Fold It

Imagine that you have a square piece of paper. You fold it in half to create 2 congruent rectangles. You then fold it in half again. After three folds, how many rectangles have you created? Be sure to count all-- large and small, and partially overlapping rectangles.

Remember: all squares are rectangles.

This figure has 3 rectangles: A, B, and AB together.

Connecto Warmup!
Numbers on lines are sums of connecting circle numbers. For example: \( c + 3 = 8 \). What are the numbers for:

- A? _______
- B? _______
- C? _______
- D? _______
Strange Numbers

Palindromes! Forwards or backwards, they read the same. 202 is a palindrome, and so is 3113. How many more 4-digit than 3-digit palindromic numbers are there?
___________________

Square or Cubic? How many more square than cubic numbers are there between 1 and 1,000?
___________________

Abundant Number: Sum of its proper factors is greater than the number. Example: 12; Factors are 1, 2, 3, 4, 6. Sum of factors is 16.
___________________

Deficient Number: Sum of its proper factors is less than the number. Example: 15; Factors are 1, 3, 5. Sum of factors is 9.
___________________

Perfect Number: Sum of its proper factors is equal to the number. Example: 6; Factors are 1, 2, 3. Sum of factors is 6.
___________________

What is the greatest 3-digit:

1. Abundant Number? _______

2. Deficient Number? _______

3. Perfect Number? _______
Connecto

Numbers on lines are sums of connecting circle numbers. What are the numbers for:

A? _____  B? _____
C? _____  D? _____
E? _____  F? _____

Dividends!

What is the smallest number that when...

1. Divided by 2, 3, 4, 5, or 6 has a remainder of zero? _____
2. Divided by 2, 3, 5, or 7 has a remainder of zero? _____
3. Divided by 2, 4, 6, or 8 has a remainder of zero? _____
4. Divided by 2, 3, 5, or 7 has a remainder of 1? _____
5. Divided by 4, 6, 8, or 10 has a remainder of 1? _____
Odd Patterns

Row 1
1

Row 2
1 3 5

Row 3
1 3 5 7 9

Row 4
1 3 5 7 9 11 13

Row 5
1 3 5 7 9 11 13 15 17

Imagine that the pattern continues. What will be:

1. The middle number in Row 30? 

2. What is the sum of the numbers in Row 30? 

3. If you know the row number how can you figure out the sum?
_______________________________________________

Another Odd Pattern

Row 1
1

Row 2
1 3 1

Row 3
1 3 5 3 1

Row 4
1 3 5 7 5 3 1

Row 5
1 3 5 7 9 7 5 3 1

Imagine that the pattern continues.

1. What is the middle number in Row 30? 

2. What is the sum of the numbers in Row 20? 

3. If you know the row number, how can you figure out the sum?
_______________________________________________