Review Questions

The answers to the chapter review questions can be found in the Appendix.

1.   What is output by the following code? (Choose all that apply.) ✓

```
1: public class Fish {
2:     public static void main(String[] args) {
3:         int numFish = 4;
4:         String fishType = "tuna";
5:         String anotherFish = numFish + 1;
6:         System.out.println(anotherFish + " " + fishType);
7:         System.out.println(numFish + " " + 1);
8: } }
```

  A. 4 1

  B. 5

  C. 5 tuna

  D. 5tuna

  E. 51tuna

  F. The code does not compile.

2.   Which of these array declarations are not legal? (Choose all that apply.)

  A. `int[][] scores = new int[5][];`

  B. `Object[][][] cubbies = new Object[3][0][5];`

  C. `String beans[] = new beans[6];` *variable name as a type*

  D. `java.util.Date[] dates[] = new java.util.Date[2][];`

  E. `int[][] types = new int[];` ⎫

  F. `int[][] java = new int[][];` ⎬ *first size is required*

3.   Note that March 13, 2022 is the weekend when we spring forward, and November 6, 2022 is when we fall back for daylight saving time. Which of the following can fill in the blank without the code throwing an exception? (Choose all that apply.)

```
var zone = ZoneId.of("US/Eastern");
var date = _____;
var time = LocalTime.of(2, 15);
var z = ZonedDateTime.of(date, time, zone);
```

  A. `LocalDate.of(2022, 3, 13)`

  B. `LocalDate.of(2022, 3, 40)` → *March 40?*

  C. `LocalDate.of(2022, 11, 6)`

D. `LocalDate.of(2022, 11, 7)`

E. `LocalDate.of(`<u>`2023`</u>`, 2, 29)` Not a leap year

F. `LocalDate.of(2022, `<u>`MonthEnum`</u>`.MARCH, 13);` Only "month"

4. Which of the following are output by this code? (Choose all that apply.)

```
3: var s = "Hello";
4: var t = new String(s);
5: if ("Hello".equals(s)) System.out.println("one");
6: if (t == s) System.out.println("two");
7: if (t.intern() == s) System.out.println("three");
8: if ("Hello" == s) System.out.println("four");
9: if ("Hello".intern() == t) System.out.println("five");
```

→ String pool

A. `one`

B. `two`

C. `three`

D. `four`

E. `five`

F. The code does not compile.

G. None of the above

5. What is the result of the following code?

```
7: var sb = new StringBuilder();
8: sb.append("aaa").insert(1, "bb").insert(4, "ccc");
9: System.out.println(sb);
```

A. `abbaaccc`

B. `abbaccca`

C. `bbaaaccc`

D. `bbaaccca`

E. An empty line

F. The code does not compile.

6. How many of these lines contain a compiler error? (Choose all that apply.) ✓

```
23: double one = Math.pow(1, 2);
24: int two = Math.round(1.0); 1.0 is a double and does not fit in an int
25: float three = Math.random(); → returns a double
26: var doubles = new double[] {one, two, three};
```

A. 0

B. 1

    C. `2`

    D. 3

    E. 4

7. Which of these statements is true of the two values? (Choose all that apply.)

```
2022-08-28T05:00 GMT-04:00
2022-08-28T09:00 GMT-06:00
```
→ 9:00
→ 15:00

    A. The first date/time is earlier.

    B. The second date/time is earlier.

    C. Both date/times are the same.

    D. The date/times are two hours apart.

    E. The date/times are six hours apart.

    F. The date/times are 10 hours apart.

8. Which of the following return **5** when run independently? (Choose all that apply.)

```
var string = "12345";
var builder = new StringBuilder("12345");
```

    A. `builder.charAt(4)`

    B. `builder.replace(2, 4, "6").charAt(3)` **1265**

    C. `builder.replace(2, 5, "6").charAt(2)`

    D. `string.charAt(5)`

    E. `string.length` **( ) missing**

    F. `string.replace("123", "1").charAt(2)` **145**

    G. None of the above

9. Which of the following are true about arrays? (Choose all that apply.)

    A. The first element is index 0.

    B. The first element is index 1.

    C. Arrays are fixed size.

    D. Arrays are immutable.

    E. Calling `equals()` on two different arrays containing the same primitive values always returns `true`.

    F. Calling `equals()` on two different arrays containing the same primitive values always returns `false`.

    G. Calling `equals()` on two different arrays containing the same primitive values can return `true` or `false`.

10. How many of these lines contain a compiler error? (Choose all that apply.)

```
23: int one = Math.min(5, 3);     int
24: long two = Math.round(5.5);    long
25: double three = Math.floor(6.6);  long, but can fit in a double
26: var doubles = new double[] {one, two, three};
```

A. 0
B. 1
C. 2
D. 3
E. 4

11. What is the output of the following code?

```
var date = LocalDate.of(2022, 4, 3);
date.plusDays(2);
date.plusHours(3);   local date does not have time element
System.out.println(date.getYear() + " " + date.getMonth()
    + " " + date.getDayOfMonth());
```

A. 2022 MARCH 4
B. 2022 MARCH 6
C. 2022 APRIL 3
D. 2022 APRIL 5
E. The code does not compile.
F. A runtime exception is thrown.

12. What is output by the following code? (Choose all that apply.)

```
var numbers = "012345678".indent(1);   add n spaces at the beginning of a new line
numbers = numbers.stripLeading();   removes the space at the beginning
System.out.println(numbers.substring(1, 3));  12
System.out.println(numbers.substring(7, 7));  empty
System.out.print(numbers.substring(7));  78
```

A. 12
B. 123
C. 7
D. 78
E. A blank line
F. The code does not compile.
G. An exception is thrown.

13. What is the result of the following code? ✓

```java
public class Lion {
   public void roar(String roar1, StringBuilder roar2) {
      roar1.concat("!!!");
      roar2.append("!!!");
   }
   public static void main(String[] args) {
      var roar1 = "roar";
      var roar2 = new StringBuilder("roar");
      new Lion().roar(roar1, roar2);
      System.out.println(roar1 + " " + roar2);
} }
```

    A. roar roar

    B. roar roar!!!

    C. roar!!! roar

    D. roar!!! roar!!!

    E. An exception is thrown.

    F. The code does not compile.

14. Given the following, which can correctly fill in the blank? (Choose all that apply.)

```java
var date = LocalDate.now();
var time = LocalTime.now();
var dateTime = LocalDateTime.now();
var zoneId = ZoneId.systemDefault();
var zonedDateTime = ZonedDateTime.of(dateTime, zoneId);
Instant instant = _____;
```

    A. Instant.now()

    B. new Instant() → using a constructor is not valid

    C. date.toInstant() → missing time and time zone

    D. dateTime.toInstant() → missing time zone

    E. time.toInstant() → missing date and time zone

    F. zonedDateTime.toInstant()

15. What is the output of the following? (Choose all that apply.)

```java
var arr = new String[] { "PIG", "pig", "123"};
Arrays.sort(arr);
System.out.println(Arrays.toString(arr));
System.out.println(Arrays.binarySearch(arr, "Pippa"));
```

0   1   2   3   ← negates and substracts one

A. `[pig, PIG, 123]`

B. `[PIG, pig, 123]`

C. `[123, PIG, pig]`

D. `[123, pig, PIG]`

E. `-3`

F. `-2`

G. The results of `binarySearch()` are undefined in this example.

16. What is included in the output of the following code? (Choose all that apply.)

```
var base = "ewe\nsheep\\t";
int length = base.length();
int indent = base.indent(2).length();
int translate = base.translateEscapes().length();

var formatted = "%s %s %s".formatted(length, indent, translate);
System.out.format(formatted);
```

[handwritten annotations: "13?" crossed out, "11"; "indent added two spaces @ the beginning of every new line + a new line to the end"; "makes \\t to \t (actual escape character)"; "≈10"]

A. `10`

B. `11`

C. `12`

D. `13`

E. `14`

F. `15`

G. `16`

17. Which of these statements are true? (Choose all that apply.)

```
var letters = new StringBuilder("abcdefg");
```

A. `letters.substring(1, 2)` returns a single-character `String`. *["b"]*

B. `letters.substring(2, 2)` returns a single-character `String`. *[* Empty string]*

C. `letters.substring(6, 5)` returns a single-character `String`. *[✗ Reversed indexes not allow]*

D. `letters.substring(6, 6)` returns a single-character `String`. *[*]*

E. `letters.substring(1, 2)` throws an exception. *[✗]*

F. `letters.substring(2, 2)` throws an exception. *[✗]*

G. `letters.substring(6, 5)` throws an exception.

H. `letters.substring(6, 6)` throws an exception. *[*]*

18. What is the result of the following code? (Choose all that apply.)

```
13: String s1 = """
14:    purr""";
```

```
15: String s2 = "";
16:
17: s1.toUpperCase();
18: s1.trim();
19: s1.substring(1, 3);
20: s1 += "two";   purr + two
21:
22: s2 += 2;        ⎫
23: s2 += 'c';      ⎬ built somewhere else (heap)
24: s2 += false;    ⎭ string pool
25:
26: if ( s2 == "2cfalse") System.out.println("==");
27: if ( s2.equals("2cfalse")) System.out.println("equals");
28: System.out.println(s1.length());  7
```

    A. 2

    B. 4

    C. `7`

    D. 10

    E. ==

    F. `equals`

    G. An exception is thrown.

    H. The code does not compile.

19. Which of the following fill in the blank to print a positive integer? (Choose all that apply.)

```
String[] s1 = { "Camel", "Peacock", "Llama"};
String[] s2 = { "Camel", "Llama", "Peacock"};
String[] s3 = { "Camel"};
String[] s4 = { "Camel", null};
System.out.println(Arrays._____);
```

    A. `compare(s1, s2)` Different and P > L (that makes the first array larger)

    B. `mismatch(s1, s2)` * Different in index 1 or greater

    C. compare(s3, s4)

    D. `mismatch (s3, s4)` *

    E. compare(s4, s4)

    F. mismatch (s4, s4)

20. Note that March 13, 2022 is the weekend that clocks spring ahead for daylight saving time. What is the output of the following? (Choose all that apply.)

```
var date = LocalDate.of(2022, Month.MARCH, 13);
var time = LocalTime.of(1, 30);
var zone = ZoneId.of("US/Eastern");
var dateTime1 = ZonedDateTime.of(date, time, zone);
var dateTime2 = dateTime1.plus(1, ChronoUnit.HOURS);

long diff = ChronoUnit.HOURS.between(dateTime1, dateTime2);
int hour = dateTime2.getHour();
boolean offset = dateTime1.getOffset()
   == dateTime2.getOffset();
System.out.println("diff = " + diff);
System.out.println("hour = " + hour);
System.out.println("offset = " + offset);
```

    A. `diff = 1` *not counting the daylight hour*

    B. `diff = 2`

    C. `hour = 2`

    D. `hour = 3` → *2:30 + the daylight hour*

    E. `offset = true` *time zone changed due to daylight hour*

    F. The code does not compile.

    G. A runtime exception is thrown.

21. Which of the following can fill in the blank to print avaJ? (Choose all that apply.)

```
3: var puzzle = new StringBuilder("Java");
4: puzzle._____;
5: System.out.println(puzzle);
```

    A. `reverse()`

    B. `append("vaJ$").substring(0, 4)`

    C. `append("vaJ$").delete(0, 3).deleteCharAt(puzzle.length() - 1)`

    D. `append("vaJ$").delete(0, 3).deleteCharAt(puzzle.length())`

    E. None of the above

22. What is the output of the following code? ✓

```
var date = LocalDate.of(2022, Month.APRIL, 30);
date.plusDays(2);
date.plusYears(3);
System.out.println(date.getYear() + " " + date.getMonth()
   + " " + date.getDayOfMonth());
```

A. `2022 APRIL 30`

B. `2022 MAY 2`

C. `2025 APRIL 2`

D. `2025 APRIL 30`

E. `2025 MAY 2`

F. The code does not compile.

G. A runtime exception is thrown.