Complete Question #1 - 4, #6 - 8, and #10 - 12 (page 235)

1.The third array will have an index of 3.

2. int[] quantities= new int[20];

3. Int[] heights = {“1.65”,” 2.15”,”4.95”};

4. for (int i = 0; i < grades.length; i++) { System.out.println(grades[i]); }

6. Passing a whole array to a method passes the reference to the elements, allowing the method to access an element of the array and change its value. Because the elements of the array are a primitive data type, passing an element passes only the data stores, not a reference to the data location.

7. Offset array indexes are used when a range should be shifted to correlate to a lower range of index values.

8.

10. A dynamic array varies in size during run time and is used in applications where the size of an array may need to grow or shrink. The ArrayList class implements a dynamic array.

11. Because of the index0f() method which compares its object parameter to each element of the array, it is important that the object’s class has an appropriately overridden equals () method.

12. If the values are integers you can use the compareTo(Integer intObject). This will return 0 when the Integer object value is the same as intObject. A negative int is returned when the Integer object is less than intObject, and a positive int is returned when the Integer object is greater than intObject.

If the values are doubles you can use the compareTo(Double doubleobject). This will return 0 when the Double object value is the same as doubleObject. A negative int is returned when the Double object is less than doubleObject, and a positive int is returned when the Double object is greater than double.Object.

Exercise 5: Mastermind
The game of Mastermind is played as follows: One player (the code maker) chooses a secret arrangement of colored pegs and the other player (the code breaker) tries to guess it. For each

guess, the code breaker puts forth an arrangement of colored pegs, and the code maker reports two numbers: 1. The number of pegs that are the correct color and in the correct position. 2. The number of pegs that are the correct color regardless of whether they are in the correct position. Create a Mastermind application that plays the game of Mastermind with the computer as the code maker and the user as the code breaker. The application should use a mastermindGame class, which has a constructor with parameters for the number of pegs in the code (1 to 10) and the number of colors for the pegs (1 to 9). The secret code generated by a mastermindGame object can contain duplicate colors. For example, a 5-peg code could be 1 2 2 5 6. A guess with duplicates will require extra attention when counting the number of pegs of the correct color. For example, if the code is 1 2 3 4 5 6 and the guess is 2 1 1 2 2 2, then the mastermindGame object should only report two correct colors (a single 1 and a single 2). Application output should look similar to: