



Please write clearly in block capitals.

Centre number

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Candidate number

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Surname

Forename(s)

Candidate signature

I declare this is my own work.

AS MATHEMATICS

Paper 1

Thursday 14 May 2026

Afternoon

Time allowed: 1 hour 30 minutes

Materials

- You must have the AQA Formulae for A-level Mathematics booklet.
- You should have a graphical or scientific calculator that meets the requirements of the specification.

Instructions

- Use black ink or black ball-point pen. Pencil should only be used for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer each question in the space provided for that question.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- Do **not** write outside the box around each page or on blank pages.
- Show all necessary working; otherwise marks for method may be lost.
- Do all rough work in this book. Cross through any work that you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.

Advice

- Unless stated otherwise, you may quote formulae, without proof, from the booklet.
- You do not necessarily need to use all the space provided.

For Examiner's Use	
Question	Mark
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TOTAL	



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for more: jadedamien673@gmail.com

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7356/1

Section AAnswer **all** questions in the spaces provided.

- 1** A line L has equation

$$5y = 4x + 9$$

The line T is perpendicular to L

Find the gradient of T

Circle your answer.

[1 mark]

$$-\frac{5}{4}$$

$$-\frac{4}{5}$$

$$\frac{4}{5}$$

$$\frac{5}{4}$$



- 2 Find the expression that is equivalent to $\left(\frac{36x^4}{121}\right)^{-\frac{1}{2}}$

Circle your answer.

[1 mark]

$$\frac{6x^2}{11}$$

$$\frac{6}{11x^2}$$

$$\frac{11x^2}{6}$$

$$\frac{11}{6x^2}$$

Turn over for the next question

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- 3 Express $3x^2 - 6x - 8$ in the form $a(x - b)^2 + c$ where a , b and c are integers.

[3 marks]



- 4 Use logarithms to solve the equation

$$5^{2x+5} = 12^{100}$$

Give your answer to one decimal place.

[3 marks]

Turn over for the next question

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- 5 Determine the set of values of x which satisfy the inequality

$$x - 1 < 4 - 2x - 2x^2$$

Give your answer using set notation.

[3 marks]



6 (a)

can be written as

[2 marks]

6 (b)

where $0^\circ < x < 360^\circ$

Fully justify your answer.

[4 marks]

[illegible]

[4 marks]

AB has length 12 cm



Angle ACB is 100°

Find the shortest distance from C to the line AB

Give your answer to one decimal place.

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0 9

8 A curve has equation

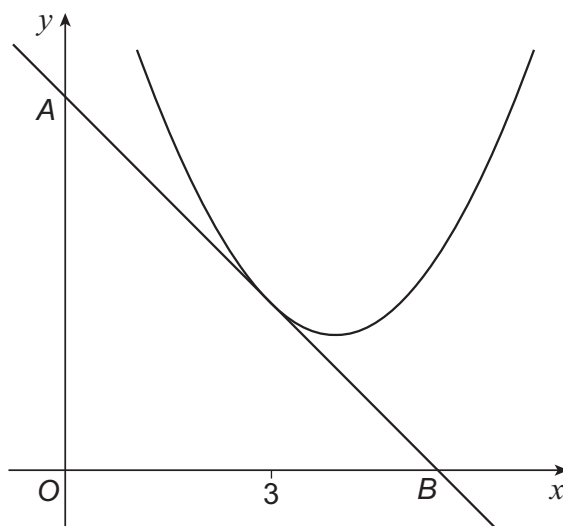
$$y = x^2 - 8x + 20$$

8 (a) Find $\frac{dy}{dx}$

[2 marks]

8 (b) The line L is the tangent to the curve with equation $y = x^2 - 8x + 20$ at the point where $x = 3$ as shown in **Figure 2**

Figure 2



The line L crosses the y -axis at point A and the x -axis at point B

Find the area of triangle OAB

[6 marks]



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9 Prove that

$$(3n + 4)^2 - (3n - 4)^2$$

is a multiple of 12 for all integer values of n

[3 marks]

Turn over for the next question

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10 The polynomial $f(x)$ is given by

$$f(x) = x^3 - 2ax^2 + 28x + 4b$$

It is given that $(x - 2)$ is a factor of $f(x)$

10 (a) Show that $2a - b = 16$

[2 marks]

10 (b) A second polynomial $g(x)$ is given by

$$g(x) = 2x^3 - ax^2 - 4x - 2b$$

It is given that $(x - 2)$ is also a factor of $g(x)$

10 (b) (i) Find the value of a and the value of b

[3 marks]



Fully justify your answer.

[5 marks]

[illegible]

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11 (a) Show that

$$(2 - \sqrt{3})^2 = 7 - 4\sqrt{3}$$

[1 mark]

11 (b) Use the result from part (a) to solve

$$x^2 = 21 - 12\sqrt{3}$$

Give your solutions in the form $a + b\sqrt{3}$ where a and b are integers.

Fully justify your answer.

[3 marks]

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12 The circle C has equation

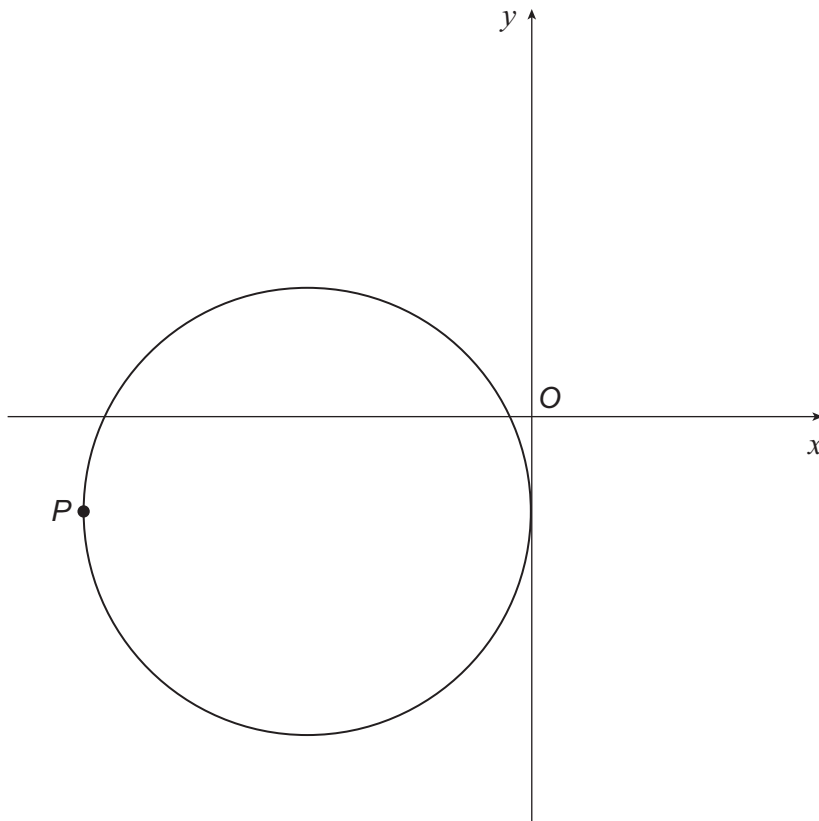
$$(x + 5)^2 + (y + 2)^2 = r^2$$

where r is an integer.

The point P has coordinates $(-10, -2)$ and lies on C

Circle C and point P are shown in **Figure 3**

Figure 3



12 (a) (i) State the coordinates of the centre of C

[1 mark]

12 (a) (ii) Find the radius of the circle.

[1 mark]



[1 mark]

[4 marks]

[illegible]

Turn over for Section B

Section BAnswer **all** questions in the spaces provided.**13**

Two forces, **F** newtons and $\begin{bmatrix} 2 \\ 3 \end{bmatrix}$ newtons, act on a particle.

The resultant force is $\begin{bmatrix} 6 \\ -2 \end{bmatrix}$ newtons.

Find **F**

Circle your answer.

[1 mark]

$$\begin{bmatrix} -4 \\ 5 \end{bmatrix}$$

$$\begin{bmatrix} -8 \\ -1 \end{bmatrix}$$

$$\begin{bmatrix} 4 \\ -5 \end{bmatrix}$$

$$\begin{bmatrix} 8 \\ 1 \end{bmatrix}$$



14

In this question use $g = 9.8 \text{ m s}^{-2}$

A ball, which is initially at rest, is dropped from a height of h metres above the ground.

The ball takes 4 seconds to reach the ground.

Find the value of h to two significant figures.

Circle your answer.

[1 mark]

20

39

59

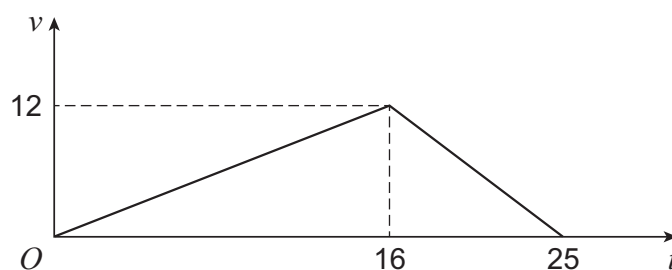
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- 15** A car is moving in a straight line along a horizontal road.

The graph in **Figure 4** shows how the car's velocity, $v \text{ m s}^{-1}$, changes with time t seconds.

Figure 4



- 15 (a)** Find the total distance travelled by the car over the 25-second period shown.

[2 marks]

- 15 (b)** Find the deceleration of the car between 16 and 25 seconds.

[2 marks]



16 (a) Find an expression for the acceleration of the particle at time t

[2 marks]

Show that the initial displacement of the particle from the point P is 5.5 metres.

[5 marks]

17 Musa cycles along a straight horizontal road. He travels a distance of 100 metres from point A to point B with uniform acceleration $a \text{ m s}^{-2}$

At A , his velocity is 4.5 m s^{-1}

At B his velocity is 7.5 m s^{-1}

17 (a) Find the value of a

[2 marks]

17 (b) The total mass of Musa and the bicycle is 50 kg

Musa models his driving force as a constant force of magnitude 80 newtons.

Musa models the resistance to motion as a constant force of magnitude R newtons.

17 (b) (i) Use Musa's model to find R

[3 marks]



17 (b) (ii) State **one** limitation of Musa's model.

[1 mark]

Turn over for the next question

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In this question use $g = 10 \text{ m s}^{-2}$

Two particles, A and B , are connected by a light inextensible string that passes over a smooth pulley.

Particle A has mass x kg and particle B has mass $(x + 2)$ kg

The particles are held at rest with the string vertical and taut.

Particle B is 5 metres above the ground.

The particles are released from rest.

18 (a) Show that the magnitude of the acceleration of particle B , in m s^{-2} , is

$$\frac{10}{x+1}$$

[5 marks]

[illegible]

18 (b) Particle B moves for 2 seconds then hits the ground.

Given that particle A does not reach the pulley, show that $x = 3$

[3 marks]

END OF QUESTIONS



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