

3 Variables, algorithms, and conditionals – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)
algorithm	算法	_____

Recall

Programs follow instructions to solve a problem:

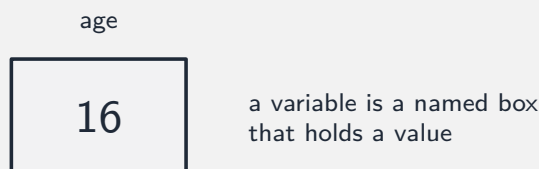
- They store values and calculate with them.
- They make choices depending on the situation.
- A step-by-step method for solving a problem is an algorithm.

This sheet lines up the basics of programming. Each idea has a worked example.

New ideas

■ 1 Variables

A **variable** is a named store that holds a value, which can change as the program runs.



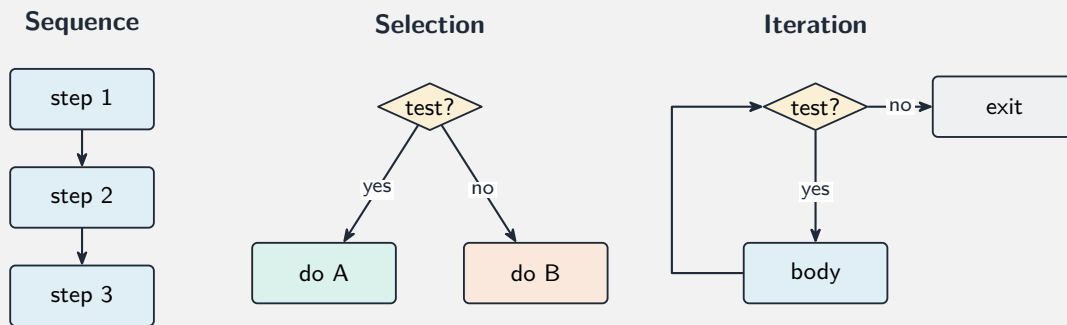
```
score <- 0
score <- score + 10    // score is now 10
```

■ 2 Expressions

An **expression** combines values and operators to compute a result, such as `price * quantity`.

■ 3 Algorithms

An **algorithm** 算法 is a step-by-step method to solve a problem –like a recipe. It uses three building blocks: sequence, selection (choices), and iteration (repeats).



■ 4 Conditionals

A **conditional** (IF) chooses what to do based on a true/false test:

```
IF (score >= 50)
    DISPLAY "Pass"
ELSE
    DISPLAY "Fail"
```

Watch out: the order of steps matters. `score <- 0` then `score <- score + 10` gives 10; swapping the lines would add 10 to an unset value. Sequence is the first building block of every algorithm.

Practice

Try these in order. The methods are all above.

2.1 State what a variable is.

[2]

2.2 After `x <- 5` then `x <- x + 3`, state the value of `x`. [2]

2.3 State what an algorithm is. [2]

2.4 Given `score = 40` and the IF/ELSE above, state what is displayed. [1]

2.5 Name the three building blocks of an algorithm. [3]