

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

3.2 A constructor sets an object's [1]

- | | |
|---|---|
| A | B |
| C | D |
- 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]