Combined science - Biology - Key stage 4
Ecology
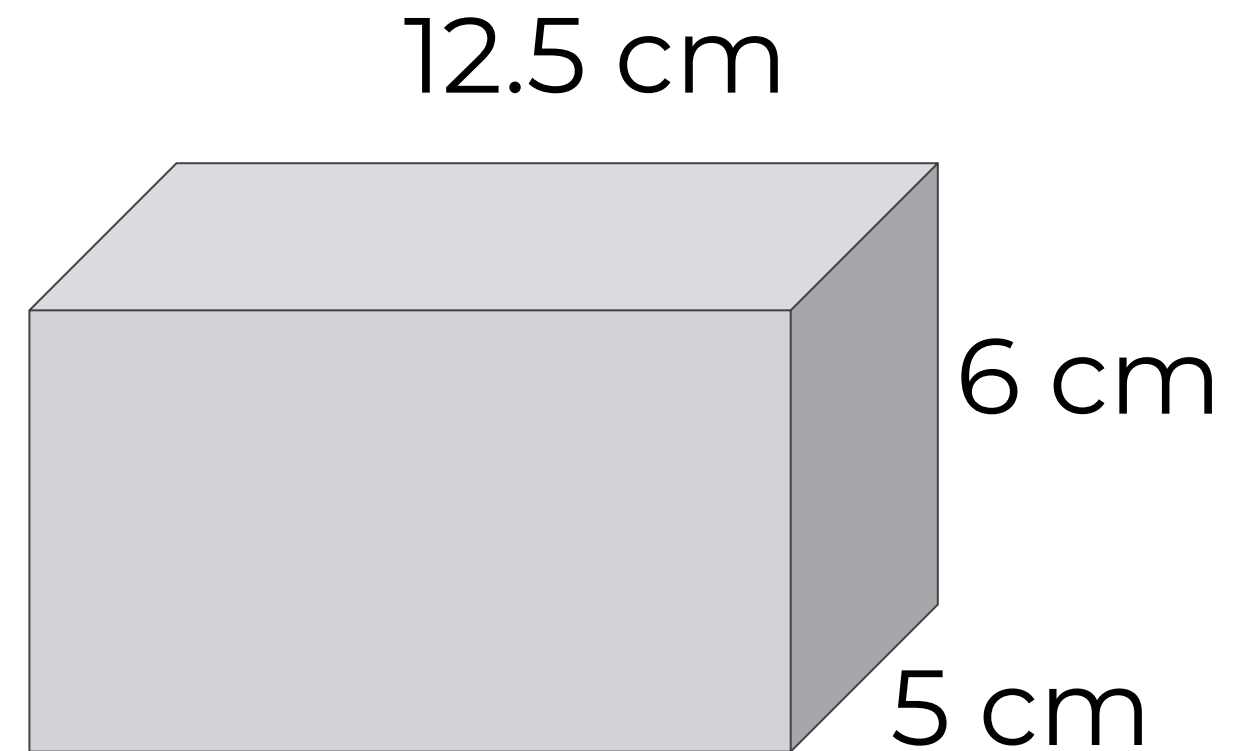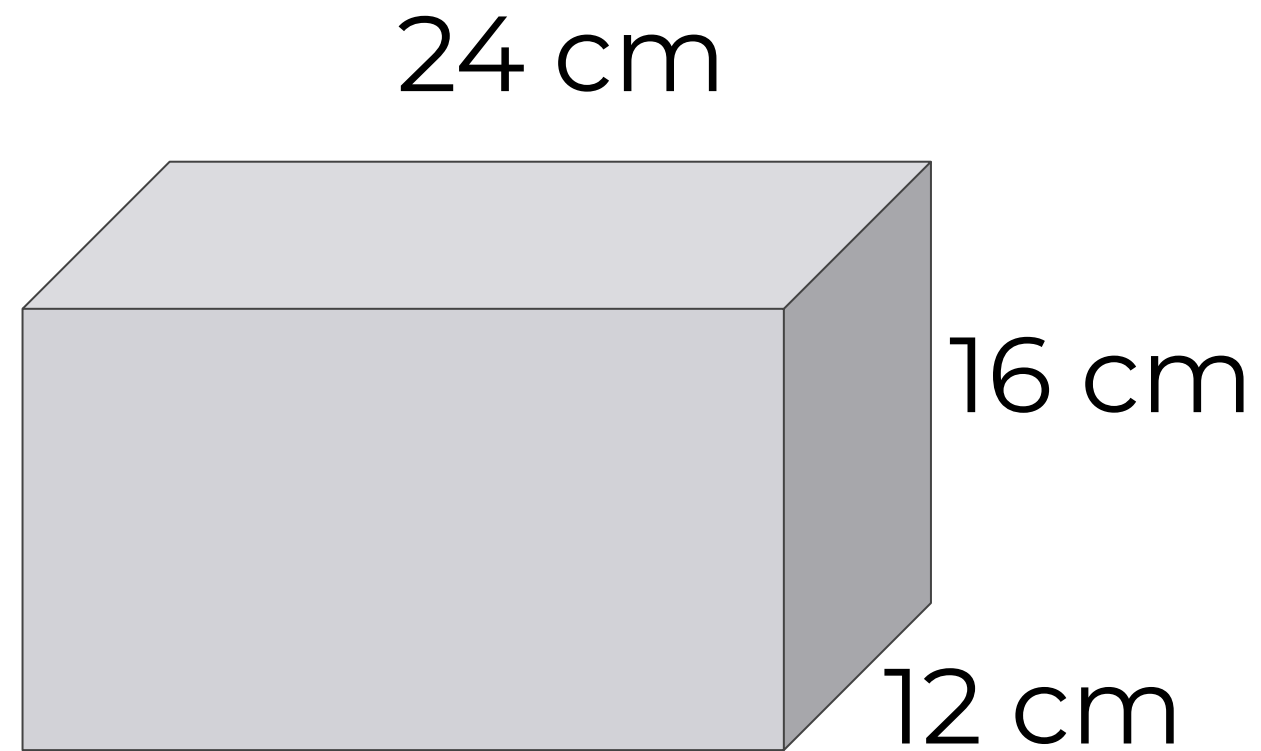
Maths skills

Dr Clapp
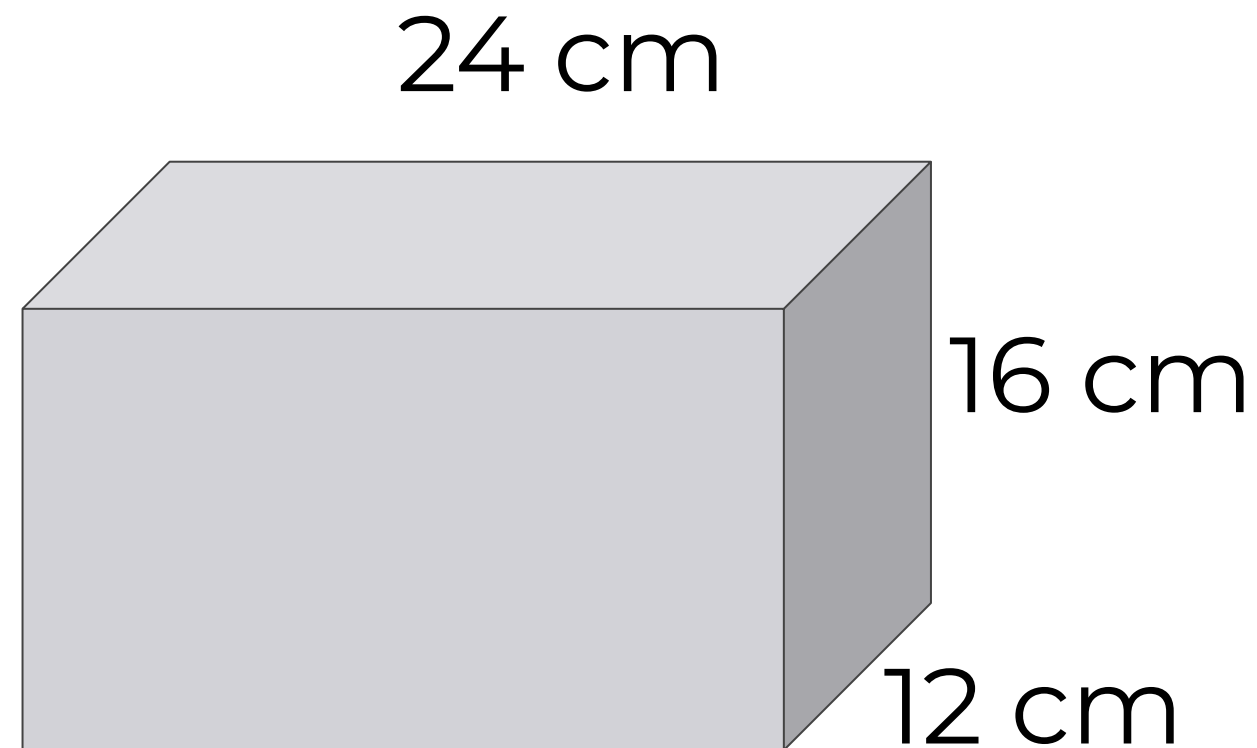
Independent practice

Find the surface areas and volumes of these shapes:

24 cm

16 cm

12 cm

12.5 cm

6 cm

5 cm

Independent practice - answers

Find the surface areas and volumes of these shapes:

24 cm

16 cm

12 cm

SA: 24 x 12 = 288 x 2 = 576
24 x 16 = 384 x 2 = 768
16 x 12 = 192 x 2 = 384
576 + 768 + 384 = 1,728 cm^2

Vol: 24 x 16 x 12 = 4,608 cm^3

Independent practice - answers

Find the surface areas and volumes of these shapes:

SA: 12.5 x 5 = 62.5 x 2 = 125
12.5 x 6 = 75 x 2 = 150
6 x 5 = 30 x 2 = 60
125 + 150 + 60 = 335 cm^2

Vol: 12.5 x 6 x 5 = 375 cm^3

12.5 cm

6 cm

5 cm
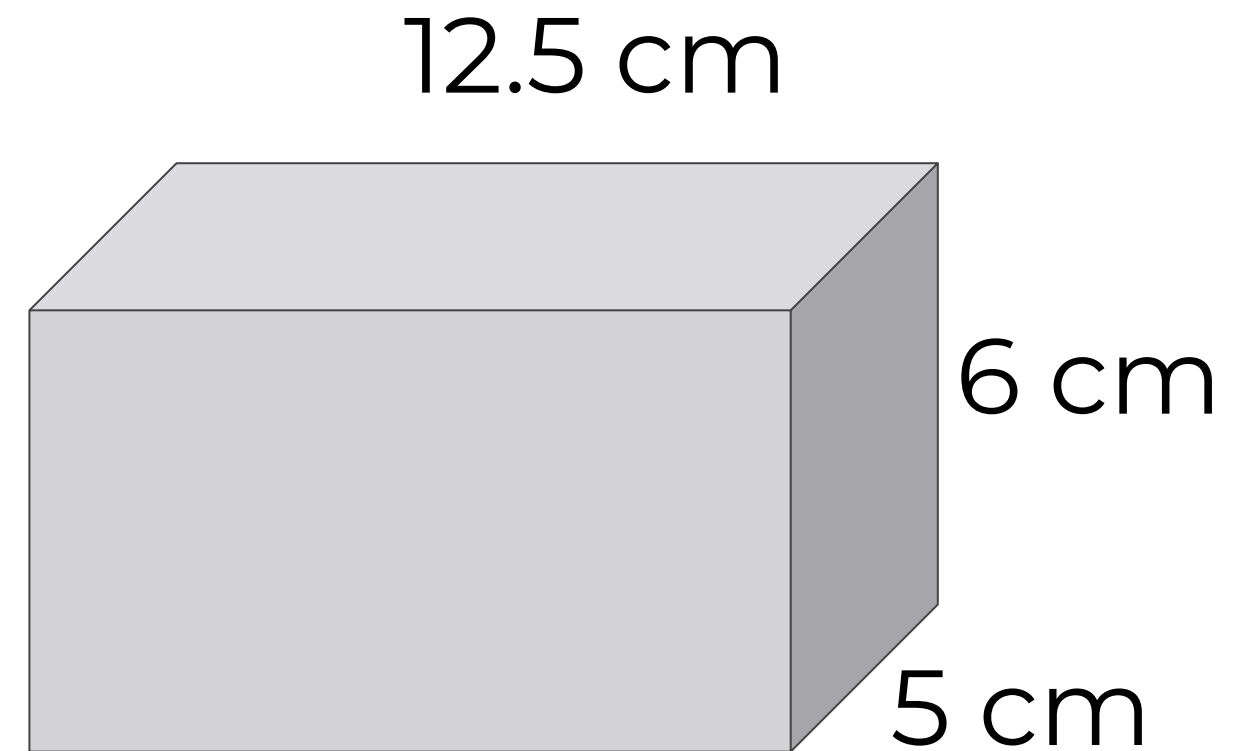
Independent practice

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 1250cm^3

Independent practice - answers

Animal 1 : surface area 540,000cm^2 volume 180,000 cm^3
Animal 2 : surface area   25,000 cm^2 volume   1250cm^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) ÷ 8 = **105.5**
Median: 101, 103, 103, **105**, **107**, 107, 108, 110
          (105 + 107) ÷ 2 = **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) ÷ 9 = **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) ÷ 6 =**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