

ICAS

PAPER G

SAMPLE



MATHEMATICS

**DO NOT OPEN THIS BOOKLET
UNTIL INSTRUCTED.**

STUDENT'S NAME:

Read the instructions on the **ANSWER SHEET** and fill in your **NAME, SCHOOL** and **OTHER INFORMATION**.

Use a pencil. Do **NOT** use a coloured pencil or a pen.

Rub out any mistakes completely.

You **MUST** record your answers on the **ANSWER SHEET**.

Mark only **ONE** answer for each question.

Your score will be the number of correct answers.

Marks are **NOT** deducted for incorrect answers.

There are **4 MULTIPLE-CHOICE QUESTIONS** (1–4).

Use the information provided to choose the **BEST** answer from the four possible options.

On your **ANSWER SHEET** fill in the oval that matches your answer.

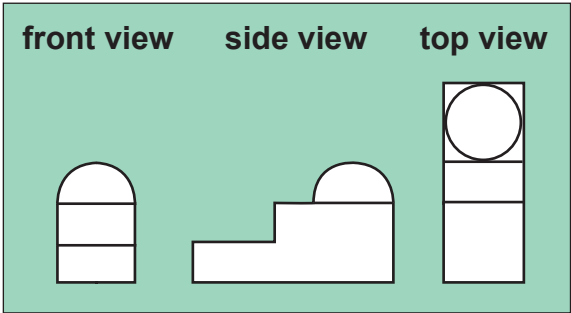
There is **1 FREE-RESPONSE QUESTION** (5).

Write your answer in the boxes provided on the **ANSWER SHEET** and fill in the ovals that match your answer.

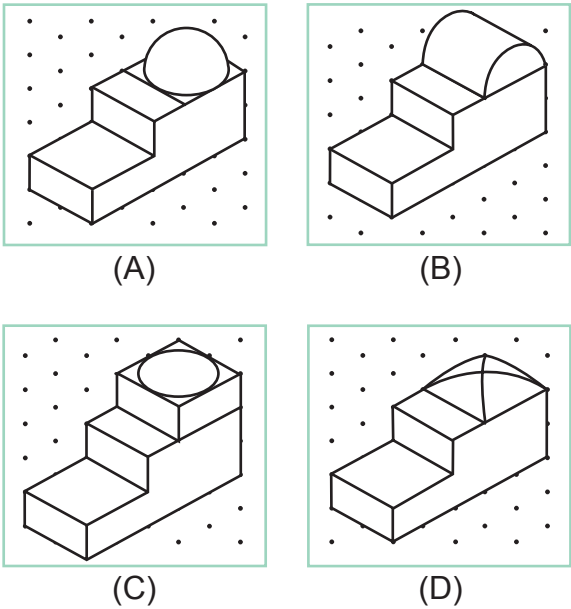
You may use a ruler and spare paper.

A **CALCULATOR** is required.

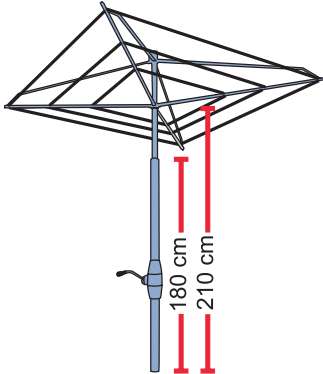
1. The plans for a new school hall are on display. These plans show a front view, a side view and a top view of the hall.



Which of the diagrams shows a correct three-dimensional view of the new hall?



2. A rotary clothes line is 180 cm from the ground at its lowest level and 210 cm when it is at its highest.



When the handle is given one full turn, the height of the clothes line increases by 30 mm.

How many full turns of the handle will it take to raise the clothes line from its lowest to its highest level?

- (A) 10
- (B) 30
- (C) 100
- (D) 300

3. Henry made a pattern with blocks, as shown.

Stage	Picture
1	
2	
3	
4	

In Stage 2 Henry used a total of five blocks.

How many blocks does Henry need for Stage 5?

- (A) 16
- (B) 17
- (C) 18
- (D) 21

4. Sandra has these pictures on her website.



Picture 1 uses 7.25 KB of memory



Picture 2 uses 3.323 KB of memory

Approximately how much memory does Picture 2 use as a percentage of the memory used by Picture 1?

- (A) 54%
- (B) 46%
- (C) 43%
- (D) 39%

QUESTION 5 IS FREE RESPONSE.

Write your answer in the boxes provided on the ANSWER SHEET and fill in the ovals that match your answer.

5. Lin cut this square picture out of a magazine.



She made an enlarged copy that was still square but twice as wide.



Lin cut off a rectangle from the right of the picture.



The picture was now a rectangle whose width was $\frac{2}{3}$ of the height.

She then doubled the width of the picture.



The area of the rectangle was now $139\,968\text{ mm}^2$.

How high, in mm, was the original picture?

END OF PAPER

ACKNOWLEDGMENT

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THE FOLLOWING YEAR LEVELS SHOULD SIT THIS PAPER:

Australia	Year 9
Brunei	Form 4
Hong Kong	Form 3
Indian Subcontinent ¹	Class 9
Indonesia	Year 10
Malaysia	Form 3
Middle East ²	Class 9
New Zealand/Pacific ³	Year 10
Singapore	Secondary 2
Southern Africa ⁴	Grade 9

1 Indian Subcontinent Region: India, Sri Lanka, Nepal, Bhutan and Bangladesh.

2 Middle East Region: United Arab Emirates, Qatar, Kuwait, Saudi Arabia, Egypt, Bahrain, Oman, Turkey, Lebanon, Tunisia, Morocco, Libya, Algeria and Jordan.

3 Pacific Region: Vanuatu, Papua New Guinea and Fiji.

4 Southern Africa Region: South Africa, Botswana, Lesotho, Swaziland, Zimbabwe and Namibia.



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HOW TO FILL OUT THIS SHEET:



• USE A PENCIL

- Print your details clearly in the boxes provided.
- Make sure you fill in only one oval in each column.
- Rub out all mistakes completely.
- Do not use a coloured pencil or pen.

EXAMPLE 1: Debbie Bach

FIRST NAME

LAST NAME

EXAMPLE 2: Chan Ai Beng

FIRST NAME

LAST NAME

Two 5x5 letter grids for a word search. The first grid contains the word 'CHAN' in the top row. The second grid contains the word 'BENG' in the top row. Both grids have a red border and a red arrow pointing to the start of the word.

C	H	A	N	
A	A		A	
B	B	B	B	
	C			
B	D			
E				

A	I		B	E	N	G
	A	A	A	A	A	A
B	B	B		B	B	B
C	C	C	C	C	C	C
D	D	D	D	D	D	D
E	E	E	E	E	E	E

EXAMPLE 3: Jamal bin Abas

FIRST NAME

LAST NAME

The image shows two 5x5 grids of letters. The first grid contains the name 'JAMAL BIN' and the second grid contains the name 'ABAS'. Both grids have a 5x5 grid of letters below the name, with some letters highlighted in black.

J	A	M	A	L		B	I	N
○	○	○	○	○	○	○	○	○
A	○	A	○	A	A	A	A	○
B	B	B	B	B	B	○	B	○
C	C	C	C	C	C	○	C	○
D	D	D	D	D	D	○	D	○
E	E	E	E	E	E	○	E	○

A	B	A	S
○	○	○	○
○	A	○	A
B	○	B	B
C	○	C	C
D	○	D	D
E	○	E	E

FIRST NAME to appear on certificate

[illegible]

LAST NAME to appear on certificate

[illegible]

Are you male or female?

☐ Male

 Female

Does anyone in your home usually speak a language other than English?

☐ Yes

☐ No

School name:

Town / suburb:

Today's date:

Postcode:

DATE OF BIRTH

Day Month Year

STUDENT ID

(optional)

CLASS

(optional)

0	0	0	0	0	0
1	1	1	1	1	1
2	2		2	2	2
3	3		3	3	3
	4		4	4	4
	5		5	5	5
	6		6	6	6
	7		7	7	7
	8		8	8	8
	9		9	9	9

0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9

(A)	(K)
(B)	(L)
(C)	(M)
(D)	(N)
(E)	(O)
(F)	(P)
(G)	(Q)
(H)	(R)
(I)	(S)
(J)	(T)

TO ANSWER THE QUESTIONS

MULTIPLE CHOICE

Questions 1 to 4

Example: 4 + 6 =

- (A) 2
- (B) 9
- (C) 10
- (D) 24

The answer is 10, so fill in the oval (C), as shown.

(A) (B) (C) (D)

START

- 1 (A) (B) (C) (D)
- 2 (A) (B) (C) (D)
- 3 (A) (B) (C) (D)
- 4 (A) (B) (C) (D)

5

0	0	0
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9

FREE RESPONSE

Question 5

Example: 6 + 6 =

- The answer is 12, so WRITE your answer in the boxes.
- Write only ONE digit in each box, as shown, and fill in the correct ovals, as shown.

	1	2
0	0	0
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9



USE A PENCIL
DO NOT USE A COLOURED PENCIL OR PEN

SAMPLE



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QUESTION	KEY	SOLUTION	STRAND	LEVEL OF DIFFICULTY
1	A	Option A correctly matches the front, side and top views. Option B does not match the front view or the top view. Option C does not match the front view or the side view. Option D does not match any view.	Space and Geometry	Easy
2	A	The difference between the clothes line highest and lowest level is $210 - 180 = 30$ cm Convert this to mm is $30 \times 10 = 300$ mm. One full turn of the handle increases the height by 30 mm; therefore we need to divide 300 by 30 which equals 10. It will take 10 full turns of the handle to raise the clothes line from its lowest to its highest level.	Measurement	Easy
3	B	The number of blocks used in the stages shows a pattern: 1, 5, 9, 13... The pattern is continued by adding four blocks to the previous term. So Stage 5 will contain $13 + 4 = 17$ blocks.	Algebra and Patterns	Medium
4	B	3.323 KB as a percentage of 7.25 KB is calculated as $(3.323 \div 7.25) \times 100\% = 45.83427\%$. This is 46% when rounded up.	Number and Arithmetic	Medium
5	162	Let x be the side length of the original picture. After the first transformation, the picture is still a square, but now with a side length of $2x$. After cutting off a rectangle from the right of the picture, the picture is now a rectangle with height $2x$ and width $\frac{2}{3}$ of $2x$ which equals $\frac{4}{3}x$. After the final transformation, the width is doubled, $\frac{8}{3}x$, but the height stays the same, $2x$. The area of the picture is now 139 968 mm ² . Hence, $2x \times \frac{8x}{3} = 139\,968$ $\frac{16x^2}{3} = 139\,968$ $x^2 = \frac{139\,968 \times 3}{16}$ $x = \sqrt{26\,244}$ $x = 162$	Number and Arithmetic	Hard

Level of difficulty refers to the expected level of difficulty for the question.

Easy	more than 70% of candidates will choose the correct option
Medium	about 50–70% of candidates will choose the correct option
Medium/Hard	about 30–50% of candidates will choose the correct option
Hard	less than 30% of candidates will choose the correct option