

Exercise walk-through

Constructors ■ 3.4

eXercise

You must be able to

- write a **constructor** 构造方法 that sets the initial state of a new object
- use **parameters** to give each object its starting values
- understand that a constructor runs when an object is created with `new`

Method — Constructors

A **constructor** sets a new object's **initial state**. It has the class's name, takes parameters, and runs when you use `new`:

```
k+kdpublic+w n+nfDogp(nString+w nnp)+w p
+w      nname+w o=+w nnp;+w      c+c1// set the starting value
p
```

`new Dog("Rex")` runs this constructor and stores "Rex" as the dog's name.

Method — A no-argument constructor

A class may have more than one constructor. A **no-argument** constructor sets defaults:

```
public Dog() {
    name = "Unknown";
}
```

`new Dog()` uses this one; `new Dog("Rex")` uses the parameterised one. Java chooses by the arguments you pass.

Practice 2.1 ■ 1 mark

State what a constructor does.

Solution 2.1

Worked steps

it sets the initial state of a new object **B1**.

Practice 2.2 ■ 1 mark

State when a constructor runs.

Solution 2.2

Method: Constructors

Worked steps

when an object is created with new **B1**.

Practice 2.3 ■ 1 mark

State how a constructor gives each object different starting values.

Solution 2.3

Method: Constructors

Worked steps

through its parameters, which supply each object's starting values **B1**.

Exam-style 3.1 ■ 1 mark

A constructor runs when an object is

- A** printed
- B** created with `new`
- C** deleted
- D** compared

Solution 3.1

Method: Constructors

A printed

B created with new 

C deleted

D compared

Worked steps

B.

Exam-style 3.2 ■ 1 mark

A constructor sets an object's

A final value

B initial state

C return type

D superclass

Solution 3.2

Method: Constructors

A final value

B initial state 

C return type

D superclass

Worked steps

B.

Exam-style 3.3 ■ 1 mark

The statement `new Student("Ana", 16)` is run.

- (a) State what runs as a result.
- (b) Name "Ana" and 16 in this call.
- (c) State what the constructor sets up.

Solution 3.3

Method: Constructors

Worked steps

(a) the constructor **B1**. (b) arguments **B1**. (c) the object's initial state **B1**.