ALBERT

Name _____ Date _____

Numerical Patterns Worksheet

Grade 5 · Common Core 5.OA.B.3

> Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.

Practice

Builds the skill step by step.

1. Pattern B starts at 0 and uses the rule "add 4." Write the first five terms of Pattern B.

2. Pattern A starts at 0 and uses the rule "add 3." Write the first five terms of Pattern A.

3. Pattern A is 0, 2, 4, 6. Pattern B is 0, 6, 12, 18. How do the matching terms compare?

   A. Each term in Pattern B is 3 times the matching term in Pattern A.

   B. Each term in Pattern B is 4 more than the matching term in Pattern A.

   C. Each term in Pattern A is 3 times the matching term in Pattern B.

   D. The patterns have the same terms.

4. Pattern A starts at 0 and adds 5. Pattern B starts at 0 and adds 10. The first term of each pattern is 0. What is the 4th term of each pattern? Give Pattern A first.

5. Pattern A is 0, 1, 2, 3. Pattern B is 0, 3, 6, 9. Make ordered pairs (Pattern A term, Pattern B term). What is the third ordered pair?

6. Pattern A is 0, 4, 8, 12. Pattern B is 0, 2, 4, 6. Which statement is true?

   A. Each term in Pattern B is 2 times the matching term in Pattern A.

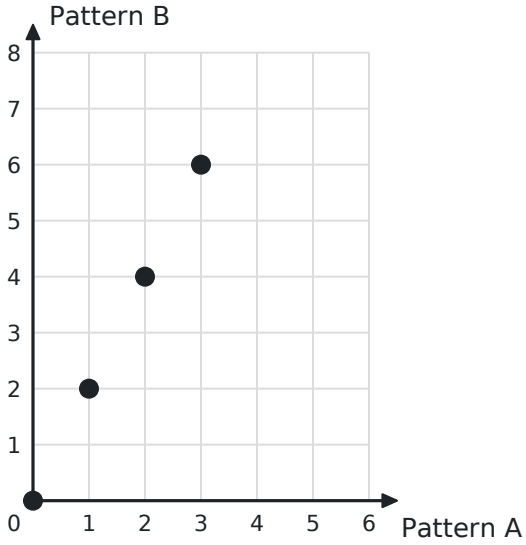
   B. Each term in Pattern B is 2 less than the matching term in Pattern A.

   C. Each term in Pattern A is 4 more than the matching term in Pattern B.

   D. Each term in Pattern B is half the matching term in Pattern A.

7. Pattern B starts at 0 and adds 7. The first term is 0. What is the 6th term of Pattern B?

8. The grid shows ordered pairs (Pattern A term, Pattern B term). Pattern A starts at 0 and adds 1. Which rule makes Pattern B?



   A. Start at 0 and add 1.

   B. Start at 0 and add 2.

   C. Start at 0 and add 3.

   D. Start at 2 and add 2.

9. Pattern A starts at 0 and adds 3. Pattern B starts at 0 and adds 9. The 5th term of Pattern A is 12. What is the 5th term of Pattern B?

10. Pattern A is 0, 2, 4, 6, 8. Pattern B is 0, 8, 16, 24, 32. Each term in Pattern B is how many times the matching term in Pattern A?

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On Level

Grade-level practice.

1. Pattern A starts at 0 and adds 4. Pattern B starts at 0 and adds 8. Write the first four ordered pairs (Pattern A term, Pattern B term).

2. Pattern A starts at 0 and adds 3. Pattern B starts at 0 and adds 12. Which statement is true?

   A. Each term in Pattern B is 9 more than the matching term in Pattern A.

   B. Each term in Pattern A is 4 times the matching term in Pattern B.

   C. Each term in Pattern B is 4 times the matching term in Pattern A.

   D. Each term in Pattern B is 3 times the matching term in Pattern A.

3. Pattern A starts at 0 and adds 6. Pattern B starts at 0 and adds 3. The first term of each pattern is 0. What is the 7th term of each pattern? Give Pattern A first.

4. Pattern A starts at 0 and adds 2. Pattern B starts at 0 and adds 6. Why is each term in Pattern B always 3 times the matching term in Pattern A?

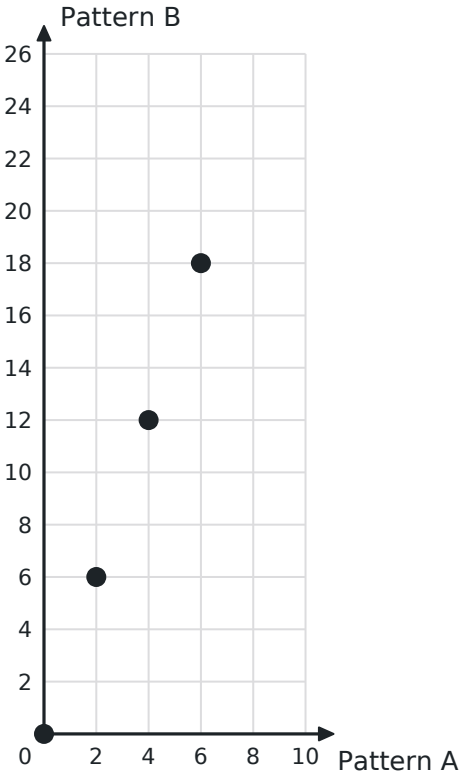
   A. 6 is greater than 2.

   B. Both start at 0, and Pattern B adds 3 times as much as Pattern A at every step.

   C. Pattern B has more terms than Pattern A.

   D. Both patterns have only even numbers.

5. The grid shows ordered pairs (Pattern A term, Pattern B term). If both patterns continue, what is the next ordered pair?



6. The table shows matching terms of two patterns. What is the missing term in Pattern A?

Pattern A	Pattern B
0	0
5	15
10	30
?	45

7. Pattern A starts at 0 and adds 9. Pattern B starts at 0 and adds 3. Which statement is true?

   A. Each term in Pattern A is 3 times the matching term in Pattern B.

   B. Each term in Pattern B is 3 times the matching term in Pattern A.

   C. Each term in Pattern A is 6 more than the matching term in Pattern B.

   D. The patterns have the same terms.

8. Mia saves $4 each week, and Leo saves $12 each week. Both start with $0. When Mia has saved $28, how much has Leo saved?

9. Pattern A starts at 0 and adds 5. Pattern B starts at 0 and adds 20. Write the ordered pair (Pattern A term, Pattern B term) whose first number is 25.

10. Which ordered pair belongs with (0, 0), (1, 5), (2, 10), (3, 15)?

    A. (4, 19)

    B. (5, 20)

    C. (4, 20)

    D. (20, 4)

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Challenge

Multi-step and word problems that stretch it.

1. Pattern A starts at 0 and adds 3. Pattern B starts at 0 and adds 15. The first term is 0. What is the 10th term of Pattern B?

2. Pattern A starts at 0 and adds 4. Pattern B starts at 0 and adds 12. A term in Pattern B is 96. What is the matching term in Pattern A?

3. Pattern A starts at 0 and adds 6. Pattern B starts at 0 and adds 4. Which statement is true?

   A. Each term in Pattern A is 2 times the matching term in Pattern B.

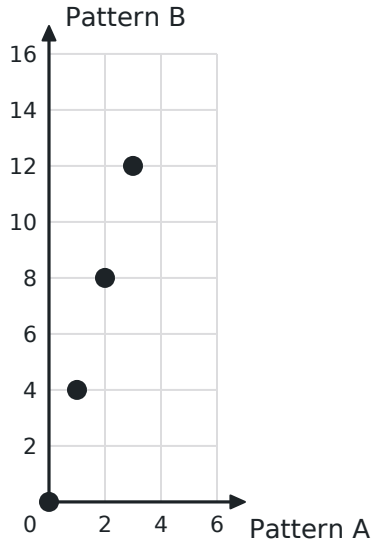
   B. Every term after the first in Pattern A is greater than the matching term in Pattern B.

   C. Each term in Pattern B is 2 more than the matching term in Pattern A.

   D. The patterns have the same terms.

4. Pattern A starts at 0 and adds 2. Pattern B starts at 0 and adds 10. The first term of each pattern is 0. How much greater is the 8th term of Pattern B than the 8th term of Pattern A?

5. The grid shows ordered pairs (Pattern A term, Pattern B term). Pattern A starts at 0 and adds 1. If the patterns continue, what is the Pattern B term when the Pattern A term is 9?



6. Pattern A starts at 0 and adds 5. Pattern B starts at 0 and adds 10. Tom says each term in Pattern B is 5 more than the matching term in Pattern A. Is he right?

   A. Yes. Pattern B adds 5 more each time.

   B. No. Each term in Pattern B is 5 times the matching term in Pattern A.

   C. No. The two patterns have the same terms.

   D. No. Each term in Pattern B is 2 times the matching term in Pattern A, so the difference keeps growing.

7. Pattern A starts at 0 and adds 7. Pattern B starts at 0 and adds 21. The first term is 0. Which term number in Pattern B is 126?

8. Pattern A starts at 0 and adds 8. Pattern B starts at 0 and adds 2. Write the ordered pair (Pattern A term, Pattern B term) whose second number is 14.

9. Two patterns start at 0. Pattern A adds 3 and Pattern B adds 6. The ordered pairs (Pattern A term, Pattern B term) are graphed. Which point is NOT on the graph?

   A. (3, 6)

   B. (6, 12)

   C. (5, 10)

   D. (9, 18)

10. A trail mix uses 3 cups of oats for every 1 cup of raisins. Make two patterns starting at 0: raisins add 1 and oats add 3. How many cups of oats go with 8 cups of raisins?