

Recording the Steps in Division

Jonathan experimented with multiples of 3.

He said:

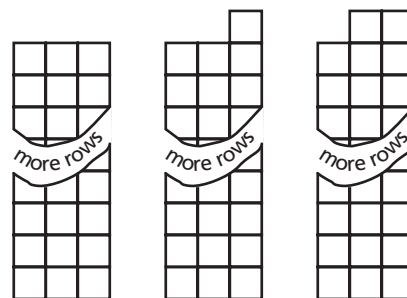
I made 3 lists:

- multiples of 3,
- numbers 1 greater than that,
- numbers 2 greater than that.

And he wrote:

List A Mult of 3	List B 1 + Mult of 3	List C 2 + Mult of 3
3	4	5
6	7	8
9	10	11
etc.	etc.	etc.

I drew array pictures like these because all the numbers in List A could be made with rows of 3 tiles and the numbers in List B could be made the same way but with one extra tile, and the numbers in List C needed two extra tiles.



Then I invented “Jonathan’s First Rule.” It says that if you add any two numbers from List B, their sum must **always** be in List C. I can prove it! Each number in List B has rows of 3 and one extra tile, so the sum of two such numbers must be rows of 3 with 2 extra tiles. Numbers like that are in List C.

Jonathan’s First Rule:
 $B + B = C$

1 Experiment with the numbers. What rules can you invent?

2 Explain one of your rules using the array pictures.