

Numeracy Across the Curriculum

Science

- (b) The ball has an average speed of 11 m/s

The ball takes 0.25 s to travel the same distance as the length of the table.

Calculate the length of the table.

Use the equation:

$$\text{distance travelled} = \text{speed} \times \text{time}$$

(2)

- (c) A table tennis ball should only be used if it bounces to at least 75% of the height it was dropped from.

A manufacturer tested a table tennis ball.

The table shows the results.

Height ball was dropped from in cm	Height of bounce in cm
30.0	25.1

Determine whether the ball can be used.

Use the data from the table above.

(3)

- (e) Calculate the percentage by mass of oxygen in ammonium nitrate (NH_4NO_3).

Relative atomic masses (A_r): H = 1 N = 14 O = 16

Relative formula mass (M_r): $\text{NH}_4\text{NO}_3 = 80$

(3)

DT

2

You have marked out and cut a design to a measurement of 100 x 100mm with a tolerance of $\pm 2\text{mm}$. Which one of the following measurements is in tolerance?

A 97.9 x 100.58mm

☐

B 98.2 x 102.56mm

☐

C 99.9 x 101.07mm

☐

D 102.58 x 96.2mm

☐

[1 mark]

- 22 . 1 You have been asked to redesign your chosen product to make it suitable for a child aged between 3 and 5 years old.

The data in the table below shows the preferred colour scheme according to 250 children aged between 3 and 5 years old.

Calculate the missing percentages.

[2 marks]

	Number of children	Percentage of total
Pastel colours	55	22%
Primary colours	105	
Fluorescent colours	50	20%
Subtle colours	30	
Metallic colours	10	4%
Total	250	

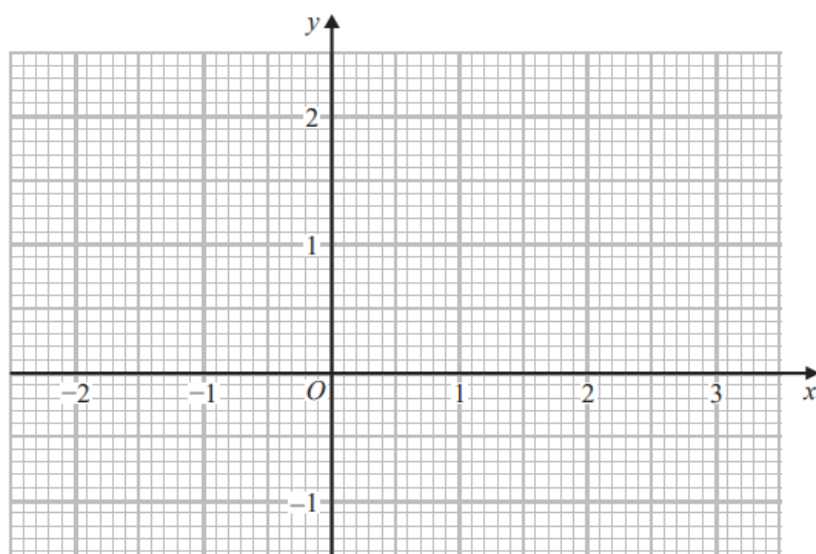
Maths

- 13 (a) Complete the table of values for $y = \frac{1}{2}x - 1$

x	-2	-1	0	1	2	3
y	-2				0	

(2)

- (b) On the grid, draw the graph of $y = \frac{1}{2}x - 1$ for values of x from -2 to 3



Geography

Location X Sediment size (cm)	Location Y Sediment size (cm)
12	9
10	4
9	2
15	3
8	2
13	6
Mean: 11.2	Mean:

0 3 . 2

Complete the table in **Figure 12** by calculating the mean sediment size, in cm, for location Y.

[1 mark]

Students measured the flow of water in two different rivers over 7 days. **Figure 7** shows the results, in rank order, for the two rivers.

Figure 7

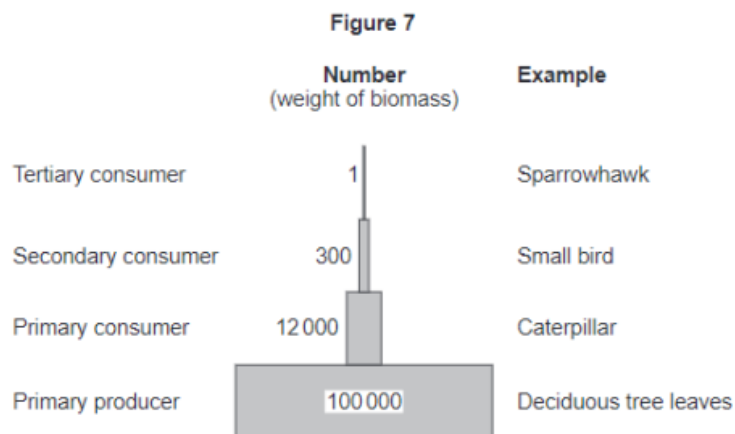
	River A (Flow in cubic metres/second)	River B (Flow in cubic metres/second)
	6.2	11.8
Upper quartile →	6.0	10.4
	5.6	8.7
	5.2	5.1
	5.0	2.1
Lower quartile →	4.5	1.4
	3.7	1.2
Median	5.2	5.1
Interquartile range	1.5	

0 4 . 7

Complete the table (**Figure 7**) by calculating the interquartile range for River B.

[1 mark]

Study **Figure 7**, a graph showing the biomass at different levels of a food chain.



Biomass is the total quantity or weight of organisms in a given area.

2.4

Calculate the percentage loss in biomass between the primary consumer and secondary consumer levels.

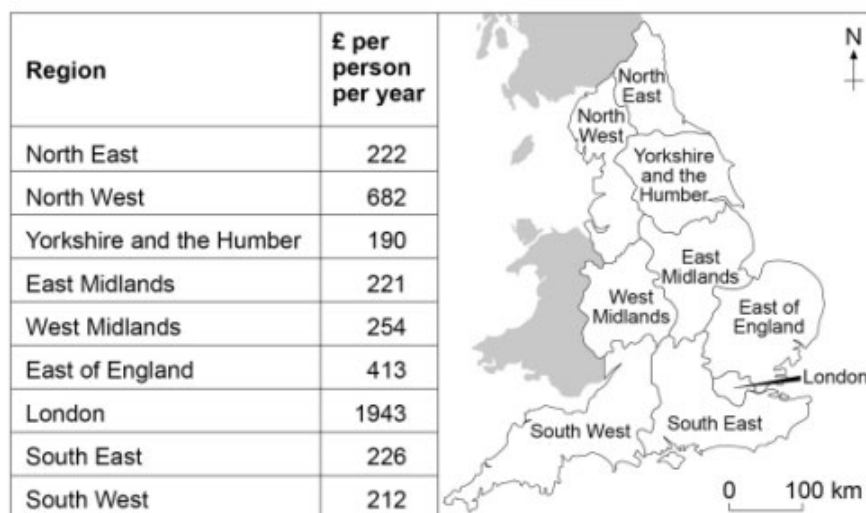
Shade **one** circle only.

[1 mark]

- A 2.5% ☐
- B 97.5% ☐
- C 25.2% ☐
- D 95.5% ☐

Study **Figure 8**, information about the planned spending on transport infrastructure in England's regions 2016–2021.

Figure 8



02.9

Using **Figure 8**, calculate the mean planned spending per person per year 2016–2021 in the nine English regions.

[2 marks]