

Surname	Centre Number	Candidate Number
Other Names		0



WJEC LEVEL 2 CERTIFICATE

9550/01

ADDITIONAL MATHEMATICS

A.M. MONDAY, 23 June 2014

2 hours 30 minutes

ADDITIONAL MATERIALS

A calculator will be required 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 or use the π button on your calculator.

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 3.

When you are asked to show your working you must include enough intermediate steps to show that a calculator has not been used.

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	5	
2.	7	
3.	8	
4.	4	
5.	5	
6.	7	
7.	8	
8.	7	
9.	7	
10.	8	
11.	7	
12.	11	
13.	5	
14.	4	
15.	7	
Total	100	

1. Find $\frac{dy}{dx}$ for each of the following.

(a) $y = 6x^5 + 7x - 2$

[3]

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(b) $y = \frac{1}{x^6}$

[1]

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(c) $y = x^{\frac{5}{2}}$

[1]

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2. (a) Factorise $15x^2 - 14x - 8$.

[4]

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Hence solve the equation $15x^2 - 14x - 8 = 0$.

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(b) Use the method of completing the square to find the least value of $x^2 + 10x + 3$.

[3]

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6. (a) Simplify $\frac{5}{3 + \sqrt{2}}$, leaving your answer in surd form.

Do not use a calculator to answer this question.
You must show all your working.

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- (b) Showing all your working, simplify each of the following.

(i)
$$\frac{3x^{-\frac{7}{4}} \times 2x^{\frac{17}{4}}}{x^{\frac{3}{2}}}$$

[2]

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(ii)
$$\frac{28x^{\frac{1}{7}} + 7x^{\frac{2}{7}}}{7x^{\frac{1}{7}}}$$

[2]

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7. The coordinates of the points D and E are $(-1, 13)$ and $(5, 5)$ respectively.

(a) Calculate the length of the line DE .

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(b) Find the gradient of the straight line that passes through points D and E .

[2]

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(c) Find the equation of the straight line that passes through points D and E .
Express your answer in the form $ax + by = c$, where a , b and c are whole numbers.

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13. The following equations represent straight lines.

$$2x + 4y = 7$$

$$2x + 5y = 7$$

$$x + 2y = 7$$

$$4x - 2y = 7$$

$$2x - 4y = 7$$

- (a) Which equations represent lines that are parallel?
You must explain how you know that these lines are parallel.

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- (b) Write down any two of the equations that represent lines that are perpendicular.
You must explain how you know that these lines are perpendicular.

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