Mock Grade 4

Maths Booklet 5

Paper 3H
Calculator

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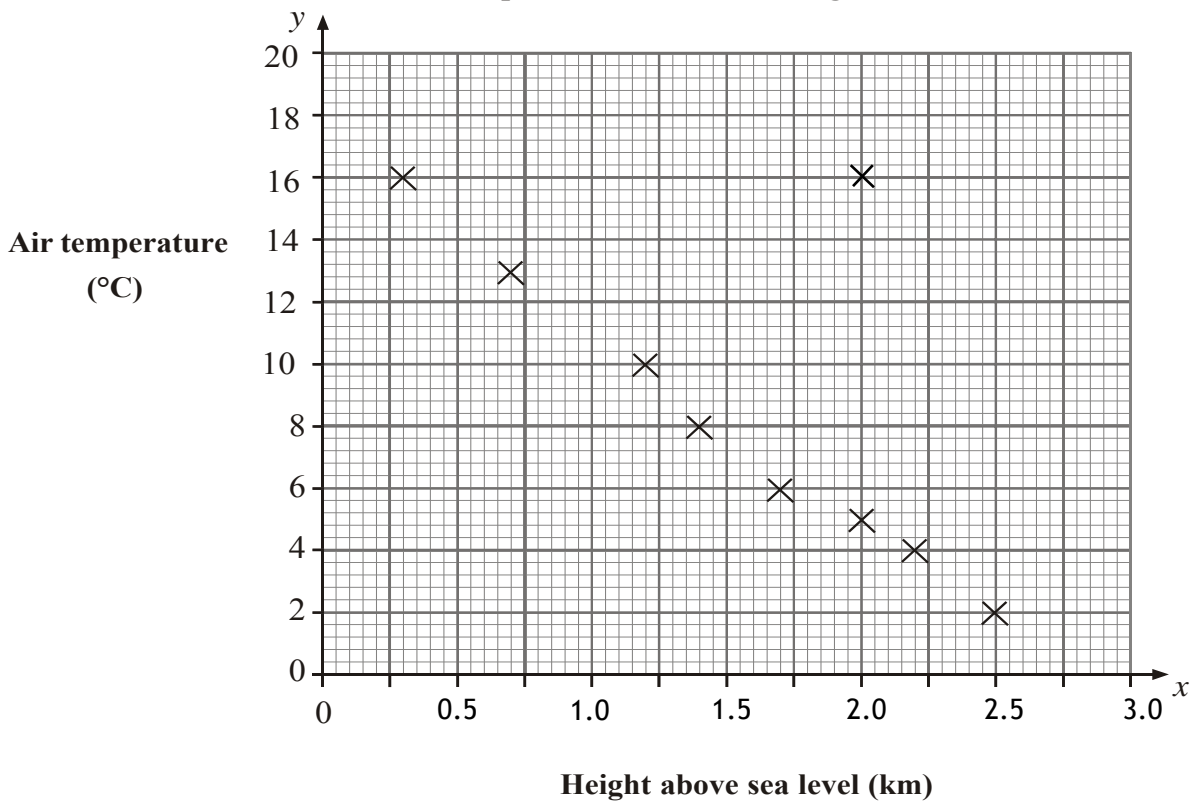1   The scatter diagram shows the air temperature, y °C, at each of these heights, x km, above sea level.

On a particular day, a scientist recorded the air temperature at 9 different heights above sea level.

Air temperature at different heights above sea level

One of the points is an outlier.

(a) Write down the coordinates of the outlier.

(1)

For all the **other** points

(b) (i) draw the line of best fit,

   (ii) describe the correlation.

....

....

(2)

(c) Find an estimate of the height above sea level when the air temperature is 0 °C.

....

(1)

On another day, the air temperature was 18 °C.

Lucia says,

     "I can see from the graph that on this day, the height above seal level must have been 0 km."

(d) Comment on what Lucia says.

....

....
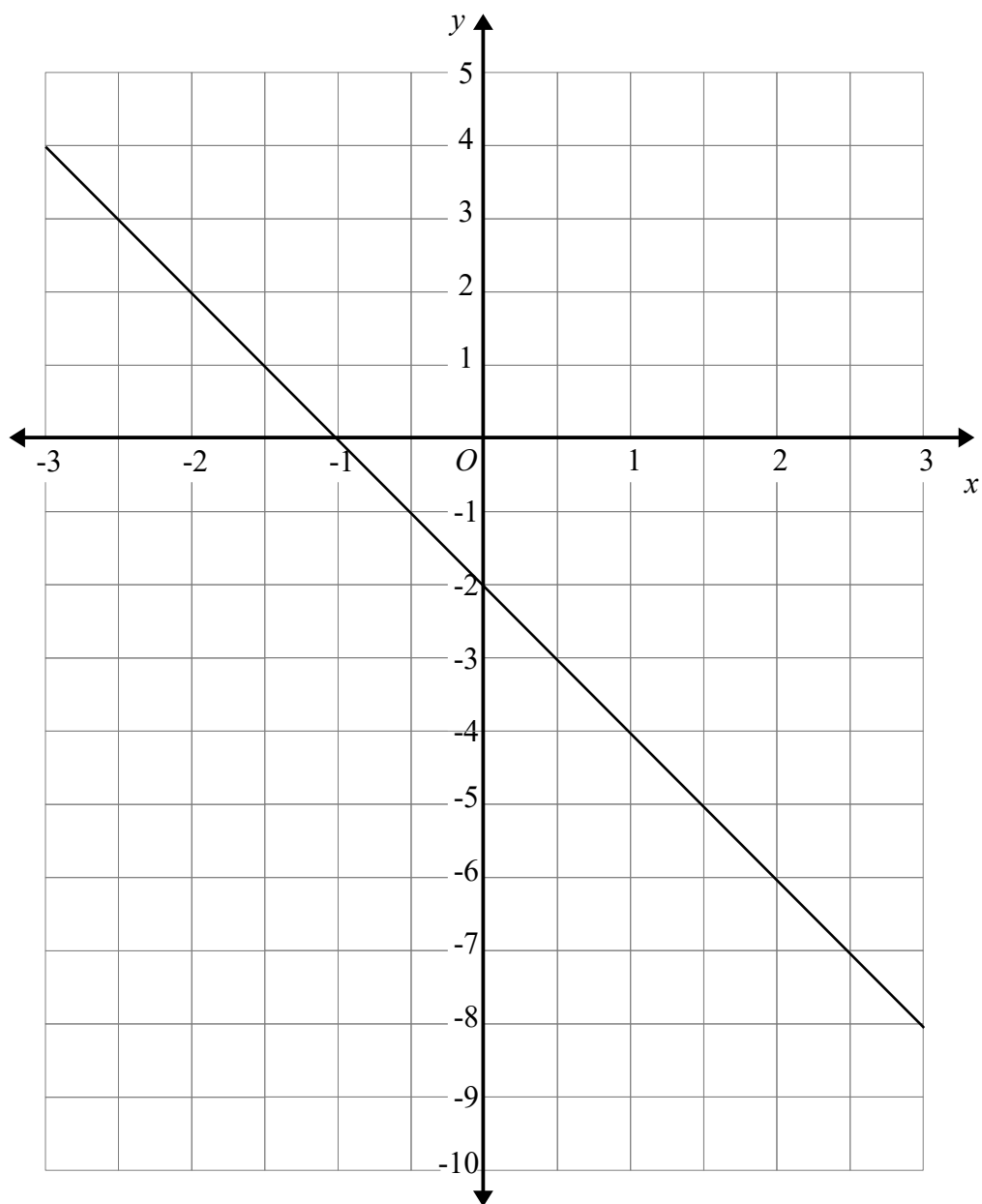
(1)

(Total for Question 1 is 5 marks)

2   The length, L cm, of a line is measured as 28 cm correct to the nearest centimetre.

Complete the following statement to show the range of possible values of L

.... $\leqslant L <$ ....

(Total for Question 2 is 2 marks)

3 Line **L** is drawn on the grid below.

Find the equation for the straight line **L**.
Give your answer in the form $y = mx + c$

4 Jenny works in a shop that sells belts.

The table shows information about the waist sizes of 45 customers who bought belts from the shop in May.

Belt size	Waist (*w* inches)	Frequency
Small	$28 < w \leqslant 32$	32
Medium	$32 < w \leqslant 36$	9
Large	$36 < w \leqslant 40$	3
Extra Large	$40 < w \leqslant 44$	1

(a) Calculate an estimate for the mean waist size.

....inches

(3)

Belts are made in sizes Small, Medium, Large and Extra Large.

Jenny needs to order more belts in June.
The modal size of belts sold is Small.

Jenny is going to order $\dfrac{3}{4}$ of the belts in size Small.

The manager of the shop tells Jenny she should **not** order so many Small belts.

(b) Who is correct, Jenny or the manager?
    You must give a reason for your answer.

....

....

(2)

(Total for Question 4 is 5 marks)

5 (a) Simplify $(2m^2)^4$

....
(1)

(b) Simplify $\dfrac{16m^7n^3}{4m^3n}$

....
(2)

(c) Solve $4(2x + 1) > 9$

....
(2)

(Total for Question 5 is 5 marks)

6 Andy cycles a distance of 50 km at an average speed of 32 km/h.
He then runs a distance of 24 km at an average speed of 9 km/h.

Work out the total time Andy takes.
Give your answer in hours and minutes.

.... hours .... minutes

(Total for Question 6 is 3 marks)

7 A number, m, is rounded to 2 decimal places.
The result is 7.81

Complete the error interval for m.

.... $\leqslant m <$ ....

(Total for Question 7 is 2 marks)

8 Maisie knows that she needs 7 kg of grass seed to make a rectangular lawn 14 m by 8 m.

Grass seed is sold in 2 kg boxes.

Maisie wants to make a rectangular lawn 15 m by 22 m.
She has 11 boxes of grass seed.

(a) Has Maisie got enough grass seed to make a lawn 15 m by 22 m?
You must show all your working.

(4)

Maisie opens the 11 boxes of grass seed.

She finds that 10 of the boxes contain 2 kg of grass seed.
The other box contains 1 kg of grass seed.

(b) Does this affect whether Maisie has enough grass seed to make her lawn?
Give a reason for your answer.

....

....

....

(1)

(Total for Question 8 is 5 marks)