



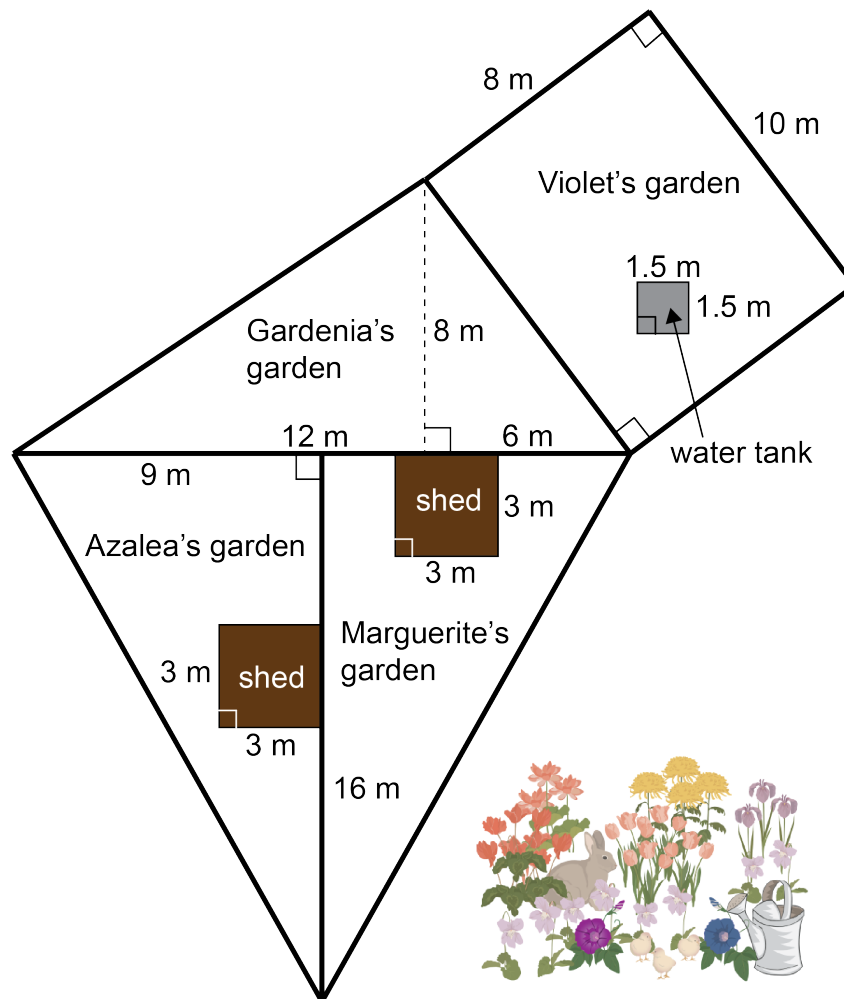
Problem of the Week

Problem B and Solution

Competing Gardens

Problem

Gardenia, Marguerite, Azalea, and Violet just moved into a new neighbourhood. Each says that she has the largest garden, but it is so hard to tell! The following diagram shows the shape and size of each garden and any other objects on the properties.



- Determine the area of each garden, excluding any objects on the property. Who has the largest garden?
- What is the difference in area between the largest garden and the smallest garden?



Solution

- (a) Gardenia's garden is in the shape of a triangle with base $12 + 6 = 18$ m and height 8 m. Thus, the area of Gardenia's garden is $\frac{1}{2} \times 18 \times 8 = 72$ m².

Azalea's garden is in the shape of a triangle with base 9 m and height 16 m. It has a square shed on the property with side length 3 m. We need to subtract the area of the shed from the area of the garden. The area of the shed is $3 \times 3 = 9$ m². Thus, the area of Azalea's garden is $(\frac{1}{2} \times 9 \times 16) - 9 = 72 - 9 = 63$ m².

Marguerite's garden is in the shape of a triangle with base $12 + 6 - 9 = 9$ m and height 16 m. It also has a shed on the property with side length 3 m. We notice that Marguerite's garden and shed have the same dimensions as Azalea's garden and shed, so their gardens will have equal areas. Thus, the area of Marguerite's garden is also 63 m².

Violet's garden is in the shape of a rectangle with sides 8 m and 10 m. It has a square water tank on the property with side length 1.5 m. We need to subtract the area of the water tank from the area of the garden. The area of the water tank is $1.5 \times 1.5 = 2.25$ m². Thus, the area of Violet's garden is $(8 \times 10) - 2.25 = 80 - 2.25 = 77.75$ m².

Therefore the largest garden belongs to Violet, with an area of 77.75 m².

- (b) The largest garden has an area of 77.75 m². The smallest garden has an area of 63 m². Thus, the difference is $77.75 - 63 = 14.75$ m².