1. What index value does the third element of an array have?
   The third element has an index of 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};
```

6. How does passing an entire array to a method differ from passing a single element of the array?
   Passing an entire array passes the reference, meaning the method can change the original array.
   Passing a single element only passes the value, so changes affect only the copy.

7. Why are offset array indexes required in some cases?
   Offsets are needed when the programmer needs to move forward or backward from a specific index or when adjusting for arrays starting at 0 instead of 1.

8. What output is displayed by the statements below?

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

Output:

```
i
```

(Character at index 3 is the fourth character: E = 0, l = 1, a = 2, i = 3)

10. Give an example of when a dynamic array might be a better structure choice over an array.
    When the number of items is not known ahead of time, such as storing user input until they choose to stop.

11. How does the ArrayList indexOf() method determine equality between the object passed to the method and an element in the array?
    It uses the equals() method to compare values.

12. How can the values of wrapper class objects be compared?
    They can be compared using the equals() method or by unboxing them into primitive values and using comparison operators.