

4.8 ArrayList Methods

Name: _____ Class: _____ Date: _____

Total: 8 marks

KEY WORDS `arraylist` 动态数组 • `array` 数组

Objective

Build the skills to answer exam questions on **ArrayList methods**.

You must be able to:

- create an **ArrayList** 动态数组 that can grow and shrink
- use `add`, `get`, `set`, `remove`, and `size`
- understand that an ArrayList stores **objects** (primitives as wrappers)

1 Worked examples

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

■ ArrayList

Unlike an array, an **ArrayList** can grow and shrink as elements are added or removed:

```
ArrayList<Integer> list = new ArrayList<>();
list.add(5);           // [5]
list.get(0);           // returns 5
list.size();           // 1
```

- `add`, `get`, `set`, `remove`, and `size` are the core methods.
- An ArrayList stores **objects**, so primitives are stored as wrappers (an `int` becomes an `Integer`).

■ A worked sequence

Start empty, then:

```
list.add(5); list.add(8); // [5, 8]
list.set(0, 3);           // [3, 8]
list.remove(1);           // [3]
```

`remove(1)` deletes the element at **index 1** (the 8), leaving [3], so `list.size()` is now 1.

2 Practice

2.1 State one way an ArrayList differs from an array. [1]

2.2 Name the method that returns the number of elements. [1]

2.3 State what `list.get(0)` returns. [1]

3 Exam-style questions

3.1 To add an element to an ArrayList, you use [1]

- A `add`
- B `length`
- C `new`
- D `size`

3.2 The number of elements in an ArrayList is found with [1]

- A `.length`
- B `.size()`
- C `.count`
- D `.get()`

3.3 `ArrayList<String> a = new ArrayList<>(); a.add("hi"); a.add("bye");`.

- (a) State `a.size()`. [1]
- (b) State `a.get(1)`. [1]
- (c) State whether an `ArrayList` can grow. [1]

Solutions

2.1 an `ArrayList` can grow and shrink, while an array has a fixed size.

2.2 `size()`.

2.3 the first element of the list.

3.1 A.

3.2 B.

3.3 (a) 2. (b) "bye". (c) yes.