1. What index value does the third element of an array have?
Index 2, because array indexes start at 0.

2. Write the declaration for an array named quantities that stores 20 integers.

```
int[] quantities = new int[20];
```

3. Write a declaration for an array named heights storing the numbers 1.65, 2.15, and 4.95.

```
double[] heights = {1.65, 2.15, 4.95};
```

4. Write a for-each statement that displays the integer values stored in an array named grades.

```
for (int grade : grades) {
   System.out.println(grade);
}
```

6. How does passing an entire array to a method differ from passing a single element of the array?
Passing an entire array sends the reference, so the method can access and modify all its elements.
Passing a single element sends only that value, not the whole array, so the method cannot change the rest of the array.

7. Why are offset array indexes required in some cases?
Offset indexes are needed when:
You start reading from somewhere other than index 0, or
You need to access elements relative to a position (e.g., i + 1, i - 1) for searching, comparing neighbors, or skipping elements.

8. What output is displayed by the statements below?

```
String name = "Elaine";
System.out.println(name.charAt(3));
```

Character at index 3 is: i

10. Give an example of when a dynamic array might be a better structure choice over an array.
A dynamic array (like ArrayList) is better when the number of items:
Changes a lot,
Or you don’t know how many items there will be ahead of time
(e.g., storing user input until they choose to quit).

11. How does the ArrayList indexOf() method determine equality?
It uses the equals() method of the objects stored in the ArrayList to check if they match the object passed to indexOf().

12. How can the values of wrapper class objects be compared?

Wrapper class objects (like Integer, Double, etc.) should be compared using:
equals() → compares the values inside the objects,
Not == (which compares references).