What you learned

In PHP

A variable can change type, a string is one type, and an array is both a list and a map that keeps insertion order. `match` throws `UnhandledMatchError` when a value has no arm and that line runs. `7 / 2` is `3.5`. `"0"` and `[]` are falsy. `??` fills in a missing value.

In Rust

`let` is immutable until you say `mut`. A shadow in an inner block ends when the block ends, and the outer name comes back. `const` is an item, not a `let`.

Integers default to `i32`, floats to `f64`. `7 / 2` is `3`. `as` truncates. `try_into` returns `Err` when the value does not fit. `bool` has no truthiness. `char` is one Unicode scalar.

A function's last expression, with no semicolon, is the return value. A semicolon makes that value `()`.

`if` needs a `bool` and both branches share a type. `(1..=5).rev()` counts down. `5..1` is empty. `break 'outer` leaves the labelled loop.

A tuple packs mixed types. `[T; N]` fixes the length, and a constant index past the end does not compile. A `Vec` grows. `v.get(i)` is `Option`. A `HashMap` does not keep insertion order. A `BTreeMap` prints keys in sorted order.

`String` owns text. `&str` is a borrowed view. On `héllo`, `.len()` is bytes and `.chars().count()` is characters.

`match` is exhaustive at compile time. A guard is `if` after the pattern. `let Some(x) = opt else { return; }` leaves on `None`. The input classifier puts those pieces on a `Vec<Option<i32>>`.

Key takeaways

- Names, numbers, functions, and control flow are the first half.
- Tuples, arrays, `Vec`, `HashMap`, and strings are the collections.
- `match`, `Option`, and the classifier are the last piece. The quiz is the button on this page.

Take the chapter quiz from the button on this page. It opens a separate page. Twelve questions, and you need 80% to pass. After you submit, each question shows a one-line explanation.

What's next: Why ownership