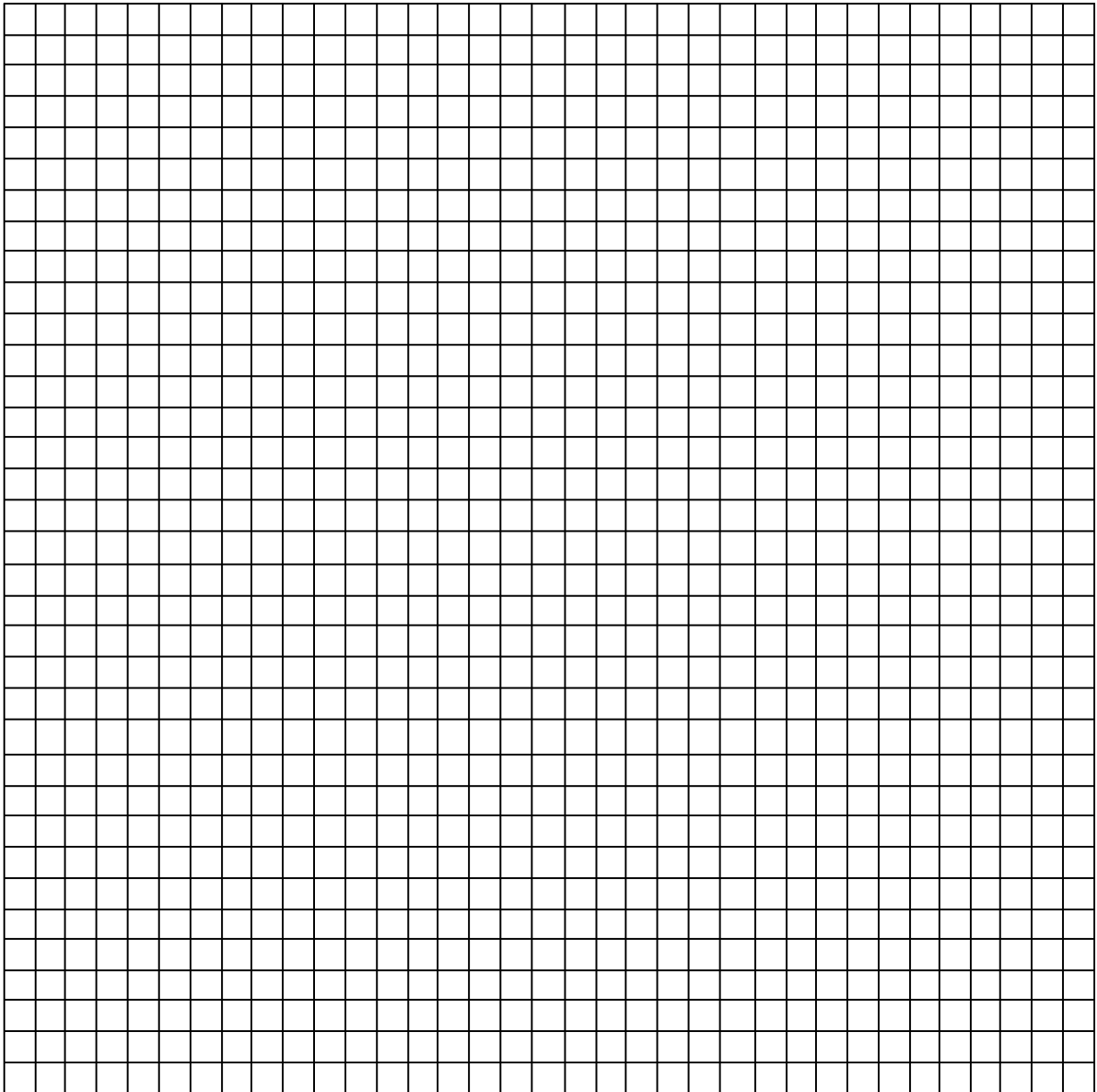


# Counting the Trains

NAME \_\_\_\_\_

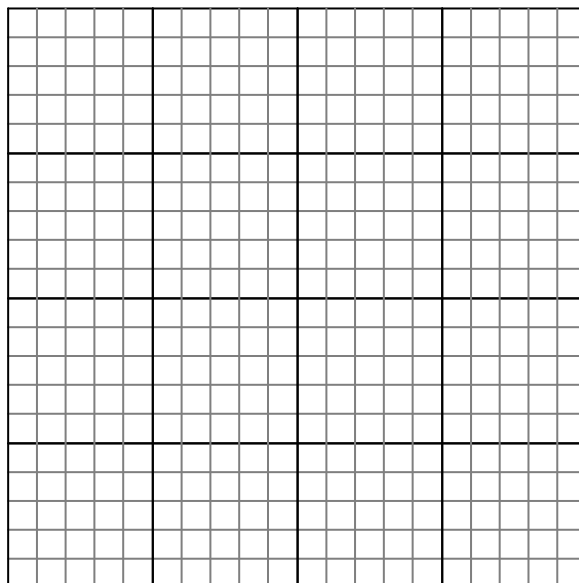
1. Make all of the trains of length 1, 2, 3, 4, and 5. Record them using the grid below. As you are building them, think about and write down how you know that you have made all of the trains. Check with your teacher when you think you have them all.



2. Look at all the trains of length 3 and 4. How can you use those trains to make the trains of length 5? Explain how you were able to do this.

3. How can you build all the trains of length 6 from the trains of length 4 and length 5? Show and explain how you were able to do this.
  
4. Write a recursive rule that describes how to find the number of trains of length  $A_n$ . Use your rule to find the number of trains of length 7, 8 and 9.

5. Make a table below that shows the different train lengths and the numbers of ways to make each length.



6. Make a scatter plot to the right that shows these data. Do you think the graph is linear? Why or why not?