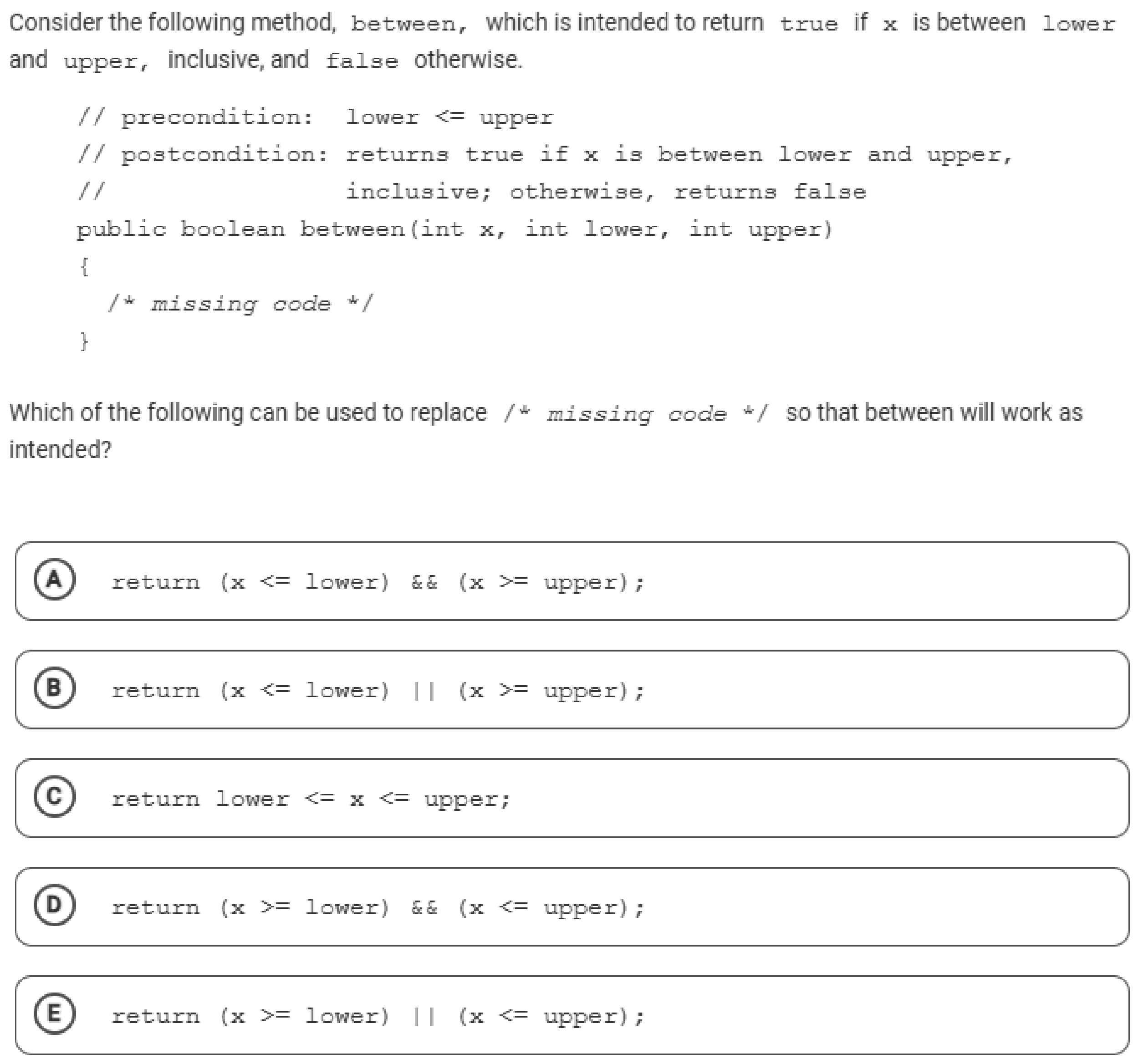
AP Practice 1

Multiple Choice (2 mins per problem)

You can use the provided reference sheet (link).

1) D



Consider the following method, `between,` which is intended to return `true` if `x` is between `lower` and `upper,` inclusive, and `false` otherwise.

```
// precondition:  lower <= upper
// postcondition: returns true if x is between lower and upper,
//                inclusive; otherwise, returns false
public boolean between(int x, int lower, int upper)
{
  /* missing code */
}
```

Which of the following can be used to replace `/* missing code */` so that between will work as intended?

(A) `return (x <= lower) && (x >= upper);`

(B) `return (x <= lower) || (x >= upper);`

(C) `return lower <= x <= upper;`

(D) `return (x >= lower) && (x <= upper);`

(E) `return (x >= lower) || (x <= upper);`

2) B

Consider the following method.

```
public int someCode(int a, int b, int c)
{
  if ((a < b) && (b < c))
    return a;
  if ((a >= b) && (b >= c))
    return b;
  if ((a == b) || (a == c) || (b == c))
    return c;
}
```

Which of the following best describes why this method does not compile?

(A) The reserved word `return` cannot be used in the body of an `if` statement.

(B) It is possible to reach the end of the method without returning a value.

(C) The `if` statements must have `else` parts when they contain `return` statements.

(D) Methods cannot have multiple `return` statements.

(E) The third `if` statement is not reachable.

3) A , C

Consider the following code segment.

```
double a = 1.1;
double b = 1.2;

if ((a + b) * (a - b) != (a * a) - (b * b))
{
  System.out.println("Mathematical error!");
}
```

Which of the following best describes why the phrase `"Mathematical error!"` would be printed? (Remember that mathematically $(a + b) * (a - b) = a^2 - b^2$.)

(A) Precedence rules make the `if` condition true.

(B) Associativity rules make the `if` condition true.

(C) Roundoff error makes the `if` condition true.

(D) Overflow makes the `if` condition true.

(E) A compiler bug or hardware error has occurred.

4) C

```
public static int mystery(int[] arr)
{
  int x = 0;

  for (int k = 0; k < arr.length; k = k + 2)
    x = x + arr[k];

  return x;
}
```

Assume that the array `nums` has been declared and initialized as follows.

```
int[] nums = {3, 6, 1, 0, 1, 4, 2};
```

What value will be returned as a result of the call `mystery(nums)` ?

(A) 5

(B) 6

(C) 7

(D) 10

(E) 17

5) C

```
int[] arr = {1, 2, 3, 4, 5, 6, 7};

for (int k = 3; k < arr.length - 1; k++)
  arr[k] = arr[k + 1];
```

Which of the following represents the contents of `arr` as a result of executing the code segment?

(A) `{1, 2, 3, 4, 5, 6, 7}`

(B) `{1, 2, 3, 5, 6, 7}`

(C) `{1, 2, 3, 5, 6, 7, 7}`

(D) `{1, 2, 3, 5, 6, 7, 8}`

(E) `{2, 3, 4, 5, 6, 7, 7}`

Free Response (20 mins per free response)

Mountain (Array) - Lnk

1. Read and understand the problem in the pdf file. You can use the provided reference sheet (link).
2. Write the code given in the questions. Compile and run the Runner. Compare your results with the answer in the **AnswerOutput.txt** file.
3. **For Part B,** you can use the given methods isIncreasing and isDecreasing to help you with the solution.
4. If you are stuck, look at the **hints.txt** file, or Come in for help.

Token Pass (Array) - Link

1. Read and understand the problem in the pdf file. You can also use the provided reference sheet (link).
2. Write the code given in the questions. Compile and run the Runner. Compare your results with the answer in the **AnswerOutput.txt** file.
3. If you are stuck, look at the **hints.txt** file, or come in for help.