Functions

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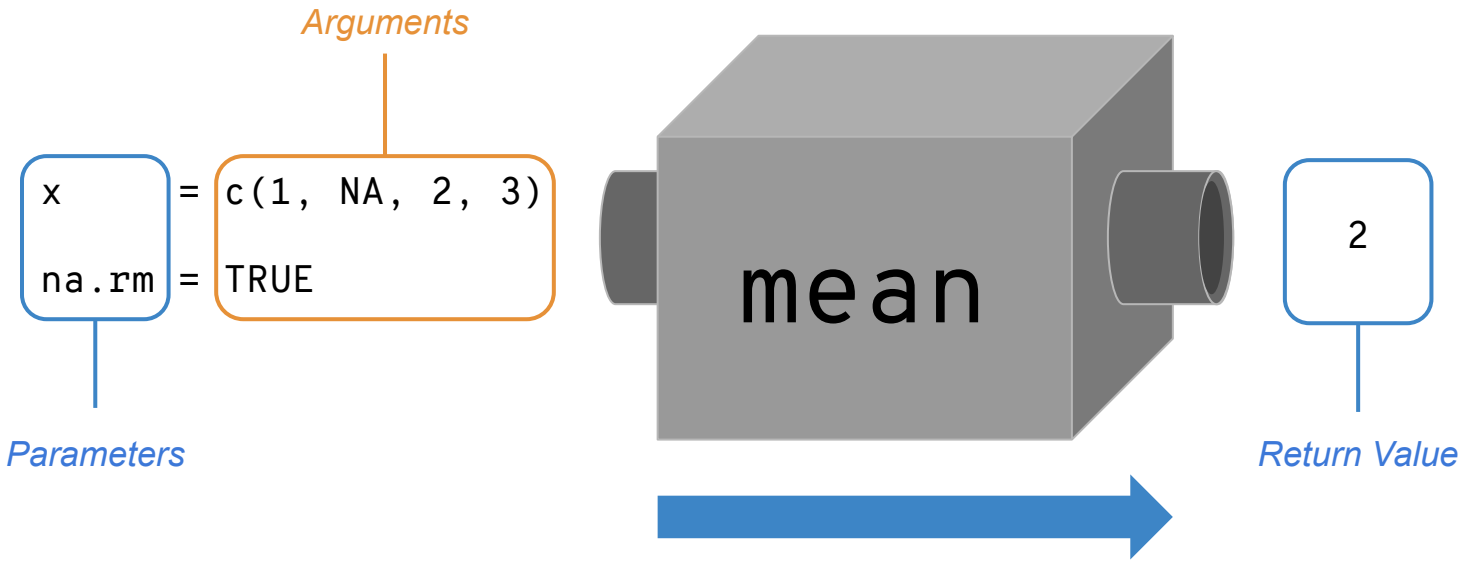
Functions

A function is like a factory: raw materials go in, finished products come out.



Default Arguments

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Function Example

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Variables: Scope & Lookup

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Summary

- Function definitions create a new scope
- *Local variables*
  - Are private
  - Get reset for each call
  - Mask non-local variables (exception: function calls)
- *Lexical scoping*
  - Where a function is **defined** determines non-local variables in scope
- *Dynamic lookup*
  - When a function is **called** determines values of non-local variables

Using Functions

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Using Functions

- Functions are the building blocks for solving problems.
- Divide and conquer! Break problems into small steps.
- Use a short function for each step. Then you can:
  - Test each step separately
  - Modify, reuse, or repurpose a step

Writing Functions

Before you write a function:

1. Write down the goal. What should the function do?
    - Draw a picture if it helps clarify the goal.
2. Check whether the function already exists.
    - Check base R, packages, and code you've already written.
3. Write down the inputs and outputs.
4. Write code to handle a simple case.
    - For data science problems, use a tiny data set (a subset).