

Grade 5 - Patterns and Ordered Pairs - Lesson

Common Core 5.OA.B.3 · maths-pdf.fr/en/

A numerical pattern is a list of numbers made by a rule, such as start at 0 and add 3. When two patterns follow different rules, the terms in the same position are called corresponding terms. Write them as ordered pairs, like (3, 6), and plot them on a coordinate plane to see how the patterns are related.

Grade 5 · Common Core State Standards: **5.OA.B.3**

Key facts

- Each number in a pattern is called a term.
- Corresponding terms are the terms in the same position in two patterns.
- In an ordered pair (x, y) , x tells how far right and y tells how far up.
- If one pattern adds twice as much as the other, its terms are twice as large.
- Points from patterns that add the same amount each time lie on a straight line.

What is a numerical pattern?

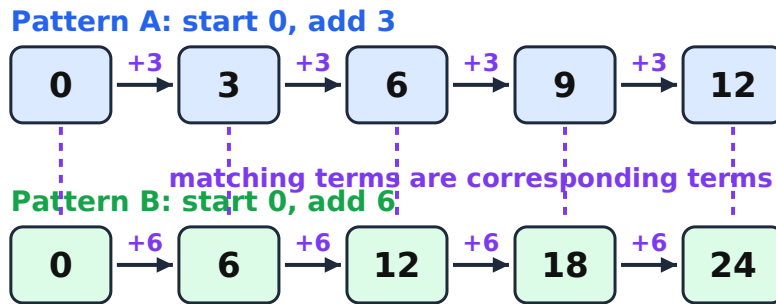
A **numerical pattern** is a list of numbers that follows a rule. Each number in the list is a **term**. The rule "start at 0, add 3" gives the terms 0, 3, 6, 9, 12.

Key words

- **Term**: one number in a pattern.
- **Corresponding terms**: the terms in the same position in two patterns.
- **Ordered pair**: two numbers written as (x, y) .

What are corresponding terms?

Two patterns can start together. The first terms match, the second terms match, and so on. In the picture, 3 and 6 correspond, and 9 and 18 correspond.



Dashed lines join corresponding terms.

How do you turn corresponding terms into ordered pairs?

Write the term from the first pattern first and the term from the second pattern second, like (3,6). The first number tells how far to go right. The second number tells how far to go up.

A (x)	0	3	6	9	12
B (y)	0	6	12	18	24
Pair (x, y)	(0,0)	(3,6)	(6,12)	(9,18)	(12,24)

Each column gives one ordered pair.

How do you find the relationship between two patterns?

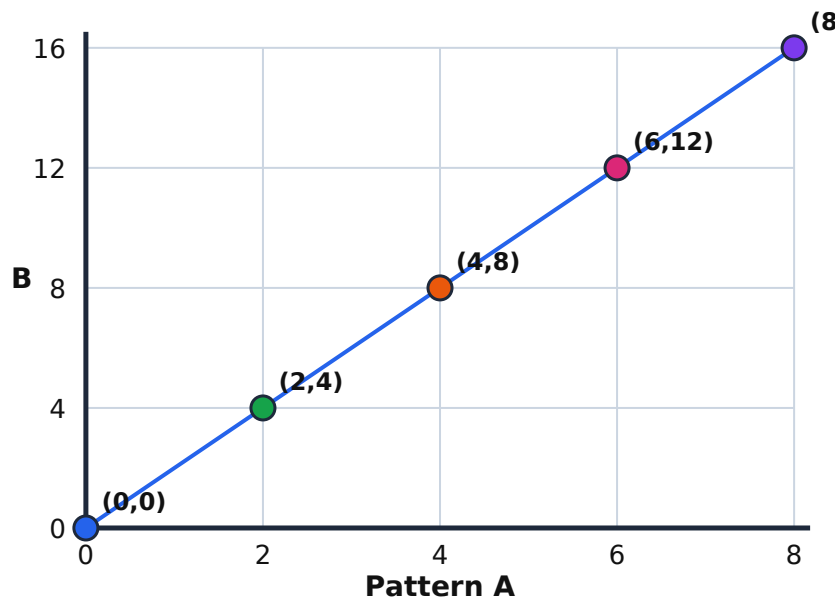
Compare corresponding terms. Here $6 = 2 \times 3$, $12 = 2 \times 6$ and $18 = 2 \times 9$. Every term in pattern B is twice its partner in pattern A. That happens because B adds twice as much each time.

How do you graph the ordered pairs?

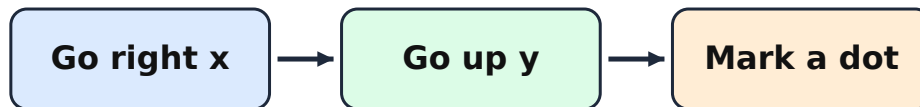
Pattern A: start at 0, add 2. Pattern B: start at 0, add 4. Graph the pairs.

1. List the terms. A: 0, 2, 4, 6, 8. B: 0, 4, 8, 12, 16.
2. Write the ordered pairs: (0,0),(2,4),(4,8),(6,12),(8,16).
3. Draw the axes. Label the x-axis for pattern A and the y-axis for pattern B.
4. Plot each pair: go right the first number, then up the second number.

The points line up, and each y is $2 \times$ its x.



The points line up because B is always 2 times A.



Plot every ordered pair this way.

Questions about patterns and ordered pairs

What is a numerical pattern?

A numerical pattern is a list of numbers made by a rule, such as start at 0 and add 4. Each number is called a term. The terms 0, 4, 8, 12 follow that rule.

What are corresponding terms?

Corresponding terms are terms in the same position in two patterns. If pattern A has 6 as its third term and pattern B has 12 as its third term, then 6 and 12 correspond.

Which number goes first in an ordered pair?

The number from the first pattern goes first, and it tells how far to move right. The number from the second pattern goes second, and it tells how far to move up. So $(3,6)$ is 3 right and 6 up.

Why do the points on the graph line up?

Each pattern adds the same amount every time, so the points rise by the same amount each step. That makes a straight line of points.

Does a pattern have to start at 0?

Patterns can start at other numbers. In Grade 5 you work with patterns that start at 0 and follow a rule such as add 3 or add 12, so the first ordered pair is $(0,0)$.