

3.4 Constructors

Name: _____ Class: _____ Date: _____

Total: 8 marks

KEY WORDS constructor 构造方法

Objective

Build the skills to answer exam questions on **constructors**.

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**

1 Worked examples

Study these first. Each one shows the method for a question type used later.

■ Constructors

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

```
public Dog(String n) {
    name = n;    // set the starting value
}
```

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

■ 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.

2 Practice

2.1 State what a constructor does.

[1]

2.2 State when a constructor runs.

[1]

2.3 State how a constructor gives each object different starting values.

[1]

3 Exam-style questions

3.1 A constructor runs when an object is

[1]

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

3.2 A constructor sets an object's

[1]

- A final value
- B initial state
- C return type
- D superclass

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

- (a) State what runs as a result. [1]
- (b) Name "Ana" and 16 in this call. [1]
- (c) State what the constructor sets up. [1]

Solutions

2.1 it sets the initial state of a new object.

2.2 when an object is created with `new`.

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

3.1 B.

3.2 B.

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