Surname	Centre Number	Candidate Number
Other Names		0

GCSE LINKED PAIR PILOT

4363/01

METHODS IN MATHEMATICS

UNIT 1: Methods (Non-Calculator)
FOUNDATION TIER

A.M. TUESDAY, 11 June 2013

$1\frac{1}{2}$ hours

CALCULATORS ARE NOT TO BE USED FOR THIS PAPER

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions in the spaces provided.

Take π as 3·14.

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

You are reminded that assessment will take into account the quality of written communication (including mathematical communication) used in your answer to question **8**.

For Examiner's use only		
Question	**Maximum Mark**	**Mark Awarded**
1	**9**	
2	**8**	
3	**3**	
4	**7**	
5	**10**	
6	**5**	
7	**7**	
8	**6**	
9	**2**	
10	**3**	
11	**4**	
12	**4**	
13	**4**	
14	**4**	
15	**4**	
TOTAL MARK		

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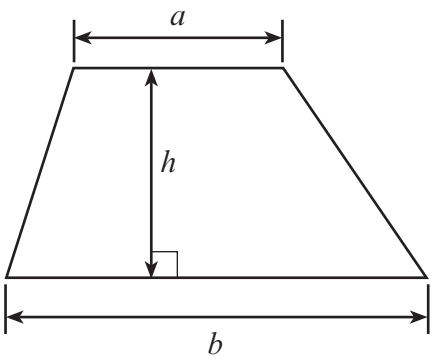
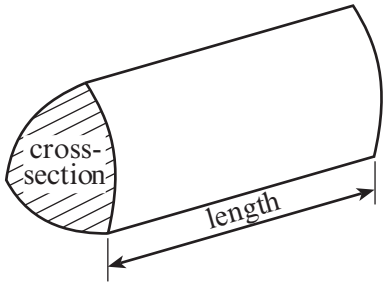
Formula List

Area of trapezium = $\frac{1}{2}(a + b)h$



Volume of prism = area of cross-section × length



Examiner only

1. *(a)* Write down, in figures, the number eight thousand and thirty nine.

.....

[1]

(b) Write down, in words, the number 48 702.

.....

[1]

(c) Using only the numbers in the following table,

7	**4**	**25**
16	**36**	**10**

write down

- a factor of 12,

.....

- a multiple of 8,

.....

- a prime number.

.....

[3]

(d) What is the value of the 3 in the number 13 265?

.....

[1]

(e) Round 51 684 to the nearest 100.

.....

[1]

(f) **Estimate** the answer to $51 \times 3{\cdot}9$.

.....

.....

[2]

Examiner only

2. Calculate each of the following.

(a) 396 + 128

.....

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.....

[1]

(b) 910 – 631

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.....

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[1]

(c) 252 ÷ 7

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[1]

(d) 516 × 82

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[3]

(e) 19 – 2 × 5

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[1]

Examiner only

(f) Sian worked out that she would need to order 10 coaches to take 312 people to the theatre.
Each coach holds 53 people.
Is Sian correct or incorrect? Explain your answer.

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.....

[1]

Turn over.

Examiner only

3. In a magic square, each row, column and diagonal have the same total.
The following magic square uses each of the numbers 1, 2, 3, 4, 5, 6, 7, 8 and 9 once.

6	1	
	5	
		4

Complete the magic square above by filling in the missing numbers.

Workings:

.....

.....

.....

.....

[3]

Examiner only

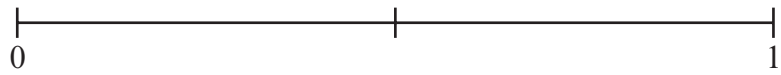
4. *(a)* On the probability scale shown below, mark the points **A**, **B**, **C** and **D** where:

A is the probability that when a fair coin is thrown you will get a tail.

B is the probability that there will be 12 months in the next year.

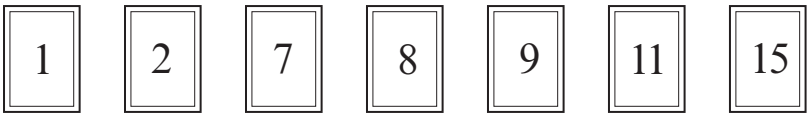
C is the probability that next year will be 2005.

D is the probability that a disc selected, at random, from a bag containing 1 red disc, 1 white disc and 1 green disc will be a white disc.



[4]

(b) Joshua has these seven numbered cards which he places face down.



His friend chooses one card at random.

What is the probability that the card will have

- an odd number, ...
- a number greater than 8? .....

[2]

(c) Raffle tickets are numbered 1 to 200.
Rachel buys five tickets and gets the numbers 10, 11, 12, 13 and 14.
Tomos buys five tickets and gets the numbers 25, 78, 95, 104 and 162.
One ticket is chosen at random.
Is Rachel or Tomos more likely to have the winning ticket? Explain your answer.

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[1]

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Turn over.

Examiner only

5. *(a)* Give the next term in the sequence **and** write in words the rule for finding the next term in the sequence.

1, 3, 9, 27, ...

Rule: .....

.....

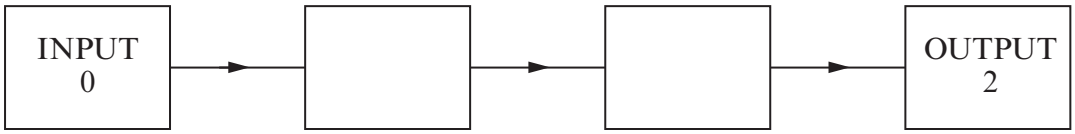
[2]

(b) Simplify $7x + 4 - 3x - 7$.

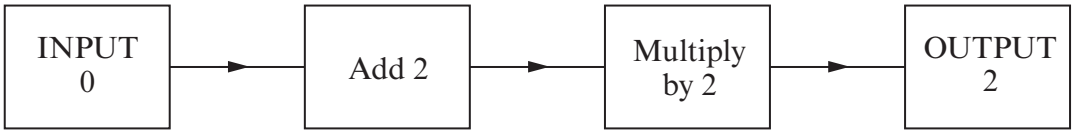
.....

[2]

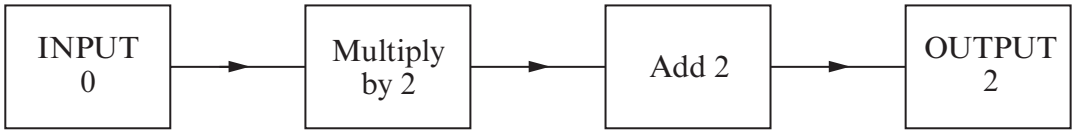
(c) Jenny and Steve were asked to find a rule for the following function machine.



Jenny wrote the rule as



Steve wrote the rule as



Showing all the working for both rules, explain who is correct.

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[2]

Examiner only

(d) Given that $P = 3q + n$, find the value of n when $P = 27$ and $q = 4$.

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[2]

(e) Simplify $\frac{10x}{2}$.

.....

[1]

(f) Expand $3(4x - 7)$.

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[1]

Examiner only

6. *(a)* Showing all your working, write 0·37, $\frac{2}{5}$ and $\frac{35}{100}$ in ascending order.

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[3]

(b) Find the value of $2^3 \times 5^2$.

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[2]

Examiner only

7. Find the size of the angles a, b and c in the diagram below.

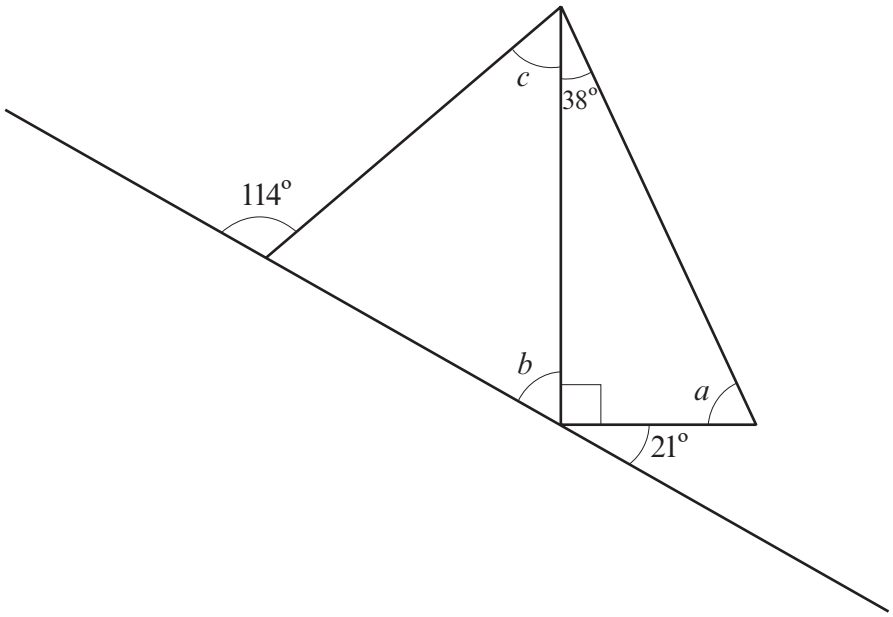

Diagram not drawn to scale

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a = ... ° b = ... ° c = ... °

[7]

Turn over.

Examiner only

8. *You will be assessed on the quality of your written communication in this question.*

A holiday company advertises two package holidays to the same destination and hotel.

Best Beach Holidays

Package 1	Package 2
5 nights £655 per person	7 nights £845 per person
Includes: • Accommodation • Return Airfare	Includes: • Accommodation • Return Airfare

The cost of the accommodation, per night, is the same in both packages.
The cost of the return airfare is the same in both packages.

Find the cost of the return airfare. Explain clearly how you have reached your answer.

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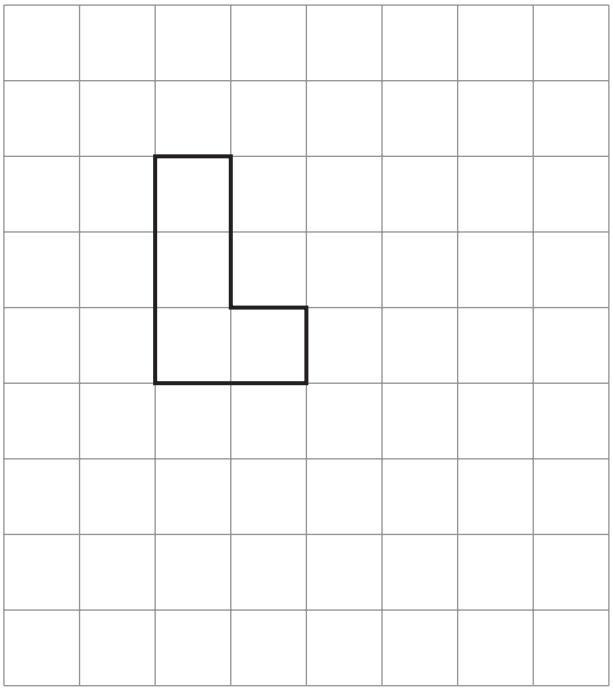
[6]

Examiner only

9. Show that the given shape tessellates by drawing more of the shapes on the grid below.



[2]

Examiner only

10.

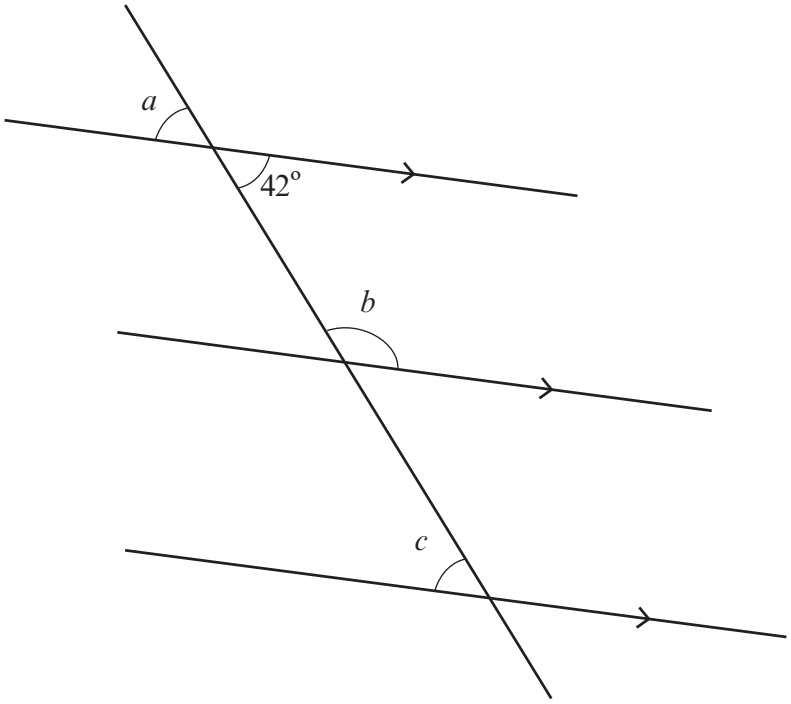


Diagram not drawn to scale

Find the size of each of the angles a, b and c.

.....

.....

.....

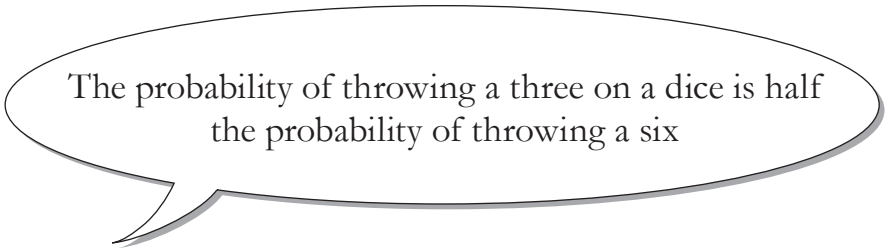
a = ... ° b = ... ° c = ... °

[3]

Examiner only

11. Nancy makes two statements about the probability of events based on throwing fair dice.

For each of her statements below, decide if Nancy is correct or not.
You must explain your decisions **using probabilities**.



Is Nancy correct? .....

Explanation:

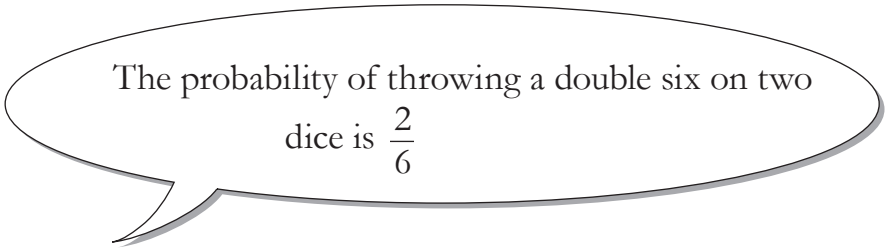
.....

.....

.....

.....

[2]



Is Nancy correct? .....

Explanation:

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.....

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.....

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[2]

Examiner only

12. Given the following information, complete the Venn diagram shown below.

- $\varepsilon = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$
- **A** is the set of factors of 24
- **B** is the set of multiples of 3
- **C** is the set of common factors of 30 and 70

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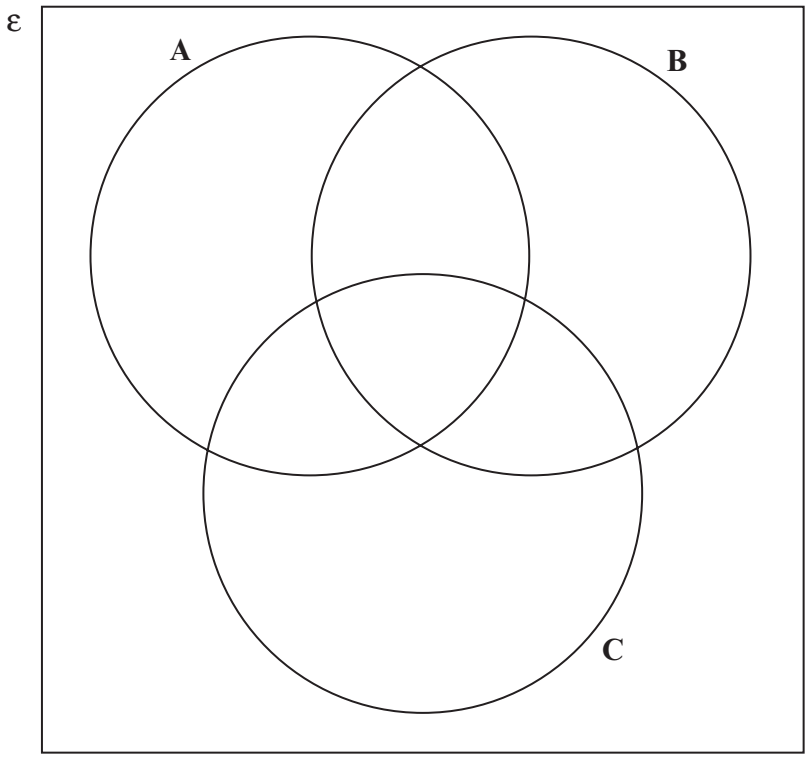

[4]

Examiner only

13. You are given the coordinates of three of the four vertices of a parallelogram.

They are (3, 2) (5, –2) (7, 2).

Find the coordinates of two possible positions for the fourth vertex.

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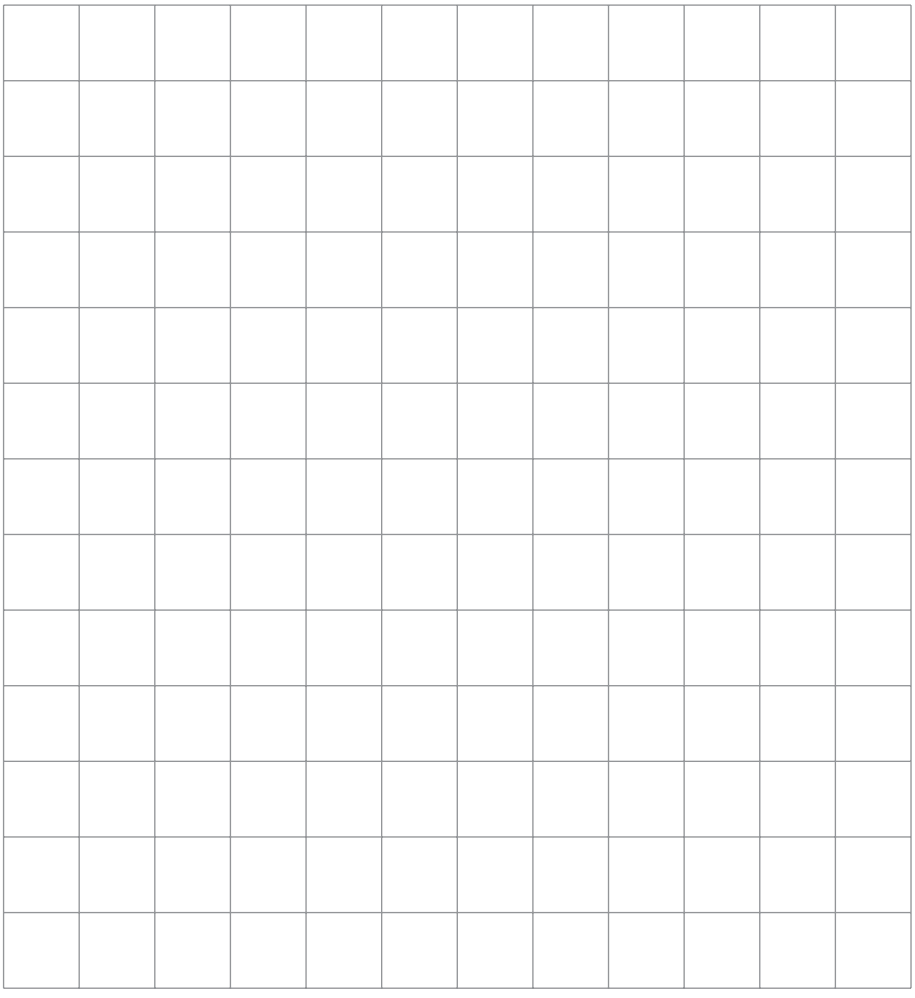

Coordinates of one of the possible answers (..... , ...)

Coordinates of another possible answer (..... , ...)

[4]

Examiner only

14. Use the grid below to draw graphs to represent each of the following equations.

(i) $y = \frac{1}{2}x + 6$

(ii) $x + y = 8$

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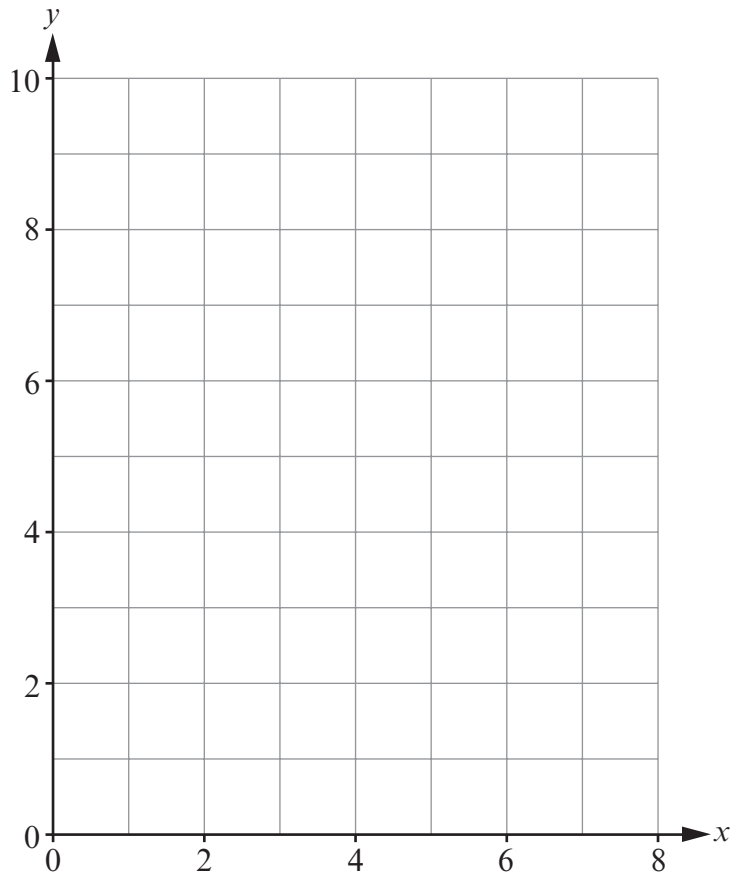
Label your lines (i) and (ii) as appropriate.



[4]

Examiner only

15. Find the *n*th term of the following sequences.

(a) 3, 13, 23, 33, 43, ...

.....

.....

[2]

(b) 50, 40, 30, 20, 10, ...

.....

.....

.....

[2]

END OF PAPER