

# Numerical Patterns and Relationships

Grade 5 Math • Section 3.5

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Score: \_\_\_\_\_ / 10

## Quick Review and Helpful Hints

**➤ Pattern rule:** A rule tells you how to generate each term. Example: “Start at 1, add 3” gives 1, 4, 7, 10, 13, ...

**➤ Comparing two patterns:** Generate terms for both rules, form ordered pairs, and look for a relationship between corresponding terms.

**💡** You can graph ordered pairs on a coordinate plane to see the relationship visually.

**🔍 Example:** Rule A: start at 0, add 2. Rule B: start at 0, add 6. Find the first 5 terms of each and describe the relationship.

**➤** Rule A: 0, 2, 4, 6, 8. Rule B: 0, 6, 12, 18, 24. Each term in B is 3 times the corresponding term in A. Ordered pairs: (0, 0), (2, 6), (4, 12), (6, 18), (8, 24).

**💡 Answer:** Each term in B is 3 times the corresponding term in A

## ✂ Practice Problems

Generate terms and describe the relationship between the two patterns.

- Rule A: start at 0, add 3. Rule B: start at 0, add 9. Write the first 5 terms of each. \_\_\_\_\_
- In the patterns above, each term in B is \_\_\_\_\_ times the corresponding term in A. \_\_\_\_\_
- Rule A: start at 0, add 4. Rule B: start at 0, add 8. Write the first 5 terms of each. \_\_\_\_\_
- Write the ordered pairs (A, B) for the two patterns above. \_\_\_\_\_
- Rule A: start at 1, add 5. Rule B: start at 2, add 10. Write the first 5 terms of each. \_\_\_\_\_
- What is the relationship between corresponding terms in the two patterns above? \_\_\_\_\_
- Rule A: start at 0, add 1. Rule B: start at 0, add 7. Write the first 5 ordered pairs. \_\_\_\_\_
- Create your own two rules where each term in Rule B is 4 times the term in Rule A. \_\_\_\_\_

## ✂ Word Problems

- A machine fills 5 bottles per minute on Line A and 15 bottles per minute on Line B. After 6 minutes, how many bottles has each line filled? Describe the relationship. \_\_\_\_\_
- Jenna saves \$4 each week. Her brother saves \$12 each week. Write the first 5 terms of each pattern and describe how the amounts are related. \_\_\_\_\_



## Answer Keys

- |   |   |
|---|---|
| <p>1. <math>A : 0, 3, 6, 9, 12; B : 0, 9, 18, 27, 36</math></p> <p>2. <math>3</math></p> <p>3. <math>A : 0, 4, 8, 12, 16; B : 0, 8, 16, 24, 32</math></p> <p>4. <math>(0, 0), (4, 8), (8, 16), (12, 24), (16, 32)</math></p> <p>5. <math>A : 1, 6, 11, 16, 21; B : 2, 12, 22, 32, 42</math></p> | <p>6. <math>B = 2A</math></p> <p>7. <math>(0, 0), (1, 7), (2, 14), (3, 21), (4, 28)</math></p> <p>8. Example: <math>A : 0, 2, 4, 6, 8; B : 0, 8, 16, 24, 32</math></p> <p>9. <math>A : 30, B : 90; B = 3A</math></p> <p>10. <math>J : 4, 8, 12, 16, 20; B : 12, 24, 36, 48, 60; B = 3J</math></p> |
|---|---|

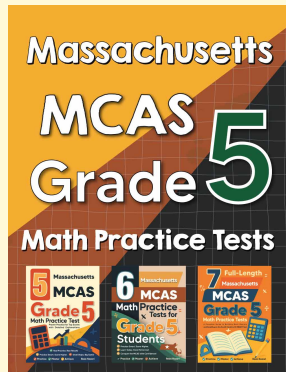
### Step-by-Step Explanations

1. Start with the main idea. For numerical patterns and relationships, add 3 each time for A and 9 each time for B. Write the terms in order so the relationship between the two rules is easy to see.
2. Keep the work tidy. For numerical patterns and relationships, each B term is 3 times the matching A term. Ordered pairs come from matching terms in the same position.
3. Look at what the numbers mean. For numerical patterns and relationships, add 4 for A and 8 for B. A constant multiplier between the two lists usually shows up clearly in the table.
4. Use the setup first. For numerical patterns and relationships, pair each A value with the corresponding B value. Write the terms in order so the relationship between the two rules is easy to see.
5. Check the size of the answer. For numerical patterns and relationships, start with the given first term and keep adding the rule amount. Ordered pairs come from matching terms in the same position.
6. Match the operation to the words. For numerical patterns and relationships, each B term is twice the matching A term. A constant multiplier between the two lists usually shows up clearly in the table.
7. Write the important values first. For numerical patterns and relationships, pair each A term with the matching B term. Write the terms in order so the relationship between the two rules is easy to see.
8. Follow the pattern carefully. For numerical patterns and relationships, any valid rule works if every B value is 4 times A. Ordered pairs come from matching terms in the same position.
9. Start with the main idea. For numerical patterns and relationships, after 6 minutes, Line A fills  $5 \times 6 = 30$  and Line B fills  $15 \times 6 = 90$ . A constant multiplier between the two lists usually shows up clearly in the table.
10. Keep the work tidy. For numerical patterns and relationships, her brother saves 3 times as much each week. Write the terms in order so the relationship between the two rules is easy to see.



# Want Even More Practice?

Check Out Our Other Massachusetts MCAS Test Books!



## Massachusetts MCAS Grade 5 Math Preparation Bundle

18 full-length practice tests across three books  
(5 + 6 + 7)

No repeated questions—maximum practice value!



**18 Tests!**  
**3 Books**  
**One Bundle**

**Important:** All our test books contain **unique, completely different tests** from each other! Each book offers fresh practice questions—no repeats!

### 5 Practice Tests

- ✓ 5 complete practice tests with detailed explanations
- ✓ Perfect foundation for MCAS test preparation
- ✓ Builds confidence and test-taking skills
- ✓ High-quality questions aligned with state standards

**Start your practice journey!**

### 6 Practice Tests

- ✓ 6 complete practice tests with detailed explanations
- ✓ **Unique tests**—different from the 5 tests book
- ✓ Perfect for more practice after mastering 5 tests
- ✓ Builds even more confidence and test-taking skills
- ✓ Same high-quality questions aligned with standards

**Take your practice to the next level!**

### 7 Practice Tests

- ✓ 7 complete practice tests for maximum preparation
- ✓ **Unique tests**—different from 5 and 6 tests books
- ✓ The most comprehensive practice for Grade 5
- ✓ Ideal for students aiming for top scores
- ✓ Extensive practice builds mastery and confidence

**Go all the way with comprehensive practice!**