



## Problem of the Week

### Problem A and Solution

### Flowers for Volunteers

#### Problem

To thank the volunteers at school, the school council would like to give 5 flowers to each volunteer. There are 15 volunteers to thank. You cannot buy individual flowers; they are only sold by the dozen.

- A) How many dozens will the school council need to buy?
- B) If one dozen flowers costs \$10.00, how much will the school council need to spend on flowers?

#### Solution

- A) Since the school council wants to give each volunteer 5 flowers, then they need a total of  $15 \times 5 = 75$  flowers. Alternatively, we can skip count by 5: *5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75* to calculate this total. To calculate how many dozen flowers we need, we could use repeated subtraction of 12, starting with 75:

$$75 - 12 = 63$$

$$63 - 12 = 51$$

$$51 - 12 = 39$$

$$39 - 12 = 27$$

$$27 - 12 = 15$$

$$15 - 12 = 3$$

So after subtracting 12, six times, we still have 3 flowers to buy. Since the smallest number of flowers we can buy is 12, we need to buy a total of 7 dozen flowers.

Alternatively, we can skip count by 12 until we get a number greater than or equal to 75: *12, 24, 36, 48, 60, 72, 84*. This also shows us that we need at least 7 dozen flowers to have enough for the volunteers.

Also we can use division to see that  $75 \div 12 = 6$  remainder 3. Again, this means that we need 7 dozen flowers.

- B) Since flowers cost \$10.00 per dozen, then the school council must spend  $7 \times 10.00 = \$70.00$  to buy enough flowers for the volunteers.





## Teacher's Notes

Dividing integers results in a two part answer: the quotient and the remainder. For example  $38 \div 11 = 3$  with a remainder of 5. This is an exact result. If we use a calculator to do division, we may end up with an inexact result. For example, the result of dividing 38 by 11 appears as 3.45454545 on a calculator. This is an approximation. The exact answer has the digits 45 repeating forever.

When computers calculate the result of division with integers, the quotient and remainder are stored separately. This means that it is possible to access those two parts separately. Most computer languages have comands that allow you to access each of the parts. They also have commands that allow you to generate integer values from non-integer results. For example, you may be able to round off a number (to the nearest integer), round down a number (often referred to as finding the floor) or round up a number (often referred to as finding the ceiling).

If we want to see single result of a division where the decimal representation has infinitely repeating decimals, a computer can only display a finite number of digits. These types of results are converted into a different format, usually known as floating point numbers. Since this value is an inexact result of a calculation, small errors can appear when we work with this kind of number. You might see the result of working with inexact data when you expect to see a result like 4 after doing some calculations on your computer, but you see the number 3.999999999 or 4.0000000001 instead.

