

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Pages	Mark
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10	
TOTAL	



General Certificate of Secondary Education
Higher Tier
June 2013

Methods in Mathematics (Linked Pair Pilot)

93651H/A

Unit 1 Algebra and Probability
Section A Calculator

H

Thursday 20 June 2013 9.00 am to 9.45 am

For this paper you must have:

- a calculator
- mathematical instruments.



Time allowed

- 45 minutes

Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.
- This paper is divided into two sections: Section A and Section B.
- After the 45 minutes allowed for Section A, you must put your calculator on the floor under your seat. You will then be given Section B.
- When you have answered Section B you may work again on Section A but you must **not** use your calculator. It must remain on the floor under your seat.
- At the end of the examination tag Section A and Section B together with Section A on top.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 40.
- The quality of your written communication is specifically assessed in Questions 2 and 4. These questions are indicated with an asterisk (*).
- You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer book.
- You are expected to use a calculator where appropriate.

Advice

- In all calculations, show clearly how you work out your answer.



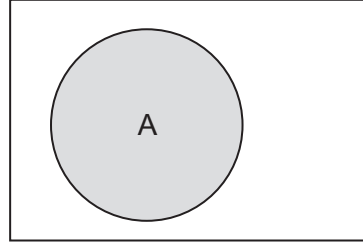
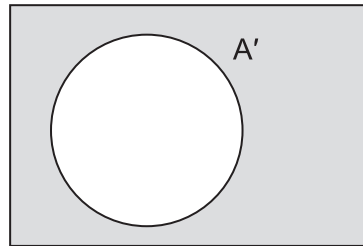
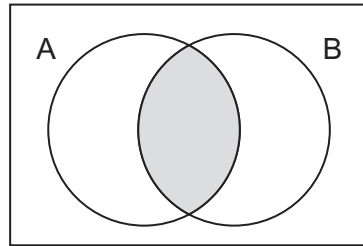
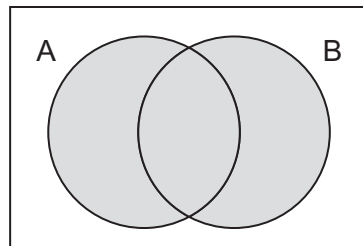
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WMP/Jun13/93651H/A

93651H/A

Formulae Sheet: Higher Tier

Set notation

 A  A'  $A \cap B$  $A \cup B$ 

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

1 (a) Solve $5(x - 7) = 45$

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.....
.....

$x =$ (3 marks)

1 (b) Solve $10y + 3 = 6y + 12$

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.....
.....
.....
.....

$y =$ (3 marks)

Turn over for the next question



***2** Year 10 has 210 students.
112 are boys.

Year 11 has 240 students.
132 are boys.

Which year group has the greater proportion of boys?
You **must** show your working.

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.....

(4 marks)

3 150 people work in an office.
The ratio of men to women is 2 : 3

How many **men** are there?

.....
.....
.....
.....

Answer (2 marks)



***4 (a)** $T = 5n - 2$

n is an **odd** number.

Tick the correct statement.

T is always even

T is always odd

T could be even or odd

Give a reason for your answer.

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(2 marks)

4 (b) Rearrange $T = 5n - 2$ to make n the subject.

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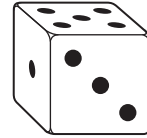
Answer (2 marks)

10

Turn over ►



5 An ordinary six-sided dice is rolled 300 times.
It lands on five 120 times.



Do you think the dice is fair?
Give a reason for your answer.

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(2 marks)

6 Two bags contain counters.

Bag A has 1 red counter and 1 blue counter.
Bag B has 1 red counter, 1 yellow counter and 1 white counter.

One counter is chosen at random from **each** bag.

What is the probability that the two red counters are chosen?

Answer (3 marks)



7 (a) Solve the simultaneous equations

$$2x + 6y = 16$$

$$3x + 8y = 19$$

Do **not** use trial and improvement.
You **must** show your working.

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Answer (4 marks)

7 (b) Write down two simultaneous equations whose only solution is

$$x = 6, y = -5$$

Answer

and

..... (2 marks)



8 (a) Factorise $x^2 - 3x - 28$

.....

Answer (2 marks)

8 (b) Hence, or otherwise, simplify fully

$$\frac{x^2 - 16}{x^2 - 3x - 28}$$

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Answer (2 marks)

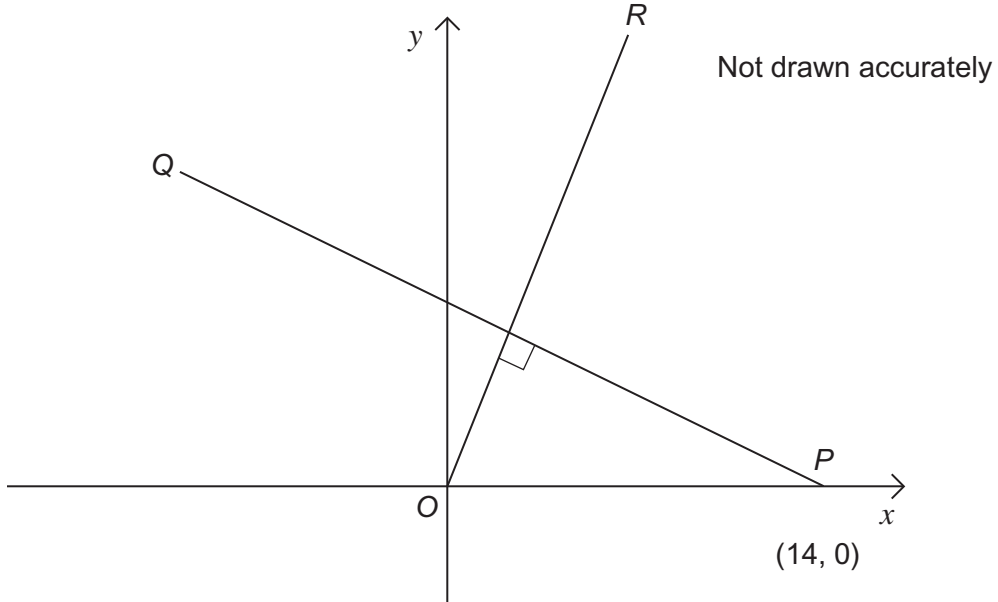


10

The gradient of line OR is $\frac{7}{4}$

PQ is perpendicular to OR .

P is the point $(14, 0)$.



Work out the equation of line PQ .

Give your answer in the form $ax + by = c$, where a , b and c are integers.

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Answer (4 marks)

END OF SECTION A

4



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ANSWER IN THE SPACES PROVIDED**



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