

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

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

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