AP COMPUTER SCIENCE PRINCIPLES • EXERCISE SHEET

3.14 Libraries

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

Objective

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

You must be able to:

- explain how a **library** 库 is a collection of reusable procedures
- describe how an **API** 应用程序接口 documents how to use a library
- call library procedures to add **functionality** 功能 without writing it from scratch
- select an appropriate library for a problem

1 Worked examples

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

Library and API

A **library** is a collection of procedures that can be reused across programs. An **API** (application program interface) documents **how to use** the library —what procedures exist and what they need.

Why use one

Calling library procedures adds **functionality without writing it from scratch**, and libraries support **abstraction** by hiding complex implementation detail.

2 Practice

2.1 Define a software library. [1]

2.2 State what an API documents. [1]

2.3 State one benefit of using a library. [1]

3 Exam-style questions

3.1 A library is a collection of [1]

- **A** variables
- **B** reusable procedures
- **C** errors
- **D** bytes

3.2 An API is used to [1]

- **A** store data
- **B** document how to use a library
- **C** compress files
- **D** sort a list

3.3 A developer needs graph-drawing features for a program.

(a) State whether to write them from scratch or use a library. [1]

(b) Name what documents the library's use. [1]

(c) State how libraries support abstraction. [1]

4 Go further

- work through the **3.14 Libraries** lesson on the **Learn** page;
- read the **Algorithms and Programming** section of the AP Computer Science Principles handout on the **Know** page.

Solutions

2.1 a collection of procedures that can be reused across programs.

2.2 how to use the library (its available procedures and how to call them).

2.3 it adds functionality without writing it from scratch.

3.1 B.

3.2 B.

3.3 (a) use a library. (b) the API. (c) they hide the complex implementation detail.