Answers to Review Questions
Chapter 3

1.  A) 40 B) 39 C) No
2.  char name[35];
3.  A) cin >> setw(25) >> name;
   B) cin.getline(name, 25);
4.  cin >> age >> pay >> section;
5.  iostream and iomanip
6.  char city[31];
7.  A) price = 12 * unitCost;
   B) cout << setw(12) << 98.7;
   C) cout << 12;
8.  5, 22, 20, 6, 46, 30, 0, 3, 16
9.  a = 12 * x;
   z = 5 * x + 14 * y + 6 * k;
   y = pow(x, 4);
   g = (h + 12) / (4 * k);
   c = pow(a, 3) / (pow(b, 2) * pow(k, 4));
10. C
11. B
12. unitsEach = static_cast<double>(qty) / salesRep;
13. const int rate = 12;
14. x += 5;
   total += subtotal;
   dist /= rep;
   ppl *= period;
   inv -= shrinkage;
   num %= 2;
15. east = west = north = south = 1;
16. cout << setw(8) << fixed << showpoint
         << setprecision(2) << divSales;
17. cout << setw(12) << fixed
         << setprecision(4) << totalAge;
18. cout << setw(12) << left << showpoint
         << setprecision(8) << population;
19. cos
20. sin
21. tan
22. exp
23. fmod
24. log
25. log10
26. pow
27. sqrt
28. `cmath`

29. **Display** "Enter the customer's maximum amount of credit: ".
   Read `maxCredit`.
   **Display** "Enter the amount of credit the customer has used: ".
   Read `creditUsed`.
   \[ \text{availableCredit} = \text{maxCredit} - \text{creditUsed}. \]
   **Display** "The customer's available credit is $".
   **Display** `availableCredit`.

   ```
   #include <iostream>
   using namespace std;

   int main()
   {
       double maxCredit, creditUsed, availableCredit;

       cout << "Enter the customer's maximum amount of credit: ";
       cin >> maxCredit;
       cout << "Enter the amount of credit used by the customer: ";
       cin >> creditUsed;
       availableCredit = maxCredit - creditUsed;
       cout << "The customer's available credit is $";
       cout << availableCredit << endl;
       return 0;
   }
   ```

30. **Display** "Enter the amount of the sale: ".
    Read `saleAmount`.
    **Display** "Enter the sales tax rate : ".
    Read `taxRate`.
    \[ \text{salesTax} = \text{saleAmount} \times \text{taxRate}. \]
    \[ \text{saleTotal} = \text{saleAmount} + \text{salesTax}. \]
    **Display** "The sales tax is $".
    **Display** `salesTax`.
    **Display** "The sale total is $".
    **Display** `saleTotal`.

   ```
   #include <iostream>
   using namespace std;

   int main()
   {
       double saleAmount, taxRate, salesTax, totalSale;

       cout << "Enter the amount of the sale: ";
       cin >> saleAmount;
       cout << "Enter the sales tax rate: ";
       cin >> taxRate;
       salesTax = saleAmount \times \text{taxRate};
       totalSale = saleAmount + salesTax;
       cout << "The sales tax is $" << salesTax << endl;
       cout << "The sale total is $" << totalSale << endl;
       return 0;
   }
   ```
31. `#include <iostream>` is missing.
Each `cin` and `cout` statement starts with capital C.
The `<<` operator is mistakenly used with `cin`.
The assignment statement should read:
```
sum = number1 + number2;
```
The last statement should have `<<` after `cout`.
The last statement is missing a semicolon.
32. The first `cin` statement should read:
```
cin >> number1 >> number2;
```
The assignment statement should read:
```
quotient = static_cast<float>(number1) / number2;
```
The last statement is missing a semicolon.
33. The variables should not be declared `const`.
The last statement is missing a semicolon.
34. There shouldn’t be a semicolon after the `#include` directive.
The function header for `main` should read:
```
int main()
```
The combined assignment operators improperly used.
Those statements should be:
```
number1 *= 50;
number2 *= 50;
```
35. There shouldn’t be a semicolon after the `#include` directive.
The function header for `main` should read:
```
int main()
```
The first two `cout` statements should end with a semicolon.
The variable `number1` is used, but never defined.
The combined assignment operator is improperly used. The statement should read:
```
half /= 2;
```
There is also a logical error in the program. The value divided by 2 should be `number1`, not `half`.
The following statement:
```
cout << fixedpoint << showpoint << half << endl;
```
should read:
```
cout << fixed << showpoint << half << endl;
```
36. There shouldn’t be a semicolon after the `#include` directive.
name should be declared as an array.
The following statement:
```
cin.getline >> name;
```
should read:
```
cin >> name;
```
37. Your monthly wages are 3225.000000
38.  6 3 12
39.  In 1492 Columbus sailed the ocean blue.
40.  Hello George
41.  Hello George Washington
42.  Minutes: 612002.0000
    Hours: 10200.0332
    Days: 425.0014
    Months: 13.9726
    Years: 1.1644