

# 1.12 Objects: Instances of Classes

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Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

Total: 9 marks

## Objective

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Build the skills to answer exam questions on **objects as instances of classes**.

You must be able to:

- understand that an **object** 对象 is a specific **instance** 实例 of a class
- explain that a **class** 类 is a blueprint defining state and behaviour
- distinguish the class (the type) from an object (a value of that type)
- describe an object's **attributes** 属性 and **methods** 方法

## 1 Worked examples

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

### ■ Class and object

A **class** is a **blueprint** that defines the state and behaviour of its objects. An **object** is a specific **instance** created from that blueprint.

### ■ Attributes and methods

An object's **attributes** are its data; its **methods** are the behaviours it can perform.

### ■ Many objects

Many separate objects can be created from the same class —each has its own attribute values.

## 2 Practice

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2.1 State the relationship between a class and an object. [1]

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2.2 State the difference between an attribute and a method. [2]

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2.3 State whether many objects can be created from one class. [1]

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### 3 Exam-style questions

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3.1 An object is [1]

- **A** a blueprint
  - **B** an instance of a class
  - **C** a primitive type
  - **D** a compiler
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3.2 A class defines an object's [1]

- **A** only its data
  - **B** only its methods
  - **C** its state and behaviour
  - **D** the hardware
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3.3 A Dog class is written.

(a) State what a specific dog created from it is called. [1]

(b) Name an object's data. [1]

(c) Name an object's behaviours. [1]

### 4 Go further

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- work through the **1.12 Objects: Instances of Classes** lesson on the **Learn** page;
- read the **Using Objects** section of the AP Computer Science A handout on the **Know** page.

## Solutions

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**2.1** a class is a blueprint; an object is a specific instance created from it.

**2.2** an attribute is the object's data; a method is a behaviour the object can perform.

**2.3** yes.

**3.1** B.

**3.2** C.

**3.3** (a) an object (an instance). (b) its attributes. (c) its methods.