Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

MATHEMATICS

2nd Mock Exame
10/25/2024

You must answer on the question paper.

You will need: Geometrical instruments

INSTRUCTIONS
- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You should use a calculator where appropriate.
- You may use tracing paper.
- You must show all necessary working clearly.
- Give non-exact numerical answers correct to 3 significant figures, or 1 decimal place for angles in degrees, unless a different level of accuracy is specified in the question.

π, use either For your calculator value or 3.142.

INFORMATION
- The total mark for this paper is 130.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **20** pages. Any blank pages are indicated.

[Turn over

7 **(a)** Solve $3x - 8 = 6 - 4x$.

$x =$ .... [2]

(b) Factorise fully $10a^2 + 5a$.

.... [2]

(c) Factorise fully $(2x - 3)^2 - 9$.

.... [2]

(d) $\qquad$ $f(x) = \dfrac{1}{4x - 1}, \ x \neq \dfrac{1}{4}$ $\qquad$ $g(x) = 3^x$

(i) Find f(4).

.... [1]

(ii) Find gg(2).

.... [2]

(iii) Find k when $g(k) = f(7)$.

.... [2]

3 **(a)** $C = \frac{1}{4}xy^2$

    (i) Find C when $x = 5$ and $y = 8$.

$$C = \text{...} \quad [2]$$

    (ii) Find the positive value of y when $C = 15$ and $x = 2.4$.

$$y = \text{...} \quad [2]$$

(b) Write as a single fraction in its simplest form.

$$\frac{4}{x-1} - \frac{3}{2x+5}$$

.... [3]

(c) Expand and simplify.

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

.... [3]

11 Solve the simultaneous equations.

$$5t - 2w = 19$$
$$3t + 2w = 5$$

$t =$ ....

$w =$ .... [2]

12 Simplify.

(a) $\dfrac{32g^{16}}{16g^{8}}$

.... [2]

(b) $\left(625k^{8}\right)^{\frac{3}{4}}$

.... [2]

10 (a) Expand and simplify.

$$4(2x-1)-6(3-x)$$

.... [2]

(b) Factorise completely.

(i) $6x^2y + 9xy$

.... [2]

(ii) $4x^2 - y^2 + 8x + 4y$

.... [3]

21 Solve the simultaneous equations.
You must show all your working.

$$4y + 3x = 13$$
$$y = x^2 - 18$$

$x =$ .... $y =$ ....

or $x =$ .... $y =$ .... **[5]**

4 In this question all the measurements are in centimetres.
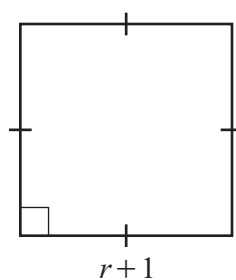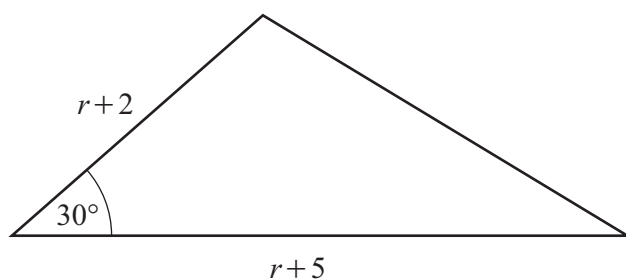
NOT TO SCALE

The area of the triangle is equal to the area of the square.

(a) Show that $3r^2 + r - 6 = 0$.

[4]

(b) Solve the equation $3r^2 + r - 6 = 0$.
Give your answer to 2 decimal places.
You must show all your working.

$r = $ .... or $r = $ .... [3]

(c) Find the perimeter of the square.

.... cm [2]

6 (a)

Sequence	1st term	2nd term	3rd term	4th term	5th term		nth term
A	-7	-3	1	5			
B	7	13	23	37			
C	$\dfrac{2}{27}$	$\dfrac{3}{81}$	$\dfrac{4}{243}$	$\dfrac{5}{729}$			

Complete the table for the three sequences.

[10]

(b) In a sequence, the sum of the first 49 terms is 7644.
The sum of the first 50 terms is 7975.

Find the 50th term of this sequence.

.... [1]

6 $f(x) = 5x - 3$ $\qquad$ $g(x) = 64^x$ $\qquad$ $h(x) = \dfrac{2}{x+1}, \quad x \neq -1$

(a) Find the value of

(i) $f(2)$

.... [1]

(ii) $gf(0.5)$.

.... [2]

(b) Find $h^{-1}(x)$.

$h^{-1}(x) =$ .... [3]

(c) Find x when $g(x) = \dfrac{1}{2^5}$.

$x =$ .... [2]

(d) Write as a single fraction in its simplest form $\dfrac{1}{f(x)} - h(x)$.

.... [4]