**Section 2.8**    Ⓦ    8.    How many tokens are there in the following statement?

```
answer=(3*q-p*p)/3;
```

9.    Insert spaces between the tokens in Exercise 8 to make the statement easier to read.

10.    In the dweight.c program (Section 2.4), which spaces are essential?

# Programming Projects

1.    Write a program that uses printf to display the following picture on the screen:

```
        *
       *
      *
*      *
  *  *
    *
```

2.    Write a program that computes the volume of a sphere with a 10-meter radius, using the formula $v = 4/3\pi r^3$. Write the fraction 4/3 as 4.0f/3.0f. (Try writing it as 4/3. What happens?) *Hint:* C doesn't have an exponentiation operator, so you'll need to multiply $r$ by itself twice to compute $r^3$.

3.    Modify the program of Programming Project 2 so that it prompts the user to enter the radius of the sphere.

Ⓦ    4.    Write a program that asks the user to enter a dollars-and-cents amount, then displays the amount with 5% tax added:

```
Enter an amount: 100.00
With tax added: $105.00
```

5.    Write a program that asks the user to enter a value for $x$ and then displays the value of the following polynomial:

$$3x^5 + 2x^4 - 5x^3 - x^2 + 7x - 6$$

*Hint:* C doesn't have an exponentiation operator, so you'll need to multiply $x$ by itself repeatedly in order to compute the powers of $x$. (For example, x * x * x is x cubed.)

6.    Modify the program of Programming Project 5 so that the polynomial is evaluated using the following formula:

$$((((3x + 2)x - 5)x - 1)x + 7)x - 6$$

Note that the modified program performs fewer multiplications. This technique for evaluating polynomials is known as *Horner's Rule.*

7.    Write a program that asks the user to enter a U.S. dollar amount and then shows how to pay that amount using the smallest number of $20, $10, $5, and $1 bills:

```
Enter a dollar amount: 93

$20 bills: 4
$10 bills: 1
 $5 bills: 0
 $1 bills: 3
```