NCTM ANNUAL MEETING & EXPOSITION 2023 D.C.

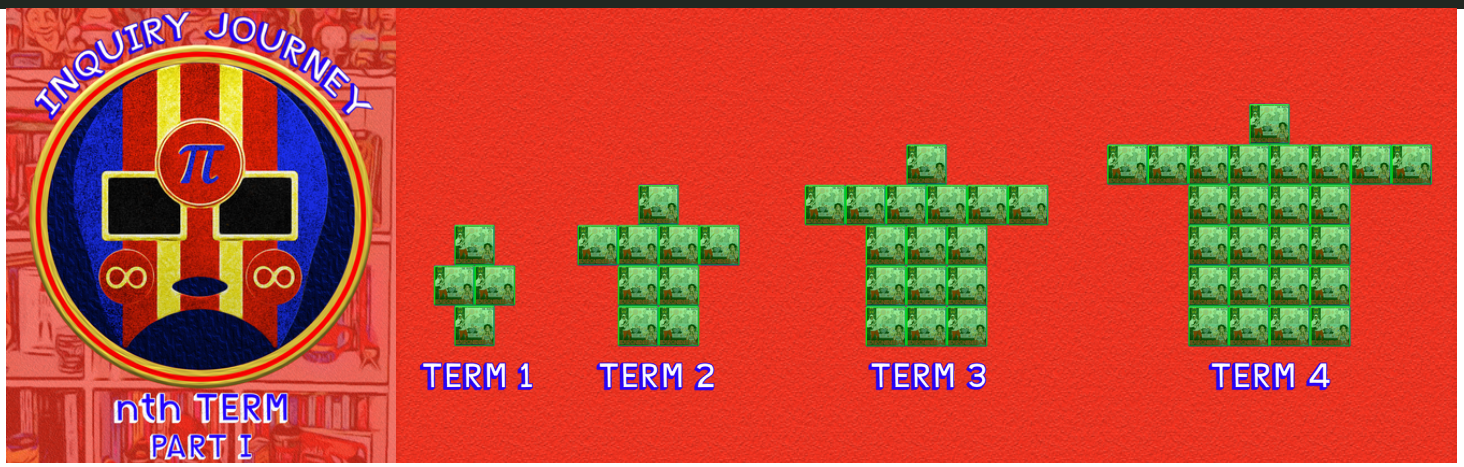
SHORTS, HOOKS, & INQUIRY

MIDDLE LEVEL MATHEMATICS

Dr. Mike Sherman
msherman@bhusd.org

October 27, 2023

INQUIRY JOURNEY
VISUAL PATTERNS

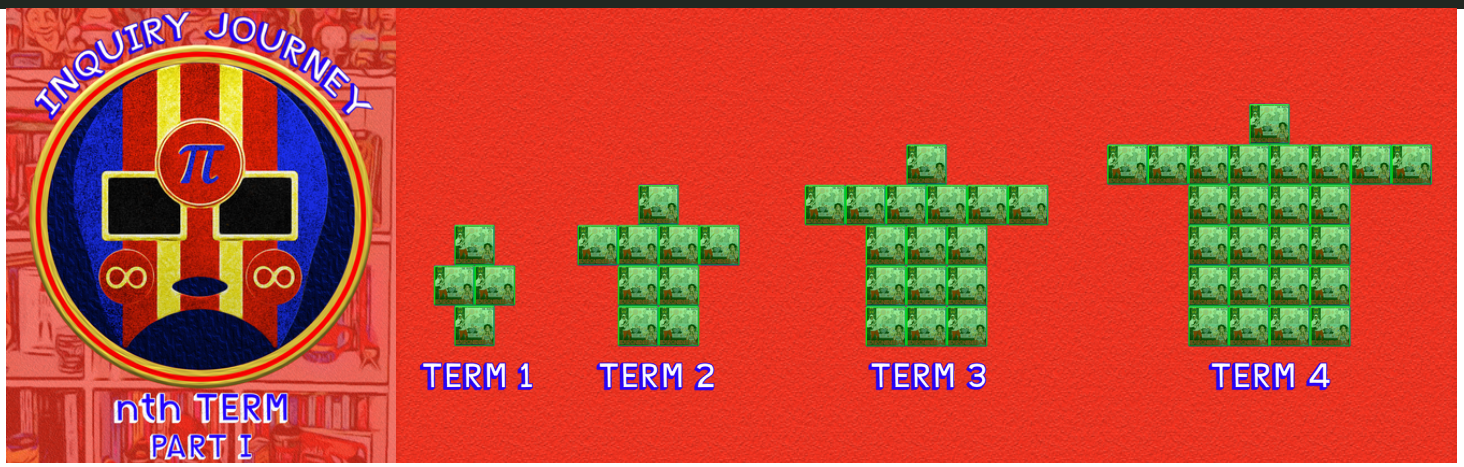


What changes from Term 1 to Term 2? What changes from Term 2 to Term 3? What changes from Term 3 to Term 4?

Show what you think Term 5 will look like? What led you to your decision?

What do you expect to see in Term 6? Term 7? Show or explain.

INQUIRY JOURNEY
VISUAL PATTERNS

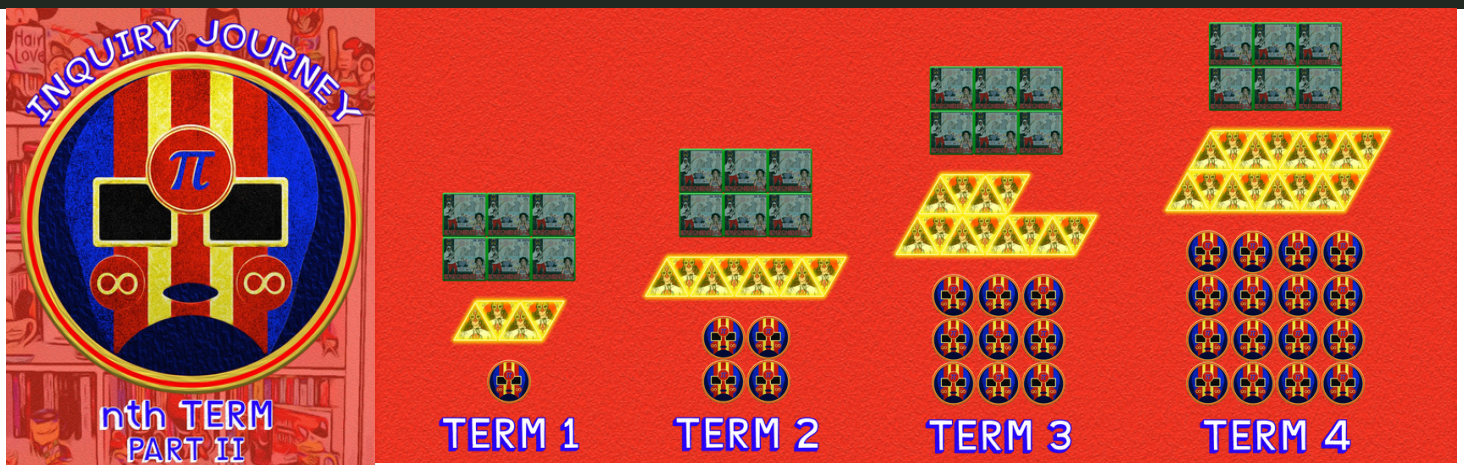


How many squares will be in the 87th term? Describe what the term would look like.

How can you figure out the number of squares in any term? Create an equation that supports your thinking.

Final task: Go help Dr. Math! Let him know how you found your answers.

INQUIRY JOURNEY
VISUAL PATTERNS

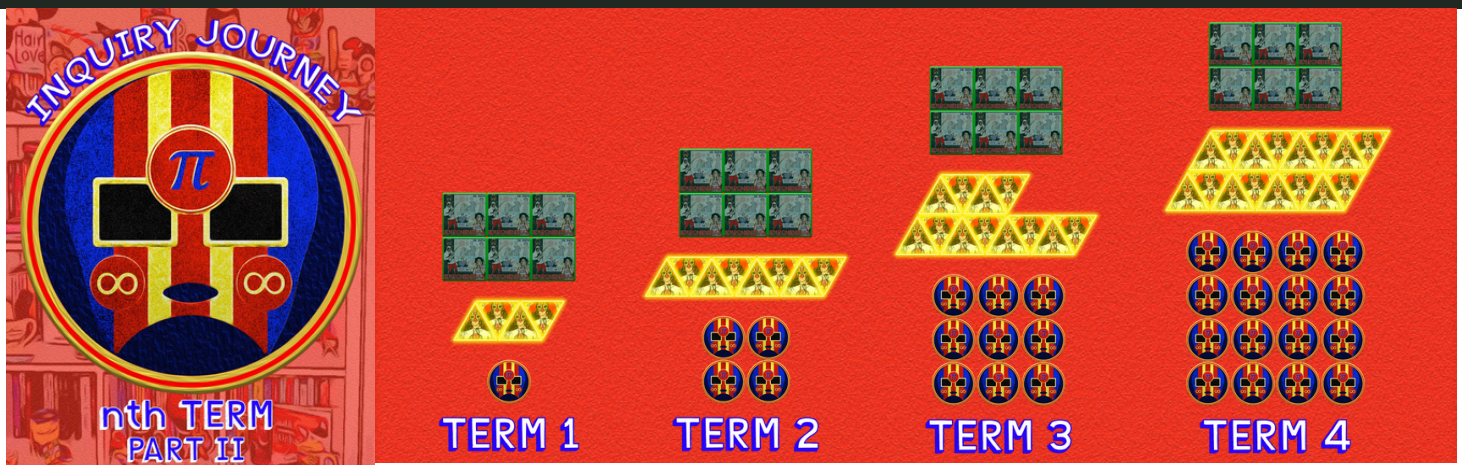


What changes from Term 1 to Term 2? What changes from Term 2 to Term 3? What changes from Term 3 to Term 4?

Show what you think Term 6 will look like? What led you to your decision?

What do you expect to see in Term 8? Term 9? Show or explain.

INQUIRY JOURNEY
VISUAL PATTERNS

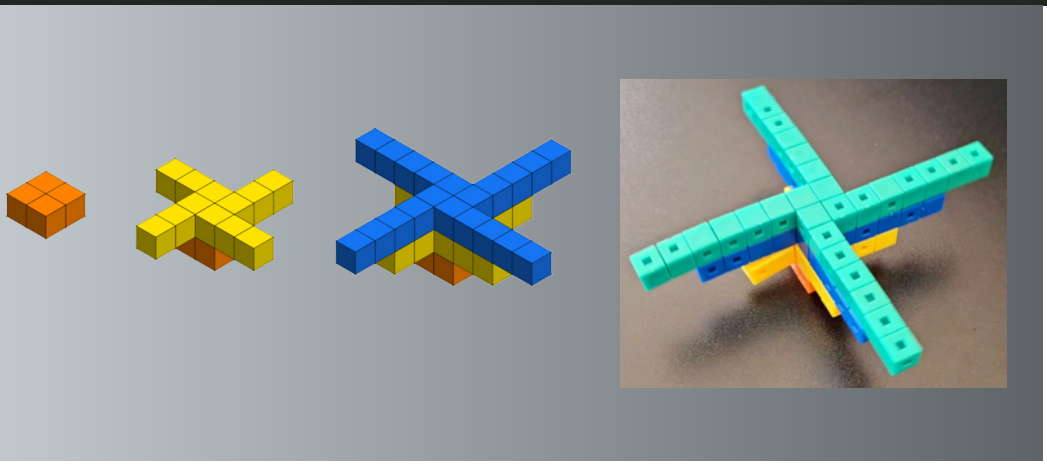


How many squares will be in the 53rd term? Describe what the term would look like.

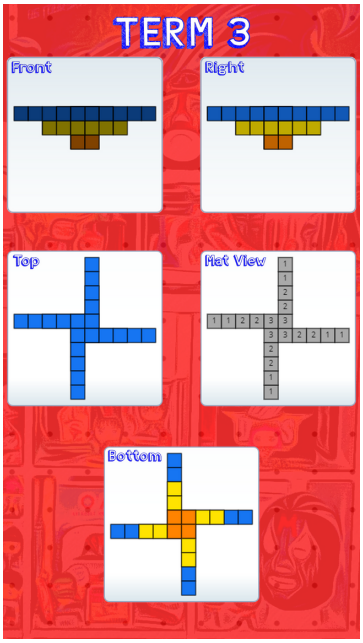
How can you figure out the number of squares in any term? Create an equation that supports your thinking.

Final task: Go help Dr. Math! Let him know how you found your answers.

INQUIRY JOURNEY
VISUAL PATTERNS

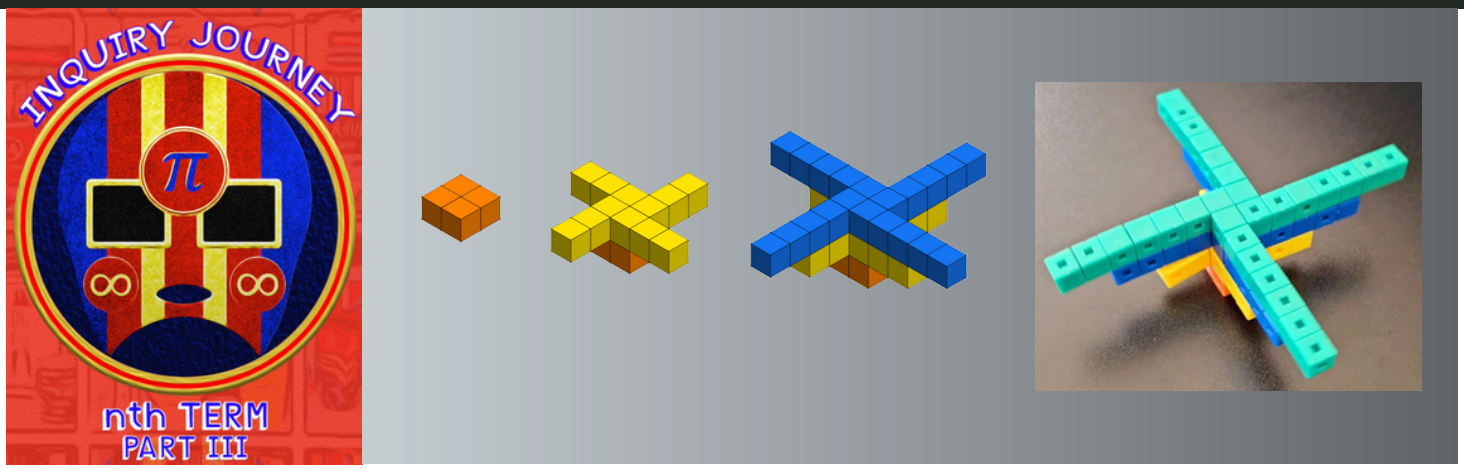


How many cubes will be in Term 112? How many of each color? Why?



Final task: Go help Dr. Math! Let him know how you found your answers.

INQUIRY JOURNEY
VISUAL PATTERNS



How many cubes are in the nth term? Explain your strategy.

Go help Dr. Math! Sound off and let him know what you did.

INQUIRY JOURNEY
VISUAL PATTERNS

1)

Sketch two additional figures that match this series.

INQUIRY JOURNEY
VISUAL PATTERNS

How many squares will be in the 24th figure? Describe what it would look like.

INQUIRY JOURNEY
VISUAL PATTERNS

2)

Sketch two additional figures that match this series.

INQUIRY JOURNEY
VISUAL PATTERNS

How many squares will be in the 78th figure?

How many squares will be in the nth figure?

INQUIRY JOURNEY
VISUAL PATTERNS

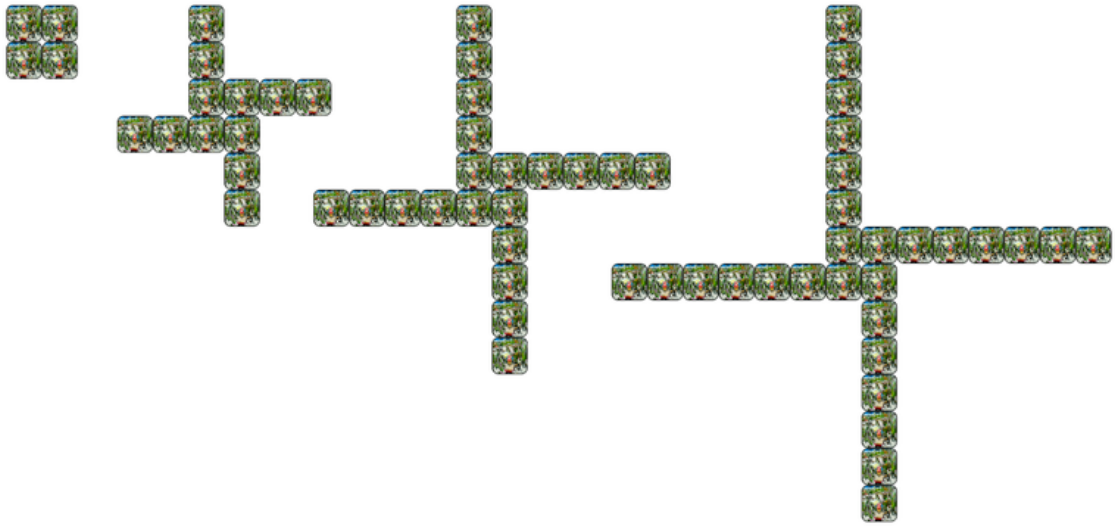
3)

How many squares will be in the 6000th figure?

How many squares will be in the nth figure?

INQUIRY JOURNEY
VISUAL PATTERNS

4)



How many squares will be in the 158th figure?

How many squares will be in the nth figure?

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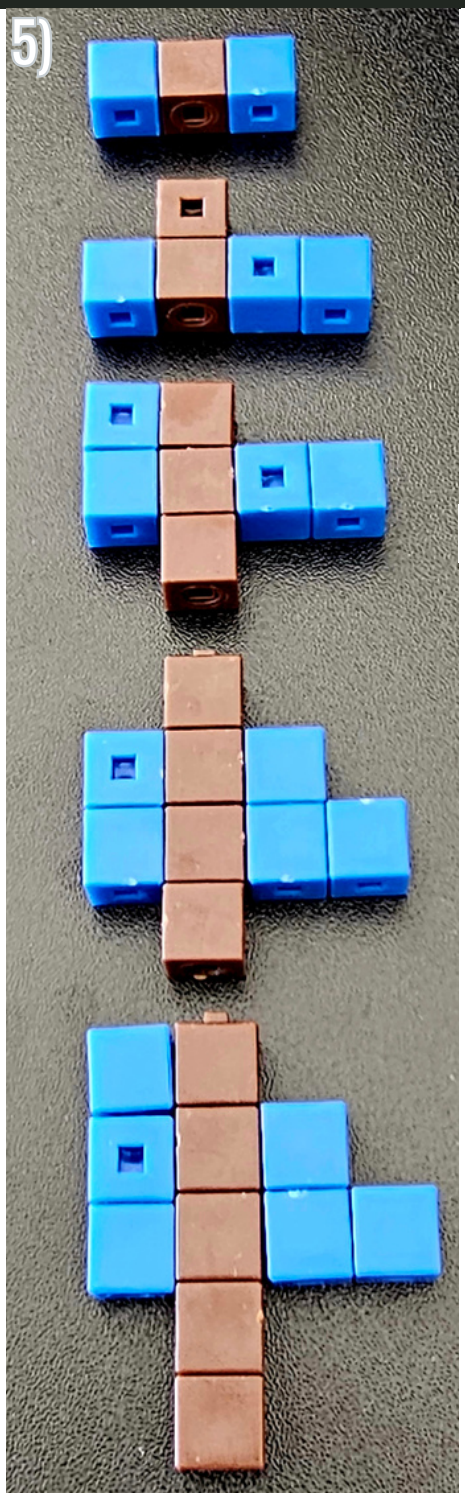
VISUAL PATTERNS

5)



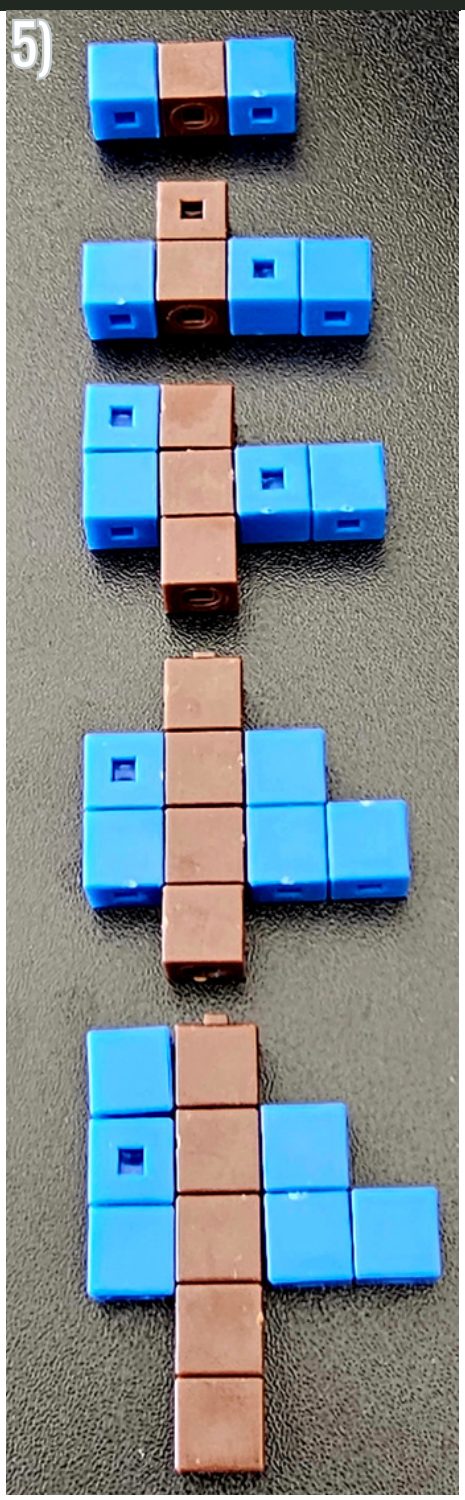
What changes from Figure 1 to Figure 2? What changes from Figure 2 to Figure 3? What changes from Figure 3 to Figure 4?

Show what you think Figure 6 will look like? What led you to your decision?

What do you expect to see in Figure 7? Figure 10? Show or explain.

INQUIRY JOURNEY
VISUAL PATTERNS

5)

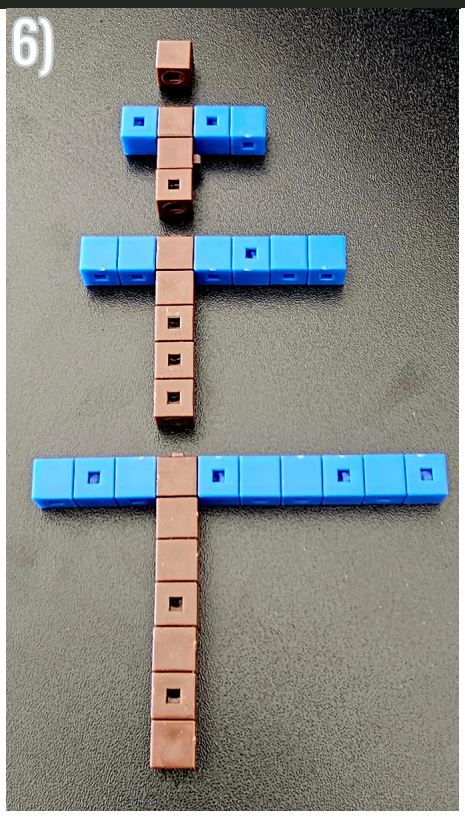


How many cubes will be in the 37th figure? Describe what the figure would look like.

How many cubes will be in the nth figure?

INQUIRY JOURNEY
VISUAL PATTERNS

6)

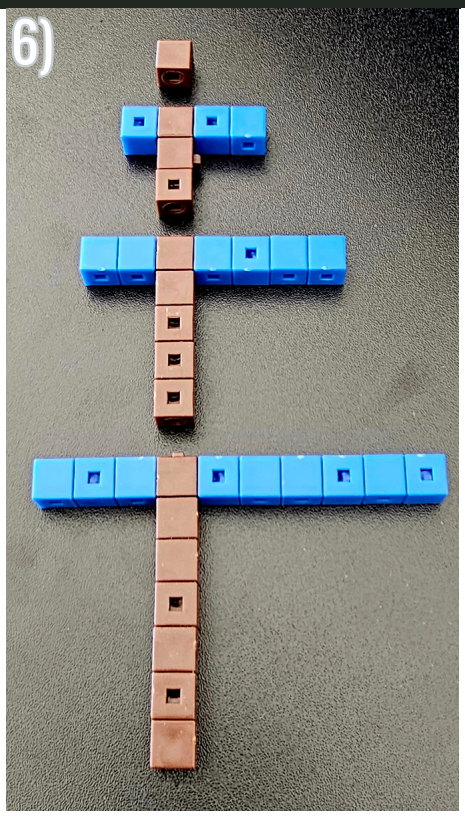


What changes from Figure 1 to Figure 2? What changes from Figure 2 to Figure 3? What changes from Figure 3 to Figure 4?

What do you expect to see in Figure 8? Figure 14? Show or explain.

INQUIRY JOURNEY
VISUAL PATTERNS

6)

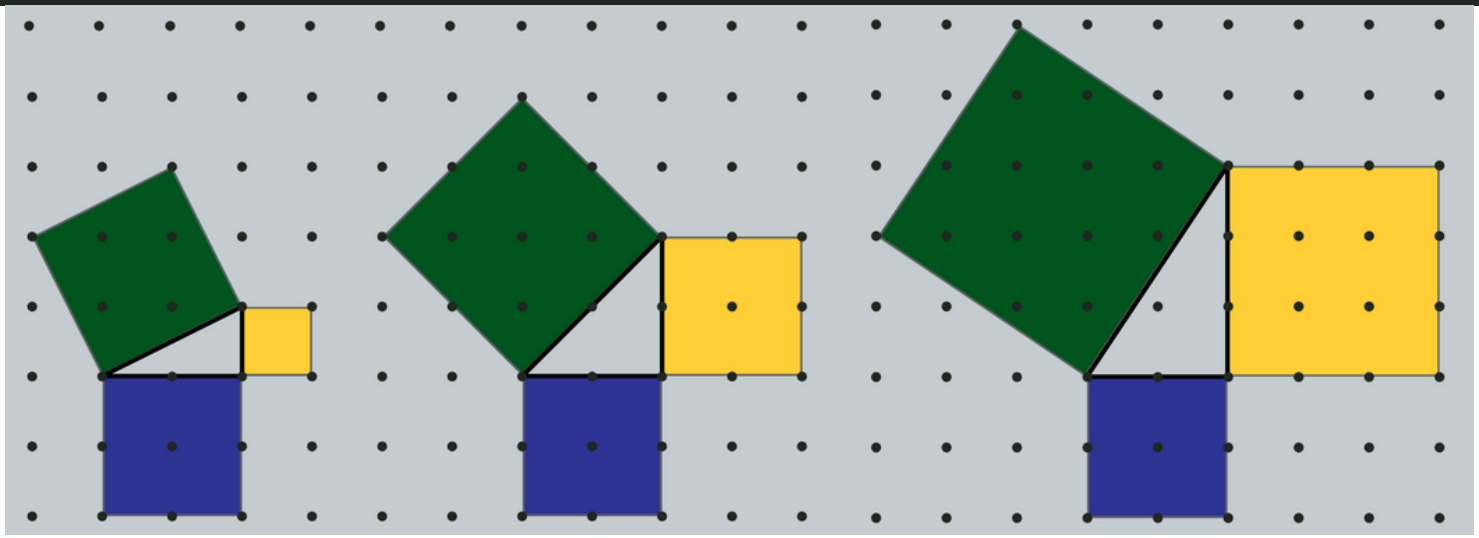


How many cubes will be in the 264th figure? How many of each color? Why?

How many cubes will be in the nth figure?

INQUIRY JOURNEY
VISUAL PATTERNS

Construct your own visual pattern(s).



What do you notice about the size of shape?

Construct at least three more examples similar to the images above. What do you notice?

Determine the missing values in the table for each right triangle.

Leg 1 Length (units)	Leg 2 Length (units)	Area of Leg 1 Square (square units)	Area of Leg 2 Square (square units)	Area of Hypotenuse Square (square units)
1	1			
1	2			
2	2			
	1			17
	2			20
				10
				25
4				32
6				100
				37
12				169
a	b			

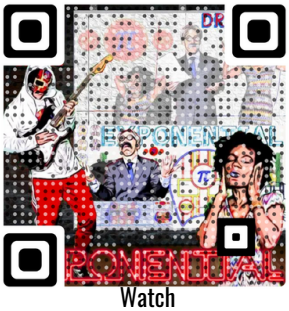
HOOKS EXPONENTIAL

Congratulations, you've been chosen for the deal of a lifetime! You have two options to choose from.

Option 1: During the month of July, you will receive $1 on July 1st and then you will receive double what you received the previous day for every remaining day that month.

Option 2: During the month of July, you will receive $1,000,000 each day of the month!

Why did you make your original choice?


Watch

Were you surprised by how much money Paty made? How so?

How was the growth in money different to what you have previously studied? How was it similar?

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