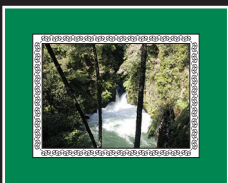
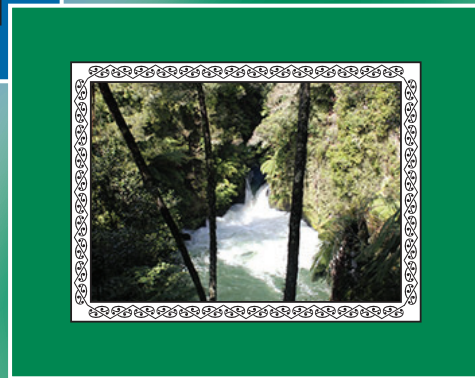
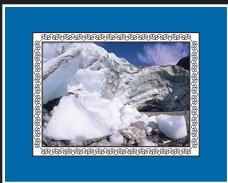
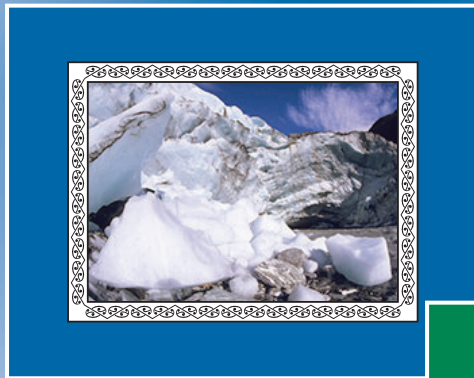
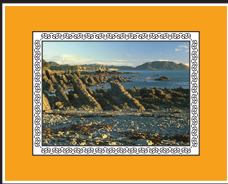
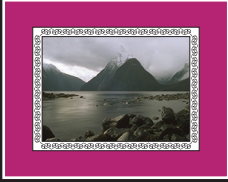


# MATHS MATE Skill Builder

fourth edition



4.2

5.1

J. B. Wright





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Website: www.mathsmate.co.nz



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**Released:** 4th Edition - 2013

**Maths Mate materials available for use**

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Maths Mate Level 2.2	Student Pad - 1st Ed.	978 1 921535 98 7
Maths Mate Level 3.1	Student Pad - 1st Ed.	978 1 921535 99 4
Maths Mate Level 3.2	Student Pad - 4th Ed.	978 1 925114 14 0
Maths Mate Level 4.1	Student Pad - 4th Ed.	978 1 925114 15 7
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# TEACHER'S GUIDE

## FORWARD

### Why use Skill Builders?

Too often, through the teaching, learning and assessment process, teachers identify weaknesses and gaps in student learning but the constraints of the classroom severely limit remediation opportunities.

The Maths Mate Skill Builder series was prepared in response to requests from teachers and parents who want an easy but effective way to help students who identify skill deficiencies using the Maths Mate Programme, and are motivated to do something about them.

The Maths Mate record keeping sheets found at the start of each term in each Student Pad (and on each CD ~ Record Keeping Sheets, pages 1 to 4) enable students to find out what they know and what they still need to learn and practise.

The Skill Builders extensively target through instruction and practice, all skills within the related Maths Mate Programme except the problem solving questions. The Problem Solving Hints & Solutions (see CD ~ Problem Solving Hints & Solutions) can be used by teachers to develop students' problem solving skills. The Skill Builders also contain a Glossary of important facts and reference material that will provide instant help when students present with difficulties.

### Background to the design of Maths Mate and Skill Builders

MM4.2	1	1	2	3	3	4	4
MM5.1	1	1	2	2	3	3	4

Any question on the Maths Mate sheets is part of a set of 4 similar questions in the term. For example, consider sheets 1, 2, 3 and 4 in year 8 term 1. Question 10 on each sheet is similar in design, content and degree of difficulty. This grouping of question style is also true of the next set of four sheets and so on. Thus the Maths Mate tests made available in the Teacher Resource Book and CD (see CD ~ Test Masters, pages 1 to 32 and Test Answers, pages 1 to 32) also reflect this grouping of question style and substance. Generally too, the Skill Builders can be linked to each set of 4 similar questions. These links are identified in the grid at the title of each skill. The grid shown here for example, would relate a skill to questions in the first 4 sheets of MM Level 4.2 term 1, the last 4 sheets of MM Level 4.2 term 2 and the first 4 sheets of MM Level 5.1 term 1. Once understood, these links will be helpful to students in their selection of Skill Builders and to you in your allocation of Skill Builders to students.

On each Maths Mate worksheet, questions 1 through to 33 get progressively harder. (Refer - How to use the Skill Builders, page iv)

### Suggestions for the preparation and organisation of Skill Builders

Teachers can either direct students to their digital copies or print copies of particular pages for students. Rather than photocopying Skill Builders one at a time, you may find it helpful to set up a file in a central area that contains perhaps five copies of each Skill Builder. In this way you will save time and be prepared in advance. Students should be reminded that the Glossary is a valuable resource that can be added to. The Glossary too can be photocopied for students as a resource.

### How you can help

We are confident that your students will be rewarded for the effort you have made in making these worksheets available to them. As with any programme, however, there is always room for improvement and we place great value in feedback from people like yourself. Please, if you have any suggestions at all, contact us.

# HOW TO USE MATHS MATE SKILL BUILDERS

## 1. Determine which Maths Mate questions pose a difficulty

If a student gets one or more incorrect answers, represented by one or more successive unshaded boxes on their worksheet results sheet, then that question requires a Skill Builder.

For example, question 13 in Sheets 1, 2, 3 and 4 is not shaded, so Skill 13.1 from Skill Builder 13 needs to be handed to the student.

MATHS MATE		Name: Paul Wright								
Level 4 of 2		Class: 8B								
Worksheet Results		Teacher: Miss Bourke								
Term 1	Sheet 1	Sheet 2	Sheet 3	Sheet 4	Skill Builder	Sheet 1	Sheet 2	Sheet 3	Sheet 4	Skill Builder
1. [- Whole Numbers to 10]	10	10	10	10	10.1	10	10	10	10	10.1
2. [- Whole Numbers to 10]	10	10	10	10	10.1	10	10	10	10	10.1
3. [- Whole Numbers to 10]	10	10	10	10	10.1	10	10	10	10	10.1
4. [- Whole Numbers to 12]	10	10	10	10	10.1	10	10	10	10	10.1
5. [Large Number +,-]	10	10	10	10	10.1	10	10	10	10	10.1
6. [Large Number x,-]	10	10	10	10	10.1	10	10	10	10	10.1
7. [Decimal +,-]	10	10	10	10	10.1	10	10	10	10	10.1
8. [Decimal x,-]	10	10	10	10	10.1	10	10	10	10	10.1
9. [Fraction +,-]	10	10	10	10	10.1	10	10	10	10	10.1
10. [Fraction x,-]	10	10	10	10	10.1	10	10	10	10	10.1
11. [Percentages]	10	10	10	10	10.1	10	10	10	10	10.1
12. [Decimals / Fractions / Percentages]	10	10	10	10	10.1	10	10	10	10	10.1
13. [Integers]	10	10	10	10	10.1	10	10	10	10	10.1
14. [Rates / Ratios]	10	10	10	10	10.1	10	10	10	10	10.1
15. [Indices / Square Roots]	10	10	10	10	10.1	10	10	10	10	10.1
16. [Order of Operations]	10	10	10	10	10.1	10	10	10	10	10.1
17. [Exploring Numbers]	10	10	10	10	10.1	10	10	10	10	10.1
18. [Multiples / Factors / Primes]	10	10	10	10	10.1	10	10	10	10	10.1
19. [Number Patterns]	10	10	10	10	10.1	10	10	10	10	10.1
20. [Expressions]	10	10	10	10	10.1	10	10	10	10	10.1
21. [Substitution]	10	10	10	10	10.1	10	10	10	10	10.1
22. [Equations]	10	10	10	10	10.1	10	10	10	10	10.1
23. [Coordinates]	10	10	10	10	10.1	10	10	10	10	10.1
24. [Units of Measurements / Time]	10	10	10	10	10.1	10	10	10	10	10.1
25. [Perimeter]	10	10	10	10	10.1	10	10	10	10	10.1
26. [Area / Volume]	10	10	10	10	10.1	10	10	10	10	10.1
27. [Shapes]	10	10	10	10	10.1	10	10	10	10	10.1
28. [Location / Transformation]	10	10	10	10	10.1	10	10	10	10	10.1
29. [Statistics]	10	10	10	10	10.1	10	10	10	10	10.1
30. [Probability]	10	10	10	10	10.1	10	10	10	10	10.1
31. [Problem Solving 1]	10	10	10	10	10.1	10	10	10	10	10.1
32. [Problem Solving 2]	10	10	10	10	10.1	10	10	10	10	10.1
33. [Problem Solving 3]	10	10	10	10	10.1	10	10	10	10	10.1
Total Correct	20	24	22	26						

## 2. Find the relevant Skill Builder on the Maths Mate worksheet results sheet

Check across the question that is posing difficulties on the worksheet results sheet to find the list of skills within the Skill Builder that are most relevant to that question.

Obtain a copy of one or all of the skills listed for that question (pages 1 to 326). You can also double check with the grid at the right of each skill title, that the chosen skill is appropriate.

Remember, students should work through the skills in order. The skills where possible are arranged in increasing degree of difficulty.

Be aware that some skills may require the knowledge of previous skills, so when a student has several areas of weakness, they should work on the lowest numbered skill builders first. For example, a student struggling with Q9 and Q12 may need to build skills required for Q9 before they can improve Q12.

**13. [Integers]**

**Skill 13.1** Comparing and ordering integers.

- Use a number line.
- Hint: Numbers decrease as you move to the left or down and increase as you move to the right or up.

A negative number is always smaller than a positive number.

An altitude is lower when further down, below sea level (BSL) and higher when further up, above sea level (ASL).

Temperatures below zero are lower than temperatures above zero.

**Q.** Who won the 2010 Women's British Open Golf Tournament? (Hint: In golf the lowest score wins.)

A. +5 K. Webb  
B. -10 K. Hull  
C. -11 Y. Tseng

**A. C** Find the lowest score to determine the winner.

**a)** Which of Saturn's moons has the highest temperature?

A) -201°C Enceladus  
B) -200°C Mimas  
C) -187°C Tethys

**C**

**b)** Which temperature for oxygen is higher?

A) -183°C boiling point  
B) -218°C melting point

**c)** Who won the 2010 British Open Golf Tournament? (Hint: In golf the lowest score wins.)

A) -16 L. Oosthuizen  
B) +3 P. Senior  
C) -2 R. Allenby

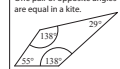
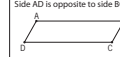


**d)** Which body of water is at the lowest altitude?

A) -28 m Caspian Sea  
B) -408 m Dead Sea  
C) -15 m Lake Eyre

### 3. Look up any unknown terms in the Skill Builder glossary

The glossary (pages 327 to 378) is more than just a list of definitions. It contains a wealth of relevant information that may help the students to better understand the question at hand. Weaker students may find that referring to a copy of the glossary, and even building on it, is a helpful strategy for improving their overall mathematical competency.

For example, a student might need to look up the word “operation” before attempting to complete Skill 13.1

<b>once</b>	• On one occasion.	Just this time!
<b>operation</b>	• A mathematical process performed according to certain <i>rules</i> .	There are four basic operations in arithmetic: addition $3 + 12$ subtraction $3 - 1$ multiplication $1 \times 5$ division $6 \div 3$ There are many complex operations like: sine $30^\circ$ , $\sqrt{9}$ and $\log_{10} 100.5^4$ .
<b>opposite angles</b>	• Angles across from each other in a shape.	One pair of opposite angles are equal in a kite. 
<b>opposite sides</b>	• Sides across from each other in a shape.	Side $\overline{AB}$ is opposite to side $\overline{CD}$ Side $\overline{AD}$ is opposite to side $\overline{BC}$ 
<b>opposites</b>	• Two <i>numbers</i> with the same <i>absolute value</i> but different <i>signs</i> .	The opposite of $+4$ is $-4$ .
<b>order</b>	• Placing a group in a special arrangement.	The aliens are arranged in order of height. 
<b>order of operations</b>	• The order of doing <i>operations</i> is: 1) <i>Simplify</i> inside all <i>brackets</i> . 2) <i>Evaluate</i> powers and <i>square roots</i> . 3) Calculate $\times$ and $\div$ from left to right. 4) Calculate $+$ and $-$ from left to right.	Calculate $4 + 3 \times (6 - 2)$ by 1) $4 + 3 \times (6 - 2)$ 2) $4 + 3 \times 4$ 3) $4 + 9 \times 4$ 4) $4 + 36$ = 40
<b>ordered pair</b>	• See <i>coordinates</i> .	
<b>ordinal numbers</b>	• A <i>whole number</i> that shows position.	1st, 2nd, 3rd, 4th, 5th, ... are ordinal numbers.
<b>orientation</b>	• Position relative to <i>direction</i> .	The tornado is coming from the west. 

page 352 www.mathsmate.co.nz © Maths Mate 4.2/5.1 Glossary

### 4. Complete the relevant Skill Builder

Work through the examples given for that skill, and complete the exercises.

There are many techniques or methods that can be used to teach the same basic skills, even something as simple as adding 7 and 9. It is good for a student to be given a range of alternatives appropriate for each skill but space restrictions make this impossible. These sheets often suggest an approach that may be different to a student's past experience. If a student feels more comfortable with his current technique, that is fine. In most cases it is the end result that counts.

It is possible to take a very weak student back to a Skill Builder from a lower level if this is necessary. It is also possible to use a higher level book for students to have further practice if required.

### 5. Correct the relevant Skill Builders from the Skill Builder answer sheets (from page 387)

### 6. Circle the completed skill numbers on the Maths Mate worksheet results sheet



17. [Exploring Number]	17.1	17.2	17.3	17.4	17.5	17.6	17.7	17.8	17.9	17.10	17.11	17.12
18. [Multiples / Factors / Primes]	18.1	18.2	18.3	18.4	18.5	18.6	18.7	18.8	18.9	18.10	18.11	18.12
19. [Number Patterns]	19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.9	19.10	19.11	19.12
20. [Expressions]	20.1	20.2	20.3	20.4	20.5	20.6	20.7	20.8	20.9	20.10	20.11	20.12
21. [Substitution]	21.1	21.2	21.3	21.4	21.5	21.6	21.7	21.8	21.9	21.10	21.11	21.12
22. [Equations]	22.1	22.2	22.3	22.4	22.5	22.6	22.7	22.8	22.9	22.10	22.11	22.12
23. [Coordinates]	23.1	23.2	23.3	23.4	23.5	23.6	23.7	23.8	23.9	23.10	23.11	23.12
24. [Units of Measurement / Time]	24.1	24.2	24.3	24.4	24.5	24.6	24.7	24.8	24.9	24.10	24.11	24.12
25. [Perimeter]	25.1	25.2	25.3	25.4	25.5	25.6	25.7	25.8	25.9	25.10	25.11	25.12

### 7. Go back and repeat previous Maths Mate questions

After completing a Skill Builder, students should be encouraged to go back and attempt again those particular questions on the recently completed Maths Mate worksheets.

Dear Parents

As part of their Mathematics programme this year, all students have been given a weekly Maths Mate worksheet.

The programme is now under way. The diagnostic nature of the worksheets helps students monitor their own progress. After they correct their worksheet and complete the record keeping sheet, over time, your child will be able to identify areas of strength and weakness in their mathematical learning.

If your child is having difficulty with a question for consecutive weeks or believes that their understanding is not at the level they would like, then Skill Builder sheets will be made available to develop each of the skills in the Maths Mate programme. Each Skill Builder focuses on and explores one question from the Maths Mate worksheets.

As each question in the Maths Mate is generally more difficult than the last, finishing with the problem solving questions, then it would be advised that, if students are concerned with more than one question, they tackle lower numbered questions first.

The Skill Builders may also help to motivate students to make another attempt at mastering skills that they have found too difficult in the past, given that it will become clear to them that they will be confronted by the same type of question on a regular basis.

While we will be monitoring your child's progress and supporting their skill development in the school environment, it would be appreciated if you would complete the tear off slip at the bottom of this page so that we can be sure that you are aware of our expectations regarding both the Maths Mate worksheets and the availability of Skill Builder worksheets. We ask also that you continue to sign the completed worksheets each week so that we can ensure each student is working independently and regularly but with your support.

We thank you in anticipation of your involvement and remind you that you are encouraged to call and discuss your child's progress at any time.

Yours sincerely

Class Teacher

Principal

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**Maths Mate Programme - Skill Builder Return Slip**

Student's Name: ..... Class: .....

As a parent / guardian I have signed this form to indicate that I am aware of the support Maths Mate Skill Builders can give my child in their mathematical development.

Parent's Signature: ..... Date: .....