

## Quiz 5

### True/False

Indicate whether the statement is true or false.

- \_\_\_ 1. A Boolean expression evaluates to either `true` or `false`.
- \_\_\_ 2. The `if` statement executes a set of statements when a condition is false.
- \_\_\_ 3. The statement `import java.lang.Math;` is required in order to use the `random()` method to generate random numbers in an application.
- \_\_\_ 4. The `random()` method generates numbers greater than or equal to 0 and less than 1.
- \_\_\_ 5. Including a statement similar to `Double r = Math.random(10);` ensures a number between 0 and 10 is generated.
- \_\_\_ 6. Java uses short-circuit evaluation for determining the result of a compound Boolean expression that includes `&&` or `||`.
- \_\_\_ 7. If `x` has the value 6, Java will only evaluate the left side of the compound expression in the statement: `if (x > 1 && x < 50) {`
- \_\_\_ 8. The `Math` class `abs()` method always returns a negative value.
- \_\_\_ 9. The statement `System.out.println(6(Math.pow(2)));` returns the value of 6 raised to the power of 2.
- \_\_\_ 10. The statement `y = abs(3);` will return the value 3.

### Multiple Choice

Identify the choice that best completes the statement or answers the question.

- \_\_\_ 11. Which code segment displays the circle area when the radius is a positive value?
  - a. 

```
if (radius!=0) {  
    System.out.println("The radius is: " + radius * radius *  
    Math.PI);  
}
```
  - b. 

```
if (radius>=0) {  
    System.out.println("The radius is: " + radius * radius *  
    Math.PI);  
}
```
  - c. 

```
if (radius>0) {  
    System.out.println("The radius is: " + radius * radius *  
    Math.PI);  
}
```
  - d. 

```
if (radius==0) {  
    System.out.println("The radius is: " + radius * radius *  
    Math.PI);  
}
```

\_\_\_\_\_ 12. Given the following code segment:

```
if (guess == selected) {
    System.out.println("Correct");
} else {
    System.out.println("Incorrect");
}
```

Which is displayed when guess is 8 and selected is 9?

- a. Correct
- b. Incorrect
- c. No message would be displayed.
- d. Correct on one line and Incorrect on the next line

\_\_\_\_\_ 13. Given the following code segment:

```
boolean finished = false;
if (finished) {
    System.out.println("Game finished");
} else {
    System.out.println("Next round");
}
```

Which will be displayed when the code segment is run?

- a. false
- b. Game finished
- c. Next round
- d. A syntax error will be generated because (`finished`) is not a correct Boolean expression.

\_\_\_\_\_ 14. Given the following code segment:

```
if (x > 0) {
    if (y > 0) {
        System.out.println("x and y ");
    } else if (z > 0) {
        System.out.println("x and z ");
    }
}
```

Which is displayed when  $x = 56$ ,  $y = -234$ , and  $z = -45$ ?

- a. x and y
- b. x and z
- c. 56 and -45
- d. No output will be displayed.

\_\_\_\_\_ 15. Which will be displayed when the code segment below is run?

```
double grossPay = 4250.50;
if (grossPay > 3000) {
    System.out.println("Your tax rate is 33%");
} else if (grossPay > 4000) {
    System.out.println("Your tax rate is 35%");
}
```

- a. Your tax rate is 33%
- b. Your tax rate is 35%
- c. Your tax rate is 33%  
Your tax rate is 35%
- d. A run-time error will be generated.

\_\_\_\_\_ 16. Given the following code segment:

```
x = 1;
switch (x) {
    case 1: y = 0;
    case 2: y = 1;
    default: y += 1;
}
System.out.println(y);
```

What would be displayed when the segment is run?

- a. 0
- b. 1
- c. 2
- d. 3

\_\_\_\_\_ 17. Which statement is used to generate a random integer between 5 and 10?

- a. `i = Math.random(5);`
- b. `i = (10 - 5) * Math.random() + 5;`
- c. `i = (6 * Math.random() + 5);`
- d. `i = (int)(6 * Math.random() + 5);`

\_\_\_\_\_ 18. Given the following code segment:

```
if (x < 50) && (x > 0) {
    System.out.println("The value is in the approved range");
}
```

Which is true?

- a. A syntax error will be generated because `(x < 50) && (x > 0)` must be written as `(x < 50 && x > 0)`.
- b. A syntax error will be generated because `&&` should be `&`.
- c. A syntax error will be generated because a semicolon is missing at the end of the if condition.
- d. The code segment will compile without errors.

\_\_\_\_\_ 19. Which is equivalent to the expression `!(x && y)`?

- a. `(!x) || (!y)`
- b. `!(x || y)`
- c. `(x || y) && (x && y)`
- d. `(x || y)`

\_\_\_\_ 20. Given the following code segment:

```
double x = 5.86859;
int y = 100;
int calculation = (int)(x * Math.pow(y, 2));
System.out.println(calculation);
```

Which is the correct output?

- |          |           |
|----------|-----------|
| a. 50000 | c. 58686  |
| b. 58685 | d. 586859 |

### Short Answer

21. List six relational operators.
22. Assuming the comment is correct, determine the logic error in the following statement:

```
if (score <= 60) {
    //Display message if score is less than 60
    System.out.print("Try harder.");
}
```

23. Write an appropriate decision statement to display `You move to the next level.` when the value of `points` is 150 or higher.
24. Write the statements required to generate a random number between 10 and 100, inclusive and store the value in a variable named `randNum`.
25. Complete the following:
- Write an algorithm for obtaining a gross pay amount from the user and then determining an appropriate tax bracket amount based on the gross pay entered. If the gross pay is less than \$700, the tax rate is 26%, if the gross pay is between \$700 and \$1,200 inclusive, the tax rate is 33%, and if the gross pay is greater than \$1,200, the tax rate is 36%.
  - Write the pseudocode for the algorithm developed in part (a).

## Quiz 5

### Answer Section

#### TRUE/FALSE

- |            |        |                                   |
|------------|--------|-----------------------------------|
| 1. ANS: T  | PTS: 1 | TOP: The if Statement             |
| 2. ANS: F  | PTS: 1 | TOP: The if Statement             |
| 3. ANS: T  | PTS: 1 | TOP: Generating Random Numbers    |
| 4. ANS: T  | PTS: 1 | TOP: Generating Random Numbers    |
| 5. ANS: F  | PTS: 1 | TOP: Generating Random Numbers    |
| 6. ANS: T  | PTS: 1 | TOP: Compound Boolean Expressions |
| 7. ANS: F  | PTS: 1 | TOP: Compound Boolean Expressions |
| 8. ANS: F  | PTS: 1 | TOP: The Math Class               |
| 9. ANS: F  | PTS: 1 | TOP: The Math Class               |
| 10. ANS: T | PTS: 1 | TOP: The Math Class               |

#### MULTIPLE CHOICE

- |            |        |  |
|------------|--------|--|
| 11. ANS: C | PTS: 1 | TOP: The if Statement   The Math Class |
| 12. ANS: B | PTS: 1 | TOP: The if-else Statement             |
| 13. ANS: C | PTS: 1 | TOP: The if-else Statement             |
| 14. ANS: D | PTS: 1 | TOP: The if-else if Statement          |
| 15. ANS: A | PTS: 1 | TOP: The if-else if Statement          |
| 16. ANS: C | PTS: 1 | TOP: The switch Statement              |
| 17. ANS: D | PTS: 1 | TOP: Generating Random Numbers         |
| 18. ANS: A | PTS: 1 | TOP: Compound Boolean Expressions      |
| 19. ANS: A | PTS: 1 | TOP: Compound Boolean Expressions      |
| 20. ANS: B | PTS: 1 | TOP: The Math Class                    |

#### SHORT ANSWER

21. ANS:  
 == equal  
 < less than  
 <= less than or equal  
 > greater than  
 >= greater than or equal  
 != not equal

PTS: 1                      TOP: The if Statement  
 NOT: Cannot be included on an online test.

22. ANS:

The condition should be `if (score < 60)` to match the comment.

PTS: 1 TOP: The if Statement

NOT: Cannot be included on an online test.

23. ANS:

```
If (points >= 150) {
    System.out.print("You move to the next level.");
}
```

PTS: 1 TOP: The if Statement

NOT: Cannot be included on an online test.

24. ANS:

```
import java.lang.Math;
int randNum;
randNum = (int)(91 * Math.random() + 10);
```

PTS: 1 TOP: Generating Random Numbers

NOT: Cannot be included on an online test.

25. ANS:

*Answers will vary. A possible answer for part (a) is:*

1. Prompt the user for the gross pay.
2. If the gross pay is less than 700, display a message indicating the tax rate is 26%.
3. If the gross pay is equal to or between 700 and 1200, display a message indicating the tax rate is 33%.
4. If the gross pay is greater than 1200, display a message indicating the tax rate is 36%.

*A possible answer for part (b) is:*

*TAX\_RATE1 = .26*

*TAX\_RATE2 = .33*

*TAX\_RATE3 = .36*

*Prompt user for gross pay*

*if gross pay < 700*

*Display "The tax rate is " TAX\_RATE1*

*else if gross pay >=700 and gross pay <= 1200*

*Display "The tax rate is " TAX\_RATE2*

*else*

*Display "The tax rate is " TAX\_RATE3*

PTS: 1 TOP: Chapter 5 Case Study

NOT: Cannot be included on an online test.