

Combined science - Biology - Key stage 4
Ecology

Sampling Required Practical 1

Dr Clapp

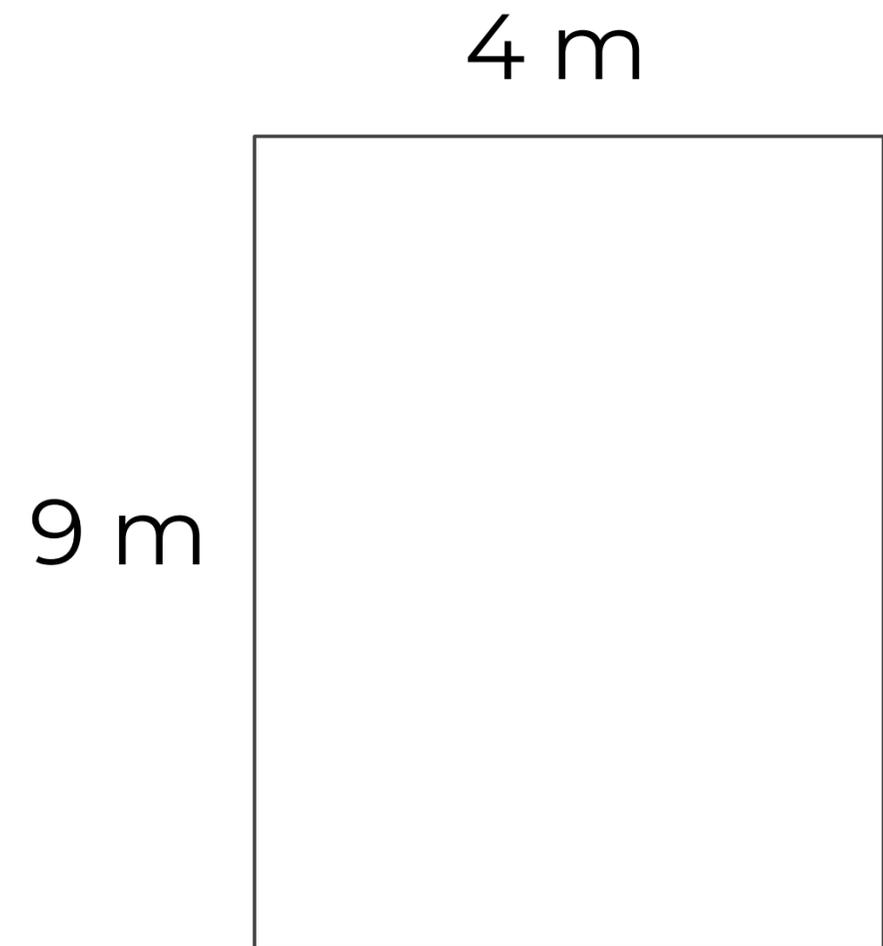


Independent practice

A 0.5 m x 0.5 m quadrat was placed 8 times in the area shown and the number of daisies counted was recorded as:

12, 16, 8, 1, 9, 5, 2, 11

Estimate the total population of daisies in the area.



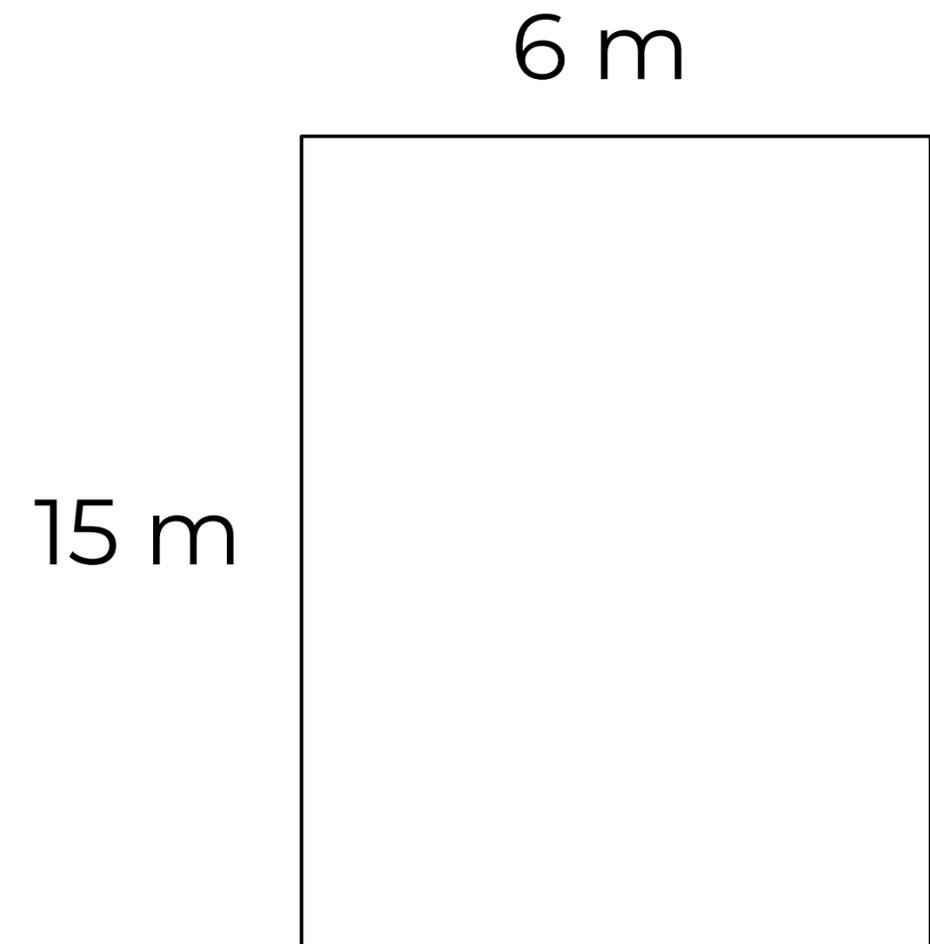
Independent practice

A 0.5 m x 0.5 m quadrat was placed 10 times in the area shown and the numbers of daisies and dandelions were counted and recorded as:

Daisies: 0, 12, 3, 3, 9, 12, 8, 11, 0, 15

Dandelions: 1, 4, 2, 6, 6, 2, 3, 6, 4, 7

Estimate the populations of daisies and dandelions in the area.



Independent practice - answers

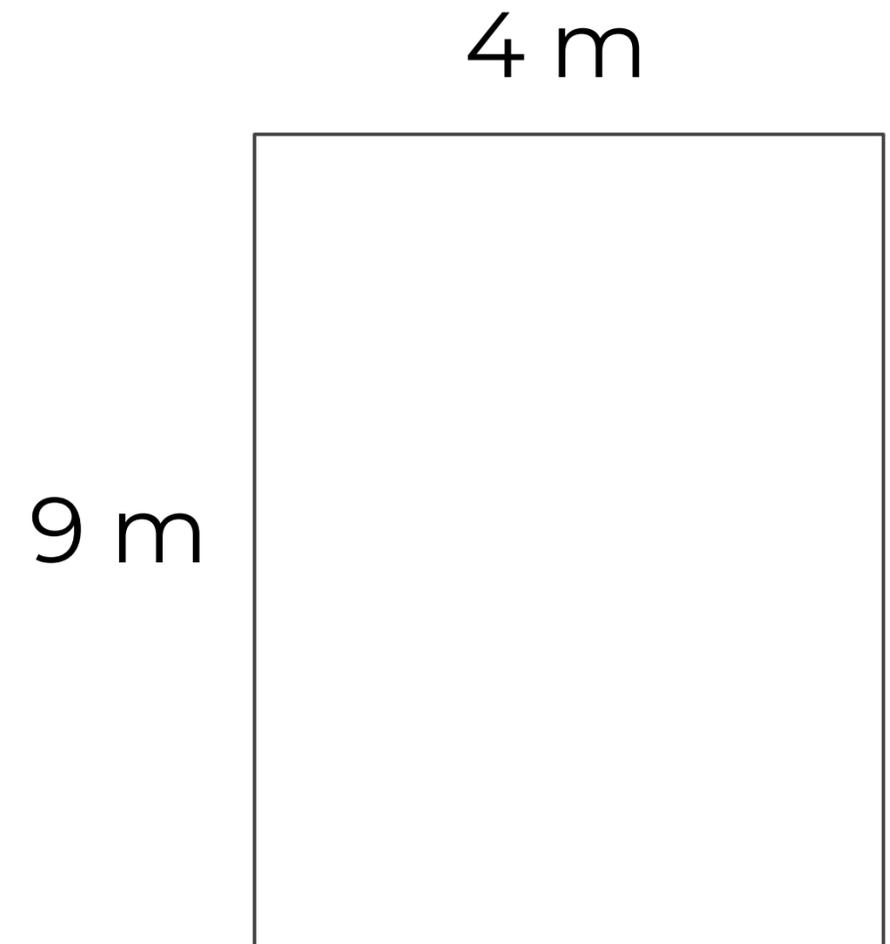
$$\text{Area of site} = 4 \times 9 = 36 \text{ m}^2$$

$$\text{Area of quadrat} = 0.5 \times 0.5 = 0.25 \text{ m}^2$$

$$\text{Multiplication factor} = 36 \div 0.25 = 144$$

$$\text{Mean number of daisies} = 64 \div 8 = 8$$

$$\text{Estimate} = 144 \times 8 = \mathbf{1152 \text{ daisies}}$$



Independent practice - answers

Area of site = $15 \times 6 = 90 \text{ m}^2$

Area of quadrat = $0.5 \times 0.5 = 0.25 \text{ m}^2$

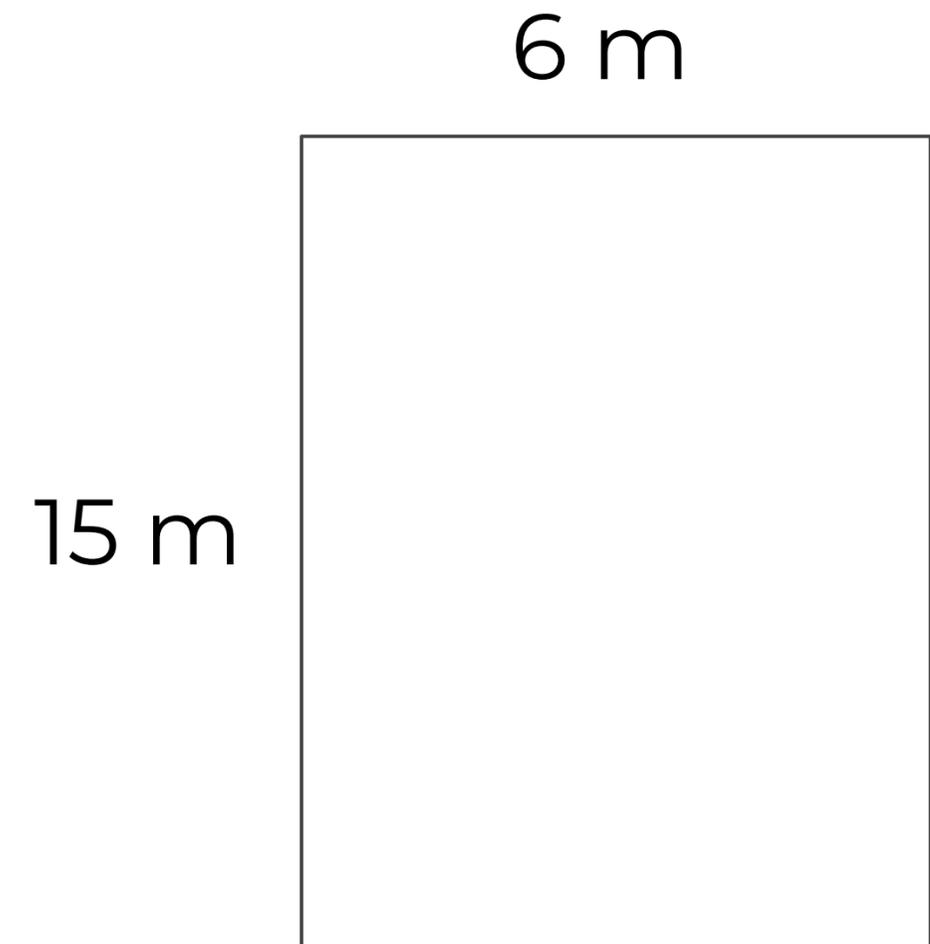
Multiplication factor = $90 \div 0.25 = 360$

Mean number of daisies = $73 \div 10 = 7.3$

Estimate = $360 \times 7.3 = \mathbf{2628 \text{ daisies}}$

Mean number of dandelions = $41 \div 10 = 4.1$

Estimate = $360 \times 4.1 = \mathbf{1476 \text{ dandelions}}$



Independent practice

Describe how you would estimate the population of daisies in a field. Include how you would make your results as accurate as possible.

Key words:

Quadrat, mean, random, grid, mean, multiply



Independent practice - answers

To sample the population of daisies in a field firstly I would place a grid over a map of the field. I would then use dice to generate random coordinates on the grid. I would place the quadrat at the coordinates and count how many daisies were present at each position. Finally I would calculate a mean and multiply up to get an estimate of the number of daisies in the whole field.

To make sure my results were as accurate as possible I would use a large quadrat, place it a large number of times and make sure the coordinates were random.

