Solutions

2.1

- `Person.__init__` completes first ✓.
- The derived constructor opens with the `super` call, chaining construction base-first ✓.

2.2

- Composition (has-a) ✓.
- Drawn as a filled diamond at the whole ✓.

2.3

- Delegate: call the base method and subtract – e.g. `return super().total() - 10` ✓.

3.1

- `Member`–`Person`: inheritance – a member is a person ✓.
- `Library`–`Catalog`: composition – the library owns its catalog ✓.
- Constructor opens with the `super` call before touching derived state ✓.
- `available` reads 3: 5 added, 2 out ✓.
- Each `Copy` answers for itself; the catalog aggregates – the whole forwards the question to its parts ✓.

3.2

- Base returns $7 + 2 = 9$ ✓.
- The copied fork returns $7 - 10 = -3$, losing the bonus ✓.
- Should return $9 - 10 = -1$ ✓.
- The hazard is the fragile base class; repair: delegate via the base call and subtract ✓. Delegation re-uses whatever the base becomes, so future base lines flow through.

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