This quiz is for students to practice. A large number of additional quiz is available for instructors using Quiz Generator from the Instructor's Resource Website.
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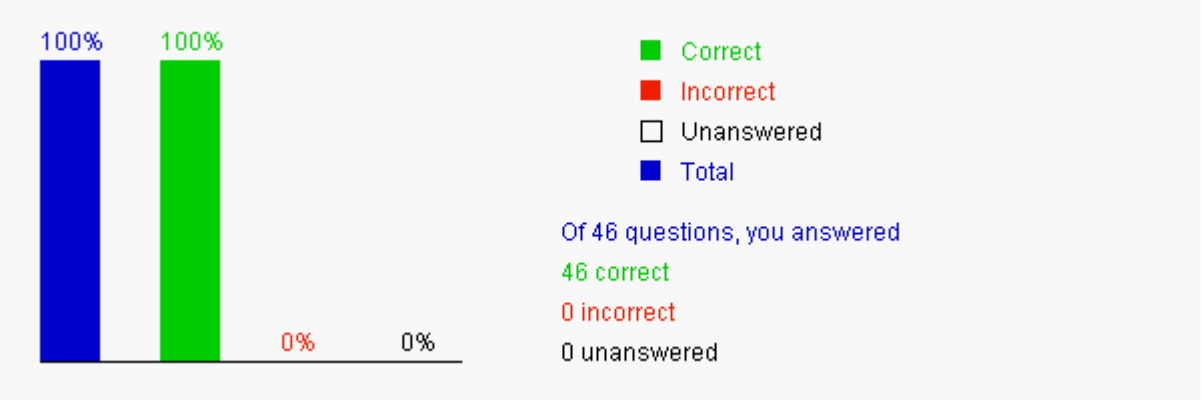
Chapter 4 Mathematical Functions, Characters, and Strings



Please send suggestions and errata to Dr. Liang at y.daniel.liang@gmail.com. Indicate which book and edition you are using. Thanks!

Section 4.2 Common Mathematical Functions *Section 4.2.1 Trigonometric Methdos*

4.1 To obtain the sine of 35 degrees, use _____.

- A. Math.sin(35)
- B. Math.sin(Math.toRadians(35))
- C. Math.sin(Math.toDegrees(35))
- D. Math.sin(Math.toRadian(35))
- E. Math.sin(Math.toDegree(35))

Your answer is correct
Explanation: Note the trig methods use the radians for angles.

4.2 To obtain the arc sine of 0.5, use _____.

- A. Math.asin(0.5)
- B. Math.asin(Math.toDegrees(0.5))
- C. Math.sin(Math.toRadians(0.5))
- D. Math.sin(0.5)

Your answer is correct
Explanation: Note the trig methods use the radians for angles.

4.3 Math.asin(0.5) returns _____.

- A. 30
- B. Math.toRadians(30)
- C. Math.PI / 4
- D. Math.PI / 2

Your answer is correct
Explanation: Note that Math.asin returns an angle in radians.

4.4 Math.sin(Math.PI) returns _____.

- A. 0.0
- B. 1.0
- C. 0.5
- D. 0.4

Your answer is correct
Explanation: Note that Math.PI is 180 degrees.

4.5 Math.cos(Math.PI) returns _____.

- A. 0.0
- B. 1.0
- C. -1.0
- D. 0.5

Your answer is correct
Explanation: Note that Math.PI is 180 degrees.

Section 4.2.3 The Rounding Methods

4.6 What is Math.round(3.6)?

- A. 3.0
- B. 3
- C. 4
- D. 4.0

Your answer is correct
Explanation: Note that round returns an int value

4.7 What is Math.rint(3.6)?

- A. 3.0
- B. 3
- C. 4.0
- D. 5.0

Your answer is correct
Explanation: Note that rint returns a double value

4.8 What is Math.rint(3.5)?

- A. 3.0
- B. 3
- C. 4
- D. 4.0
- E. 5.0

Your answer is correct
Explanation: rint returns the nearest even integer as a double since 3.5 is equally close to 3.0 and 4.0.

4.9 What is Math.ceil(3.6)?

- A. 3.0
- B. 3
- C. 4.0
- D. 5.0

Your answer is correct
Explanation: Note that ceil returns a double value

4.10 What is Math.floor(3.6)?

- A. 3.0
- B. 3
- C. 4
- D. 5.0

Your answer is correct
Explanation: Note that floor returns a double value

Section 4.3 Character Data Type and Operations Section 4.3.1 Unicode and ASCII Code

4.11 Which of the following is the correct expression of character 4?

- A. 4
- B. "4"
- C. '\0004'
- D. '4'

Your answer is correct
Explanation: You have to write '4'.

4.12 A Java character is stored in _____.

A. one byte
B. two bytes
C. three bytes
D. four bytes

Your answer is correct
Explanation: Java characters use Unicode encoding.

4.13 The Unicode of 'a' is 97. What is the Unicode for 'c'?

A. 96
B. 97
C. 98
D. 99

Your answer is correct
Explanation: The Unicode for letters and numbers are allocated in a natural order. So b is after a and c is after b, and so on.

Section 4.3.2 Escape Sequences for Special Characters

4.14 Which of the following statement prints smith\exam1\test.txt?

A. System.out.println("smith\exam1\test.txt");
B. System.out.println("smith\\exam1\\test.txt");
C. System.out.println("smith\"exam1\"test.txt");
D. System.out.println("smith"\exam1"\test.txt");

Your answer is correct
Explanation: To represent the character, use \, because it is an escape character.

Section 4.3.3 Casting between char and Numeric Types

4.15 Suppose x is a char variable with a value 'b'. What is the output of the statement System.out.println(++x)?

A. a
B. b
C. c
D. d

Your answer is correct
Explanation: The ++ and -- operators can be applied to a char variable. ++x is preincrement. x is 'b' before ++x. After ++x, x becomes c.

4.16 Suppose i is an int type variable. Which of the following statements display the character whose Unicode is stored in variable i?

A. System.out.println(i);
B. System.out.println((char)i);
C. System.out.println((int)i);
D. System.out.println(i + " ");

Your answer is correct
Explanation: (char)i casts a number into a character.

4.17 Will System.out.println((char)4) display 4?

A. Yes
B. No

Your answer is correct
Explanation: The character whose Unicode is □ is to be displayed, not number 4.

4.18 What is the output of System.out.println('z' - 'a')?

A. 25
B. 26
C. a
D. z

Your answer is correct
Explanation: The Unicode offset between z and a is 25.

4.19 An int variable can hold _____.

- [x] A. 'x'
- [x] B. 120
- [ ] C. 120.0
- [ ] D. "x"
- [ ] E. "120"

Your answer is correct
Explanation: Choice A is also correct, because a character can be implicitly cast into an int variable. The Unicode value of character is assignment to the int variable. In this case, the code is 120 (see Appendix B).

4.20 Which of the following assignment statements is correct?

- [x] A. char c = 'd';
- [x] B. char c = 100;
- [ ] C. char c = "d";
- [ ] D. char c = "100";

Your answer is correct
Explanation: Choice B is also correct, because an int value can be implicitly cast into a char variable. The Unicode of the character is the int value. In this case, the character is d (see Appendix B).

4.21 '3' - '2' + 'm' / 'n' is _____.

- ( ) A. 0
- (•) B. 1
- ( ) C. 2
- ( ) D. 3

Your answer is correct
Explanation: When an operand is a character in an arithmetic expression, the character is casted to an int value.

Section 4.3.4 Comparing and Testing Characters

4.22 To check whether a char variable ch is an uppercase letter, you write _____.

- ( ) A. (ch >= 'A' && ch >= 'Z')
- (•) B. (ch >= 'A' && ch <= 'Z')
- ( ) C. (ch >= 'A' || ch <= 'Z')
- ( ) D. ('A' <= ch <= 'Z')

Your answer is correct
Explanation: A is wrong because ch >= 'Z'. C is wrong because of using ||. D is wrong because of incorrect syntax. The correct answer is B.

4.23 Which of the following is not a correct method in the Character class?

- [ ] A. isLetterOrDigit(char)
- [ ] B. isLetter(char)
- [x] C. isDigit()
- [ ] D. toLowerCase(char)
- [x] E. toUpperCase()

Your answer is correct
Explanation: isDigit() should be isDigit(char) and toUpperCase() should be toUpperCase(char)

4.24 Suppose Character x = new Character('a'), _____ returns true.

- [x] A. x.equals(new Character('a'))
- [ ] B. x.compareToIgnoreCase('A')
- [ ] C. x.equalsIgnoreCase('A')
- [x] D. x.equals('a')
- [ ] E. x.equals("a")

Your answer is correct
Explanation: (B) and (C) are wrong because no methods compareToIgnoreCase and equalsIgnoreCase are in the Character class. (E) is wrong because a character is not a string.

Section 4.4 The String Type Section 4.4.2 Gettiing Characters from a String

4.25 Suppose s is a string with the value "java". What will be assigned to x if you execute the following code?

```
char x = s.charAt(4);
```

- A. 'a'
- B. 'v'
- C. Nothing will be assigned to x, because the execution causes the runtime error StringIndexOutofBoundsException.

Your answer is correct
Explanation: The string index starts from 0 and the last index is s.length() - 1. s.charAt(4) is out of bounds.

Section 4.4.3 Concatenating Strings

4.26 The expression "Java " + 1 + 2 + 3 evaluates to _____.

- A. Java123
- B. Java6
- C. Java 123
- D. java 123
- E. Illegal expression

Your answer is correct
Explanation: The + operator is evaluated from left to right. When a string adds with a number, the number is converted into a string. The correct answer is C.

4.27 Note that the Unicode for character A is 65. The expression "A" + 1 evaluates to _____.

- A. 66
- B. B
- C. A1
- D. Illegal expression

Your answer is correct
Explanation: When a string adds with a number, the number is converted into a string. The correct answer is C.

4.28 Note that the Unicode for character A is 65. The expression 'A' + 1 evaluates to _____.

- A. 66
- B. B
- C. A1
- D. Illegal expression

Your answer is correct
Explanation: When a character adds with a number, the character is converted into a int. The correct answer is A.

Section 4.4.4 Converting Strings

4.29 Which of the following is the correct statement to return JAVA?

- A. toUpperCase("Java")
- B. "Java".toUpperCase("Java")
- C. "Java".toUpperCase()
- D. String.toUpperCase("Java")

Your answer is correct
Explanation: The correct method is toUpperCase(). So C is correct.

Section 4.4.7 Comparing Strings

4.30 Suppose s1 and s2 are two strings. Which of the following statements or expressions is incorrect?

- [x] A. String s3 = s1 - s2;
- [x] B. boolean b = s1.compareTo(s2);
- [x] C. char c = s1[0];
- [x] D. char c = s1.charAt(s1.length());

Your answer is correct
Explanation: A is wrong because the - operator cannot be used for strings. B is wrong because the compareTo method returns an int, not a boolean. C is wrong because the [] cannot be used for accessing string elements. D is wrong because of index out of bounds.

4.31 Suppose s1 and s2 are two strings. What is the result of the following code?

```
s1.equals(s2) == s2.equals(s1)
```

- (●) A. true
- ( ) B. false

Your answer is correct 
Explanation: s1.equals(s2) and s2.equals(s1) are the same.

4.32 "abc".compareTo("aba") returns _____.

- ( ) A. 1
- (●) B. 2
- ( ) C. -1
- ( ) D. -2
- ( ) E. 0

Your answer is correct 
Explanation: The first two characters in the two strings are the same. The different between the last two characters is 2. The correct answer is B.

4.33 "AbA".compareToIgnoreCase("abC") returns _____.

- ( ) A. 1
- ( ) B. 2
- ( ) C. -1
- (●) D. -2
- ( ) E. 0

Your answer is correct 
Explanation: Ignoring case, you compare aba with abc. The first two characters in the two strings are the same. The different between the last two characters is -2. The correct answer is D.

4.34 _____ returns true.

- [ ] A. "peter".compareToIgnoreCase("Peter")
- [ ] B. "peter".compareToIgnoreCase("peter")
- [x] C. "peter".equalsIgnoreCase("Peter")
- [x] D. "peter".equalsIgnoreCase("peter")
- [x] E. "peter".equals("peter")

Your answer is correct 
Explanation: The compareToIgnoreCase return an int. So, A and B are wrong. Ignoring case, C, D, and E all return true.

Section 4.4.8 Obtaining Substrings

4.35 What is the return value of "SELECT".substring(0, 5)?

- ( ) A. "SELECT"
- (●) B. "SELEC"
- ( ) C. "SELE"
- ( ) D. "ELECT"

Your answer is correct 
Explanation: Note that the substring is from index 0 to 4, which is 5 - 1. The correct answer is B.

4.36 What is the return value of "SELECT".substring(4, 4)?

- (●) A. an empty string
- ( ) B. C
- ( ) C. T
- ( ) D. E

Your answer is correct 
Explanation: If beginIndex is endIndex, substring(beginIndex, endIndex) returns an empty string with length 0. It would be a runtime error, if beginIndex > endIndex.

Section 4.4.9 Finding a Character or a Substring in a String

4.37 To check if a string s contains the prefix "Java", you may write

- [x] A. if (s.startsWith("Java")) ...
- [x] B. if (s.indexOf("Java") == 0) ...
- [x] C. if (s.substring(0, 4).equals("Java")) ...

- [x] D. if (s.charAt(0) == 'J' && s.charAt(1) == 'a' && s.charAt(2) == 'v' && s.charAt(3) == 'a') ...

Your answer is correct
Explanation: They are all correct.

4.38 To check if a string s contains the suffix "Java", you may write

- [x] A. if (s.endsWith("Java")) ...
- [ ] B. if (s.lastIndexOf("Java") >= 0) ...
- [x] C. if (s.substring(s.length() - 4).equals("Java")) ...
- [ ] D. if (s.substring(s.length() - 5).equals("Java")) ...
- [x] E. if (s.charAt(s.length() - 4) == 'J' && s.charAt(s.length() - 3) == 'a' && s.charAt(s.length() - 2) == 'v' && s.charAt(s.length() - 1) == 'a') ...

Your answer is correct
Explanation: s.lastIndexOf('Java') >= 0 does not indicate that Java is the suffix of the string.

Section 4.4.10 Conversions between Strings and Numbers

4.39 The _____ method parses a string s to an int value.

- ( ) A. integer.parseInt(s);
- (•) B. Integer.parseInt(s);
- ( ) C. integer.parseInteger(s);
- ( ) D. Integer.parseInteger(s);

Your answer is correct
Explanation: The parseInt method is defined in the Integer class. B is correct.

4.40 The _____ method parses a string s to a double value.

- ( ) A. double.parseDouble(s);
- ( ) B. Double.parsedouble(s);
- ( ) C. double.parse(s);
- (•) D. Double.parseDouble(s);

Your answer is correct
Explanation: The parseDouble method is defined in the Double class. D is correct.

Section 4.6 Formatting Console Output

4.41 Which of the following are valid specifiers for the printf statement?

- [x] A. %4c
- [x] B. %10b
- [x] C. %6d
- [ ] D. %8.2d
- [x] E. %10.2e

Your answer is correct
Explanation: All correct except D. D is wrong because the specifier d is for decimal integer.

4.42 The statement System.out.printf("%3.1f", 1234.56) outputs _____.

- ( ) A. 123.4
- ( ) B. 123.5
- ( ) C. 1234.5
- ( ) D. 1234.56
- (•) E. 1234.6

Your answer is correct
Explanation: .1 specifies one digit after the decimal point. The rest is rounded up. So 1234.56 is displayed 1234.6.

4.43 The statement System.out.printf("%3.1e", 1234.56) outputs _____.

- ( ) A. 0.1e+04
- ( ) B. 0.123456e+04
- ( ) C. 0.123e+04
- (•) D. 1.2e+03
- ( ) E. 1.23+03

Your answer is correct
Explanation: %3.1e specifies a scientific notation with one digit after the decimal point. So, the correct answer is D.

4.44 The statement System.out.printf("%5d", 123456) outputs _____.

- A. 12345
- B. 23456
- C. 123456
- D. 12345.6

Your answer is correct
Explanation: %5d specifies an integer with width 5. The width is automatically expanded if the number is larger than the specified width. So, the correct answer is C.

4.45 The statement System.out.printf("%10s", 123456) outputs _____. (Note: * represents a space)

- A. 123456****
- B. 23456*****
- C. 12345*****
- D. ****123456

Your answer is correct
Explanation: %10s specifies to display a string with width 10. By default, it is right justified. So, the correct answer is D.

4.46 Analyze the following code:

```
int i = 3434; double d = 3434;
System.out.printf("%5.1f %5.1f", i, d);
```

- A. The code compiles and runs fine to display 3434.0 3434.0.
- B. The code compiles and runs fine to display 3434 3434.0.
- C. i is an integer, but the format specifier %5.1f specifies a format for double value. The code has an error.

Your answer is correct
Explanation: i is an integer, but the format specifier %5.1f specifies a format for double value. Type does not match. So, the correct answer is C.