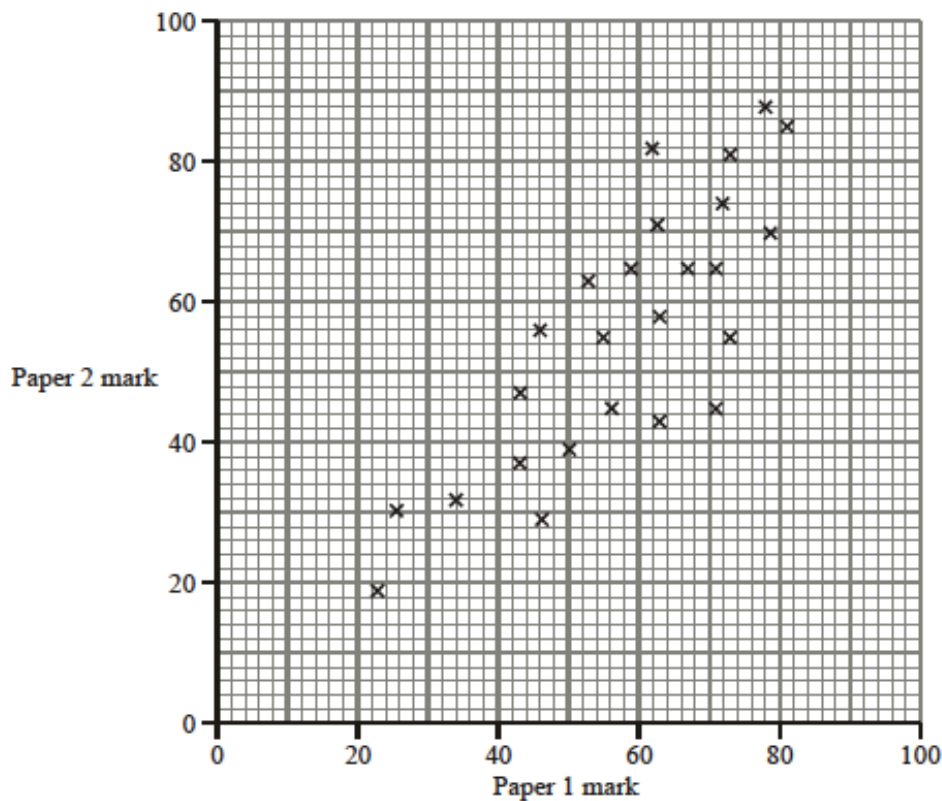


Revision F3 (Topics 1-9) [47]

1.

Mrs Millington gives her class two mock GCSE examination papers. The scatter graph shows the results.



- (a) Write down the highest mark scored on Paper 2. (1)
- (b) Describe the relationship shown on the scatter graph. (1)
- (c) Draw a line of best fit on the scatter graph. (1)
- (d) Kay was absent for Paper 2, but scored a mark of 56 on Paper 1. Use your line of best fit to estimate Kay's mark on Paper 2. (1)
- (Total 4 marks)**

2.

Craig and Sophie share 60 chocolates.
They divide them in the ratio 2 : 3 with Sophie having the larger share.

How many chocolates does Sophie have?

(Total 2 marks)

3.

- (a) Express 108 as a product of its prime factors. Give your answer in index form. (3)
- (b) Find the Highest Common Factor (HCF) of 108 and 72. (2)
- (Total 5 marks)**

4.

Jane records the times taken by 30 pupils to complete a number puzzle.

Time, t (minutes)	Number of pupils
$2 < t \leq 4$	3
$4 < t \leq 6$	6
$6 < t \leq 8$	7
$8 < t \leq 10$	8
$10 < t \leq 12$	5
$12 < t \leq 14$	1

(a) Calculate an estimate of the mean time taken to complete the puzzle. (4)

(b) Which time interval contains the median time taken to complete the puzzle? (1)

(Total 5 marks)

5.

The table also shows 3-point moving averages for this information.

Month	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Number of games consoles	64	84	53	91	108	92	154
3-point moving average		67	76	84	97	x	

(a) Using the information given in the table, work out the last 3-point moving average, x .

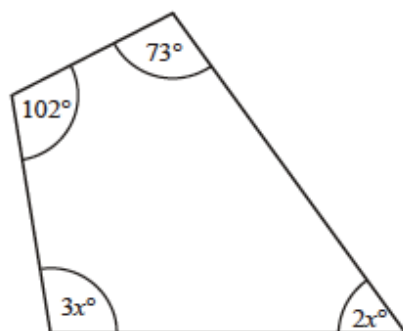
(2)

(b) Describe what the moving averages show about the trend in the number of games consoles sold in the shop over these months.

(1)

6.

The angles of a quadrilateral are 73° , $2x^\circ$, $3x^\circ$ and 102° .



Not drawn accurately

(a) Write down an equation in x . (2)

(b) Use your equation to find the largest angle in the quadrilateral. (3)

(Total 5 marks)

7.

- (a) Copy and complete the table of values for $y = (0.8)^x$

x	0	1	2	3	4
y	1	0.8	0.64		0.41

(1)

- (b) On a grid $0 \leq x \leq 4$ (2 cm = 1 unit), $0 \leq y \leq 1$ (1 cm = 0.1 units), draw the graph of $y = (0.8)^x$. (2)

- (c) Use your graph to solve the equation $(0.8)^x = 0.76$ (1)

(Total 4 marks)

8.

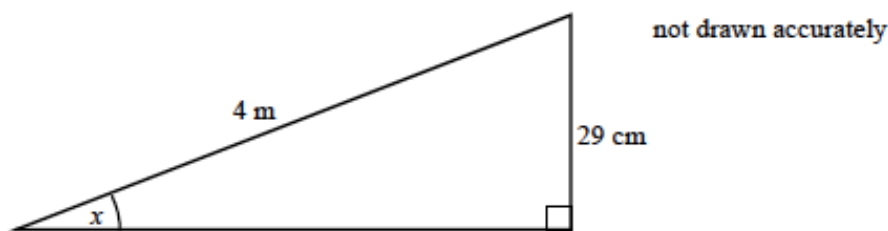
Expand and simplify $(x + 4)^2$

(2)

(Total 2 marks)

9.

- (a) A ramp is 4 metres long and 29 centimetres high.
If the ramp is safe for wheelchair users the angle marked x must be 4° or less.

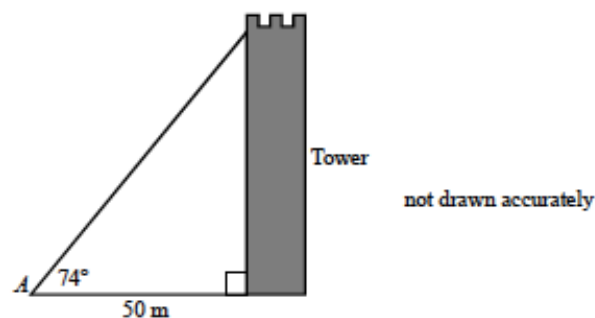


Is this ramp safe for wheelchair users?

You **must** show your working

(4)

- (b) The point A is 50 metres from the base of a tower.
The angle of elevation of the top of the tower from A is 74° .



- (i) Calculate the height of the tower.
Give your answer to a suitable degree of accuracy.

(4)

- (ii) What is the angle of depression of the point A from the top of the tower?

(1)

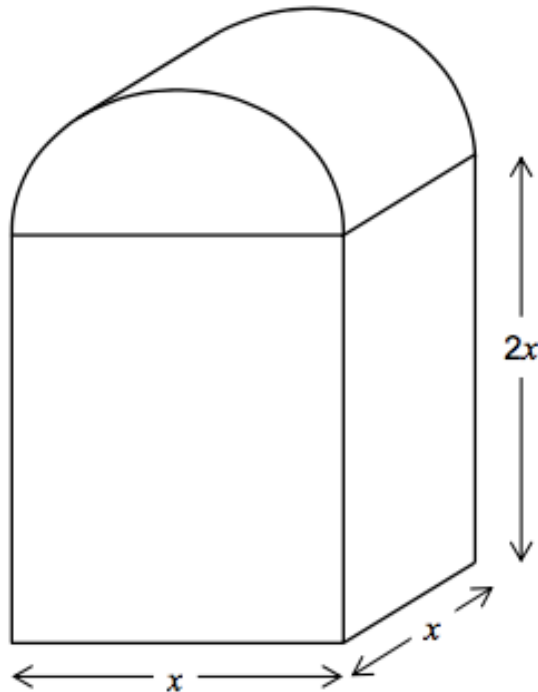
(Total 9 marks)

10. **Non-calculator**

In this question all dimensions are in centimetres.

A solid has uniform cross section.

The cross section is a rectangle and a semicircle joined together.



Work out an expression, in cm^3 , for the **total** volume of the solid.

Write your expression in the form $ax^3 + \frac{1}{b}\pi x^3$ where a and b are integers.

[4 marks]

11.

A lift cable can safely carry a total load 1200 kg.

The lift weighs 280 kg.

Both numbers are given to two significant figures.

The total load is made up of the weight of the lift and its contents.

The lift carries boxes weighing 65 kg each, correct to the nearest kg.

How many boxes can safely be carried?

You must show all your working.

(Total 4 marks)