



PRINTABLES

PREMIUM EDUCATIONAL RESOURCES

GRADE 5 MATHEMATICS • CCSS 5.OA.B.3 • OPERATIONS & ALGEBRAIC THINKING

Two Numerical Patterns & Coordinate Plane Discovery

Graphing Corresponding Terms - A Discovery-Based Learning Packet

3 Discovery Activities

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Grid Paper in 3 Sizes

Vocabulary Foldable

Anchor Chart

Full Answer Keys

Students generate patterns from rules, pair corresponding terms as ordered pairs, graph them on the first-quadrant coordinate plane, and **discover** the relationships hidden inside the numbers.



Anchor Chart: The 4-Step Workflow

1

1. GENERATE

Use each rule to build both patterns, term by term. Start at the starting number and apply the rule 6 times.

Example: Add 3: 0, 3, 6, 9, 12, 15 | Add 6: 0, 6, 12, 18, 24, 30



2

2. PAIR

Match terms by POSITION (same term number), and write them as ordered pairs (A, B). Order matters!

Example: (0, 0) (3, 6) (6, 12) (9, 18) (12, 24) (15, 30)



3

3. GRAPH

Plot each ordered pair on the first-quadrant coordinate plane: first number across (x), second number up (y).

Example: The points line up in a straight line - patterns make lines!



4

4. IDENTIFY RELATIONSHIP

Compare corresponding terms. Ask: Is B a number of TIMES A? Is B always A plus something? Does the gap grow by the same amount each time?

Example: Discovery: 6 is 2×3 , 12 is 2×6 ... Pattern B is always TWICE Pattern A!

Relationship Hunt - look for these three: • TIMES AS MANY ($\times 2$, $\times 3$...) • ALWAYS MORE BY THE SAME AMOUNT (+6, +1...) • A GAP THAT GROWS BY THE SAME AMOUNT EACH TERM (+3, +1...)

DISCOVERY ACTIVITY 1

The Doubling Pattern

Name: _____ Date: _____

Your mission: Two rules below create two patterns. Generate the terms, pair them, graph them - and see if you can discover the secret relationship hiding between the patterns *before* your teacher tells you!

RULE A: Start at 0, Add 3 RULE B: Start at 0, Add 6

Step 1 - GENERATE & PAIR. Fill in every box. Write ordered pairs as (A, B).

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Pattern A						
Pattern B						
Ordered Pair (A, B)						

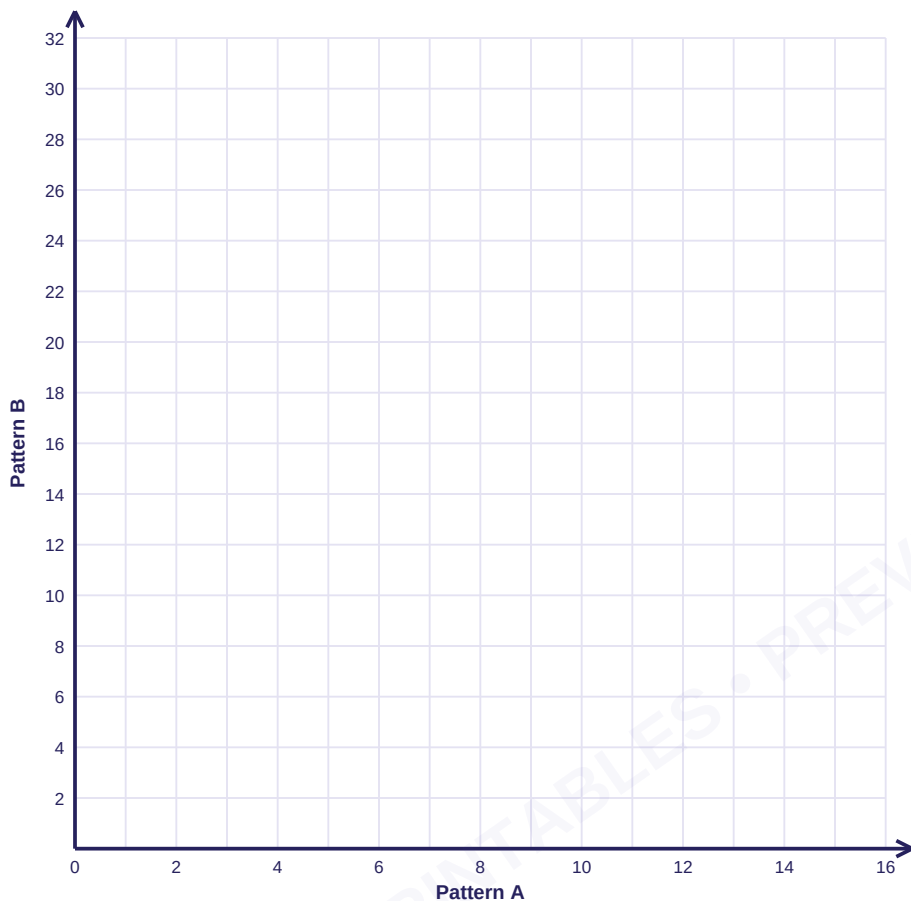
Step 2 - PREDICT. Before graphing, circle your prediction: When I graph these pairs, the points will... (a) lie in a straight line, (b) curve upward, (c) scatter randomly. My reason: _____

Step 3 - COMPARE. Complete each sentence with a number.

- Term 2: A = 3 and B = 6, so B is _____ times A.
- Term 4: A = 9 and B = 18, so B is _____ times A.
- Term 6: A = 15 and B = 30, so B is _____ times A.

DISCOVERY ACTIVITY 1 (continued)

Step 4 - GRAPH. Plot your six ordered pairs on the coordinate plane below.



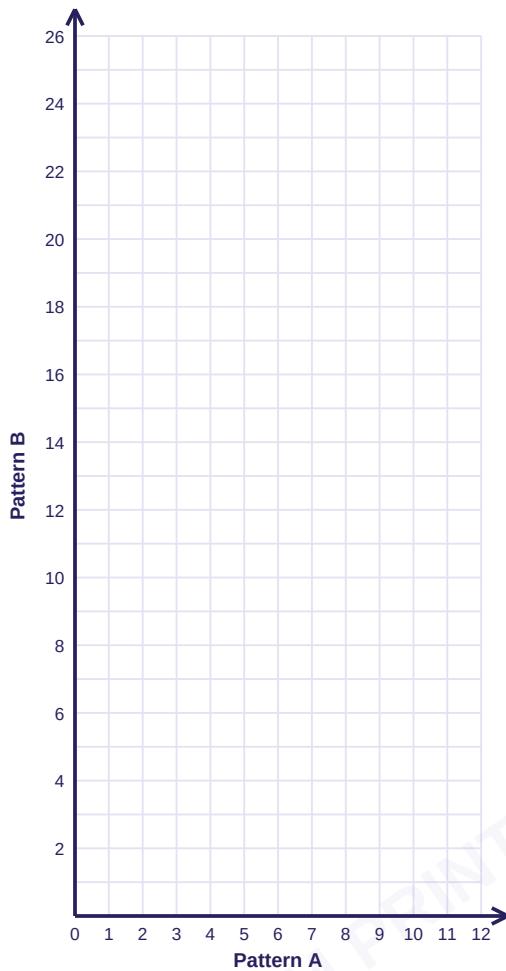
Step 5 - DISCOVER & EXPLAIN.

1. My prediction from Step 2 was (right / almost / not right). The points form _____.
2. Relationship I discovered: Pattern B is always _____ Pattern A.
3. WHY does this make sense? Compare the two rules (add 6 vs. add 3) and explain: _____
4. EXTEND: Without building the table, use your relationship to predict B when $A = 30$: $B = \underline{\hspace{2cm}}$. Check by continuing the pattern: does it work? _____

Math Talk (Turn & Talk): "I noticed that _____, so I predict _____ because _____."

DISCOVERY ACTIVITY 2 (continued)

Step 3 - GRAPH. Plot your six ordered pairs (A, B).



Step 4 - DISCOVER & EXPLAIN.

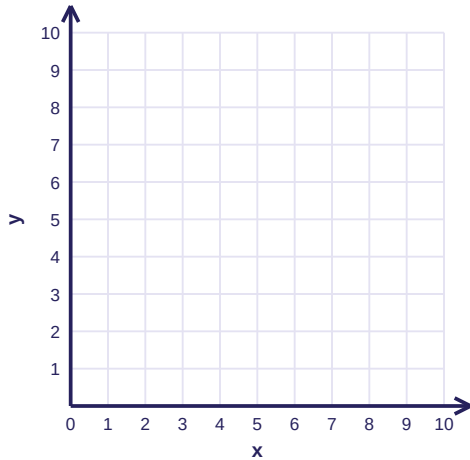
1. Do the points still lie in a straight line? _____
2. Relationship I discovered: the gap between B and A grows by _____ each term.
3. Is "B is a number of times A" true here? Test it with two pairs and explain: _____
4. COMPARE: How is this relationship DIFFERENT from Activity 1's relationship? _____

Self-Check (fist to five): I can explain why the gap grows by 3 each term. Show your teacher 1-5 fingers!

Exit Tickets 3 & 4

Exit Ticket 3 Name: _____

1) Plot (3, 6) and (5, 10) on the grid. 2) What relationship do the points suggest? (y is ____ times x)



Exit Ticket 4 Name: _____

Rule A: Add 1, start at 0. Rule B: Add 3, start at 0.

TRUE or FALSE: The difference between corresponding terms grows by 2 each term.

My answer: _____ Proof (list the first 4 differences): _____, _____, _____, _____

ANSWER KEYS

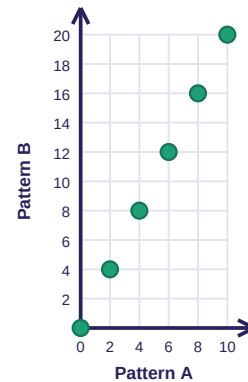
Practice Set Answer Key (Problems 1-4 of 12)

Problem 1 - A: 0, 2, 4, 6, 8, 10 | B: 0, 4, 8, 12, 16, 20

Pairs: (0,0) (2,4) (4,8) (6,12) (8,16) (10,20)

Relationship: Each term of Pattern B is 2 times the matching term of Pattern A ($B = 2 \times A$).

Why: Both patterns start at 0, and B grows by 4 each step while A grows by 2. Since 4 is twice 2, B stays twice as big as A.

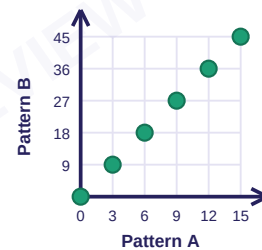


Problem 2 - A: 0, 3, 6, 9, 12, 15 | B: 0, 9, 18, 27, 36, 45

Pairs: (0,0) (3,9) (6,18) (9,27) (12,36) (15,45)

Relationship: Each term of Pattern B is 3 times the matching term of Pattern A ($B = 3 \times A$).

Why: Both start at 0, and 9 is 3 times 3, so B grows three times as fast as A.

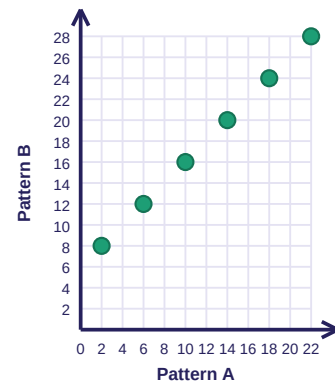


Problem 3 - A: 2, 6, 10, 14, 18, 22 | B: 8, 12, 16, 20, 24, 28

Pairs: (2,8) (6,12) (10,16) (14,20) (18,24) (22,28)

Relationship: Each term of Pattern B is 6 more than the matching term of Pattern A ($B = A + 6$).

Why: The rules add the same amount (4), so the gap never changes. The gap starts at $8 - 2 = 6$ and stays 6 forever.

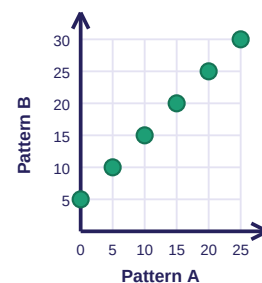


Problem 4 - A: 0, 5, 10, 15, 20, 25 | B: 5, 10, 15, 20, 25, 30

Pairs: (0,5) (5,10) (10,15) (15,20) (20,25) (25,30)

Relationship: Each term of Pattern B is 5 more than the matching term of Pattern A ($B = A + 5$).

Why: Same rule (add 5) means same growth; B simply begins 5 ahead, so it stays exactly 5 ahead.





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