**Instructions:** This homework assignment focuses primarily on some of the basic syntax and semantics of C++. The answers to the following questions can be determined from Chapters 3 and 4 of the lecture notes and Chapters 2 through 4 of the text.

Opscan forms will be passed out in class this week. Write your name and code your ID number on the opscan form. Mark Group 1 if you are in the 8TTh section and Group 2 if you are in the 10MWF section. Turn in your completed opscan at class on the 11th or 12th, or to the 1044 GTAs in McB 116/118 by 3:00 on Friday the 12th. No late opscans will be accepted.

For questions 1 through 3, select the value of the given C++ arithmetic expression. Note that the presence of a decimal point indicates a float or double, rather than an int.

<table>
<thead>
<tr>
<th>Expression</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) 12.0 / 5.0 + 2 / 5</td>
<td>2.0</td>
<td>2.4</td>
<td>2.8</td>
<td>5.0</td>
<td>none of the above</td>
</tr>
<tr>
<td>2) 10 / 3 * 5</td>
<td>0</td>
<td>.67</td>
<td>1</td>
<td>15</td>
<td>none of the above</td>
</tr>
<tr>
<td>3) 10 % 5 + 2 % 5</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>none of the above</td>
</tr>
</tbody>
</table>

For questions 4 through 6, select the value assigned to the relevant variable, given the declarations:

```cpp
int anInt;
double aDble;
```

<table>
<thead>
<tr>
<th>Declaration</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>4) aDble = 15 / 1.2;</td>
<td>10</td>
<td>10.0</td>
<td>10.25</td>
<td>10.33</td>
<td>none of the above</td>
</tr>
<tr>
<td>5) aDble = 5 / 2;</td>
<td>0.4</td>
<td>2.0</td>
<td>2.5</td>
<td>3.0</td>
<td>none of the above</td>
</tr>
<tr>
<td>6) anInt = 7.0 / 4.0;</td>
<td>1</td>
<td>1.0</td>
<td>1.75</td>
<td>2</td>
<td>none of the above</td>
</tr>
</tbody>
</table>

For questions 7 through 10, assume the variable declarations:

```cpp
int fred, murray, zach;
float jane, lisa;
```

Consider each group of statements and mark:

<table>
<thead>
<tr>
<th>Group of Statements</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>7) murray = 17; zach = 6; fred = murray * zach;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8) lisa = 403.35; jane = lisa^2;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9) murray = 17; zach = murray++; lisa = murray / zach; zach += zach;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10) cout &gt;&gt; &quot;fred&quot; &gt;&gt; endl;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Assume that any necessary #include directives are present.)
For questions 11 through 14, assume the following variables have been declared:

```cpp
int anInt;
double aDble;
char aChar;
```

and assume the standard input stream `cin` contains the values: 1.2 4.5 A -46.32

Determine the value of the indicated variable after the execution of the given statement; each question is independent, that is, each starts with the stream contents shown above.

<table>
<thead>
<tr>
<th>Question</th>
<th>Indicated Variable</th>
<th>Statement</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>11)</td>
<td><code>aChar</code></td>
<td><code>cin &gt;&gt; anInt &gt;&gt; aChar;</code></td>
<td>4</td>
<td>'4'</td>
<td>''</td>
<td>.</td>
<td>none of the above</td>
</tr>
<tr>
<td>12)</td>
<td><code>aChar</code></td>
<td><code>cin &gt;&gt; aDble &gt;&gt; aChar;</code></td>
<td>4</td>
<td>'4'</td>
<td>''</td>
<td>.</td>
<td>none of the above</td>
</tr>
<tr>
<td>13)</td>
<td><code>anInt</code></td>
<td><code>cin &gt;&gt; aDble &gt;&gt; anInt;</code></td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>4.5</td>
<td>none of the above</td>
</tr>
<tr>
<td>14)</td>
<td><code>anInt</code></td>
<td><code>cin &gt;&gt; anInt;</code> <code>cin.get(aChar);</code> <code>cin &gt;&gt; anInt;</code></td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>none of the above</td>
</tr>
</tbody>
</table>

15) What is printed by the statement:

```cpp
cout << "The answer is" << setw(3) << 30 + 12;
```

A) The answer is 30 + 12  
B) The answer is 42  
C) The answer is 42  
D) The answer is 30 + 12  
E) none of the above

16) Assuming that all variables are of type double, the correct C++ expression for \( \frac{(a + b)c}{d + e} \) is:

A) \( a + b * c / d + e \)  
B) \( (a + b) * c / d + e \)  
C) \( (a + b) * c / (d + e) \)  
D) \( (a + b * c) / d + e \)  
E) none of the above

17) What value is assigned to the variable `Average` below?

```cpp
int x = 4, y = 8, z = 5, w = 4;
double Average = (x + y + z + w) / 4;
```

A) 5.25  
B) 5  
C) 5.0  
D) 4.75  
E) none of the above
18) Given the declaration `int TestScore = 78;`, which of the output statements given below will produce the output:

```
1234567890
Score:  78
```

A) `cout << "1234567890" << endl
   << "Score:  " << TestScore << endl;`

B) `cout << "1234567890" << endl
   << "Score:" << "  " << TestScore << endl;`

C) `cout << "1234567890" << endl
   << "Score:" << setw(4) << TestScore << endl;`

D) all of the above  E) A and B only  F) A and C only

G) B and C only  H) none of the above

19) Among the C++ operators +, −, *, /, and %, which have the lowest precedence when an expression is evaluated?

A) + and −  B) * and /  C) *, /, and %

D) +, −, and %  E) none of the above

20) At the hardware level, the values 5 and 5.0 are stored in exactly the same way.

A) True  B) False  C) Maybe