

Exercise 1

1. State whether each of the following is *true* or *false*. If *false*, explain why.
 - a) Comments cause the computer to print the text after the `//` on the screen when the program is executed.
 - b) All variables must be declared before they're used.
 - c) All variables must be given a type when they're declared.
 - d) C++ considers the variables `number` and `NumBEr` to be identical.
 - e) The arithmetic operators `*`, `/`, `%`, `+` and `-` all have the same level of precedence.
2. Write a single C++ statement to accomplish each of the following:
 - a) Declare the variables `c`, `thisIsAVariable`, `q76354` and `number` to be of type `int`.
 - b) Prompt the user to enter an integer. End your prompting message with a colon (`:`) followed by a space and leave the cursor positioned after the space.
 - c) Read an integer from the user at the keyboard and store it in integer variable `age`.
 - d) If the variable `number` is not equal to 7, print "The variable number is not equal to 7".
 - e) Print the message "This is a C++ program" on one line.
 - f) Print the message "This is a C++ program" on two lines. End the first line with C++.

3. Evaluate the output of the following statements in a C++ program:

- a) `cout << 1000 % 6 << endl;`
- b) `cout << 1+3*4/2 << endl;`
- c) `cout << 7 / 2 << endl;`
- d) `cout << 7 / 2.0 << endl;`

4. (Compute the volume of a cylinder) Write a program that reads in the radius and length of a cylinder and computes the base area and volume using the following formulas:

```
area = radius * radius *  $\pi$ 
volume = area * length
```

You may use the approximation $\pi \approx 3.14$. Here is a sample run:

Enter the radius and length of a cylinder: 5.5 12

The base area is 94.985

The volume is 1139.82

5. (Financial application: calculate tips) Write a program that reads the subtotal and the gratuity rate, then computes the gratuity and total. For example, if the user enters 10 for subtotal and 15% for gratuity rate, the program displays \$1.5 as gratuity and \$11.5 as total. Here is a sample run:

Enter the subtotal and a gratuity rate: 10 15

The gratuity is \$1.5 and total is \$11.5