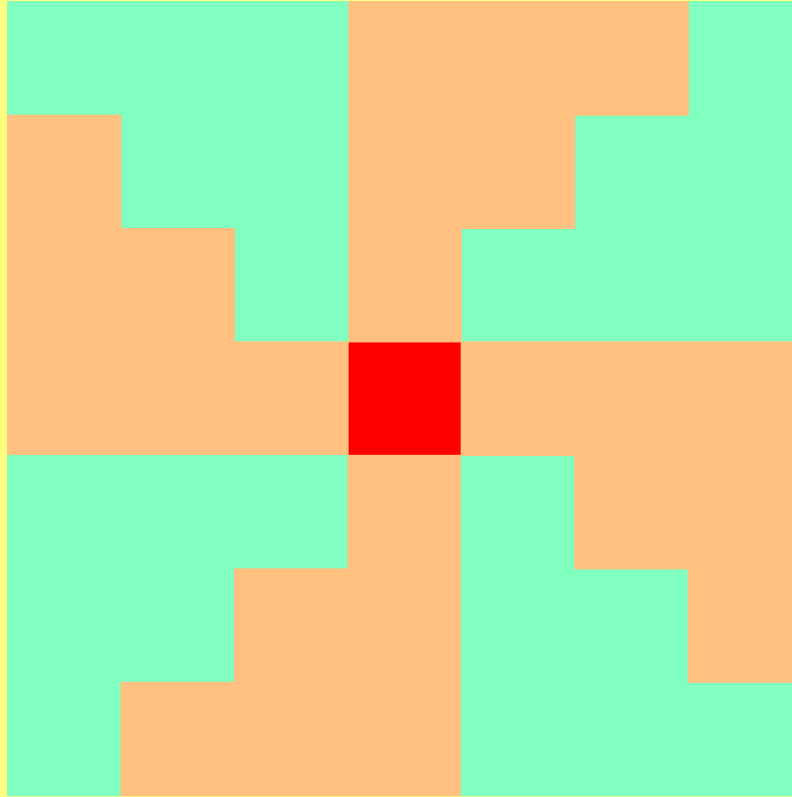


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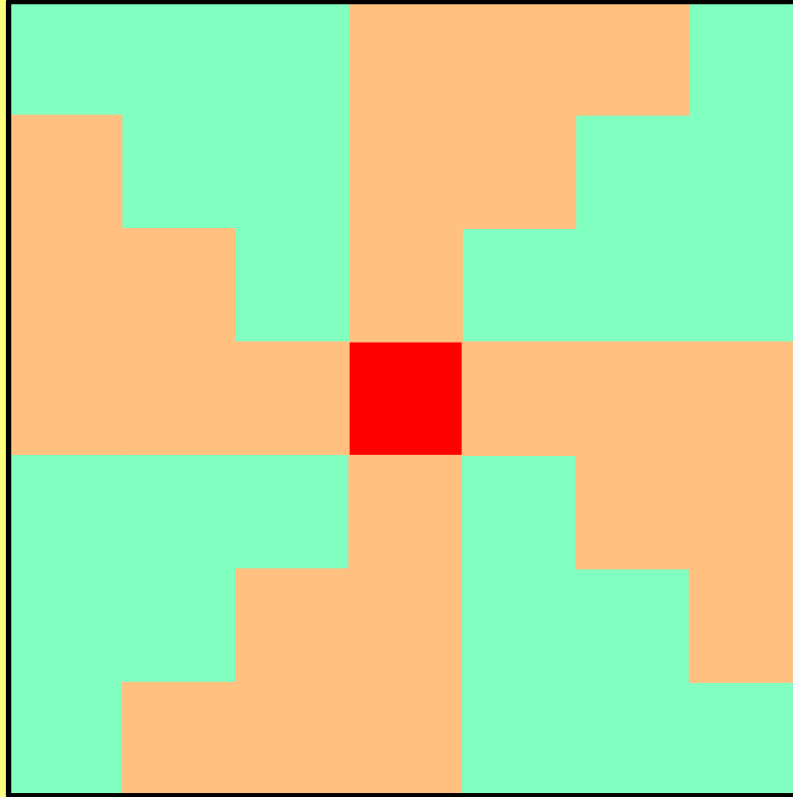
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**Start with a different
Triangle Number staircase.
Can you make a square the same way?**

**Explain how to make a square
from a Triangle Number staircase.**

**Test your explanation using
numbers instead of shapes.**

even more

**What can you make with 9 Triangle
Number staircases and 1 square?**

**Explore 9 times
any Triangle Number plus 1.**

THE END...

...OR IS IT?