Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education (9–1)

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

1372360781

MATHEMATICS **0626/05**

Paper 5 (Core) **October/November 2017**

2 hours

Candidates answer on the Question Paper.

Additional Materials: Geometrical instruments
Tracing paper (optional)

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams and graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.
Electronic calculators should be used.
If working is required for any question it must be shown below that question.
If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to three significant figures. Give answers in degrees to one decimal place.
For π, use either your calculator value or 3.142.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total of the marks for this paper is 96.

This syllabus is regulated for use in England as a Cambridge International Level 1/Level 2 (9–1) Certificate.

DC (RW/SG) 133757/3

1 Ali has a business buying and selling different coloured rolls of cloth.

(a) Each roll has 25 metres of cloth.

His selling prices are shown in the box.

Price for **a whole roll**:	£15.75
Price for **part of a roll**:	68p per metre

(i) Ali sells a whole roll of blue cloth to Miss Evans.

Work out the cost, in pence, Miss Evans pays for 1 metre of cloth from this whole roll of 25 metres.

..... p [1]

(ii) Ali sells part of a roll of red cloth to Mr Jones and the rest of this roll to Mrs Sharma.

How much more money does Ali make by selling this roll of red cloth than he made selling the whole roll of blue cloth?

£ ..... [2]

(iii) Ali sells some of the rolls of cloth from his online store.
He converts the prices to euros (€).
The exchange rate is €1 = £0.70.

Complete the table below to show the cost of a whole roll in euros.

Whole Roll	£15.75	€ .....

[2]

(b) Ali buys some rolls of cloth from a new supplier.
He buys these rolls for £8 each.
He sells each roll for £15.75.

Calculate his percentage profit from one whole roll of this new cloth.

.....% [3]

2 **(a)** Some students take a mental arithmetic test.
The test has 20 questions.

They score:

- +5 marks for each correct answer
- −3 marks for each incorrect answer
- 0 marks for each question they do not answer

(i) Work out the lowest possible score in this test.

..... [1]

(ii) Sam scores −19 in the test.
Navid scores 13 more than Sam.

Work out Navid's score.

..... [1]

(iii) Jo has 10 answers correct.
She scores a total of 32 marks in the test.
She does not answer some of the questions.

Work out how many answers Jo gets wrong.

..... [2]

(b) Team X plays against Team Y in a quiz.
Each team is asked 50 questions.

A team gains 1 point for each correct answer.
A team loses 1 point for each incorrect answer.

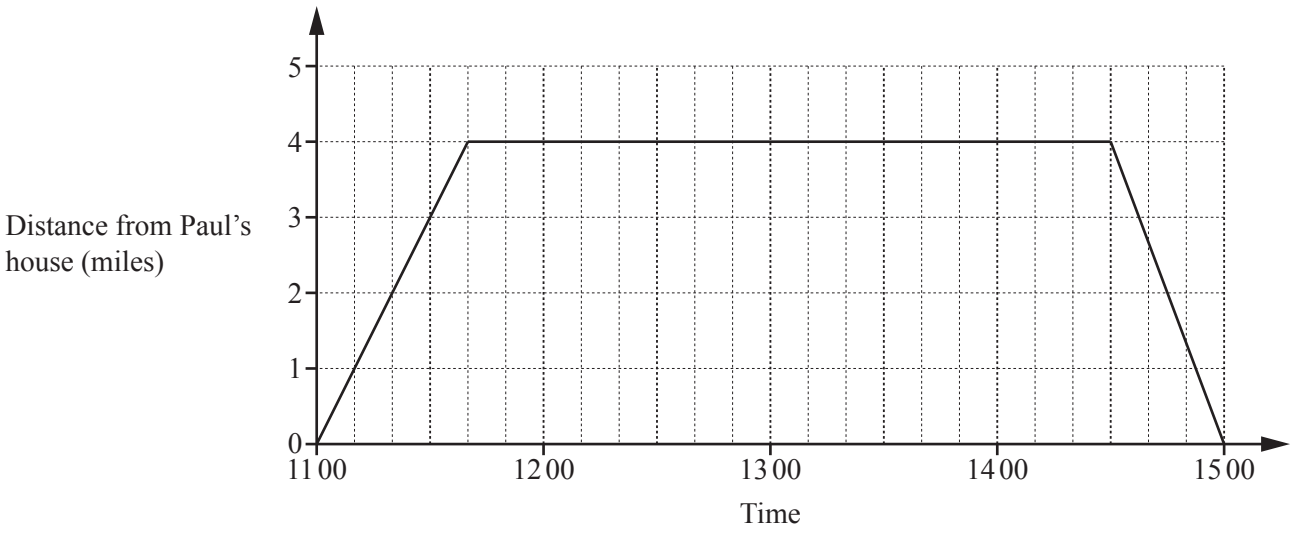
After 45 of the 50 questions, Team Y has $\frac{3}{5}$ of the answers correct.

Both teams answer all 50 questions.
At the end of the quiz, Team X has 22 points.

Show that Team X is certain to win the quiz.

[4]

3 Paul is going to meet his friend Alice at a cinema to watch a film.
The travel graph below shows information about Paul's journey from his house to the cinema and back.



(a) **(i)** How far is it from Paul's house to the cinema?

..... miles [1]

(ii) How long does Paul stay at the cinema?

..... hours ..... mins [1]

(b) Alice leaves home at 11 00.
She walks one mile to the bus stop.
Her walk takes 20 minutes.

(i) Work out her average walking speed in miles per hour.

..... mph [1]

(ii) Alice waits at the bus stop for 15 minutes for the bus to the cinema.
It is 4 miles from the bus stop to the cinema.
The average speed of the bus is 24 mph.

Work out the time Alice arrives at the cinema.

..... [3]

(c) Alice takes a taxi home.
Her 5-mile journey home takes one quarter of an hour.

Show that Alice travels home faster than Paul travels home.

[3]

4 The table shows the maximum temperature, in °C, of a chiller cabinet for each of 18 days.

5.0	4.9	4.8	1.9	2.1	3.4
5.1	4.2	3.3	3.6	2.5	1.9
4.0	3.8	3.2	3.1	1.9	2.7

(a) Complete the ordered stem and leaf diagram and key to represent the data.
You may use the blank grid to help you.

Ordered Stem and Leaf Diagram

1	
2	
3	
4	
5	

Key: 1 | 9 represents .....

[3]

(b) Work out the range.

..... °C [1]

(c) Work out the median.

..... °C [2]

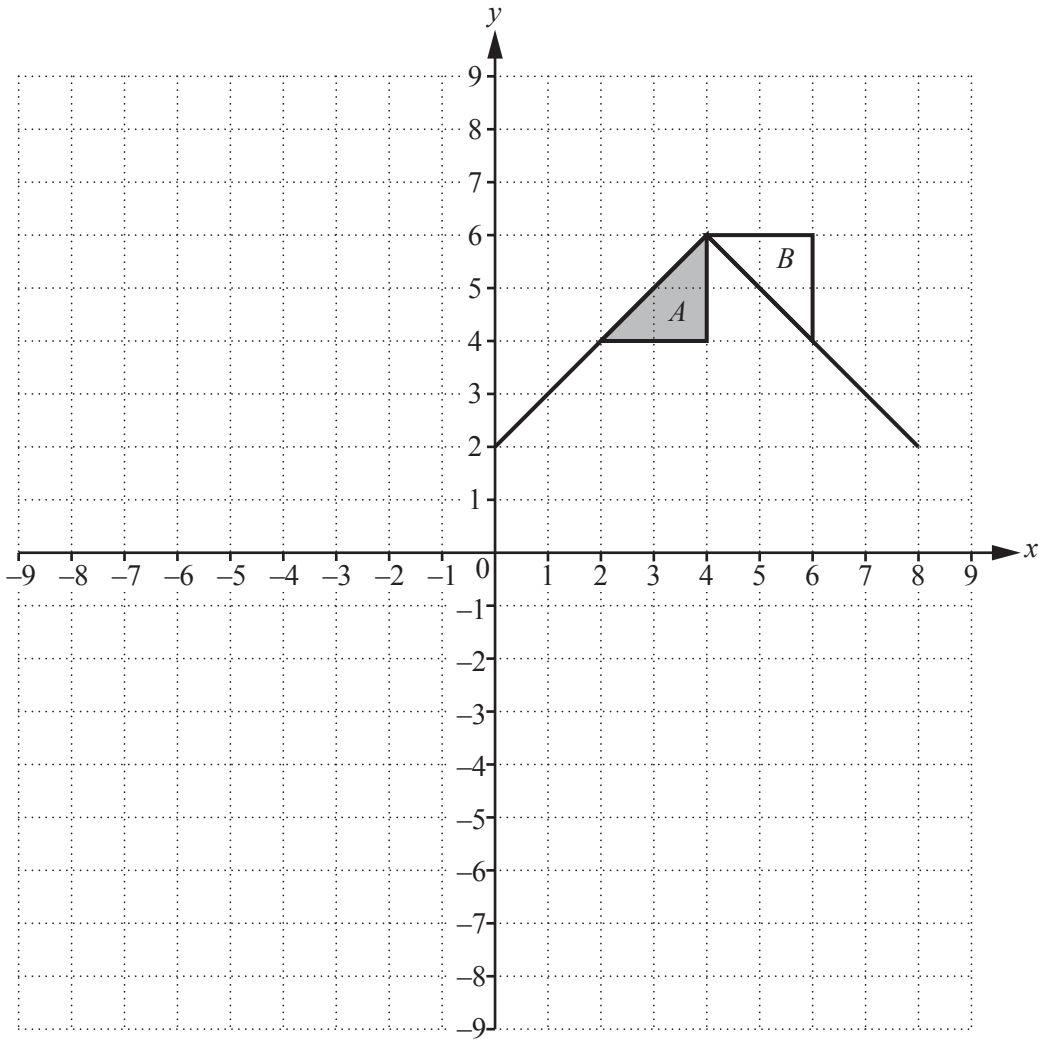
(d) **(i)** Write down the mode.

..... °C [1]

(ii) Explain why it would be misleading to use the mode as the average of the temperatures.

..... [1]

5



(a) **(i)** On the grid, draw the reflection of **flag *A*** in the line $x = -1$. [2]

(ii) On the grid, draw the translation of **flag *A*** by the vector $\begin{pmatrix} 2 \\ -8 \end{pmatrix}$. [2]

(b) Describe fully the **single** transformation that maps **flag *A*** onto flag *B*.

.....

..... [3]

6 **(a)** Here is part of Tomaz's monthly pay slip.

Earnings	**Amount(£)**	**Deductions**	**Amount(£)**
Gross pay	2992.52	Tax	431.84
		National Insurance	279.54
Total Earnings before Deductions	**2992.52**	**Total Deductions**	

(i) Work out the Total Deductions.

£ ..... [1]

(ii) Work out Tomaz's earnings after deductions.

£ ..... [1]

(iii) This formula is used to calculate National Insurance.

$$\text{National Insurance payment} = 0.12 \times (\text{Gross pay} - 663)$$

Use the formula to show that Tomaz's National Insurance payment is correct to the nearest penny.

[2]

(b) Tomaz earned £26 000 in the 2014/2015 tax year.
He did not pay any income tax on the first £10 000 that he earned.
He paid income tax at the rate of 20% on the rest of his earnings.

How much income tax did Tomaz pay in this tax year?

£ ..... [2]

(c) In 2015, Tomaz chose between these saving options.

Savings Bond	**Cash ISA**
Rate of simple interest: 2.4% per year	Rate of compound interest: 2% per year

Tomaz decided to invest £2000 in the Savings Bond for 2 years.

Did Tomaz choose the better investment?
Show how you decide.

..... because .....

..... [6]

7 Holm Island is a bird sanctuary which is managed by paid staff and volunteers.
Visitors come to the island by boat.

(a) Petra is a volunteer.

(i) She takes the 08 35 boat to the island.
The journey takes 43 minutes.

Work out the time that Petra arrives.

..... [1]

(ii) Petra stays on the island for 6 hours.
She spends $\frac{3}{4}$ of this time working in the Visitor Centre.

Work out how long Petra spends working in the Visitor Centre.

..... hours [1]

(b) The Visitor Centre sells information booklets for £3.99.
The price of a booklet is reduced by 15% in a sale.

Work out the sale price of the booklet.
Give your answer correct to the nearest penny.

£ ..... [2]

(c) The ratio of the number of

paid staff : volunteers = 2 : 5.

A total of 21 people work on the island.

Work out the number of volunteers.

..... [2]

(d) A team of volunteers is going to lay a new path.
3 volunteers will take 5 hours to lay the path.

Work out how long it would take 4 volunteers, working at the same rate, to lay the path.

..... hours [2]

(e) Some of the island's birds are oystercatchers.
The probability that a visitor will see an oystercatcher on the island is 0.1.

(i) Mark this probability, with a cross, on the scale below.

impossible certain

[1]

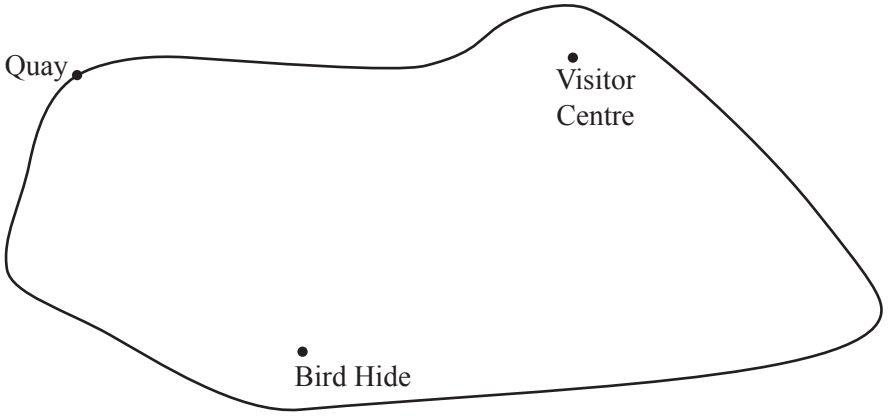
(ii) One day the island has 300 visitors.

Work out the expected number of visitors who will see an oystercatcher.

..... [1]

(f) Use a ruler and compasses only in this part of the question.
Leave in all your construction arcs.

This is a scale drawing of Holm Island.
The scale is 1 centimetre represents 0.5 kilometres.



Scale: 1 cm to 0.5 km

Part of the island is not open to visitors.

This region is

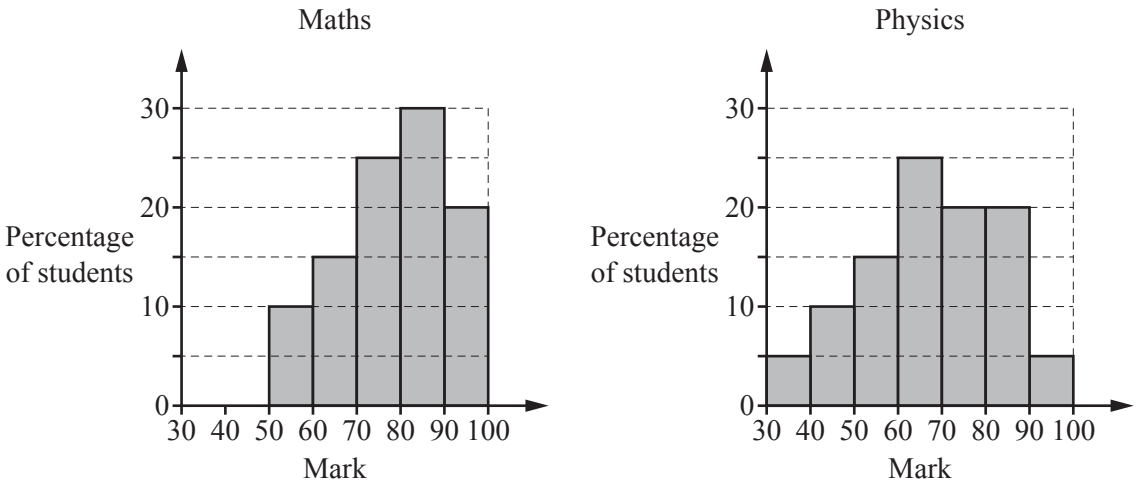
- more than 3 km from the Quay

and

- nearer to the Bird Hide than to the Visitor Centre.

On the diagram, label the region of the island that is **not** open to visitors with an R. [5]

8



The graphs show the distributions of the examination results, in maths and physics, of 20 students.

(a) Make **two** comparisons between the performance of the students in maths and physics.
Use figures to support your comparisons.

1 .....

.....

2 .....

..... [3]

(b) Manjit says:

The graphs show that maths is easier than physics.

Is Manjit's conclusion reasonable?
Explain your answer.

..... because .....

..... [1]

9 **(a)** Here are the first four terms of a sequence.

1 3 9 27

(i) Write down the next term of this sequence.

..... [1]

(ii) Write down the term-to-term rule for this sequence.

..... [1]

(b) Here are the first four terms of a different sequence.

1 −1 −3 −5

(i) Write down the next **two** terms of this sequence.

..... , ... [2]

(ii) Find an expression for the nth term of this sequence.

..... [2]

(iii) Using your answer to **part (b)(ii)**, show that −126 is not a term of this sequence.

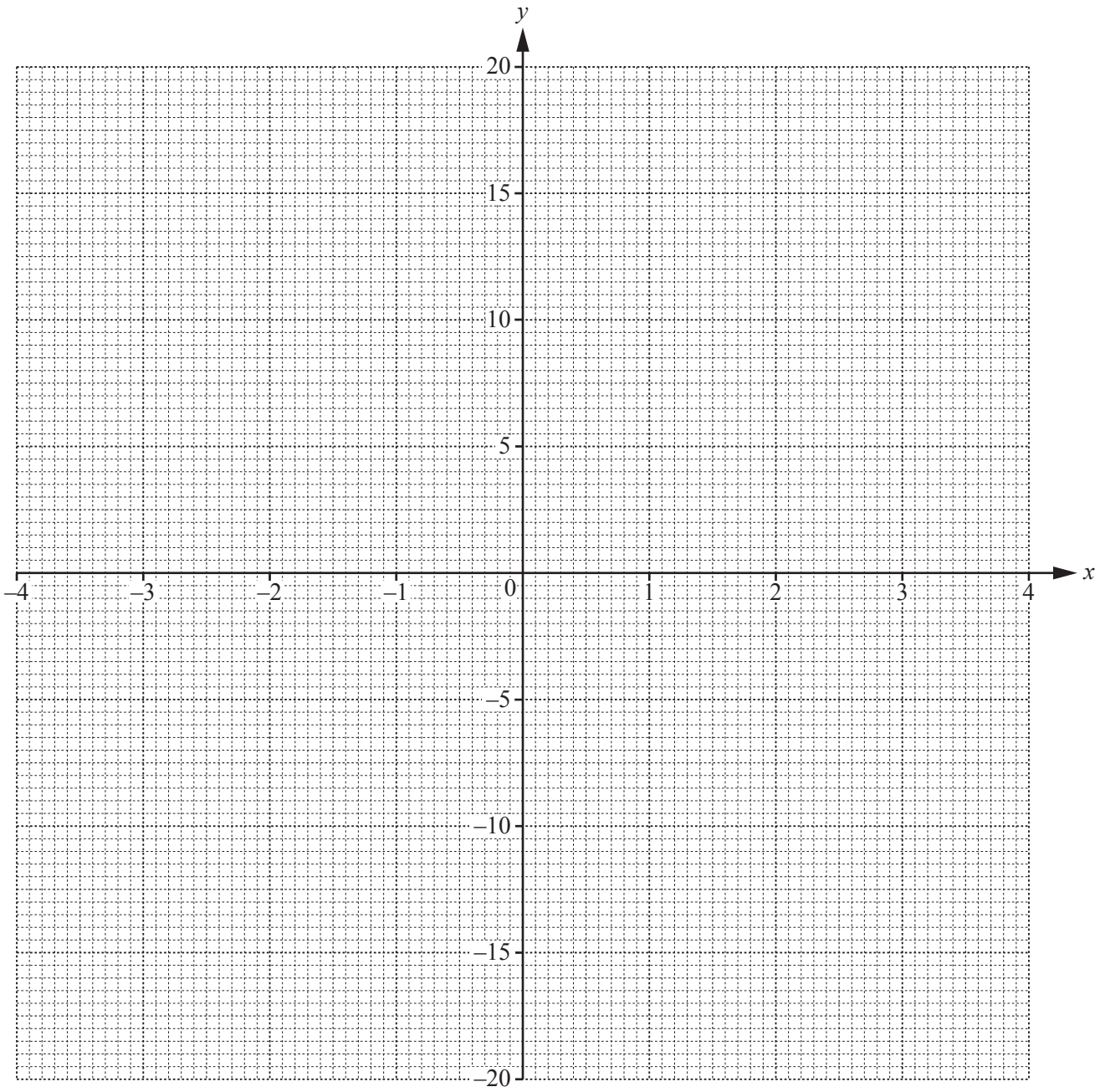
[2]

10 The table shows some values of $y = \frac{10}{x}$.

x	-4	-2	-1	-0.5		0.5	1	2	4
y				-20		20	10		2.5

(a) Complete the table. [2]

(b) On the grid, draw the graph of $y = \frac{10}{x}$ for $-4 \leqslant x \leqslant -0.5$ and $0.5 \leqslant x \leqslant 4$.



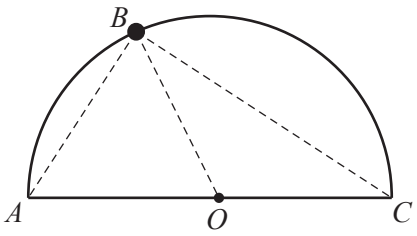
[4]

(c) On the same grid, draw the line $y = -7$. [1]

(d) **Use your graphs** to solve the equation $\frac{10}{x} = -7$.

$x =$ ..... [1]

11 The diagram shows a child's toy made from a bead, B, on a semi-circular wire, centre O.



NOT TO SCALE

The length of the diameter AC is 9 cm.
The length of the straight line AB is 4.5 cm.

(a) Calculate the length of the straight line BC.
Justify your method clearly.

$BC =$ ..... cm [4]

(b) (i) Write down the mathematical name of triangle AOB.

..... [1]

(ii) Find the length of the arc AB.

$AB =$ ..... cm [4]

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