

1.13 Object Creation and Storage (Instantiation)

Name: _____ Class: _____ Date: _____ Total: 8 marks

KEY WORDS reference variable 引用变量 • alias 别名 • constructor 构造方法
• instantiation 实例化 • null 空值

Objective

Build the skills to answer exam questions on **object creation and storage (instantiation)**.

You must be able to:

- create an object by calling a **constructor** 构造方法 with **new**
- understand that a **reference variable** 引用变量 stores the object's location
- describe what it means for a reference to hold **null**
- recognize that two references can form an **alias** 别名

1 Worked examples

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

■ Creating an object

Dog d = new Dog(); — the **new** keyword allocates memory and calls the **constructor** (instantiation).

■ Reference variables and null

A **reference variable** stores the object's **location**, not the object itself. A reference of value **null** refers to **no object**.

■ Alias

Dog e = d; makes e and d refer to the **same** object — an alias.

2 Practice

2.1 State the keyword used to create an object. [1]

2.2 State what a reference variable stores. [1]

2.3 State what **null** means. [1]

3 Exam-style questions

3.1 An object is created with the keyword [1]

- A **make**
- B **new**
- C **create**
- D **class**

3.2 A reference variable that refers to no object holds [1]

- A **0**
- B **null**
- C **""**
- D **false**

3.3 Cat a = new Cat(); Cat b = a;.

(a) State how many **Cat** objects exist. [1]

(b) State what **b** refers to. [1]

(c) Name the situation of two references to one object. [1]

Solutions

2.1 `new`.

2.2 the location (memory address) of the object.

2.3 it refers to no object.

3.1 B.

3.2 B.

3.3 (a) one. (b) the same object as `a`. (c) an alias.