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. FRIDAY, 11 January 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.

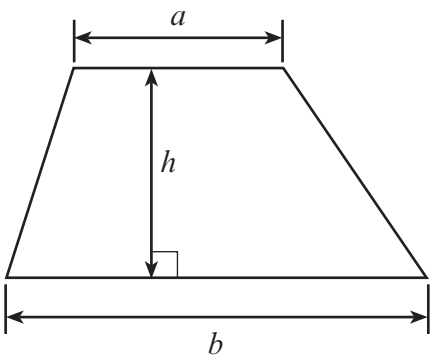
You are reminded that assessment will take into account the quality of written communication (including mathematical communication) used in your answer to question **6**.

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

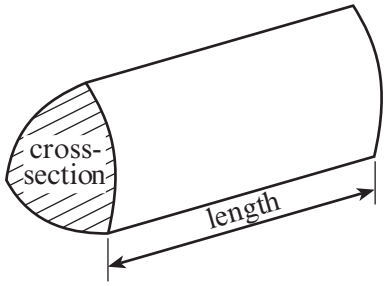
4363 010001

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 seven thousand and twenty eight.

.....

[1]

(b) Write down, in words, the number 9 200 000.

.....

.....

[1]

(c) Write down the sum of 47 and 58.

.....

.....

.....

[1]

(d) Write down the number that is half way between 75 and 83.

.....

[1]

(e) Write down the answer when 8 is multiplied by 7.

.....

[1]

(f) Write down **all** the factors of 55.

.....

[2]

(g) Write 2836 correct to the nearest 10.

.....

[1]

Examiner only

2. *(a)* Choose one term from the table below to describe the probability of each of the following events happening.

impossible		unlikely
even chance	likely	certain

(i) The first baby born tomorrow, at a hospital, will be a boy.

.....

[1]

(ii) You will obtain a ten when a fair six-sided dice numbered 1 to 6 is rolled.

.....

[1]

(iii) A person chosen at random was born on a weekend.

.....

[1]

(b) A factory employs 100 people.
Some of these people bring their lunch to work and some do not.
This information is displayed in the following table.

	Male	Female	**Total**
Bring lunch	13	36	49
Do not bring lunch	42	9	51
Total	55	45	100

Work out the probability that a person chosen at random

(i) is female,

.....

[1]

(ii) does not bring their lunch to work,

.....

[1]

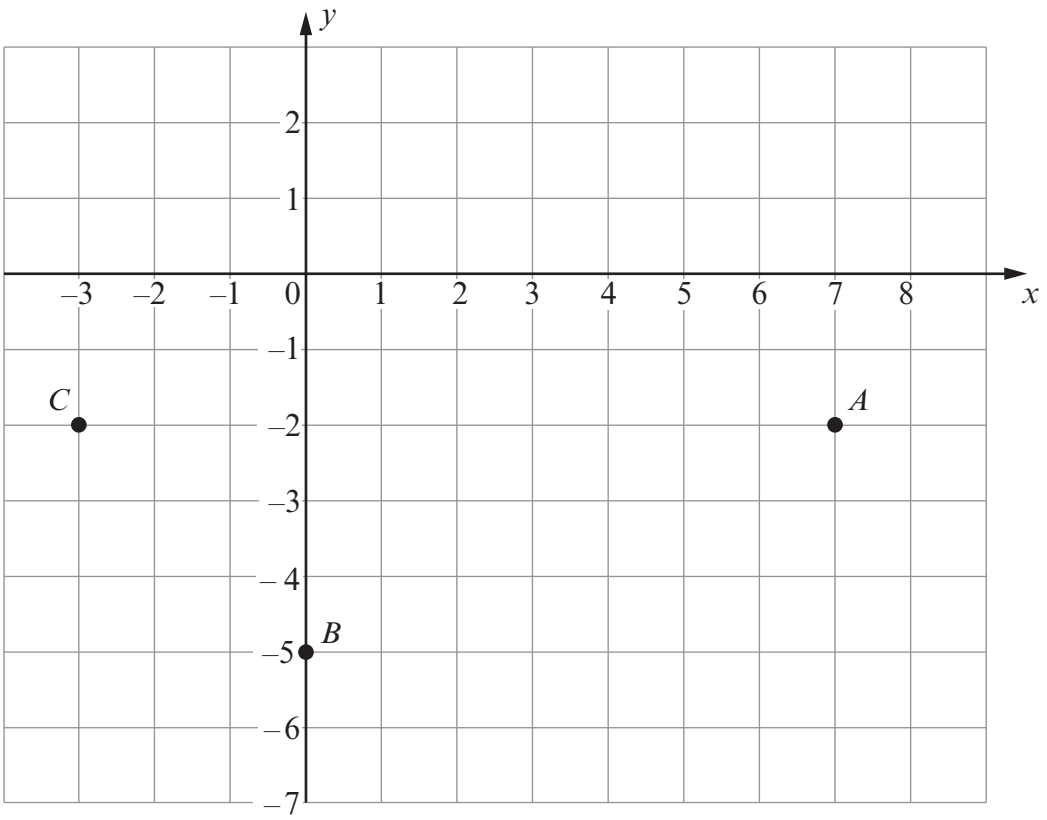
(iii) is a male who brings his lunch to work.

.....

[1]

Examiner only

3. *(a)* Write down the coordinates of the points *B* and *C* shown in the grid below.



The coordinates of *B* are (..... , ...)

The coordinates of *C* are (..... , ...)

[2]

(b) *A*, *B*, *C* and *D* are the vertices of a kite.
Plot the 4th vertex of the kite on the grid above and label it as the point *D*.

[1]

(c) Draw a line through *C* so that it is perpendicular to *AC*.

[1]

Examiner only

4. Calculate each of the following.

(a) 7396 – 4718

.....

.....

.....

.....

[1]

(b) 294 ÷ 6

.....

.....

.....

[1]

(c) 706 × 38

.....

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.....

.....

.....

.....

[3]

(d) 12 + 18 ÷ 6

.....

.....

[1]

(e) 3 × (17 – 5)

.....

.....

[1]

Examiner only

5. *(a)* Write down the next term in the following sequence.

21, 18, 15, 12, ...

[1]

(b) Write down the next term in the following sequence **and** describe the rule for continuing the sequence.

2, 6, 18, 54, ...

Rule: .....

.....

[2]

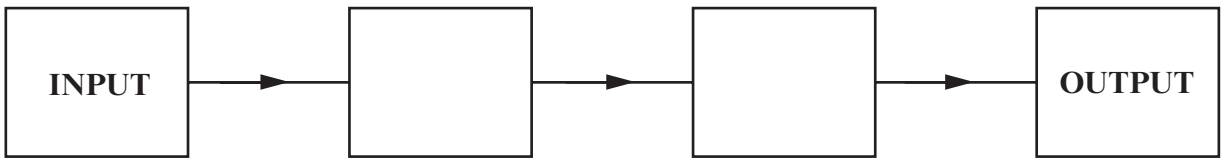
(c) The following numbers have been produced using a number machine.

$2 \longrightarrow 8 \longrightarrow 7$

$5 \longrightarrow 20 \longrightarrow 19$

$10 \longrightarrow 40 \longrightarrow 39$

Complete the boxes for the number machine.



[1]

(d) Simplify $2d + 5d - d$.

.....

[1]

(e) Simplify $3m - 4n + 5m - 2n$.

.....

.....

[2]

(f) Factorise $7y + 14$.

.....

[1]

Examiner only

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

Nia and Charlotte each play a game where the points are scored as follows:

Each win +6 points
Each loss –4 points

Nia wins 5 games and loses 3 games.
Charlotte wins 3 games and loses 5 games.
What is the difference in their final scores?

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.....

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.....

.....

[7]

7. *(a)* Arrange the following in ascending order.

0·34 0·3 0·04 0·403

.....

.....

[1]

(b) Evaluate $\frac{3}{8} + \frac{1}{2}$.

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.....

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.....

[2]

Examiner only

8. *(a)* Find the size of angle x.

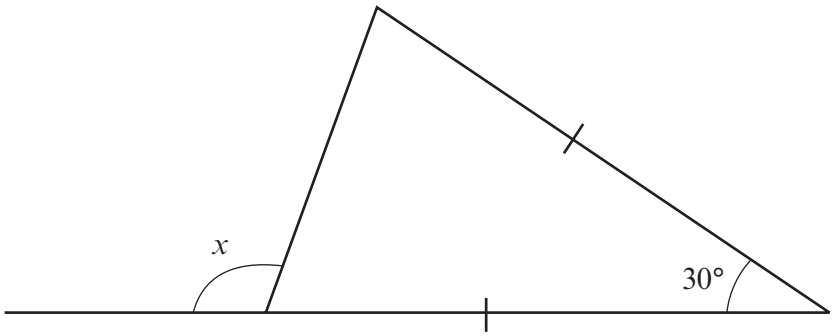

Diagram not drawn to scale

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[3]

(b) The diagram below shows a regular pentagon.
Find the size of angle t.

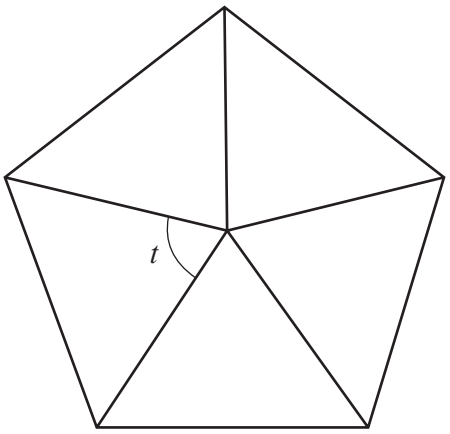

Diagram not drawn to scale

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.....

.....

[2]

Examiner only

9.

A plumber has a call out fee of £35.
He then charges £20 an hour.

(a) Find the **total cost** if the plumber works for 4 hours.

.....

.....

.....

[2]

(b) Write down a formula to work out the plumber's **total cost** for any number of hours.

.....

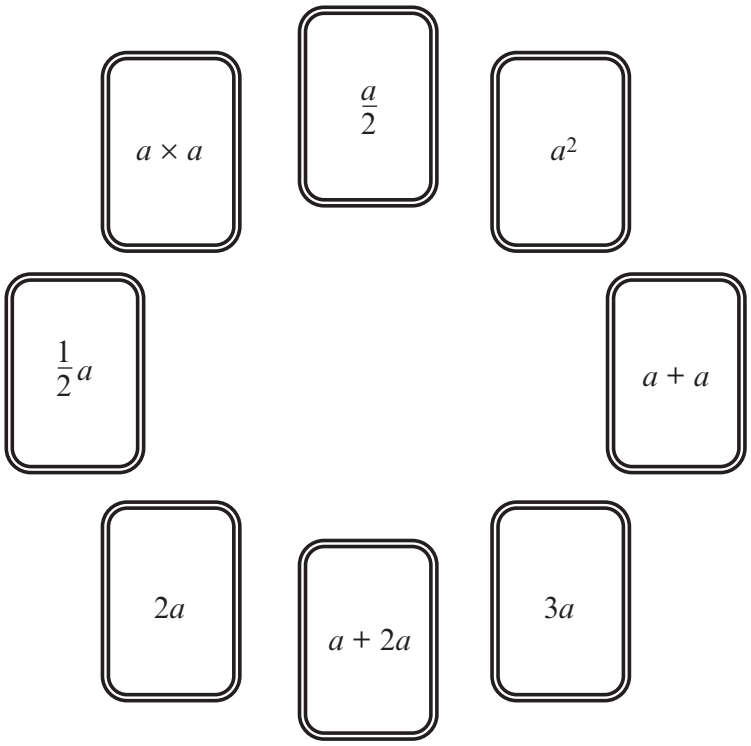
.....

.....

[2]

Examiner only

10. Sammy and Jack play snap with these algebra cards.

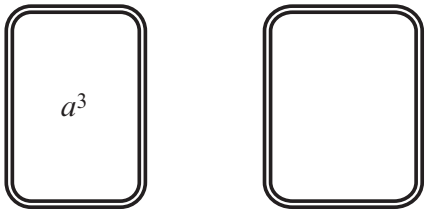


(a) Draw lines to connect the pairs of cards that are equivalent.

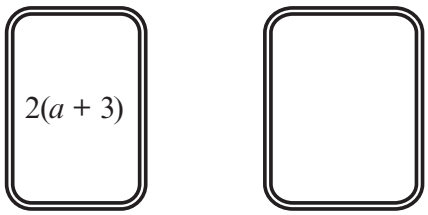
[4]

(b) For each of the following cards, write another equivalent card.

(i)



(ii)



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.....

[2]

Turn over.

Examiner only

11. A survey about the cereals that people bought was conducted in a local supermarket on a Saturday afternoon.
95 people bought Brecky Bix, 100 people bought Crispy Flakes and 59 people bought Pop Chocs.

Of these people

- 50 bought Brecky Bix and Crispy Flakes
- 37 bought Brecky Bix and Pop Chocs
- 25 bought Crispy Flakes and Pop Chocs
- 5 bought Brecky Bix, Crispy Flakes and Pop Chocs

Everyone surveyed bought at least one of these cereals.

How many people took part in this survey?

The number of people that took part in the survey = ...

[6]

Examiner only

12. Find the size of the angles q, r, s and t.

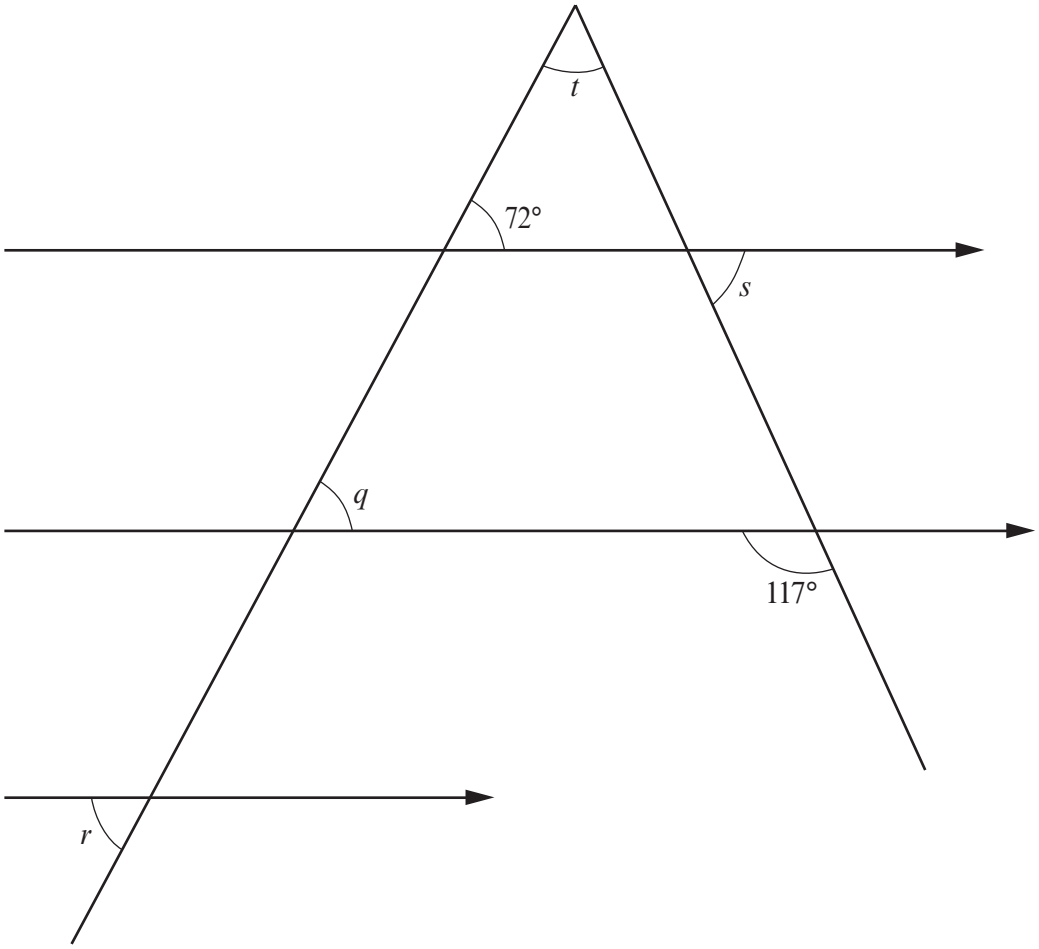

Diagram not drawn to scale

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.....

q = ... ° r = ... ° s = ... ° t = ... °

[4]

Examiner only

13. *(a)* Write 3600 as a product of prime factors using index notation.

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[3]

(b) The sum of 4 consecutive prime numbers is 60.
Calculate the sum of these 4 prime numbers together with the next two prime numbers.

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.....

.....

[4]

Examiner only

14. A ten-sided spinner has sides labelled with numbers from 1 to 10.

The spinner is spun 20 times.
It shows the number 3 on six of these occasions.

The spinner is spun another 20 times.
It shows the number 3 on four of these occasions.

(a) Do you think this is a fair spinner?
You must show your working and give a reason for your answer.

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.....

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[2]

(b) Find the best estimate for the probability of the spinner showing the number 3 on a single spin.

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[2]

(c) How could your estimate for the probability of the spinner showing the number 3 be improved?

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[1]

END OF PAPER