Science

DO NOT OPEN THIS BOOKLET UNTIL INSTRUCTED.

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.

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 calculator and a ruler.
1. The following flow chart can be used to distinguish between some elements.

Element Y is sulfur and element X is carbon.

```
  non-metal
   /     \
  gas     not a gas
    /   ___  \   ___  \
green  colourless conductor insulator
     /     ___  \    ___  \___
inert flammable yellow not yellow
```

Which feature is used in the key to distinguish between them?

(A) Carbon is black and sulfur is yellow.
(B) Carbon is a conductor and sulfur is an insulator.
(C) Carbon is a gas and sulfur is not a gas.
(D) Sulfur burns with a flame and carbon glows red hot.
For questions 2 and 3 use the information below.

The diagram shows the sizes of some deep-sea sediments.

2. Which sediment is likely to completely pass through a sieve with mesh size 0.1 mm?
   (A) coccoliths  (B) radiolaria  
   (C) diatoms  (D) pteropods

3. Which sediments would be hardest to separate from each other using sieves?
   (A) whales' ear bones and shark's teeth  
   (B) radiolaria and sponge spicules  
   (C) silicoflagellates and pteropods  
   (D) diatoms and pteropods
For questions 4 and 5 use the information below.

Reports about science experiments often include:

- a title
- an introduction
- an aim
- a method of how the experiment was to be carried out
- results (what was observed)
- a discussion of the results
- a conclusion

A student wrote a report containing a number of points.

1) "Which liquid is the most viscous?"
2) The viscosity of the liquid is how 'thick' it is. The more viscous the liquid, the slower the marble will pass through it.
3) To determine the most viscous: honey, oil or water.
4) Set up three identical jars filled with the different liquids.
5) Drop a marble in each jar at the same time and record the marble's position after one second.
6) ![Images of jars with different liquids](image)

   - honey
   - oil
   - water

   **time = 0 seconds**

   **time = 1 second**

7) The marble in the honey was near the top of the jar while the marble in the water was at the bottom of the jar.
8) Water was the most viscous liquid tested.

4. Which points are the student’s results?
   
   (A) 4 and 5
   (B) 5 and 6
   (C) 6 and 7
   (D) 7 and 8

5. Was the student’s conclusion correct? Why?

<table>
<thead>
<tr>
<th>Conclusion correct?</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) no</td>
<td>The marble went through the water the slowest.</td>
</tr>
<tr>
<td>(B) yes</td>
<td>The marble went through the water the slowest.</td>
</tr>
<tr>
<td>(C) yes</td>
<td>The marble went through the honey the slowest.</td>
</tr>
<tr>
<td>(D) no</td>
<td>The marble went through the honey the slowest.</td>
</tr>
</tbody>
</table>

END OF PAPER
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.

<table>
<thead>
<tr>
<th>FIRST NAME to appear on certificate</th>
<th>LAST NAME to appear on certificate</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Example 1: Debbie Bach</th>
<th>Example 2: Chan Ai Beng</th>
<th>Example 3: Jamal bin Abas</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRST NAME</td>
<td>LAST NAME</td>
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<tr>
<td>Debbie</td>
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<td></td>
</tr>
</tbody>
</table>

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)
Ari added cordial to water to make a jug of drink. What will be the volume of the drink in the jug?

(A) 50 mL  
(B) 150 mL  
(C) 200 mL  
(D) 250 mL

The answer is 250 mL, so you would fill in the oval D, as shown.

USE A PENCIL  
DO NOT USE A COLOURED PENCIL OR PEN
<table>
<thead>
<tr>
<th>QUESTION</th>
<th>KEY</th>
<th>KEY REASONING</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>B</td>
<td>From the flow chart, both sulphur and carbon are non-metals, neither of them is a gas but one of them is a conductor and the other an insulator. Black is not in the key, so A is wrong. Carbon is a solid, so C is wrong. How they burn is not in the key, so D is wrong.</td>
</tr>
<tr>
<td>2</td>
<td>A</td>
<td>To completely pass through a sieve with a mesh size 0.1 mm, the sediments must be smaller than 0.1 mm. Of the four sediments listed only coccoliths are completely smaller than 0.1 mm (0.1 mm &gt; size of coccolith &gt; 0.004 mm).</td>
</tr>
<tr>
<td>3</td>
<td>B</td>
<td>If the sediments are similar in size, they would be difficult to separate using sieves. The greater percentage of overlap, the more difficult they would be to separate with a sieve. The greatest percentage of overlap occurs between radiolaria and sponge spicules.</td>
</tr>
<tr>
<td>4</td>
<td>C</td>
<td>Results are ‘observations’ made using our five senses, particularly sight. We can see the marbles above the jars at time = 0 s, and we can see the jars with the marbles in them at t = 1 s, at different positions within the liquids. So point 6 and point 7 of the report are observations. Note that which liquid is the most or least viscous is an inference which is based on observations. It itself is not an observation.</td>
</tr>
<tr>
<td>5</td>
<td>D</td>
<td>The more viscous the liquid, the slower the marble will pass through it. After 1 s the slowest marble will have moved the smallest distance. This occurs in honey; therefore, it is the most viscous of these liquids.</td>
</tr>
</tbody>
</table>

**LEGEND**

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/Class</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> Australia</td>
<td>Year 8</td>
</tr>
<tr>
<td>Brunei</td>
<td>Form 2 &amp; 3</td>
</tr>
<tr>
<td><strong>2</strong> Egypt</td>
<td>Year 8</td>
</tr>
<tr>
<td><strong>2</strong> Indian Subcontinent</td>
<td>Class 8</td>
</tr>
<tr>
<td><strong>3</strong> Indonesia</td>
<td>Year 9</td>
</tr>
<tr>
<td><strong>3</strong> Middle East</td>
<td>Class 8</td>
</tr>
<tr>
<td><strong>4</strong> New Zealand/ Pacific</td>
<td>Year 9</td>
</tr>
<tr>
<td><strong>4</strong> Singapore</td>
<td>Secondary 1</td>
</tr>
<tr>
<td><strong>5</strong> Southern Africa</td>
<td>Grade 8</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.