

Recursive and Exponential Rules

Complete the table.

| TRAIN LENGTH (N) | 1 | 2 | 3 | 4 | 5 | 6 |
|--------------------------------|---------------|----|----|-----|---|---|
| NUMBER OF WAYS | 2 | 12 | 72 | 432 | | |
| NUMBER OF WAYS USING EXPONENTS | $2 \cdot 6^0$ | | | | | |

1. How many ways are there to make a train of length 7? Eight? Extend your table from include these values.
2. How would you find the number of ways to make a train of length 100? Length 2008? n ?
3. Use your calculator to graph train length and number of ways. Find and record the exponential line of best fit. How does it compare with your rule using n ?