

unit4_final_review

1. Consider the following method.

```
/** Precondition: bound >= 0 */
public int sum(int bound)
{
    int answer = 0;
    for (int i = 0; i < bound; i++)
    {
        answer += bound;
    }
    return answer;
}
```

Assume that `sum` is called with a parameter that satisfies the precondition and that it executes without error. How many times is the test expression `i < bound` in the `for` loop header evaluated?

- (A) 0
 - (B) `bound - 1`
 - (C) `bound`
 - (D) `bound + 1`
 - (E) An unknown number of times
2. Consider the following method.

```
public int compute(int n, int k)
{
    int answer = 1;

    for (int i = 1; i <= k; i++)
        answer *= n;

    return answer;
}
```

Which of the following represents the value returned as a result of the call `compute(n, k)`?

- (A) $n * k$
- (B) $n!$
- (C) n^k
- (D) 2^k
- (E) k^n

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3. Consider the following code segment.

```
int x = 1;
while ( /* missing code */ )
{
    System.out.print(x + " ");
    x = x + 2;
}
```

Consider the following possible replacements for `/* missing code */`.

- I. `x < 6`
- II. `x != 6`
- III. `x < 7`

Which of the proposed replacements for `/* missing code */` will cause the code segment to print only the values 1 3 5?

- (A) I only
- (B) II only
- (C) I and II only
- (D) I and III only
- (E) I, II, and III

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4. Consider the following code segment.

```
int x = 1;
while ( /* condition */ )
{
    if (x % 2 == 0)
    {
        System.out.print(x + " ");
    }
    x = x + 2;
}
```

The following conditions have been proposed to replace */* condition */* in the code segment.

- I. $x < 0$
- II. $x \leq 1$
- III. $x < 10$

For which of the conditions will nothing be printed?

- (A) I only
 - (B) II only
 - (C) I and II only
 - (D) I and III only
 - (E) I, II, and III
5. Consider the following code segment.

```
for (int k = 1; k <= 100; k++)
    if ((k % 4) == 0)
        System.out.println(k);
```

Which of the following code segments will produce the same output as the code segment above?

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- (A) `for (int k = 1; k <= 25; k++)
System.out.println(k);`
- (B) `for (int k = 1; k <= 100; k = k + 4)
System.out.println(k);`
- (C) `for (int k = 1; k <= 100; k++)
System.out.println(k % 4);`
- (D) `for (int k = 4; k <= 25; k = 4 * k)
System.out.println(k);`
- (E) `for (int k = 4; k <= 100; k = k + 4)
System.out.println(k);`

6. Consider the following code segment.

```
for (int r = 3; r > 0; r--)  
{  
    int c;  
  
    for (c = 1; c < r; c++)  
    {  
        System.out.print("-");  
    }  
    for (c = r ; c <= 3; c++)  
    {  
        System.out.print("*");  
    }  
  
    System.out.println();  
}
```

What is printed as a result of executing the code segment?

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(A) --*
 -*

(B) *-
 **

(C) ***
 -*
 --*

(D) ***
 **
 *-

(E) --*

 --*

7. Consider the following code segment.

```
int num = 2574;  
int result = 0;  
  
while (num > 0)  
{  
    result = result * 10 + num % 10;  
    num /= 10;  
}  
System.out.println(result);
```

What is printed as a result of executing the code segment?

- (A) 2
- (B) 4
- (C) 18
- (D) 2574
- (E) 4752

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8. Consider the following code segment.

```
int sum = 0;
int k = 1;
while (sum < 12 || k < 4)
    sum += k;

System.out.println(sum);
```

What is printed as a result of executing the code segment?

- (A) 6
 - (B) 10
 - (C) 12
 - (D) 15
 - (E) Nothing is printed due to an infinite loop.
9. Consider the following code segment.

```
int count = 0;

for (int x = 0; x < 4; x++)
{
    for (int y = x; y < 4; y++)
    {
        count++;
    }
}
System.out.println(count);
```

What is printed as a result of executing the code segment?

- (A) 4
- (B) 8
- (C) 10
- (D) 16
- (E) 20

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10. Consider the following code segment.

```
for (int outer = 1; outer <= 6; outer++)
{
    for (int inner = outer; inner <= 6; inner++)
    {
        if (inner % 2 == 0)
        {
            System.out.print(inner + " ");
        }
    }
    System.out.println();
}
```

What will be printed as a result of executing the code segment?

(A) 2 4 6
4 6
6

(B) 2 4 6
2 4 6
2 4 6

(C) 2 4 6
2 4 6
4 6
4 6
6
6

(D) 2 4 6
2 4 6
2 4 6
2 4 6
2 4 6
2 4 6

(E) 2 4
2 4
4
4

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11. Consider the following incomplete method, which is intended to return the number of integers that evenly divide the integer `inputVal`. Assume that `inputVal` is greater than 0.

```
public static int numDivisors(int inputVal)
{
    int count = 0;
    for (int k = 1; k <= inputVal; k++)
    {
        if ( /* condition */ )
        {
            count++;
        }
    }
    return count;
}
```

Which of the following can be used to replace `/* condition */` so that `numDivisors` will work as intended?

- (A) `inputVal % k == 0`
- (B) `k % inputVal == 0`
- (C) `inputVal % k != 0`
- (D) `inputVal / k == 0`
- (E) `k / inputVal > 0`

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12. Consider the following method.

```
public int mystery(int num)

{

    int x = num;

    while (x > 0)

    {

        if (x / 10 % 2 == 0)

            return x;

        x = x / 10;

    }

    return x;

}
```

What value is returned as a result of the call `mystery(1034)` ?

- (A) 4
- (B) 10
- (C) 34
- (D) 103
- (E) 1034

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13. Consider the following method.

```
/** Precondition: num > 0 */
public static int doWhat(int num)
{
    int var = 0;

    for (int loop = 1; loop <= num; loop = loop + 2)
    {
        var += loop;
    }

    return var;
}
```

Which of the following best describes the value returned from a call to doWhat ?

- (A) num
- (B) The sum of all integers between 1 and num, inclusive
- (C) The sum of all even integers between 1 and num, inclusive
- (D) The sum of all odd integers between 1 and num, inclusive
- (E) No value is returned because of an infinite loop.

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14. Consider the following code segments.

```
I.  int k = 1;

    while (k < 20)
    {
        if (k % 3 == 1)

            System.out.print( k + " ");

        k = k + 3;
    }
```

```
II. for (int k = 1; k < 20; k++)
{
    if (k % 3 == 1)

        System.out.print( k + " ");
}
```

```
III. for (int k = 1; k < 20; k = k + 3)
{
    System.out.print( k + " ");
}
```

Which of the code segments above will produce the following output?

1 4 7 10 13 16 19

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- (A) I only
- (B) II only
- (C) I and II only
- (D) II and III only
- (E) I, II, and III

15. Consider the following code segment.

```
int value = 15;

while (value < 28)

{

    System.out.println(value);

    value++;

}
```

What are the first and last numbers output by the code segment?

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(A)

<u>First</u>	<u>Last</u>
15	27

(B)

<u>First</u>	<u>Last</u>
15	28

(C)

<u>First</u>	<u>Last</u>
16	27

(D)

<u>First</u>	<u>Last</u>
16	28

(E)

<u>First</u>	<u>Last</u>
16	29

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16. Consider the following code segment.

```
int val = 48;
int div = 6;
while ((val % 2 == 0) && div > 0)
{
    if (val % div == 0)
    {
        System.out.print(val + " ");
    }
    val /= 2;
    div--;
}
```

What is printed when the code segment is executed?

- (A) 48 12 6
 - (B) 48 12 6 3
 - (C) 48 12 6 3 1
 - (D) 48 24 12 6
 - (E) 48 24 12 6 3
-

Directions: Select the choice that best fits each statement. The following question(s) refer to the following method

```
public static int mystery(int n)
{
    int x = 1;
    int y = 1;

    // Point A

    while (n > 2)
    {
        x = x + y;

        // Point B

        y = x - y;
        n--;
    }

    // Point C

    return x;
}
```

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17. What value is returned as a result of the call `mystery (6)`?

- (A) 1
- (B) 5
- (C) 6
- (D) 8
- (E) 13

18. Which of the following is true of method `mystery` ?

- (A) `x` will sometimes be 1 at // Point B.
 - (B) `x` will never be 1 at // Point C.
 - (C) `n` will never be greater than 2 at // Point A.
 - (D) `n` will sometimes be greater than 2 at // Point C.
 - (E) `n` will always be greater than 2 at // Point B.
-