1. What is the value of C++ expression $9 - 5 - 2 * 3$? **Answer:** $9 - 5 - 2 * 3 = (9 - 5) - (2 * 3) = 4 - 6 = -2$.

2. What is the value of C++ expression $19/5 + 3/5$? **Answer:** $= 3 + 0 = 3$. ($19/5$ has quotient 3 and remainder 4. $3/5$ has quotient 0 and remainder 3.)

3. What is the value of C++ expression $(14 \% 3 + 1)$? **Answer:** $(14 \% 3 + 1) = 2 + 1 = 3$. (The remainder when you divide 14 by 3 is 2.)

4. What is the type of expression $2.0 * 3.0 + 1$? **Answer:** double.

5. When you create a variable $x$ using statement

   ```cpp
ing x;
```

$x$ will have an initial value, but you have no way of knowing what that value will be when the program runs.

6. [MC] What is the value of $b$ after statement

   ```cpp
bool b = 3 > 2 && 4 == 4;
```

is performed? **Answer:** $3 > 2$ is true. $4 == 4$ is true. Since they are both true, their 'and' is true. So $b$ has value true.

7. What is the value of variable $x$ after the following statements?

   ```cpp
int y = 10;
ing x = y;
y = 50;
x++;
y++;
```

**Answer:** $x = 11$. ($x$ is set to 10 at the second line and incremented at the fourth line.)

8. Function $f(n)$ is defined below in C++. What is the value of C++ expression $f(f(3))$?

   ```cpp
int f(const int n)
{
    int m = (n+1)*(n+1);
    return m + 1;
}
```
Answer:
\[ f(3) = 4^4 + 1 = 16 + 1 = 17. \]
\[ f(f(3)) = f(17) = 18^2 + 1 = 324 + 1 = 325. \]

9. The distance between numbers \( x \) and \( y \) on a number line is \( |x - y| \).
Write a C++ definition of function \( \text{distance}(x, y) \), which returns the distance between numbers \( x \) and \( y \) on a number line. You can use function \( \text{abs} \) from the library. Do not use \( \text{sqrt} \). A heading is given.

```cpp
int distance(int x, int y)
{
    return abs(x - y);
}
```

10. Imagine that you start at one number \( w \) on a number line and walk to another number \( x \). Then, from there, you walk to another number \( y \), and then to another number \( z \). Write a C++ definition of function \( \text{totalDistance}(w, x, y, z) \), which returns the total distance traveled walking from \( w \) to \( x \) to \( y \) to \( z \). You must use your function from the preceding problem to determine the distance between two numbers. Do not use any library functions in this function definition. A heading is given.

```cpp
int totalDistance(int w, int x, int y, int z)
{
    return distance(w, x) + distance(x, y) + distance(y, z);
}
```

11. Write a C++ definition of function \( \text{ascending}(x, y, z) \), which returns true if sequence \( (x, y, z) \) is in strictly ascending order, and returns false if not. A heading is given.

```cpp
bool ascending(int x, int y, int z)
{
    return x < y && y < z;
}
```