

Write your name here	
Surname	Other names
<b>Pearson Edexcel</b>	Centre Number
<b>International GCSE</b>	Candidate Number
<h1 style="margin: 0;">Further Pure Mathematics</h1> <h2 style="margin: 0;">Paper 1</h2>	
Friday 12 January 2018 – Morning	Paper Reference
<b>Time: 2 hours</b>	<b>4PM0/01</b>
<b>Calculators may be used.</b>	Total Marks

### Instructions

- Use black ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Without sufficient working, correct answers may be awarded no marks.
- Answer the questions in the spaces provided  
– *there may be more space than you need.*

### Information

- The total mark for this paper is 100.
- The marks for **each** question are shown in brackets  
– *use this as a guide as to how much time to spend on each question.*

### Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.

Turn over ►

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**Pearson**

**Answer all TEN questions.**

**Write your answers in the spaces provided.**

**You must write down all the stages in your working.**

**1**

$$f(x) = 6 + 5x - 2x^2$$

Given that  $f(x)$  can be written in the form  $p(x + q)^2 + r$ , where  $p$ ,  $q$  and  $r$  are rational numbers,

(a) find the value of  $p$ , the value of  $q$  and the value of  $r$ . (3)

(b) Hence, or otherwise, find

(i) the maximum value of  $f(x)$ ,

(ii) the value of  $x$  for which this maximum occurs. (2)

$$g(x) = 6 + 5x^3 - 2x^6$$

(c) Write down

(i) the maximum value of  $g(x)$ ,

(ii) the exact value of  $x$  for which this maximum occurs. (3)

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**Question 1 continued**

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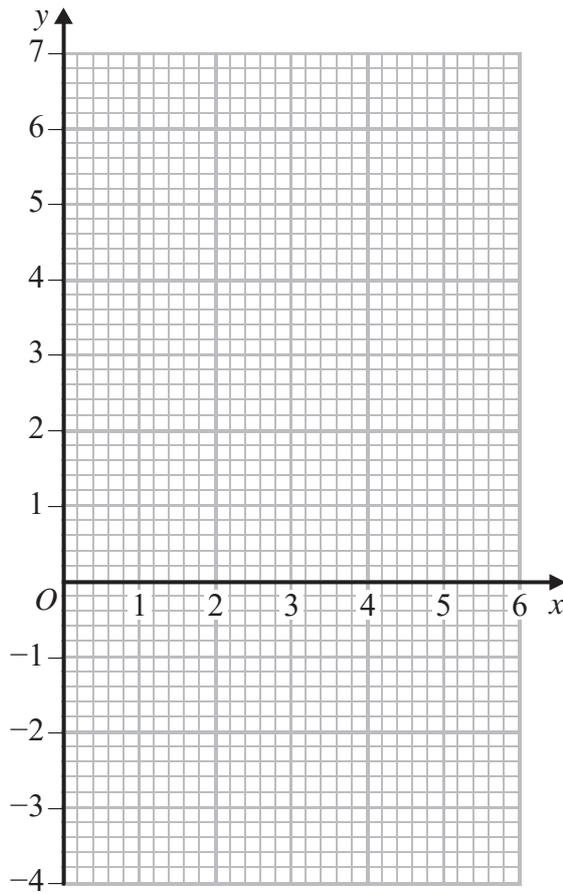
Area with horizontal dotted lines for writing answers.

**(Total for Question 1 is 8 marks)**





**Question 2 continued**



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**Turn over for a spare grid if you need to redraw your graph**



**Question 2 continued**

A large rectangular area with a rounded border, containing 25 horizontal dotted lines for writing.

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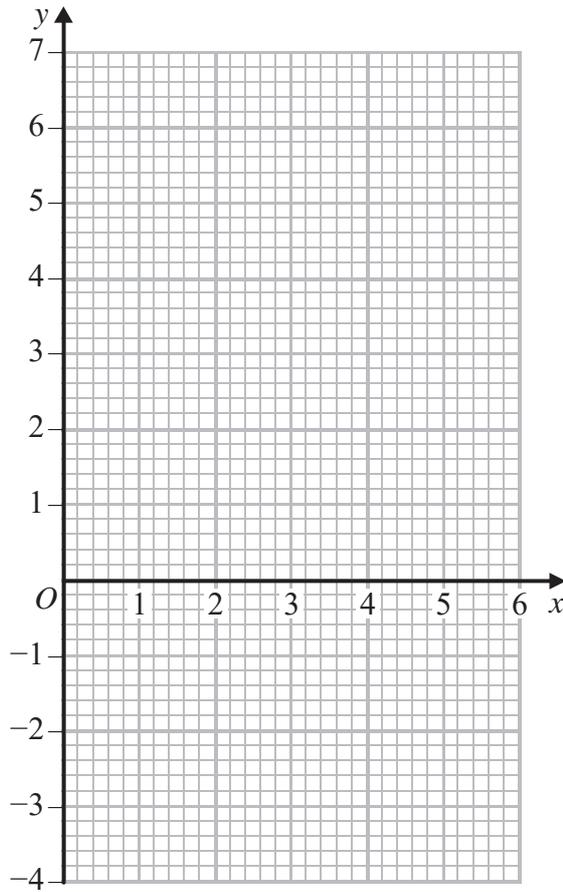
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**Question 2 continued**

**Only use this grid if you need to redraw your graph**



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**(Total for Question 2 is 8 marks)**





**Question 3 continued**

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A large rectangular area with horizontal dotted lines for writing.

**(Total for Question 3 is 6 marks)**





**Question 4 continued**

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DO NOT WRITE IN THIS AREA

Area with horizontal dotted lines for writing answers.

**(Total for Question 4 is 8 marks)**



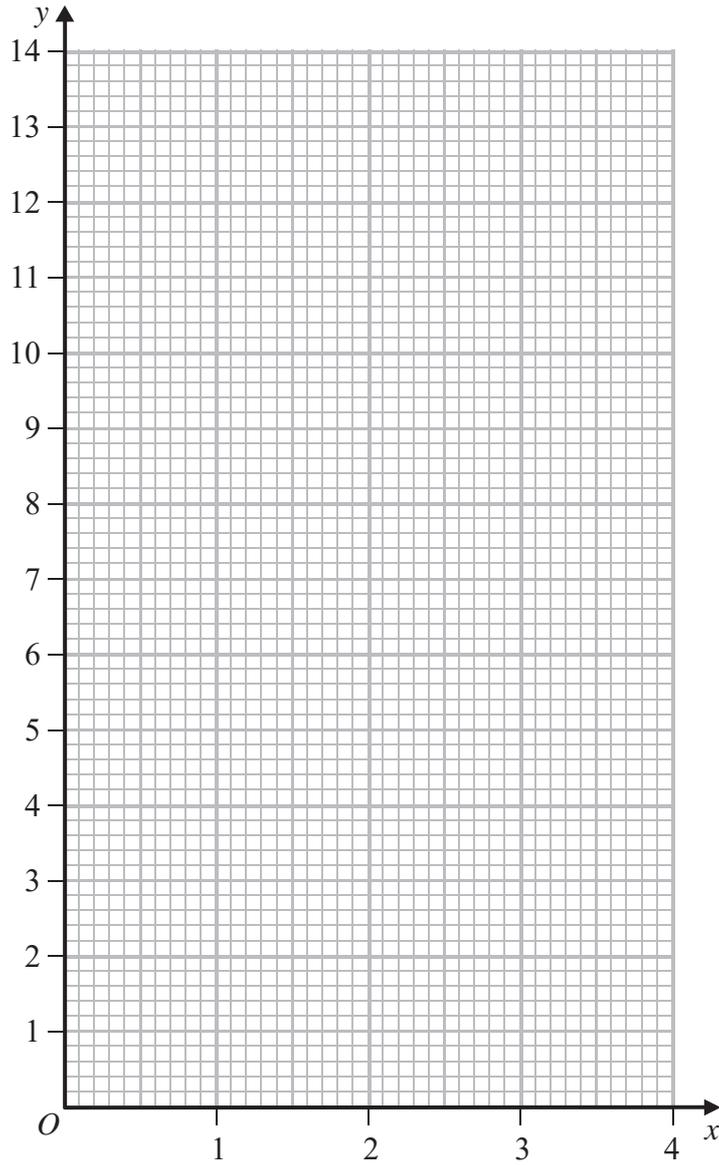


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**Question 5 continued**



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**Turn over for a spare grid if you need to redraw your graph**



**Question 5 continued**

Area for writing answers, consisting of multiple horizontal dotted lines.

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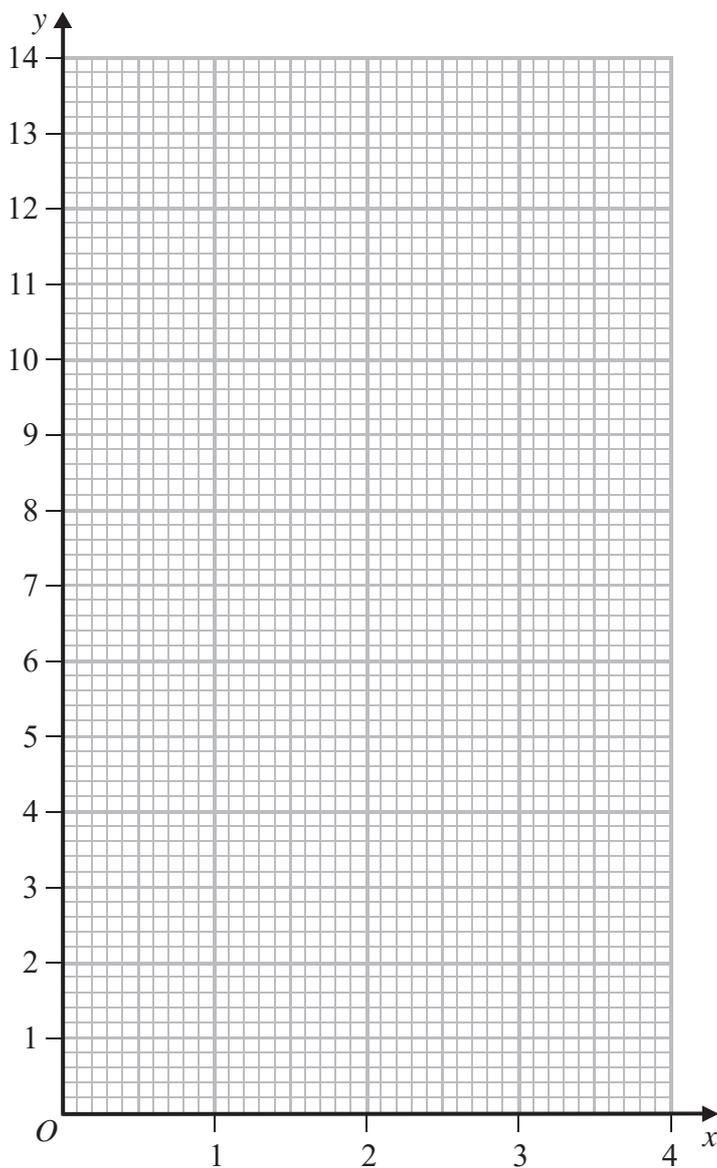
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**Question 5 continued**

**Only use this grid if you need to redraw your graph**



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**(Total for Question 5 is 9 marks)**





**Question 6 continued**

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A large rectangular area with a rounded border, containing numerous horizontal dotted lines for writing.





**Question 6 continued**

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Area with horizontal dotted lines for writing answers.

**(Total for Question 6 is 11 marks)**





**Question 7 continued**

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A large rectangular area with a dotted grid pattern, intended for writing the answer to Question 7.





**Question 7 continued**

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A large rectangular area with horizontal dotted lines for writing answers.

**(Total for Question 7 is 11 marks)**





**Question 8 continued**

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Area for writing answers, consisting of multiple horizontal dotted lines.





**Question 8 continued**

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A large rectangular area with horizontal dotted lines for writing.

**(Total for Question 8 is 10 marks)**





**Question 9 continued**

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A large rectangular area with a rounded border, containing numerous horizontal dotted lines for writing.



**Question 9 continued**

Area for writing answers, consisting of multiple horizontal dotted lines.

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**Question 9 continued**

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Area with horizontal dotted lines for writing answers.

**(Total for Question 9 is 13 marks)**





**Question 10 continued**

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A large rectangular area with a dotted grid pattern, intended for writing the answer to Question 10.



**Question 10 continued**

Area for writing the answer to Question 10, consisting of multiple horizontal dotted lines.

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**Question 10 continued**

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DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

A large rectangular area with rounded corners, containing numerous horizontal dotted lines for writing.



