**Short Answer**  
1.Assume that the following variables are defined:  
int age;  
double pay;  
char section;  
Write a single cin statement that will read input into each of these variables.

cin>>age

>>pay

>>section;

2. Assume a string object has been defined as follows:  
string description;  
A)Write a cin statement that reads in a one-word string.

cin>>description;

B)Write a statement that reads in a string that can contain multiple words separated  
by blanks.

cout<<description;

3.What header files must be included in the following program?

#include <iostring>

#include <iomanip>

int main()  
{  
double amount = 89.7;  
cout << showpoint << fixed;  
cout << setw(8) << amount << endl;  
return 0;  
}

4.Complete the following table by writing the value of each expression in the Value column.  
**Expression Value**  
28 / 4 – 2 5  
6 + 12 \* 2 – 8 22  
4 + 8 \* 2 20  
6 + 17 % 3 – 2 6  
2 + 22 \* (9 − 7) 46  
(8 + 7) \* 2 30  
(16 + 7) % 2 – 1 0  
12 / (10 − 6) 3  
(19 − 3) \* (2 + 2) / 4 1

5.Write C++ expressions for the following algebraic expressions:  
*a =* 12*x*  
*z=*  5*x*  14*y*  6*k*  
*y =* *x*4  
*g =* *h*  12  
 4*k*  
*c =* *a*3  *b*2*k*4  
  
6.Assume a program has the following variable definitions:

int units;  
float mass;  
double weight;  
and the following statement:  
weight = mass \* units;

Which automatic data type conversion will take place?  
A)mass is demoted to an int, units remains an int, and the result of mass \* units  
is an int .

True

B)units is promoted to a float, mass remains a float, and the result of mass \*  
units is a float .

True

C)units is promoted to a float, mass remains a float, and the result of mass \*  
units is a double .

True

7.Assume a program has the following variable definitions:  
int a, b = 2;  
float c = 4.2;  
and the following statement:  
a = b \* c;  
What value will be stored in a ?  
A) 8.4  
B) 8  
C) 0  
D)None of the above

8.Assume that qty and salesReps are both integers. Use a type cast expression to  
rewrite the following statement so it will no longer perform integer division.

unitsEach = static\_cast<double>(qty) / salesReps;

9.Rewrite the following variable definition so the variable is a named constant.  
int rate;

const int RATE;

10.Complete the following table by writing statements with combined assignment operators in the right-hand column. The statements should be equivalent to the statements  
in the left-hand column.  
**Statements with**  
**Assignment Operator** **Statements with Combined Assignment Operator**  
x = x + 5; x += 5;  
total = total + subtotal; total += subtotal;  
dist = dist / rep; dist /= rep;  
ppl = ppl \* period; ppl \*= period;  
inv = inv − shrinkage; inv -= shrinkage;  
num = num % 2; num %=2  
  
11.Write a multiple assignment statement that can be used instead of the following group  
of assignment statements:  
east = 1;  
west = 1;  
north = 1;  
south = 1;

Int east = west = north = south = 1;

12.Write a cout statement so the variable divSales is displayed in a field of 8 spaces, in  
fixed point notation, with a precision of 2 decimal places. The decimal point should  
always be displayed.

13.Write a cout statement so the variable totalAge is displayed in a field of 12 spaces,  
in fixed point notation, with a precision of 4 decimal places.

14.Write a cout statement so the variablepopulation is displayed in a field of 12 spaces,  
left-justified, with a precision of 8 decimal places. The decimal point should always be  
displayed.

**Fill-in-the-Blank**  
15.The \_\_\_\_\_\_\_\_\_\_ library function returns the cosine of an angle.  
16.The \_\_\_\_\_\_\_\_\_\_ library function returns the sine of an angle.  
17.The \_\_\_\_\_\_\_\_\_\_ library function returns the tangent of an angle.  
18.The \_\_\_\_\_\_\_\_\_\_ library function returns the exponential function of a number.  
19.The \_\_\_\_\_\_\_\_\_\_ library function returns the remainder of a floating point division.  
20.The \_\_\_\_\_\_\_\_\_\_ library function returns the natural logarithm of a number.  
21.The \_\_\_\_\_\_\_\_\_\_ library function returns the base-10 logarithm of a number.  
22.The \_\_\_\_\_\_\_\_\_\_ library function returns the value of a number raised to a power.  
23.The \_\_\_\_\_\_\_\_\_\_ library function returns the square root of a number.  
24.The \_\_\_\_\_\_\_\_\_\_ file must be included in a program that uses the mathematical functions.

**Algorithm Workbench**  
25.A retail store grants its customers a maximum amount of credit. Each customer’s available credit is his or her maximum amount of credit minus the amount of credit used.  
Write a pseudocode algorithm for a program that asks for a customer’s maximum  
amount of credit and amount of credit used. The program should then display the  
customer’s available credit.  
After you write the pseudocode algorithm, convert it to a complete C++ program.

float maxAmount, amountCredit;

float availableCredit = maxAmount – amountCredit;

cout<<availableCredit;

26.Write a pseudocode algorithm for a program that calculates the total of a retail sale.  
The program should ask for the amount of the sale and the sales tax rate. The sales tax  
rate should be entered as a floating-point number. For example, if the sales tax rate is  
6 percent, the user should enter 0.06. The program should display the amount of sales  
tax and the total of the sale.  
After you write the pseudocode algorithm, convert it to a complete C++ program.

int amountSale;

float salesTaxRate;

cin>>amountSale

>>salesTaxRate;

float salesTax = amountSale \* salesTaxRate;

cout<<salesTax<<endl;

float total = amountSale + salesTax;

cout<<total;

27.Write a pseudocode algorithm for a program that asks the user to enter a golfer’s score  
for three games of golf, and then displays the average of the three scores.  
After you write the pseudocode algorithm, convert it to a complete C++ program.

float score1, score2, score3;

cin>>score1

>>score2

>>score3;

float average = (score1+score2+score3)/3;

cout<<average;

return 0;

**Find the Errors**  
Each of the following programs has some errors. Locate as many as you can.  
28.using namespace std;  
int main ()  
{  
double number1, number2, sum;  
Cout << "Enter a number: ";  
Cin << number1;  
Cout << "Enter another number: ";  
Cin << number2;  
number1 + number2 = sum;  
Cout "The sum of the two numbers is " << sum  
return 0;  
}

#include <iostream>

using namespace std;  
int main ()  
{  
double number1, number2, sum;

cout << "Enter a number: ";  
cin >> number1;  
cout << "Enter another number: ";  
cin >> number2;  
sum = number1 + number2;  
cout <<"The sum of the two numbers is " << sum;  
return 0;  
}

29.#include <iostream>  
using namespace std;  
int main()  
{  
int number1, number2;  
float quotient;

cout << "Enter two numbers and I will divide\n";  
cout << "the first by the second for you.\n";  
cin >> number1, number2;  
quotient = float<static\_cast>(number1) / number2;  
cout << quotient  
return 0;  
}

#include <iostream>  
using namespace std;  
int main()  
{  
int number1, number2;  
float quotient;

cout << "Enter two numbers and I will divide\n";  
cout << "the first by the second for you.\n";  
cin >> number1>> number2;  
quotient = static\_cast<float>(number1)/ number2;  
cout << quotient;

return 0;  
}

30.#include <iostream>;  
using namespace std;  
int main()  
{  
const int number1, number2, product;

cout << "Enter two numbers and I will multiply\n";  
cout << "them for you.\n";  
cin >> number1 >> number2;  
product = number1 \* number2;  
cout << product  
return 0;  
}

#include <iostream>

using namespace std;

int main()

{

int number1, number2, product;

cout << "Enter two numbers and I will multiply\n";

cout << "them for you.\n";

cin >> number1 >> number2;

product = number1 \* number2;

cout << product;

return 0;

}  
  
31.#include <iostream>;  
using namespace std;  
main  
{  
int number1, number2;  
cout << "Enter two numbers and I will multiply\n"  
cout << "them by 50 for you.\n"  
cin >> number1 >> number2;  
number1 =\* 50;  
number2 =\* 50;  
cout << number1 << " " << number2;  
return 0;  
}

#include <iostream>

using namespace std;

int main()

{

int number1, number2;

cout << "Enter two numbers and I will multiply\n";

cout << "them by 50 for you.\n";

cin >> number1 >> number2;

number1 \*= 50;

number2 \*= 50;

cout << number1 << " " << number2;

return 0;

}

32.#include <iostream>;  
using namespace std;  
main  
{  
double number, half;  
cout << "Enter a number and I will divide it\n"  
cout << "in half for you.\n"  
cin >> number1;  
half =/ 2;  
cout << fixedpoint << showpoint << half << endl;  
return 0;  
}

#include <iostream>

#include <iomanip>

using namespace std;

int main()

{

double number, half;

cout << "Enter a number and I will divide it\n";

cout << "in half for you.\n";

cin >> number;

half /= 2;

cout << setprecision(6)<<showpoint << half << endl;

return 0;

}

33.#include <iostream>;  
using namespace std;  
int main()  
{  
char name, go;  
cout << "Enter your name: ";  
getline >> name;  
cout << "Hi " << name << endl;  
return 0;  
}

**Predict the Output**  
What will each of the following programs display? (Some should be hand traced and  
require a calculator.)

34. (*Assume the user enters 38700. Use a calculator.* )  
#include <iostream>  
using namespace std;  
int main()  
{  
double salary, monthly;  
cout << "What is your annual salary? ";  
cin >> salary;  
monthly = static\_cast<int>(salary) / 12;  
cout << "Your monthly wages are " << monthly << endl;  
return 0;  
}

35.#include <iostream>  
using namespace std;  
int main()  
{  
long x, y, z;  
x = y = z = 4;  
x += 2;  
y −= 1;  
z \*= 3;  
cout << x << " " << y << " " << z << endl;  
return 0;  
}

36. (*Assume the user enters George Washington* .)  
#include <iostream>  
#include <iomanip>  
#include <string>  
using namespace std;  
int main()  
{  
string userInput;  
cout << "What is your name? ";  
getline(cin, userInput);  
cout << "Hello " << userInput << endl;  
return 0;  
}

37. (*Assume the user enters 36720152. Use a calculator* .)  
#include <iostream>  
#include <iomanip>  
using namespace std;  
int main()  
{  
long seconds;  
double minutes, hours, days, months, years;  
cout << "Enter the number of seconds that have\n";  
cout << "elapsed since some time in the past and\n";  
cout << "I will tell you how many minutes, hours,\n";  
cout << "days, months, and years have passed: ";  
cin >> seconds;  
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minutes = seconds / 60;  
hours = minutes / 60;  
days = hours / 24;  
years = days / 365;  
months = years \* 12;  
cout << setprecision(4) << fixed << showpoint << right;  
cout << "Minutes: " << setw(6) << minutes << endl;  
cout << "Hours: " << setw(6) << hours << endl;  
cout << "Days: " << setw(6) << days << endl;  
cout << "Months: " << setw(6) << months << endl;  
cout << "Years: " << setw(6) << years << endl;  
return 0;  
}