



MATH WITH MR DJ

GRADE 5 · OPERATIONS & ALGEBRAIC THINKING

RELATING TWO NUMBER PATTERNS

Today's goal: I can generate two numerical patterns and identify relationships between them.



Tan



Digit



Blaze



Pi



Generate both

1 Add 3 from 0: 0, 3, 6, 9, 12.

2 Add 9 from 0: 0, 9, 18, 27, 36.

TURN & TALK

Now line them up in pairs.



The tempting answer

- 1 3 and 9. That is 6 more.
- 2 So the second pattern is 6 more than the first?

REMEMBER

Check the NEXT pair. 6 and 18.



BIG IDEA 2

It was true once

- 1 Gaps: 0, 6, 12, 18, 24.
- 2 Only ONE pair differs by 6.

REMEMBER

One pair cannot tell you a rule.



BIG IDEA 3

What is true every time

1 $9 = 3 \times 3$. $18 = 3 \times 6$. $36 = 3 \times 12$.

REMEMBER

Three times. And 3 is $9 \div 3$ – the steps.



BIG IDEA 4

Ordered pairs

1 $(0,0)$, $(3,9)$, $(6,18)$, $(9,27)$, $(12,36)$.

2 Right 3, up 9. Right 3, up 9.

REMEMBER

A straight line through the origin.



BIG IDEA 5

The zero was doing work

1 Start both at 1: 1, 4, 7, 10, 13 and 1, 10, 19, 28, 37.

2 Is 10 three times 4?

REMEMBER

No. “Three times” needed the 0.



Remember

- 1 Compare corresponding terms, not neighbours.
- 2 Say it as a multiplier, and the multiplier is the ratio of the two step sizes.
- 3 A difference that grows means the relationship is not a difference.



Pick your pepper!



MILD

Write the first five terms of “start at 0, add 2” and of “start at 0, add 8”.

#1 on your practice sheet



MEDIUM

The 10th term of “start at 0, add 3” is 27. Find the 10th term of “start at 0, add 9” without writing out the pattern.

#4 on your practice sheet



SPICY

For “add 3” and “add 9” from 0, write the difference between each pair of corresponding terms. What does a growing difference tell you?

#6 on your practice sheet

How's it going?



3 • Got it!

I could teach it



2 • Almost

One more example, please



1 • Not yet

I need some help

NOW YOU!

Practice sheet: everyone does Mild & Medium, then climb the peppers.

Stuck? Look back at Mr DJ's example at the top of the sheet.

Need it again? Step-by-step videos on YouTube @MathWithMrDJ

Brain break: 3 new daily puzzles at puzzles.mathwithmrdj.com

