Please check the examination details below before entering your candidate information

Candidate surname	Other names

Centre Number

Candidate Number

Pearson Edexcel Level 2 Certificate

Time: 1 hour

Paper reference **7M20**

Extended Maths Certificate

Year 10 End of Year Exam Paper 1

You must have: Ruler, pair of compasses, black ink or ball-point pen, HB or B pencil, eraser

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- If pencil is used for diagrams/sketches/graphs it must be dark (HB or B).
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided. *– there may be more space than you need.*

Information

- There are 7 questions.
- The total mark for this paper is 36
- The marks for **each** question are shown in brackets *– use this as a guide as to how much time to spend on each question.*

S84269A

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 (a) Use the factor theorem to show that $(x - 2)$ is a factor of $2x^3 + 9x^2 - 11x - 30$

(2)

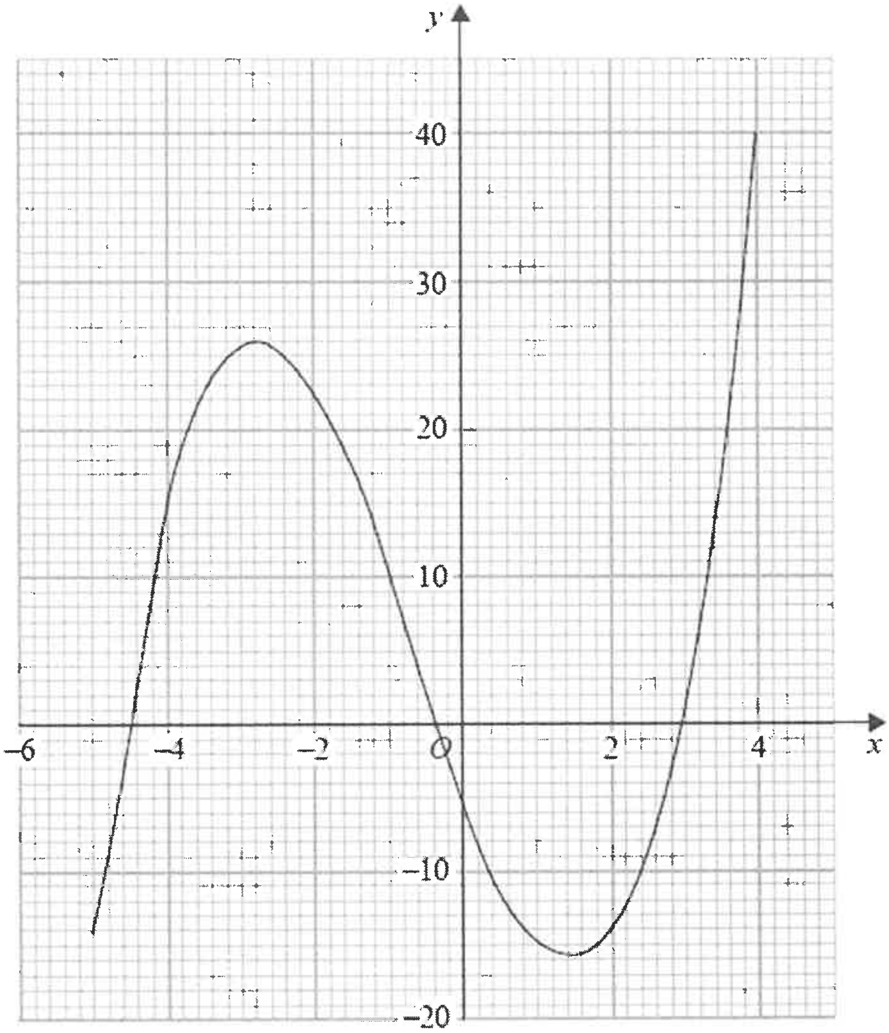
(b) Hence, factorise fully $2x^3 + 9x^2 - 11x - 30$

....

(3)

(Total for Question 1 is 5 marks)

2 The graph of $y = x^3 + 2x^2 - 13x - 4$ is drawn on the grid for $-5 \leq x \leq 4$



By drawing a suitable straight line on the grid, find estimates for the solutions of the equation $x^3 + 2x^2 - 11x - 12 = 0$

....

(Total for Question 2 is 4 marks)

3 Here are the first few rows of Pascal's Triangle.

$$\begin{array}{ccccccccccc} & & & & & 1 & & & & & \\ & & & & 1 & & 1 & & & & \\ & & & 1 & & 2 & & 1 & & & \\ & & 1 & & 3 & & 3 & & 1 & & \\ & 1 & & 4 & & 6 & & 4 & & 1 & \\ 1 & & 5 & & 10 & & 10 & & 5 & & 1 \end{array}$$

(a) Using this information, expand $(a+b)^5$

....

(2)

Given that $(a+b)^4 = a^4 + 4a^3b + 6a^2b^2 + 4ab^3 + b^4$

(b) (i) work out $6^4 + 16 \times 6^3 + 6 \times 6^2 \times 4^2 + 24 \times 4^3 + 4^4$

....

(2)

(ii) expand and simplify $(a-2b)^4$

....

(3)

(Total for Question 3 is 7 marks)

4 $$\frac{80\times\left(\sqrt{8}\right)^{8x+2}}{20\times 16^{2x-5}} = 2^{y}$$

Express y in terms of x.
Give your answer in its simplest form.

....

(Total for Question 4 is 3 marks)

5 (a) Write $\left(3-\sqrt{5}\right)^2$ in the form $c - d\sqrt{5}$ where c and d are integers.

....

(2)

(b) Show that $\dfrac{4+3\sqrt{5}}{\left(3-\sqrt{5}\right)^2+\sqrt{20}}$ can be written in the form $e+\dfrac{\sqrt{5}}{f}$

where e and f are integers.

(4)

(Total for Question 5 is 6 marks)

6 The line $y = 3mx - 2$ is a tangent to the curve $y = 4x^2 + 2x + 7$
Find the possible values of m.

....

(Total for Question 6 is 4 marks)

7 Circle **C** has equation $x^2 - 2x + y^2 - 14y + 25 = 0$

The point A with coordinates (4, 11) lies on **C**.

Line $\mathbf{L}_1$ is the tangent to **C** at A.
Line $\mathbf{L}_2$ has a positive gradient and passes through A.

The area of the triangle enclosed by $\mathbf{L}_1$, $\mathbf{L}_2$ and the x-axis is 110

Find an equation for $\mathbf{L}_2$

....

(Total for Question 10 is 7 marks)

TOTAL FOR PAPER IS 36 MARKS