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| **Beaded Factors Activity Sheet** | Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

**Part A: EXPLORE **

1. Use the Explore part of the sim. Create two bead patterns of your choice and fill in the table as shown by the example.

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| **A**  **Red Beads** | **B**  **Blue Beads** | **C**  **Pattern (Sketch or describe)** | **D**  **Number of times pattern repeats** |
| EX: | EX: | 3 red, 4 blue | 3 times |
|  |  |  |  |
|  |  |  |  |

1. How are the patterns (Column C) related to the numbers of red and blue beads in Columns A and B?
2. Use the sim to complete the table below. There are many correct answers for each row!

|  |  |  |  |
| --- | --- | --- | --- |
| **Repeats** | **My pattern** | **My partner’s pattern** | **Challenge: A third pattern!** |
| Patterns that repeat 3 times | Pattern: | Pattern: | Pattern: |
| Patterns that repeat 2 times | Pattern: | Pattern: | Pattern: |
| Patterns that repeat 5 times | Pattern: | Pattern: | Pattern: |

1. How is the number of repeats related to the total number of red beads and number of blue beads?



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| **PART B: PREDICT** |  |

1. Switch to the PREDICT part of the sim. For each row in the table, first make a prediction, then use the sim to check your prediction. You may leave the ACTUAL part blank if your prediction is correct.

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| --- | --- | --- |
|  | PREDICT  Pattern: \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_  # red # blue  Repeats \_\_\_\_\_\_\_ times. | ACTUAL  Pattern: \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_  # red # blue  Repeats \_\_\_\_\_\_\_ times. |
|  | PREDICT  Pattern: \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_  # red # blue  Repeats \_\_\_\_\_\_\_ times. | ACTUAL  Pattern: \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_  # red # blue  Repeats \_\_\_\_\_\_\_ times. |
|  | PREDICT  Pattern: \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_  # red # blue  Repeats \_\_\_\_\_\_\_ times. | ACTUAL  Pattern: \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_  # red # blue  Repeats \_\_\_\_\_\_\_ times. |
|  | PREDICT  Pattern: \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_  # red # blue  Repeats \_\_\_\_\_\_\_ times. | ACTUAL  Pattern: \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_  # red # blue  Repeats \_\_\_\_\_\_\_ times. |
|  | PREDICT  Pattern: \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_  # red # blue  Repeats \_\_\_\_\_\_\_ times. | ACTUAL  Pattern: \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_  # red # blue  Repeats \_\_\_\_\_\_\_ times. |

1. Fill in the numbers of red and blue beads to make the patterns with the given number of repeats. Try first without the sim and then use the sim to check your work.

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| Pattern:  Repeats 2 times |  |  | Pattern:  Repeats 4 times |  |
| Pattern:  Repeats 3 times |  |  | Pattern:  Repeats 4 times |  |



1. Challenge! A nifty trick …

Compute the following product for each pattern in #6 above.

(# times pattern repeats)(# red beads in one round of pattern)(# blue beads in one round of pattern)

How is this product related to your answers in #6? Why does this work?