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?

(A)  

(B)  

(C)  

(D)  

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.

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%  

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 mm\(^2\).

How high, in mm, was the original picture?
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.

(A) [Image of front view]
(B) [Image of side view]
(C) [Image of top view]
(D) [No image provided]

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.

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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.

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She then doubled the width of the picture.

The area of the rectangle was now 139 968 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:

<table>
<thead>
<tr>
<th>Country</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Year 9</td>
</tr>
<tr>
<td>Brunei</td>
<td>Form 4</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>Form 3</td>
</tr>
<tr>
<td>Indian Subcontinent¹</td>
<td>Class 9</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Year 10</td>
</tr>
<tr>
<td>Malaysia</td>
<td>Form 3</td>
</tr>
<tr>
<td>Middle East²</td>
<td>Class 9</td>
</tr>
<tr>
<td>New Zealand/Pacific³</td>
<td>Year 10</td>
</tr>
<tr>
<td>Singapore</td>
<td>Secondary 2</td>
</tr>
<tr>
<td>Southern Africa⁴</td>
<td>Grade 9</td>
</tr>
</tbody>
</table>

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.

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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.

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.

USE A PENCIL
DO NOT USE A COLOURED PENCIL OR PEN
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 \( \frac{4x}{3} \).

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,

\[
2x \times \frac{8x}{3} = 139,968
\]

\[
\frac{16x^2}{3} = 139,968
\]

\[
x^2 = \frac{139,968 \times 3}{16}
\]

\[
x = \sqrt{26,244}
\]

\[
x = 162
\]
**Level of difficulty** refers to the expected level of difficulty for the question.

<table>
<thead>
<tr>
<th>Level</th>
<th>Expected Percentage of Candidates Choosing the Correct Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easy</td>
<td>more than 70%</td>
</tr>
<tr>
<td>Medium</td>
<td>about 50–70%</td>
</tr>
<tr>
<td>Medium/Hard</td>
<td>about 30–50%</td>
</tr>
<tr>
<td>Hard</td>
<td>less than 30%</td>
</tr>
</tbody>
</table>