LESSON MAKER PRO

Patterns on the Plane

Use rules and graphs to predict ordered pairs.

GRADE 5 · 5.A.1

5.A.1 "Describe and graph patterns of change created through numerical patterns. Use tables and rules with up to two operations to describe patterns of change and make predictions and generalizations about various mathematical situations..."

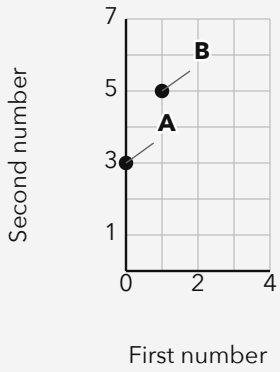
NAME _____ **DATE** _____

THE BIG IDEA

A rule connects the first number in an ordered pair to the second number. On a coordinate grid, start at the origin. Move right for the first number and up for the second number.

WORKED EXAMPLE

What point comes next on the grid? Look for the change in each coordinate.



1. The first numbers go from 0 to 1. Next is 2.
2. The second numbers go from 3 to 5. Add 2 more to get 7.
3. Check the rule: multiply the first number by 2, then add 3.

Answer: (2, 7)

PRACTICE 4 problems

1 For (1, 7), (2, 11), (3, 15), give a rule with two operations.

ANSWER _____

2 Rule: multiply the first number by 3, then add 4. What pair starts with 4?

ANSWER _____

3 What pair comes next: (1, 8), (2, 13), (3, 18)?

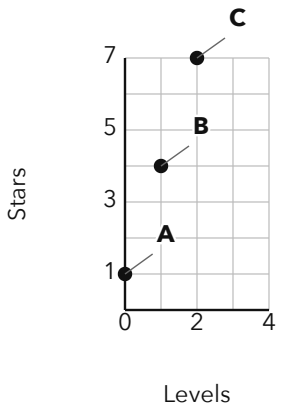
ANSWER _____

4 Rule: multiply the first number by 2, then add 5. What first number gives 15?

ANSWER _____

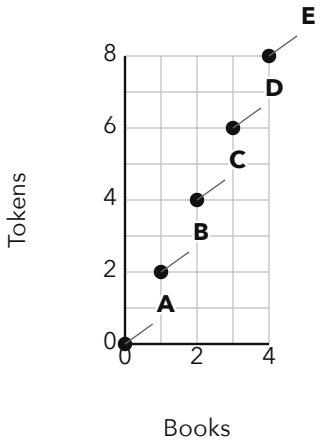
APPLY IT Show your work

1 A game gives 3 stars per level plus 1 bonus star. Which plotted point shows 7 stars? What does its first coordinate tell you?



ANSWER _____

2 Each donated book earns 2 class tokens. Use the graph to find the tokens for 4 books. Which axis shows books?



ANSWER _____

CHALLENGE One step up

One rule doubles the first number, then adds 6. Another triples it, then adds 2. Find a whole-number first coordinate greater than 1 that gives the same second coordinate for both rules. Write the ordered pair.

WORK SPACE AND ANSWER

ANSWER KEY

Patterns on the Plane

GRADE 5 · 5.A.1

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	For (1, 7), (2, 11), (3, 15), give a rule with two operations.	**Multiply the first number by 4, then add 3.**
2	Rule: multiply the first number by 3, then add 4. What pair starts with 4?	**(4, 16)**
3	What pair comes next: (1, 8), (2, 13), (3, 18)?	**(4, 23)**
4	Rule: multiply the first number by 2, then add 5. What first number gives 15?	**5**

PART 2 · APPLY IT

1. **Point C, (2, 7). The first coordinate means 2 levels.** Find 7 on the stars axis and read the first coordinate of the plotted point.
2. **8 tokens; the horizontal axis shows books.** Read the second coordinate of the point at 4 books. Books are shown on the horizontal axis.

CHALLENGE

(4, 14)

Accept equivalent wording for the rules and axis names. For the challenge, both rules give 14 when the first coordinate is 4.