Surname	Centre Number	Candidate Number
Other Names		0

GCSE LINKED PAIR PILOT

4363/01

W15-4363-01

METHODS IN MATHEMATICS

UNIT 1: Methods (Non-Calculator)
FOUNDATION TIER

A.M. FRIDAY, 9 January 2015

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 **6**.

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

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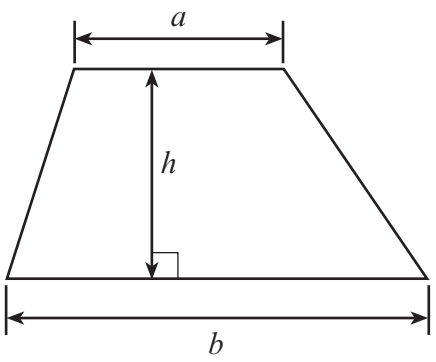
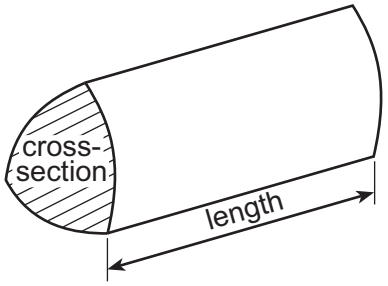
Formula List

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



Volume of prism = area of cross-section × length



Examiner only

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

.....

(ii) Write down, in words, the number 8 500 000. [1]

.....

.....

(b) (i) Write down the sum of 75 and 37. [1]

.....

.....

.....

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

.....

(iii) Write down the answer when 45 is divided by 5. [1]

.....

.....

(c) (i) Write 257 correct to the nearest 10. [1]

.....

(ii) Write 7548 correct to the nearest 100. [1]

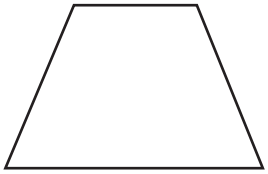
.....

(d) Write down all the factors of 14. [2]

.....

Examiner only

2. Write down the special name given to each of the following shapes. [4]

SHAPE	NAME
	
	
	
	

Examiner only

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

impossible **unlikely** **even chance** **likely** **certain**

(i) Obtaining a head when throwing a fair coin once. [1]

.....

(ii) Choosing a red counter from a bag containing only blue and yellow counters. [1]

.....

(iii) Obtaining a two when a fair dice numbered 1 to 6 is rolled once. [1]

.....

(b) Pupils have a choice of a sandwich and a drink for lunch on a school trip.

- They can choose a ham, cheese or salad sandwich.
- To drink, they can choose water, milk or orange juice.

Write down all the possible combinations of a sandwich and a drink that a pupil may have for lunch on the school trip. [3]

.....

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Examiner only

4. Calculate each of the following.

(a) 892 – 506 [1]

(b) 267 × 15 [3]

(c) 5 × 0·7 [1]

(d) 0·3 × 0·2 [1]

(e) 15 – 4 × 3 [1]

(f) 20 ÷ (4 + 1) [1]

Examiner only

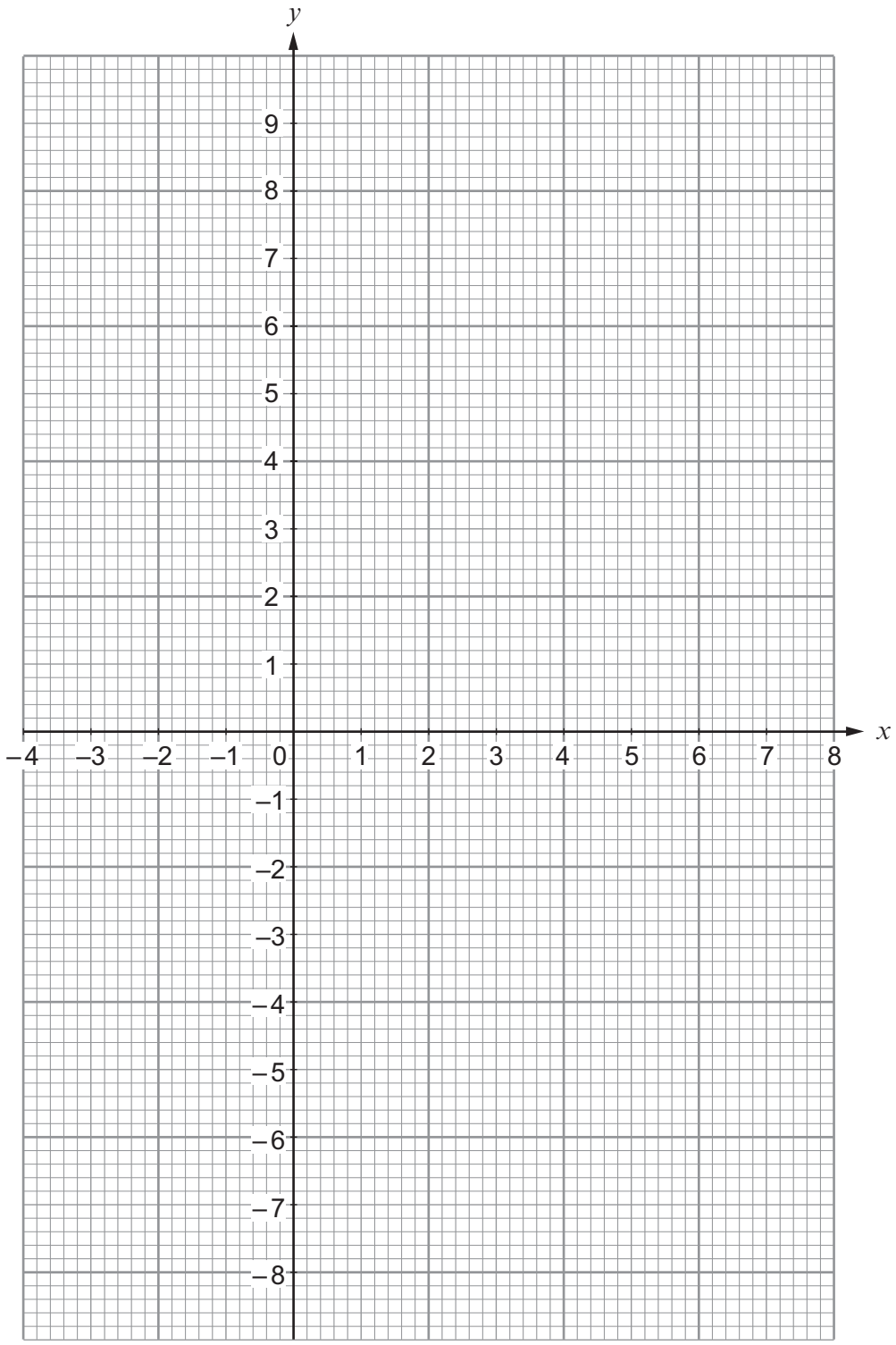
5. In a game, the rule for plotting points is $(x, 2x)$.

On the graph below, plot the points when $x = 1$, $x = 4$ and when $x = -2$. [3]

.....

.....

.....



Examiner only

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

Two teams, Team A and Team B, took part in a school quiz.
They were asked 10 questions in a General Knowledge round and 5 questions in a Picture round.

In the General Knowledge round:
- correct answers scored 5 points
- incorrect answers scored –3 points.

In the Picture round:
- correct answers scored 10 points
- incorrect answers scored –5 points.

Here are the results:

Team A		**Team B**	
General Knowledge round	***Picture round***	***General Knowledge round***	***Picture round***
5 correct 5 incorrect	3 correct 2 incorrect	3 correct 7 incorrect	4 correct 1 incorrect

Which team won the competition and by how many points?
You must show all your working. [7]

Examiner only

7. *(a)* Arrange the following in ascending order. [1]

0·75 0·5 0·07 0·507

.....

(b) Express each of the following as eighths. [3]

(i) $\frac{1}{4} = \frac{\quad}{8}$

(ii) $\frac{1}{2} = \frac{\quad}{8}$

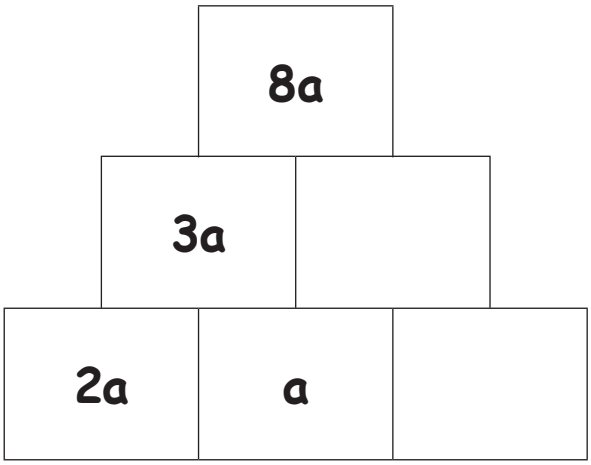
Now, write $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{8}$ in order, starting with the **largest**.

.....

Examiner only

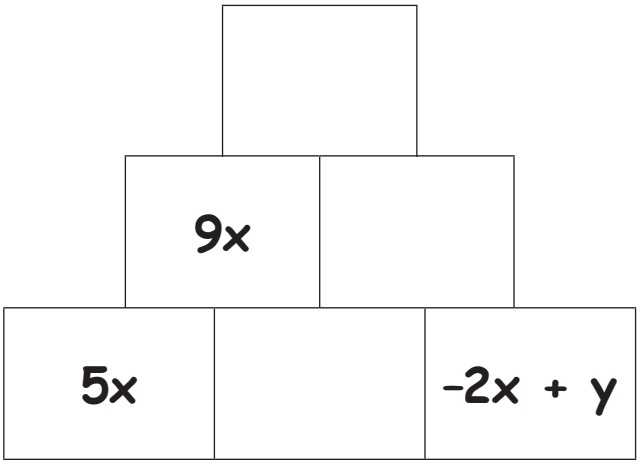
8. To fill in a block, you must add the values on the two blocks directly below it.
Some values are already displayed.
Fill in the empty blocks.
You must simplify your answer.

(a)



[2]

(b)



[3]

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9.

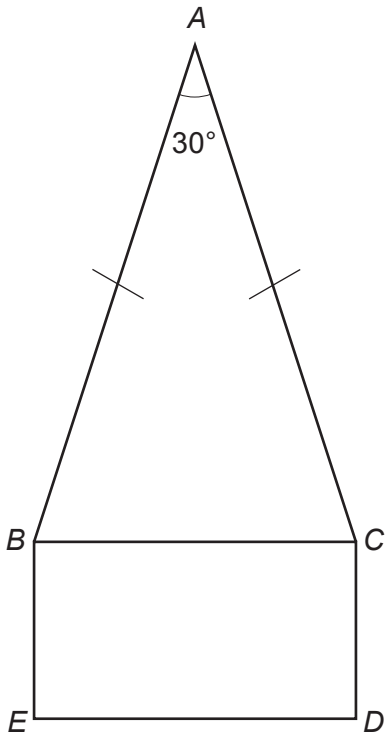

Diagram not drawn to scale

The diagram shows:

- an isosceles triangle *ABC*
- a rectangle *BCDE*.

Find the size of $A\hat{B}E$. [4]

Examiner only

10. A bag contains only red, yellow, green and blue coloured balls.

There are 30 balls in the bag.
There are 4 red balls.
There are twice as many yellow balls as there are red balls.
There are three times as many green balls as there are red balls.
The remaining balls are blue.

(a) Complete the table below to show the probability of choosing each colour of ball when one ball is chosen at random from the bag. [4]

.....

.....

.....

.....

.....

Colour	Red	Yellow	Green	Blue
Number	4			
Probability				

(b) What is the probability of obtaining a blue or red ball when one ball is chosen at random from the bag? [2]

.....

.....

.....

Examiner only

11. *(a)* Simplify $11x + 6y + 14x - 9y$. [2]

.....

.....

(b) Find the value of $5a + 3b$ when $a = -3$ and $b = 6$. [2]

.....

.....

(c) Expand $p(2 + 5p)$. [2]

.....

(d) Factorise $3xy - 9y$. [2]

.....

(e) **equation** **inequality** **formula** **expression**

Use one of the special names above to describe the following: [2]

(i) $5x + 3y$ .....

(ii) $8p + 9 = 25$ .....

(f) Which has the greater value, $3x^2$ or $(3x)^2$, when $x = 2$?
You must show your working. [1]

.....

.....

.....

Examiner only

12. An experiment was carried out to investigate the probability of obtaining a head when a biased coin is thrown.
The number of times the coin landed and showed a head in 4 sets of ten throws is shown in the table below.

Number of throws	Number of times a head is recorded
1st ten throws	2
2nd ten throws	4
3rd ten throws	3
4th ten throws	1

(a) Complete the table below to show the relative frequency of obtaining a head after throwing the coin a total of 10 times, 20 times, 30 times and 40 times. [2]

Number of times the coin is thrown altogether		**10**	**20**	**30**	**40**
Relative frequency of obtaining a head	Fraction	$\frac{2}{10}$	$\frac{6}{20}$		
	Decimal	0·2	0·3		

(b) Using the above results, write down the best estimate for the probability of obtaining a head when this biased coin is thrown.
Give a reason for your answer. [2]

.....

.....

.....

Examiner only

13.

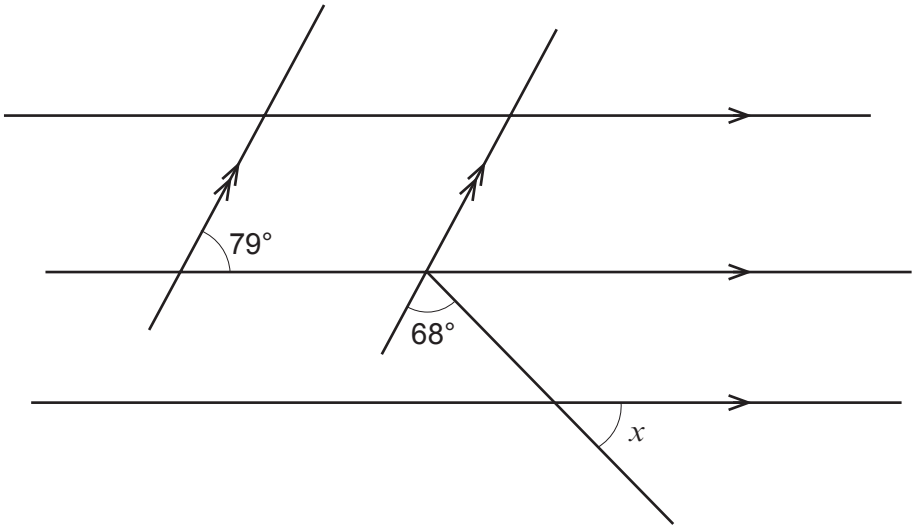

Diagram not drawn to scale

Calculate the size of the angle x.
You must show your working below or on the diagram. [3]

.....

.....

.....

x = ... °

Examiner only

14. *(a)* Find the highest common factor of 120 and 140. [1]

(b) Find the lowest common multiple of 14 and 22. [2]

(c) Express 180 as a product of prime numbers using index notation. [3]

END OF PAPER