Lawnsword Garden Design Scenario

Lawnsword Garden Design specialises in designing and producing lawns and old-fashioned hay meadows for clients.

Hay meadows, which contain mixtures of grass and wild flowers, are always produced by sowing seed.

Lawns may be made by laying prepared turf or by sowing seed. It is the seed sowing which causes a problem, since different types of seeds cover different areas. Ms Jane Lawnsword, who is the proprietor of the business, spends many hours calculating the amount of seeds required for each job and she now feels that she should be able to enlist the help of a computer to ease her workload.

You have volunteered to attempt to solve the "seed sowing problem" and Ms Lawnsword has passed you details of one of the pending jobs.

The job details which follow are for the sowing of two lawns and two fields. The four shapes shown are the four most popular shapes that the business deals with, so any program should be able to accept different dimensions for each basic shape.

The job details are for:

- A rectangular lawn
- A circular lawn
- An L – shaped field
- A field that is rectangular, but includes a circular pond

In the future Ms Lawnsword wants to use the program to work out the seeds needed for different combinations of these four basic shapes so your program should be written with this in mind. Think of how your program could handle combinations, or numbers of shapes such as:

- 2 round lawns and 2 'L' shaped fields
- 2 round fields and 3 'L' shaped lawns.

The program must calculate how much of each seed type should be sown, and how many whole bags of each seed must be purchased.

Additional information for Lawnsword Garden Design Scenario

Lawn 1:

- Lawn 1 is a rectangle measuring 18 metres by 12 metres.
- It is to be sown with fine grass seed.
- When sowing, 30 grams of seed covers one square metre of lawn.

Lawn 2:

- Lawn 2 is a circle with a diameter of 16 metres
- It will be sown with the same fine grass mixture used for lawn 1.
- The diameter (d) of a circle is twice the radius (r) so r = d / 2.
- For the area of the circle use the calculation 22 * r * r / 7.

The results of your calculations for Lawn 1 and Lawn 2 should be added together before you calculate the whole number of bags of fine grass mixture that are required.

- The fine grass seed is purchased in 1 kilogram bags.
- There are 1,000 grams in 1 kilogram.

Field 1:

- Field 1 is to be sown with hay meadow seed.
- Hay meadow seed is sown at the rate of 20 grams per square metre.

It is best to think of this field as a big rectangle with a small rectangle removed to form the 'L' shape. The big rectangle measures 120metres by 100 metres, and the small rectangle (the bit missing) measures 55 metres by 50 metres.

Field 2:

- Field 2 is a rectangle which includes a circular pond.
- The field is 100 metres by 75 metres and the pond has a diameter of 25 metres.

(Use the same formulae to calculate the area of the pond as you used to calculate the area of lawn 2).
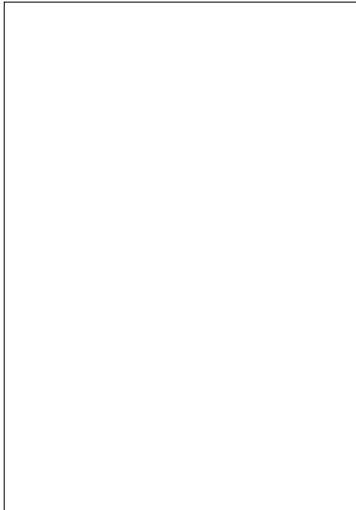
- Field 2 is to be sown with the same hay meadow seed as used for field 1.
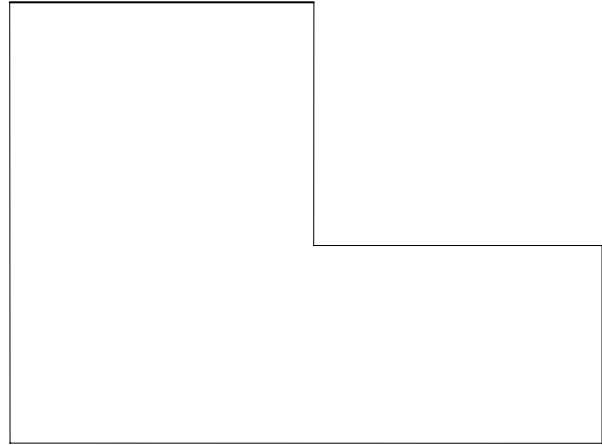
Total hay meadow seed

- The results of your calculations for Field 1 and Field 2 should be added together before you calculate the number of whole bags of hay meadow seeds that are required.
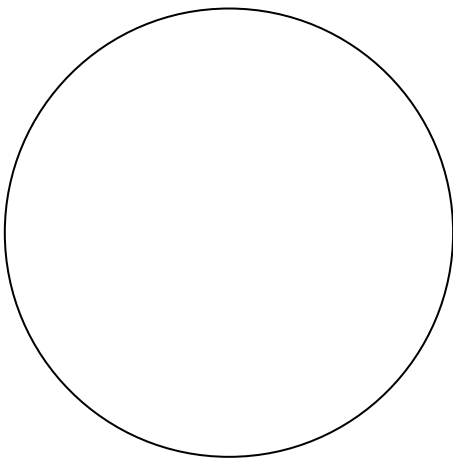- The hay meadow seed is purchased in 5 kilogram bags.

Lawn & Field Shapes:

Lawn 1

Field 1

Lawn 2

Field 2

Pond