REACH ASSESSMENTS™ ICAS ASSESSMENTS™

PAPER I

PRACTICE QUESTIONS

Mathematics

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.

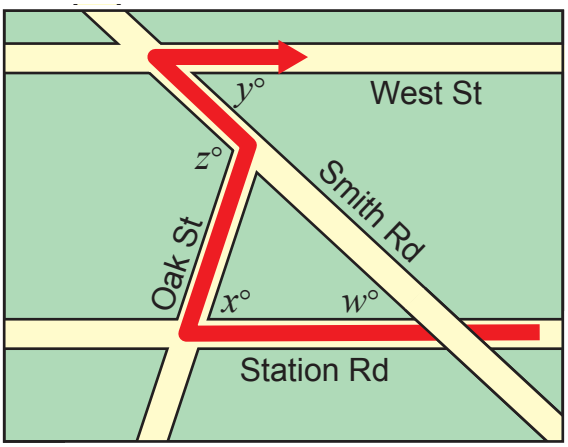
There are **5 MULTIPLE-CHOICE QUESTIONS** (1–5).
Use the information provided to choose the **BEST** answer from the four possible options.

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.

UNSW Global

1. Terry is in Station Rd and is going to a party in West St, which runs parallel to Station Rd. The angles between some of the streets are shown.



NOT TO SCALE

Which of these statements must be true?

(A) $w = y$

(B) $x = w$

(C) $y = x$

(D) $z = y$

2. A company uses this formula to predict total profit P based on the number of products x sold.

$$P = n^2 + 60n - 4000$$

How many products are sold if there is zero profit?

(A) 0
(B) 40
(C) 100
(D) 4000

3. $$7.101 \div (3.019 - 0.798)$$

What is the value of this expression correct to three significant figures?

(A) 3.19
(B) 3.197
(C) 3.20
(D) 3.200

4. This scatter diagram shows the relationship between the air temperature T and the number of people P visiting a beachside shopping centre.

Which formula could describe the relationship between the air temperature and the number of people?

(A) $P = 5T^2$

(B) $P = -5T$

(C) $P = -\frac{T}{5}$

(D) $P = \frac{5}{T}$

© UNSW Global Pty Limited

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.* Mario knows that a number is divisible by nine if the sum of its digits is divisible by nine.

He has eight cards with the digits 1 to 8 written on them as shown.

Mario selects three of these cards to make a three-digit number that is divisible by nine. He then replaces these three cards and repeats this selection procedure to select different three-digit numbers divisible by nine.

How many **even** three-digit numbers is it possible for him to find in this way?

* Free response questions are only applicable to some assessments.

END OF PAPER

© UNSW Global Pty Limited

THIS PAGE MAY BE USED FOR WORKING.

© UNSW Global Pty Limited

PAPER I M

REACH ASSESSMENTS™

UNSW Global

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: D E B B I E

LAST NAME: B A C H

EXAMPLE 2: Chan Ai Beng

FIRST NAME: C H A N

LAST NAME: A I B E N G

EXAMPLE 3: Jamal bin Abas

FIRST NAME: J A M A L B I N

LAST NAME: A B A S

FIRST NAME to appear on certificate

LAST NAME to appear on certificate

SAMPLE

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 Ⓒ, as shown.

Ⓐ Ⓑ ● Ⓓ

USE A PENCIL
DO NOT USE A COLOURED PENCIL OR PEN

START

1 Ⓐ Ⓑ Ⓒ Ⓓ

2 Ⓐ Ⓑ Ⓒ Ⓓ

3 Ⓐ Ⓑ Ⓒ Ⓓ

4 Ⓐ Ⓑ Ⓒ Ⓓ

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

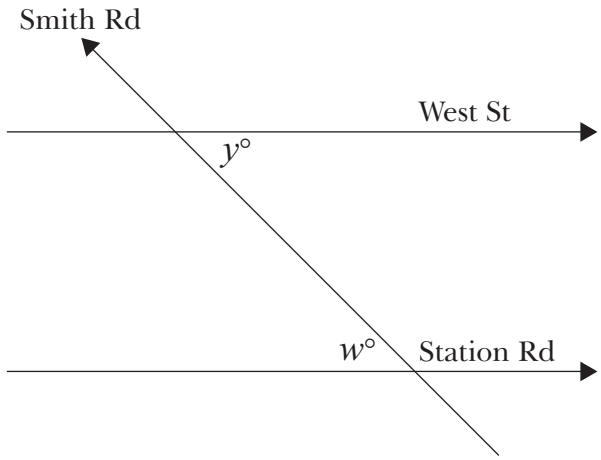
SAMPLE

PAPER I M

REACH ASSESSMENTS™

UNSW Global

For details on how we handle your personal information, please see our Privacy Policy on our website at **unswglobal.unsw.edu.au**

QUESTION	KEY	SOLUTION	STRAND	LEVEL OF DIFFICULTY
1	A	 Station Rd and West St are parallel, while Smith Rd crosses them. This results in angle y and angle w, that are alternate, being equal. Therefore, statement A is the correct statement.	Space and Geometry	Easy
2	B	This is a quadratic equation. It factorises to $(n + 100)(n - 40) = 0$ The solutions for this equation are $n = -100$ and $n = 40$. As n is the number of products, it cannot be negative. Hence, $n = 40$ is the correct solution. Alternatively, substituting the options will show that $n = 40$ gives $P = 0$.	Algebra and Patterns	Easy
3	C	The result of the calculation is 3.197208465. This number rounded to three significant figures is 3.20.	Number and Arithmetic	Medium
4	D	The diagram shows an inverse relation between the air temperature, T, and the number of people, P. As T increases, P decreases. Note that the relation is not linear. Option A is a quadratic equation that gives a parabola when graphed, where the relation is positive (considering positive values of T). This does not describe the given data. Options B and C are both linear equations that give straight lines sloping downwards when graphed. Again, these do not describe the given data. Option D is an equation that gives a hyperbola when graphed. For small values of T, P has a large value. As the values of T increase, the values of P decrease. This correctly describes the given data.	Chance and Data	Medium

© UNSW Global Pty Limited

<table>
<tr>
<td>5</td>
<td>18</td>
<td>
Numbers to be considered are numbers with a digit sum that is divisible by 9. So the sum of the digits must be multiples of 9: 9, 18, 27... The highest digit sum that can be obtained from the numbers 1 to 8 is 8 + 7 + 6 = 21. So only numbers whose digits sum to 9 or 18 need to be considered.

The numbers must be even, so they must be of the form: _ _ 2, _ _ 4, _ _ 6 and _ _ 8.

Take for example _ _ 2. To make this number's digits sum to 9, the first two digits must sum to 7. We can therefore have 342, or 432. We cannot have 252 or 522 as the number 2 cannot be used twice.

This table summarises the solutions.
<table>
<tr><th rowspan="2">Possible numbers</th><th>Sum to 9</th><th rowspan="2">Solutions</th><th>Sum to 18</th><th rowspan="2">Solutions</th></tr>
<tr><th>First two digits sum to:</th><th>First two digits sum to:</th></tr>
<tr><td rowspan="4">_ _ 2</td><td rowspan="4">7</td><td>432</td><td rowspan="4">16</td><td rowspan="4">-</td></tr>
<tr><td>342</td></tr>
<tr><td>162</td></tr>
<tr><td>612</td></tr>
<tr><td rowspan="2">_ _ 4</td><td rowspan="2">5</td><td>234</td><td rowspan="2">14</td><td>684</td></tr>
<tr><td>324</td><td>864</td></tr>
<tr><td rowspan="4">_ _ 6</td><td rowspan="4">3</td><td rowspan="2">126</td><td rowspan="4">12</td><td>486</td></tr>
<tr><td>846</td></tr>
<tr><td rowspan="2">216</td><td>756</td></tr>
<tr><td>576</td></tr>
<tr><td rowspan="4">_ _ 8</td><td rowspan="4">1</td><td rowspan="4">-</td><td rowspan="4">10</td><td>468</td></tr>
<tr><td>648</td></tr>
<tr><td>738</td></tr>
<tr><td>378</td></tr>
</table>
Therefore there are 18 possible numbers that Mario can find.
Note: This is one possible method. The question can be solved using other methods.
</td>
<td>Chance and Data</td>
<td>Hard</td>
</tr>
</table>

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

© UNSW Global Pty Limited

THE FOLLOWING YEAR LEVELS SHOULD SIT THIS PAPER	
Australia[1]	Year 11
Brunei	Pre-University 1
Egypt	Year 11
Hong Kong	Form 5
Indian Subcontinent[2]	Class 11
Indonesia	Year 12
Malaysia	Form 5 & Lower 6
Middle East[3]	Class 11
New Zealand/ Pacific[4]	Year 12
Singapore	Secondary 4 & 5
Southern Africa[5]	Grade 11

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.
4 Pacific Region: Vanuatu, Papua New Guinea and Fiji.
5 Southern Africa Region: South Africa, Botswana, Lesotho, Swaziland, Zimbabwe and Namibia.

UNSW Global

© 2019 Copyright. Copyright in this publication is owned by UNSW Global Pty Limited, unless otherwise indicated or licensed from a third party. This publication and associated testing materials and products may not be reproduced, published or sold, in whole or part, in any medium, without the permission of UNSW Global Pty Limited or relevant copyright owner.