

Combined science - Biology - Key stage 4  
Ecology

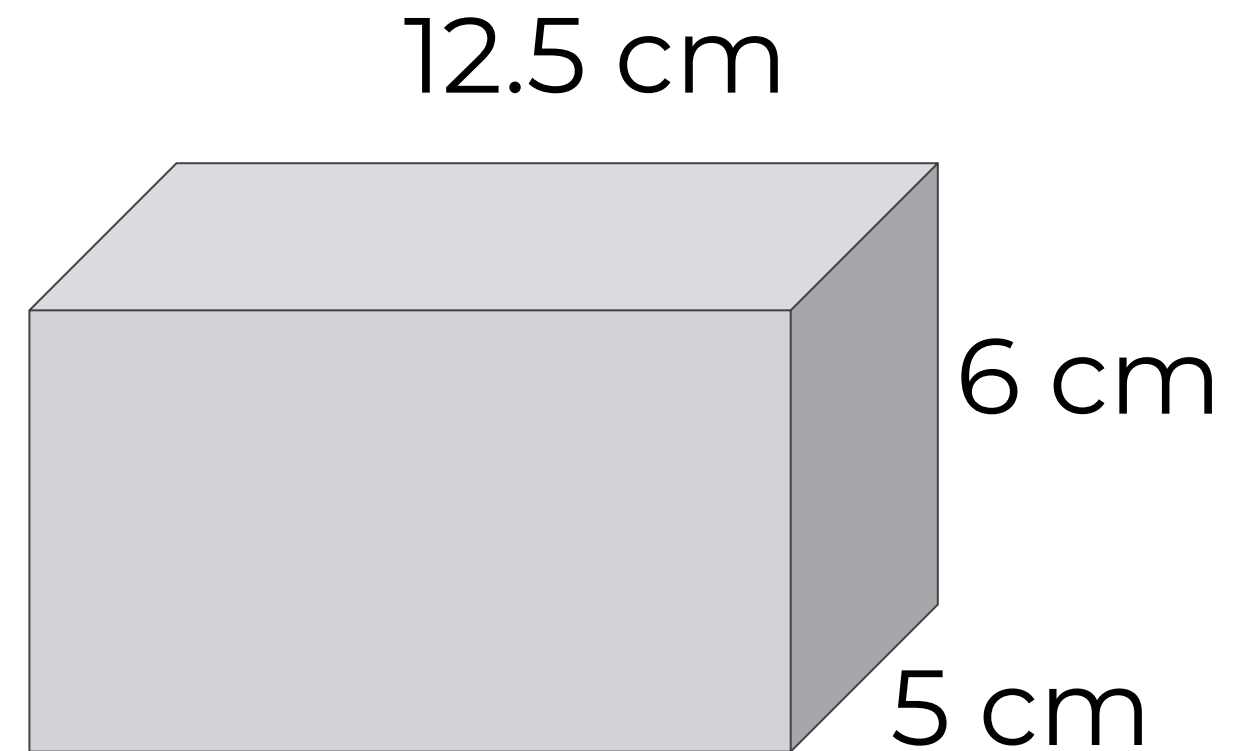
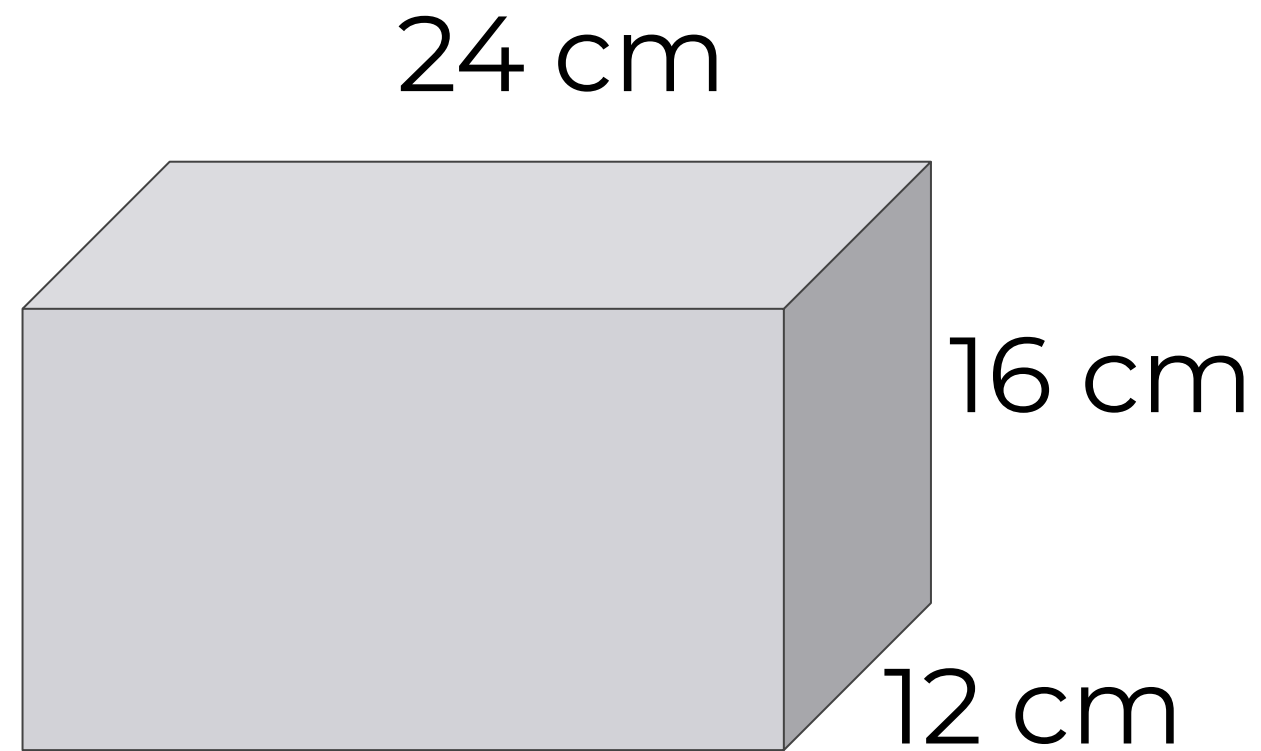
# Maths skills

Dr Clapp



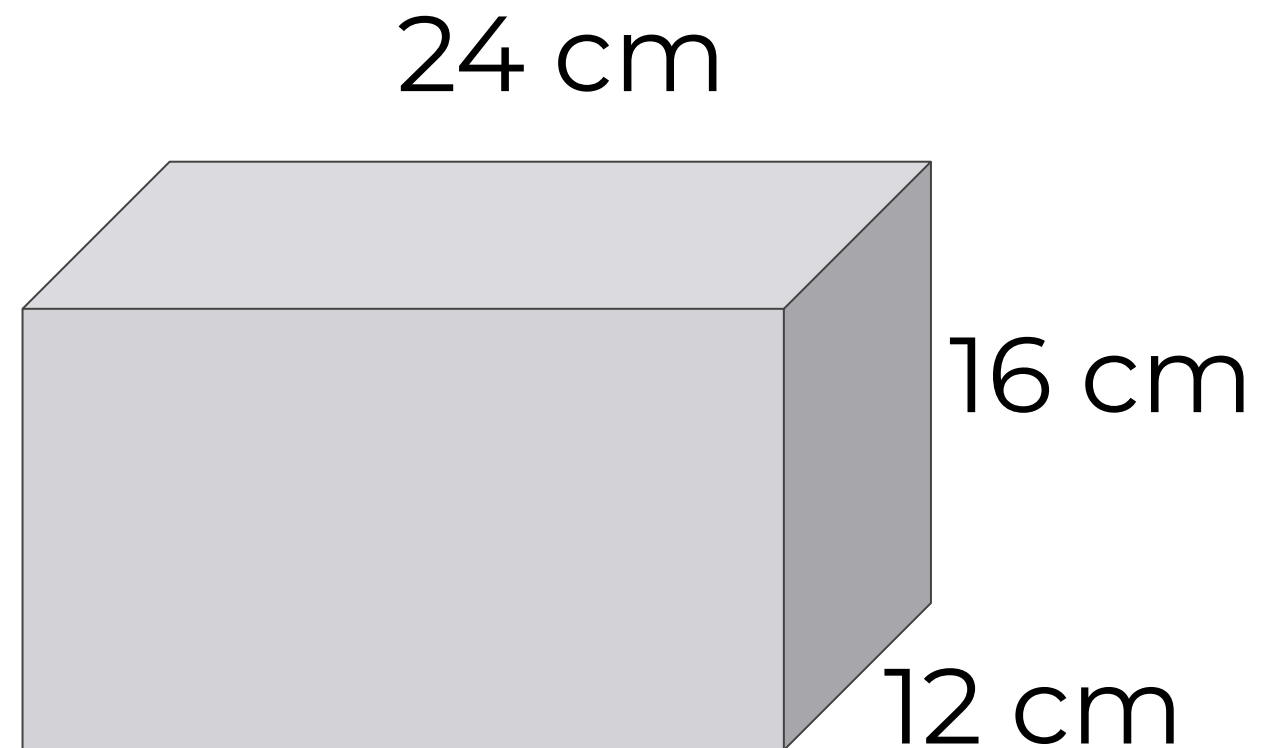
# Independent practice

Find the surface areas and volumes of these shapes:



## Independent practice - answers

Find the surface areas and volumes of these shapes:



$$SA: 24 \times 12 = 288 \times 4 = 1,152$$

$$16 \times 12 = 192 \times 2 = 384$$

$$1,152 + 384 = 1,536 \text{ cm}^2$$

$$Vol: 24 \times 16 \times 12 = 4,608 \text{ cm}^3$$



## Independent practice - answers

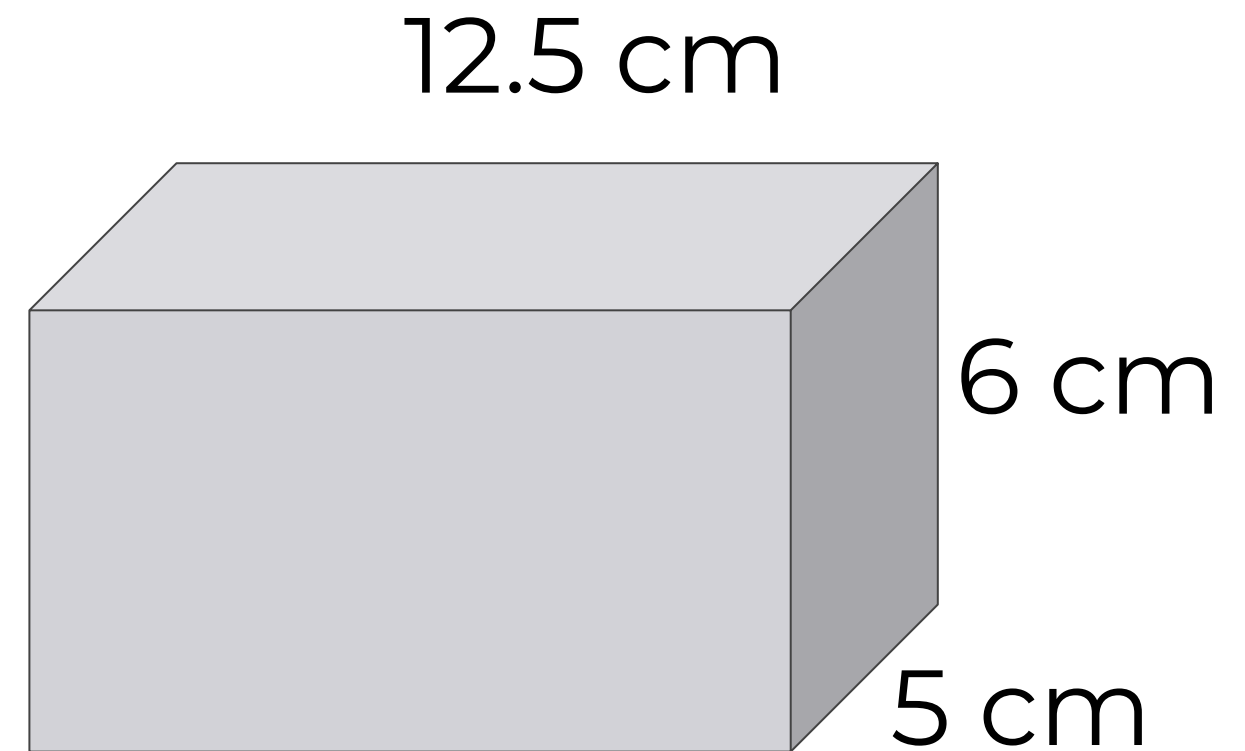
Find the surface areas and volumes of these shapes:

$$SA: 12.5 \times 5 = 62.5 \times 4 = 250$$

$$6 \times 5 = 30 \times 2 = 60$$

$$250 + 60 = 310 \text{ cm}^2$$

$$\text{Vol}: 12.5 \times 6 \times 5 = 375 \text{ cm}^3$$



# Independent practice

Use the information below to calculate the surface area : volume ratios of the two animals and predict which one lives in the hotter climate.

Animal 1 : surface area  $540,000\text{cm}^2$     volume  $180,000\text{ cm}^3$

Animal 2 : surface area  $25,000\text{ cm}^2$     volume  $1250\text{cm}^3$



# Independent practice - answers

Animal 1: surface area  $540,000\text{cm}^2$  volume  $180,000\text{ cm}^3$

Animal 2: surface area  $25,000\text{ cm}^2$  volume  $1250\text{cm}^3$

Animal 1

SA:VOL  $540000:180000$   
 $3:1$

Animal 2

SA:VOL  $25000:1250$   
 $20:1$

Animal 2 has the largest SA:vol ratio so lives in the hotter climate.



# Independent practice

Calculate the mean, median and mode for the following sets of numbers:

- a. 101, 107, 108, 110, 103, 103, 107, 105
- b. 0.23, 0.18, 0.27, 0.22, 0.20, 0.19, 0.25, 0.19, 0.26
- c. 276.5, 278, 273, 269.5, 271, 273



# Independent practice - answers

Calculate the mean, median and mode for the following sets of numbers:

a.

Mean:  $(101+107+108+110+103+103+107+105) \div 8 = \mathbf{105.5}$

Median: 101, 103, 103, **105**, **107**, 107, 108, 110

$(105 + 107) \div 2 = \mathbf{106}$

Mode: 101, **103**, **103**, 105, **107**, **107**, 108, 110 = **103 AND 107**





# Independent practice - answers

Calculate the mean, median and mode for the following sets of numbers:

b.

Mean:  $(0.23+0.18+0.27+0.22+0.20+0.19+0.25+0.19+0.26) \div 9 = \mathbf{0.22}$

Median: 0.18, 0.19, 0.19, 0.20, **0.22**, 0.23, 0.25, 0.26, 0.27 = **0.22**

Mode: 0.18, **0.19**, **0.19**, 0.20, 0.22, 0.23, 0.25, 0.26, 0.27 = **0.19**



# Independent practice - answers

Calculate the mean, median and mode for the following sets of numbers:

C.

Mode:  $(276.5 + 278 + 273 + 269.5 + 271 + 273) \div 6 = \mathbf{273.5}$

Median: 269.5, 271, **273, 273**, 276.5, 278 = **273**

Mode: 269.5, 271, **273, 273**, 276.5, 278 = **273**



# Independent practice

Calculate the uncertainty of the following sets of data and say which data can be trusted the most:

- a. 1.67, 1.77, 1.69, 1.72, 1.74
- b. 57, 54, 56, 59, 55, 59, 53
- c. 101, 107, 108, 110, 103, 103, 107, 105

