

-- Day 26: Trolley --

With Christmas done and dusted and presents delivered, the elves give you a chance to have some fun and eliminate some of the children that made the naughty list this year.

While the rail network is shut for the holiday period, you have been made the conductor of a trolley on 100,000 tracks numbered from 1 to 100,000. There are naughty children playing on every track. You have the opportunity to select the track on which the trolley starts, after which, on every move,

- if the track ID is **even**, the trolley runs over the children on that track, then moves to the track with **half** the current track number;
- if the track ID is **odd**, the trolley runs over the children on that track, then moves to the track with **three** times the current track ID, **plus one**;
- if the trolley's next move would place it outside the 100,000 tracks that you are the conductor of today, the trolley does not move at all and stops rolling any further.

Suppose you selected to start on track with ID **79998**. The next move would place the trolley at track ID **39999**. Then, the trolley would not move any further, since $39,999 \times 3 + 1 > 100,000$.

If you started, for example, on track **56**, your next move would be track 28, which is half of 56, and so on, producing the following sequence of track IDs:

56, 28, 14, 7, 22, 11, 34, 17, 52, 26, 13, 40, 20, 10, 5, 16, 8, 4, 2, 1

thus visiting **20** tracks in total.

You notice that the number of children playing on each track follows a repeating pattern (your puzzle input). In this example, suppose you notice that the first ten tracks have the following number of naughty children on each respectively:

2, 3, 7, 5, 4, 8, 9, 1, 3, 6

Since this repeats ad infinitum, you can deduce that there are 2 people on track with ID 11, 3 people on track with ID 12 and so forth.

Suppose you start on track with ID **66430**. Your trolley runs down the following tracks:

- track 66430, running over six children,
- track 33215, running over four children,
- track 99646, running over eight children,
- And finally track 49823, running over another seven children.

In total running over **25** naughty children.

Find the starting track ID that runs over the most children, and multiply this by the number of children killed to get the right answer. Using the puzzle input from above, it would be optimal to start on track **76068**, killing **1004** naughty children, giving a puzzle answer of **76372272**.

Contact me for your *custom* puzzle input.

What is your puzzle answer?