1.The index value of the third element of an array is **2** (arrays are zero-indexed).

2.Declaration for an array named quantities that stores 20 integers:

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

3.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.For-each statement to display the integer values stored in an array named grades:

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

5. a) Algorithm for inserting data into an array:

- Start
- Shift elements from the insertion index to the end of the array one position to the right.
- Insert the new data at the desired index.
- End

b) Algorithm for deleting data from an array:

- Start
- Identify the index of the element to be deleted.
- Shift elements from the next index to the end of the array one position to the left.
- Optionally, set the last element to a default value (like null or 0).
- End

6. Passing an entire array to a method allows the method to access and modify the entire dataset, while passing a single element only provides access to that specific value. Changes made to an array within the method affect the original array, while changes to a single element do not affect the array itself.