

Candidate Name	Centre Number	Candidate Number
		0



GCSE

179/02

**ADDITIONAL MATHEMATICS
PAPER 2**

A.M. MONDAY, 28 June 2010

1½ hours

ADDITIONAL MATERIALS

A calculator will be required for this paper.

INSTRUCTIONS TO CANDIDATES

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 especially when a calculator is used.

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.

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

3. (a) The coordinates of the points P and Q are $(3, 6)$ and $(15, 11)$ respectively.

(i) Calculate the length of the line PQ .

.....

.....

.....

.....

.....

(ii) Find the gradient of a straight line perpendicular to PQ .

.....

.....

.....

.....

.....

.....

[5]

(b) Find the equation of the straight line which passes through the point $(0, -3)$ and is parallel to the line $2x - 5y + 8 = 0$.

.....

.....

.....

.....

.....

.....

.....

.....

.....

[2]

4. Prove that $(x - 1)(x + 3)(x - 2) \equiv x^3 - 7x + 6$.

.....

.....

.....

.....

.....

.....

.....

.....

[4]

6. Find the equation of the tangent to the curve $y = x^3 + 4x^2 - 7$ at the point on the curve where $x = 1$.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

[6]

7. Calculate the coordinates of the two points of intersection of the curve $y = x^2 + x - 18$ and the line $y = -2x$.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

[4]

9. (a) Find $\frac{d^2y}{dx^2}$ when $y = 7x^5$.

.....

.....

.....

.....

.....

.....

[2]

- (b) Find $\int \left(7x^5 + \frac{1}{x^3} + 9 \right) dx$.

.....

.....

.....

.....

.....

.....

[4]

- (c) Evaluate $\int_2^3 (3x^2 + 5) dx$.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

[5]

11. In answering this question you should assume that all the planets are spherical.

Planet	Diameter in miles
Venus	7520.9
Earth	7926.4
Jupiter	88846.1
Saturn	74897.6
Uranus	31763.2
Neptune	30775.2

(a) The ratio of the surface area of the Earth to the surface area of Mercury is $6.83 : 1$. Find the diameter of Mercury.

.....

.....

.....

.....

.....

.....

.....

.....

.....

[4]

(b) The ratio of the volume of Jupiter to the volume of Saturn is $n : 1$. Find the value of n correct to 3 significant figures.

.....

.....

.....

.....

.....

.....

.....

.....

.....

[3]

