WJEC CBAC

GCSE LINKED PAIR PILOT

4363/01

METHODS OF MATHEMATICS
UNIT 1: Methods (Non-Calculator)
FOUNDATION TIER

A.M. FRIDAY, 10 January 2014

1 hour 30 minutes

CALCULATORS ARE
NOT TO BE USED
FOR THIS PAPER

ADDITIONAL MATERIALS

A ruler, a protractor and a pair of compasses may be required.

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 **4**.

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	8	
2.	4	
3.	3	
4.	6	
5.	5	
6.	6	
7.	3	
8.	8	
9.	4	
10.	3	
11.	5	
12.	4	
13.	4	
14.	6	
15.	3	
16.	3	
17.	5	
Total	80	

Formula List

Area of trapezium $= \frac{1}{2}(a + b)h$
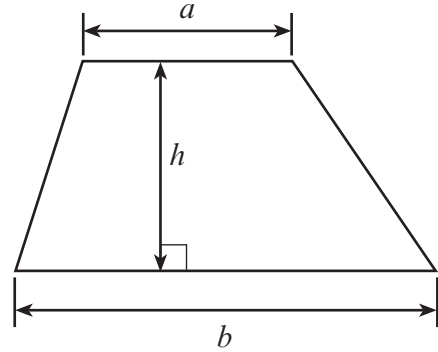
Volume of prism = area of cross-section × length

1. *(a)* (i) Write down, in figures, the number five thousand and twenty five. [1]

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(ii) Write down, in words, the number 10 000 000. [1]

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(b) (i) Write down the sum of 35 and 86. [1]

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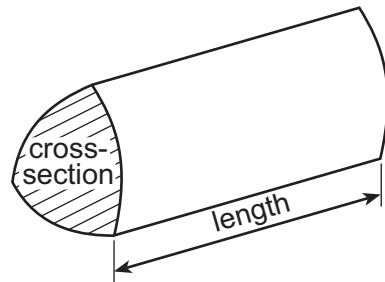
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(ii) Write down the difference between 54 and 45. [1]

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(iii) Write down the answer when 6 is multiplied by 8. [1]

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(iv) Write down the answer when 32 is divided by 4. [1]

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....

(c) (i) Write 1446 to the nearest 10. [1]

....

(ii) Write 1446 to the nearest 100. [1]

....

2. Fill in the blanks to match each event to its chance of happening.
The first one is done for you. [4]

Obtaining the number **2** when a fair dice numbered 1 to 6 is rolled once.	**Unlikely**
Obtaining the number .... when a fair dice numbered 1 to 6 is rolled once.	**Impossible**
Obtaining .... when a fair dice numbered 1 to 6 is rolled once.	**Even Chance**
Obtaining .... when a fair coin is thrown once.	**Even Chance**
Choosing a .... coloured ball out of a bag containing only yellow balls.	**Certain**

3. Using the two instructions given, fill in the blanks in the grid below. [3]

Each column must add up to 10

1	2	3	
3	4	−5	
	4		
1	0	9	0

Each row must add up to 10

....

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Turn over.

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

Dylan's weekly wage is £400.

He saves $\frac{1}{10}$ of his wage each week in order to buy a bike.

After how many weeks will he be able to afford to buy a bike which costs £250?

You must show all your working. [6]

5. *(a)* Use the following clues to find the missing number. [3]

- The number is between 1 and 20
- It is not an even number
- It is multiple of 3
- It is a square number

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Missing number is ....

(b) (i) Using all the numbers 0, 1, 3 and 5, fill in the blanks. [1]

		–			=	2	5

(ii) Using all the numbers 0, 1, 3 and 5, fill in the blanks. [1]

		×			=	6	5	0

For working:

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6.

25	6	8	20
7	10	1000	24

Choose a number from the table to match each statement.
You must give a reason for each answer. [6]

A factor of 12: ....

Reason: ....

....

A prime number: ....

Reason: ....

....

The square root of 100: ....

Reason: ....

....

7.
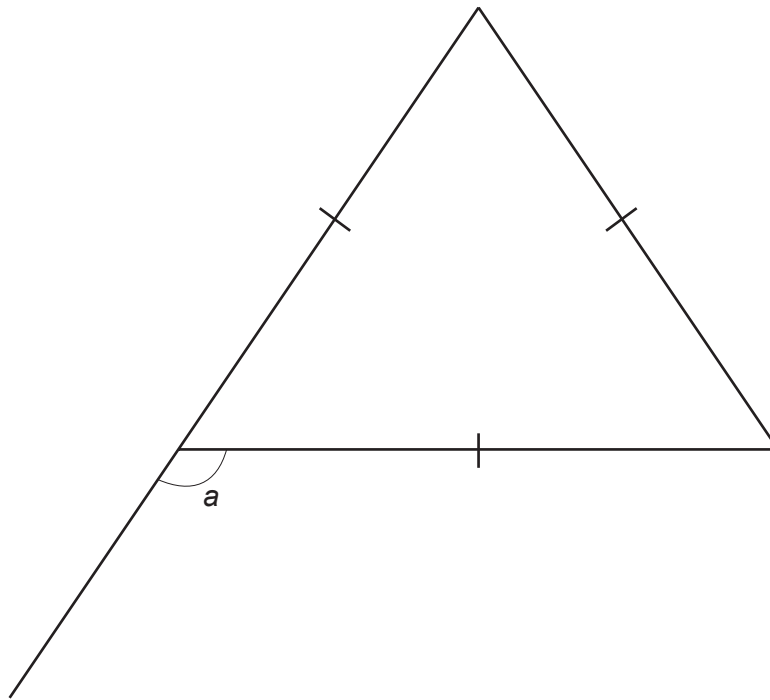
Diagram not drawn to scale

Find the size of angle *a*. [3]

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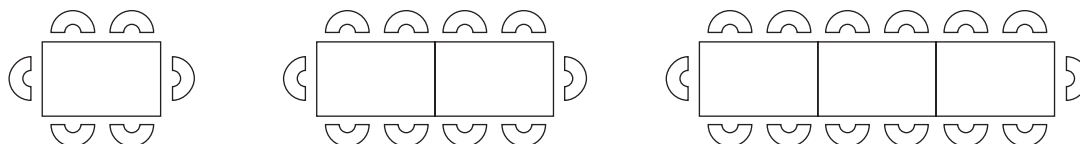
8. Seating arrangements around 1, 2 and 3 tables are shown below.
Tables must be placed only side by side in one row.

(a) In the space below, draw a seating arrangement for a row of 4 tables. [1]

(b) Complete the following table for the seating arrangements. [2]

Number of tables	1	2	3	4	5
Number of seats	6	10			

(c) Complete the following formula which connects the number of seats and the number of tables. [2]

Number of seats = ...

(d) How many seats are there around a row of 7 tables? [1]

....

....

(e) How many tables are needed for 82 seats? [2]

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9. *(a)* Simplify $7x + 5y - 3x - 2y$. [2]

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(b) Given that $e = 4f - 5$, find the value of e when $f = 3$. [2]

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10. **Showing all your working**, write $\frac{1}{2}$, $\frac{3}{8}$ and $\frac{3}{4}$ in ascending order. [3]

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11. *(a)* Find the size of angles x and y. [2]
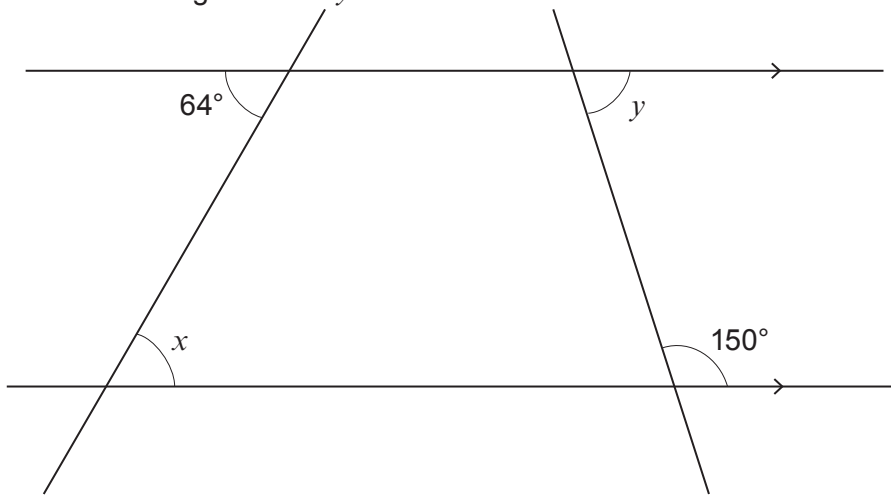
Diagram not drawn to scale

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x = ... ° y = ... °

(b) Find the size of angles a and b. [3]
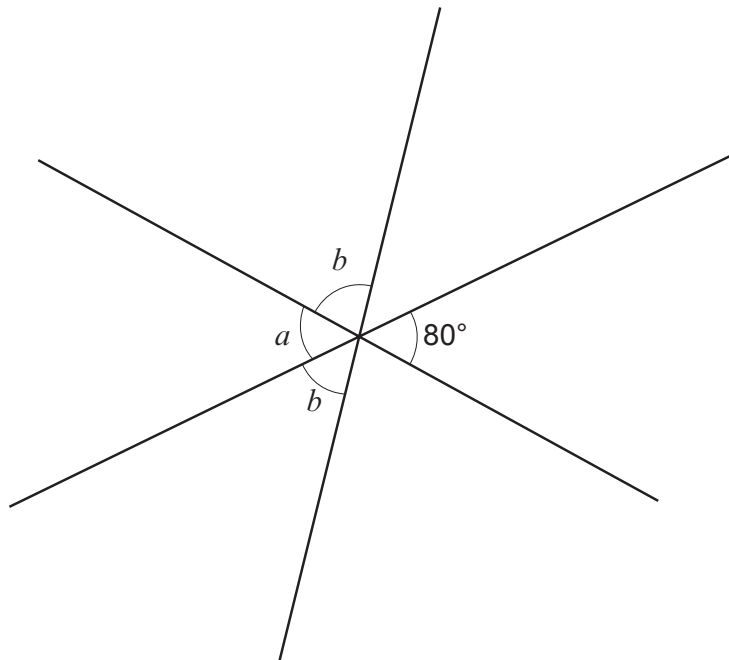
Diagram not drawn to scale

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a = ... ° b = ... °

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12. A fair dice and a fair coin are thrown once.

(a)   Fill in the table below to show all the possible outcomes.   [2]

	1	2	3	4	5	6
Head (H)	H1	H2				
Tail (T)	T1					

(b)   Write down the probability of obtaining a head and a 4.   [1]

....

(c)   Write down the probability of obtaining a tail and a number less than 3.   [1]

....

13. (a)   Expand and simplify $5(x - 4) + 3(2x - 1)$.   [2]

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(b)   Factorise $8x - 4xy$.   [2]

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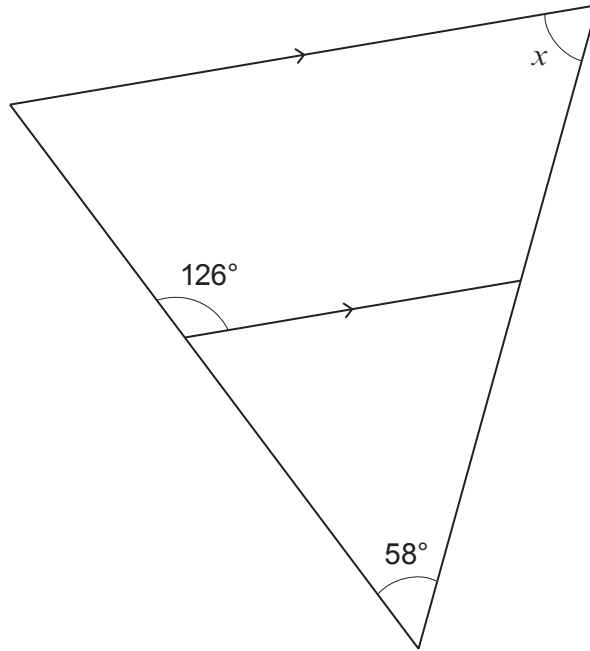
14. *(a)*

Diagram not drawn to scale

Calculate the size of angle x.
You must show all your working and explain each step of your answer.   [3]

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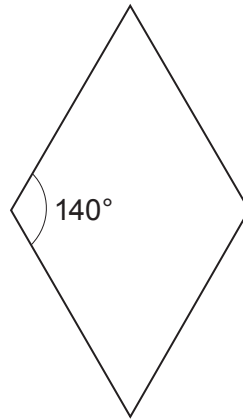
(b) The tile shown is a rhombus.

140°

Diagram not drawn to scale

Explain why tiles identical to the one shown tessellate.
You must give reasons for your answer. [3]

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15. Complete the following table.
The fraction must be expressed in its simplest form.

[3]

Fraction	Decimal	Is this a recurring or terminating decimal?
$\frac{2}{3}$	$0\dot{\cdot}6$	recurring
....	0·15	....
$\frac{7}{11}$	....	....

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16. Points are plotted on a grid.
The rule $(a, 3a)$ is used to find all the points.

(a) Does the point with coordinates $(-5, -2)$ fit the rule?
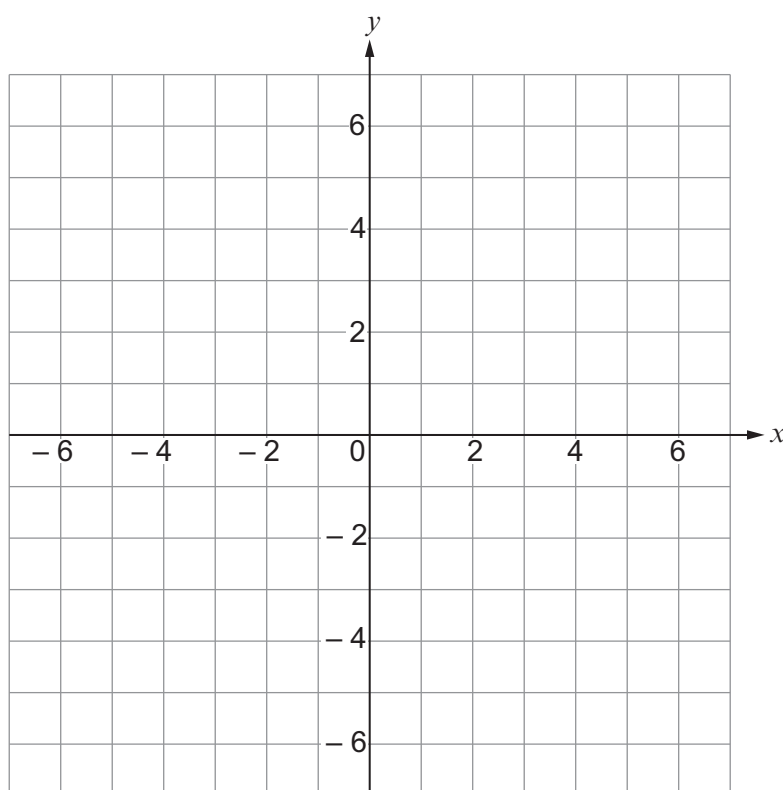You must give a reason for your answer.   [1]

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(b) Plot five possible points with coordinates that fit the rule $(a, 3a)$ on the grid.   [2]

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Turn over.

17. The universal set, ε = {22, 23, 24, 25, 26, 27, 28, 29, 30}.
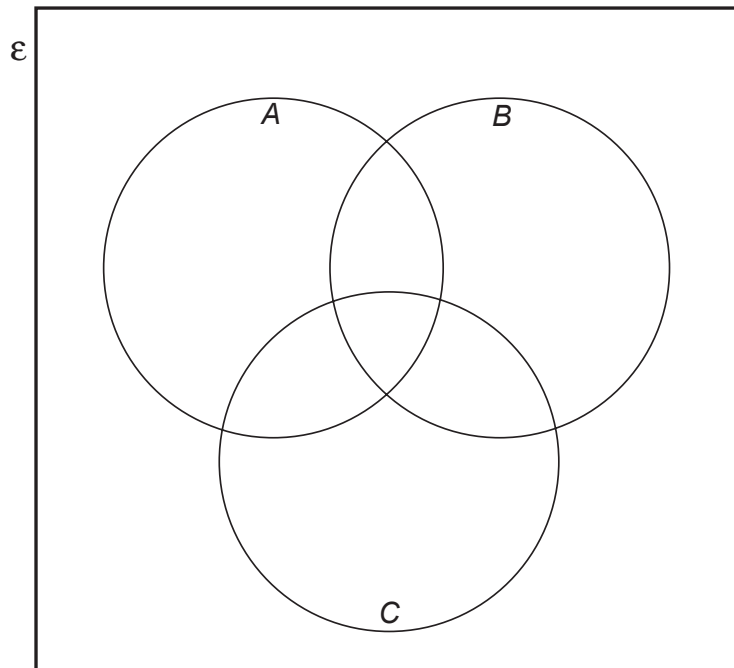
Within this universal set ε,

- set *A* is the multiples of 2
- set *B* is the multiples of 4
- set *C* is the multiples of 5
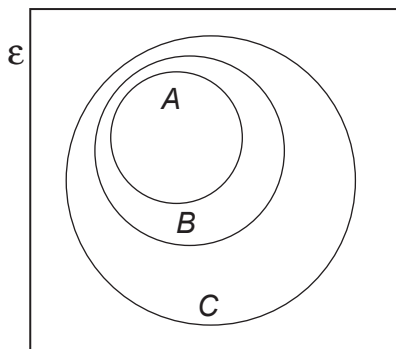
(a) Complete the Venn diagram. [3]

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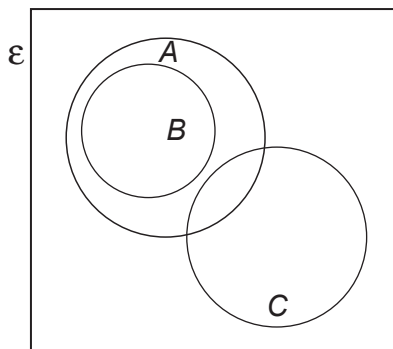
ε

A   *B*

C

(b) Which one of the following Venn diagrams could also be used to represent the sets ε, *A*, *B* and *C*?
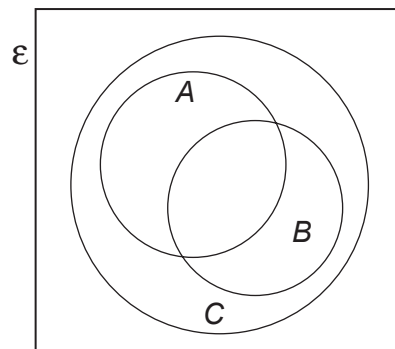You must give a reason for your choice. [2]

Venn Diagram 1

Venn Diagram 2

Venn Diagram 3

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END OF PAPER