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 5 MULTIPLE-CHOICE QUESTIONS (1–5). 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.

You may use a ruler and spare paper. You are NOT allowed to use a calculator.

Note: Some UNSW Global assessments are only available online.
1. In which picture does the slice match the missing part of the cake?

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

2. This is a diagram of a triangle.

NOT TO SCALE

Which of these cannot be values for \(x\) and \(y\) ?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(A)</td>
<td>70</td>
</tr>
<tr>
<td>(B)</td>
<td>50</td>
</tr>
<tr>
<td>(C)</td>
<td>70</td>
</tr>
<tr>
<td>(D)</td>
<td>50</td>
</tr>
</tbody>
</table>

3. This is a sector graph (pie graph).

Vehicles Passing the School

Key
- red: cars
- yellow: trucks
- white: motorbikes
- blue: bicycles

What is the angle at the centre for the number of cars passing this school?

(A) 296°
(B) 284°
(C) 257°
(D) 240°

4. In the toy car shown, the diameters of the back wheels are one-and-a-half times the diameters of the front wheels.

When the car travels one metre, the back wheels go around 6 times.

How many times do the front wheels go around when the car travels one metre?

(A) 4
(B) 6
(C) 9
(D) 12
Katya has a set of Russian dolls. The heights of her dolls are shown. They increase by a fixed ratio.

The smallest doll fits in the next larger doll. They both fit inside the next doll. The largest doll shown fits all four of the other dolls inside it.

Katya calculates the height of the doll that can fit exactly 700 dolls inside it, including the dolls shown.

She writes the answer as:

$$1.1603 \times 10^x \text{ mm}$$

What is the value of $x$?
Katya has a set of Russian dolls. The heights of her dolls are shown. They increase by a fixed ratio.

- 128 mm
- 96 mm
- 72 mm
- 54 mm
- 40.5 mm

The smallest doll fits in the next larger doll. They both fit inside the next doll. The largest doll shown fits all four of the other dolls inside it.

Katya calculates the height of the doll that can fit exactly 700 dolls inside it, including the dolls shown. She writes the answer as:

- 128 mm
- 96 mm
- 72 mm
- 54 mm
- 40.5 mm
- $1.1603 \times 10^x$ mm

What is the value of $x$?
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
DEBBIE BACH

EXAMPLE 2: Chan Ai Beng
FIRST NAME LAST NAME
CHAN AI BENG

EXAMPLE 3: Jamal bin Abas
FIRST NAME LAST NAME
ZAMAL BIN ABAS

FIRST NAME to appear on certificate

LAST NAME to appear on certificate

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)
TO ANSWER THE QUESTIONS
MULTIPLE CHOICE
Questions 1 to 35

Example: \[ 4 + 6 = \]
(A) 2
(B) 9
(C) 10
(D) 24

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

START

1
2
3
4
5

For details on how we handle your personal information, please see our Privacy Policy on our website at unswglobal.unsw.edu.au
<table>
<thead>
<tr>
<th>QUESTION</th>
<th>KEY</th>
<th>SOLUTION</th>
<th>STRAND</th>
<th>LEVEL OF DIFFICULTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>C</td>
<td>The missing part in C is one third which matches the slice (one third); altogether they complete one whole.</td>
<td>Space and Geometry</td>
<td>Easy</td>
</tr>
<tr>
<td>2</td>
<td>A</td>
<td>The sum of x and y adds to 190° which is more than the angle sum of a triangle (180°).</td>
<td>Space and Geometry</td>
<td>Easy</td>
</tr>
<tr>
<td>3</td>
<td>D</td>
<td>The total number of vehicles = 135 The angle at the centre for cars = ( \frac{90}{135} \times 360° = 240° )</td>
<td>Chance and Data</td>
<td>Medium</td>
</tr>
<tr>
<td>4</td>
<td>C</td>
<td>Let D be the diameter of the big wheel (back wheel). Let d be the diameter of the small wheel (front wheel). According to the question information, ( D = \frac{3}{2} d ). When the car travels 1 m, the big wheel makes 6 turns. Therefore, ( 6 \times ) the circumference of the big wheel = 1 Circumference of the big wheel is ( \pi D ), therefore the equation can be presented as: ( 6 \times \pi D = 1 )…. (Equation 1). Let x be the number of turns the small wheel makes when the car travels 1m. Using the same logic, we can form the equation ( x \times \pi d = 1 )…. (Equation 2) Dividing Equation 1 by Equation 2: ( \frac{6D}{xd} = 1 ), make x the subject of the equation: ( x = \frac{6D}{d} ) Substitute ( D = \frac{3}{2} d ) ( x = \frac{6 \times \frac{3}{2}}{\frac{3}{2}} = 9 ).</td>
<td>Measurement</td>
<td>Medium</td>
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<tr>
<td>5</td>
<td>89</td>
<td>Number and Arithmetic</td>
<td>Hard</td>
<td></td>
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</tbody>
</table>
| Height of smallest doll is 40.5mm. Rate of increase in height of successive dolls is \(\frac{128}{96}\). Height of doll with 700 dolls inside 
\[= 40.5 \times \left(\frac{128}{96}\right)^{700}\] 
\[= 1.1603 \times 10^{89}\] mm Therefore, the value of \(x\) is 89. |

**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
<table>
<thead>
<tr>
<th>Region</th>
<th>Year</th>
<th>Level</th>
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</thead>
<tbody>
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<tr>
<td>Brunei</td>
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<td>Form 5</td>
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<td>Egypt</td>
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<tr>
<td>Southern Africa</td>
<td>10</td>
<td>Grade 10</td>
</tr>
</tbody>
</table>

1. All international schools registered with UNSW Global (which have an 8-digit school code starting with 46) should sit the papers according to the Australian year levels.
2. Indian Subcontinent Region: India, Sri Lanka, Nepal, Bhutan and Bangladesh.
3. Middle East Region: United Arab Emirates, Qatar, Kuwait, Saudi Arabia, Bahrain, Oman, Turkey, Lebanon, Tunisia, Morocco, Libya, Algeria, Jordan and Pakistan.