

Advent of Code [About] [Events] [Shop] [Settings] [Log Out] Miłosz Łakomy 21★
 /2024/ [Calendar] [AoC++] [Sponsors] [Leaderboard] [Stats]

--- Day 13: Claw Contraption ---

Next up: the lobby of a resort on a tropical island. The Historians take a moment to admire the hexagonal floor tiles before spreading out.

Fortunately, it looks like the resort has a new arcade! Maybe you can win some prizes from the claw machines?

The claw machines here are a little unusual. Instead of a joystick or directional buttons to control the claw, these machines have two buttons labeled `A` and `B`. Worse, you can't just put in a token and play; it costs 3 tokens to push the `A` button and 1 token to push the `B` button.

With a little experimentation, you figure out that each machine's buttons are configured to move the claw a specific amount to the right (along the `X` axis) and a specific amount forward (along the `Y` axis) each time that button is pressed.

Each machine contains one prize; to win the prize, the claw must be positioned exactly above the prize on both the `X` and `Y` axes.

You wonder: what is the smallest number of tokens you would have to spend to win as many prizes as possible? You assemble a list of every machine's button behavior and prize location (your puzzle input). For example:

```
Button A: X+94, Y+34
Button B: X+22, Y+67
Prize: X=8400, Y=5400

Button A: X+26, Y+66
Button B: X+67, Y+21
Prize: X=12748, Y=12176

Button A: X+17, Y+86
Button B: X+84, Y+37
Prize: X=7870, Y=6450

Button A: X+69, Y+23
Button B: X+27, Y+71
Prize: X=18641, Y=10279
```

This list describes the button configuration and prize location of four different claw machines.

For now, consider just the first claw machine in the list:

- Pushing the machine's `A` button would move the claw `94` units along the `X` axis and `34` units along the `Y` axis.
- Pushing the `B` button would move the claw `22` units along the `X` axis and `67` units along the `Y` axis.
- The prize is located at `X=8400`, `Y=5400`; this means that from the claw's initial position, it would need to move exactly `8400` units along the `X` axis and exactly `5400` units along the `Y` axis to be perfectly aligned with the prize in this machine.

The cheapest way to win the prize is by pushing the `A` button `80` times and the `B` button `40` times. This would line up the claw along the `X` axis (because $80 \times 94 + 40 \times 22 = 8400$) and along the `Y` axis (because $80 \times 34 + 40 \times 67 = 5400$). Doing this would cost 80×3 tokens for the `A` presses and 40×1 for the `B` presses, a total of `280` tokens.

Our sponsors help make Advent of Code possible:

- Do Adventers-of-Code make the best backend devs? We think so! If you want to master backend development in Python, SQL, and Go, then try our hands-on courses on Boot.dev! Get 25% off first payment w/promo ADVENTOFCODE

For the second and fourth claw machines, there is no combination of A and B presses that will ever win a prize.

For the third claw machine, the cheapest way to win the prize is by pushing the **A** button **38** times and the **B** button **86** times. Doing this would cost a total of **200** tokens.

So, the most prizes you could possibly win is two; the minimum tokens you would have to spend to win all (two) prizes is **480**.

You estimate that each button would need to be pressed no more than **100** times to win a prize. How else would someone be expected to play?

Figure out how to win as many prizes as possible. What is the fewest tokens you would have to spend to win all possible prizes?

Your puzzle answer was **32067**.

--- Part Two ---

As you go to win the first prize, you discover that the claw is nowhere near where you expected it would be. Due to a unit conversion error in your measurements, the position of every prize is actually **10000000000000** higher on both the **X** and **Y** axis!

Add **10000000000000** to the **X** and **Y** position of every prize. After making this change, the example above would now look like this:

```
Button A: X+94, Y+34
Button B: X+22, Y+67
Prize: X=100000000008400, Y=100000000005400

Button A: X+26, Y+66
Button B: X+67, Y+21
Prize: X=100000000012748, Y=100000000012176

Button A: X+17, Y+86
Button B: X+84, Y+37
Prize: X=100000000007870, Y=100000000006450

Button A: X+69, Y+23
Button B: X+27, Y+71
Prize: X=100000000018641, Y=100000000010279
```

Now, it is only possible to win a prize on the second and fourth claw machines. Unfortunately, it will take many more than **100** presses to do so.

Using the corrected prize coordinates, figure out how to win as many prizes as possible. What is the fewest tokens you would have to spend to win all possible prizes?

Your puzzle answer was **92871736253789**.

Both parts of this puzzle are complete! They provide two gold stars: **

At this point, you should [return to your Advent calendar](#) and try another puzzle.

If you still want to see it, you can [get your puzzle input](#).

You can also [\[Share\]](#) this puzzle.