IQM3003

LEVEL 3 · CONTROLLED ASSESSMENT

INTO QUALIFICATIONS

Mathematics and Data Handling

Component 1: Paper 1 examination

Candidate question paper

Duration
1 hour 50 minutes

Total marks
100

Assessment window
_____

Assessment set
Set S of 2026

Response instruction
Write all answers in the separate answer booklet.

Release timing
exam release

Paper
P1

Assessment set ID
2026-S

INTO QUALIFICATIONS LEARNER ID

DELIVERY CENTRE ID (OPTIONAL)

EXAM DATE
_____

ASSESSMENT SET
Set S of 2026

Do not open this paper until instructed. Record every answer in the separate answer booklet.

FOR MARKER USE ONLY

Marker initials	**Mark / 100**

Instructions

- Answer every question.
- Write all answers in the separate answer booklet and identify each question clearly.
- Show all working. Unsupported answers may not receive full credit.
- Only a non-programmable, non-graphing scientific calculator is permitted. No additional materials or AI are permitted.
- The mark allocation is shown beside each question.

All questions are compulsory. Give non-exact numerical answers to 3 significant figures unless another accuracy is stated.

Question paper

Q	Question	Marks
1	A bicycle price rises from £240 to £276. Calculate the percentage increase.	2
2	£3,200 is invested at 4% compound interest per year. Calculate the value after 5 years, to the nearest penny.	3
3	(a) Expand and simplify $(2x-3)(x+4)$. [2] (b) Simplify $a^7 \div a^3$, where $a \neq 0$. [1]	3
4	A(−2, 1), B(4, 9) and C(4, 1) are points in a coordinate plane. (a) Find the equation of AB. [3] (b) Find the length AB. [2] (c) Find the area of triangle ABC. [2] (d) State the coordinates where AB meets the y-axis. [1]	8
5	Simplify fully, showing your working. (a) $\sqrt{72}-\sqrt{8}$. [2] (b) $\dfrac{5}{\sqrt{3}+1}$, leaving a rational denominator. [2]	4
6	Express $\dfrac{5x+1}{(x+1)(x-2)}$ in partial fractions.	3
7	Let $f(x)=x^2-6x+5$. (a) Write f(x) in completed-square form. [2] (b) Solve $f(x)=0$. [2] (c) Sketch $y=f(x)$, labelling all axis intercepts and the turning point. [3]	7
8	Use the discriminant to determine the number of real roots of $3x^2+2x+5=0$.	2
9	Let $g(x)=x^3-2x^2-5x+6$. (a) Show that x − 1 is a factor. [1] (b) Divide g(x) by x − 1. [2] (c) Hence solve $g(x)=0$. [2]	5

Q	Question	Marks
10	A theatre models weekly profit P pounds from selling x tickets by $P = -2x^2 + 120x - 1000$, for $0 \le x \le 60$. (a) Find the two break-even values of x. [3] (b) Find the maximum modelled profit and the number of tickets giving it, without calculus. [3] (c) State the integer ticket sales for which profit is strictly positive. [1]	7
11	Solve simultaneously $3x + 2y = 16$ and $x - y = 2$. Show your working.	4
12	Find all points of intersection of $y = x + 2$ and $y = x^2 - 4$.	4
13	(a) Solve $5 - 2x < 11$. [2] (b) Solve $x^2 - x - 12 \le 0$. [3] (c) Give the set of values satisfying both inequalities. [1]	6
14	Write $2\log_{10} x - \log_{10} 4$ as a single logarithm, for x > 0.	2
15	(a) Solve $3^{2x-1} = 27$. [2] (b) Solve $\log_2(x - 1) = 3$. [2]	4
16	Sketch $y = 2^x$ and $y = \log_2 x$ on separate axes. Label each intercept, its asymptote and one further point on each curve.	4
17	(a) Expand $(1 + 2x)^4$ in ascending powers of x. [3] (b) Use your expansion at x = 0.01 to estimate 1.02^4 by retaining terms up to x^2. [1] (c) Explain whether this estimate is above or below the exact value. [1]	5
18	A sector has radius 6 cm and angle 120°. (a) Express the angle in radians. [1] (b) Find the exact area of the sector. [2]	3
19	Triangle ABC has AB = 7 cm, AC = 9 cm and angle BAC = 60°. Let BC = a. (a) Find the exact value of a. [3] (b) Find angle ABC to 1 decimal place using the cosine rule. [3] (c) Calculate the area of triangle ABC to 3 significant figures. [2] (d) A circular sector has radius 7 cm and angle 60°. Find the exact length of its arc. [2] (e) Triangle DEF has angle D = 30°, angle E = 45° and EF = 8 cm. Find the exact length DF. [2]	12
20	A tank initially contains 500 litres of water. A model predicts $V = 500(0.92)^t$ litres after t whole days. (a) Interpret 0.92. [1] (b) Calculate V after 4 days to 1 decimal place. [2] (c) Find the first whole day for which V < 250 litres. [2] (d) Give one limitation of applying this model indefinitely. [1]	6
21	A club invests £5,000 for 3 years. Account A pays 4% simple interest per year. Account B pays 3.8% compound interest per year. There are no fees or withdrawals. (a) Calculate each final balance to the nearest penny. [4] (b) Recommend the better account on final balance alone and calculate its advantage. [2]	6