

How to use Maths Mate Skill Builder

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 is posing difficulty.

For example, question 21 in Sheets 1, 2, 3 and 4 is not shaded, so Skill 21.1 from Skill Builder 21 needs to be handed to the student.

For skill builder help go to www.mathsmate.net

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Class: 7B

Teacher: Miss Bourke

Worksheet Results

Term 1	Sheet 1	Sheet 2	Sheet 3	Sheet 4	Skill Builder	Sheet 5	Sheet 6	Sheet 7	Sheet 8	Skill Builder
1. [- Whole Numbers to 10]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.1
2. [- Whole Numbers to 10]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.1
3. [- Whole Numbers to 12]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3.1
4. [- Whole Numbers to 12]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.1
5. [Large Number +, -]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.1
6. [Large Number x, ÷]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.1
7. [Decimal +, -]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.2
8. [Decimal x, ÷]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.2
9. [Fraction +, -]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.1.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.1.2
10. [Fraction x, ÷]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.1
11. [Percentages]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11.2
12. [Decimals / Fractions / Percents]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12.2
13. [Integers]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	13.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	13.1
14. [Rates / Ratios]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	14.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	14.2
15. [Indices / Square Roots]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	15.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	15.2
16. [Order of Operations]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	16.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	16.2
17. [Exploring Number]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	17.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	17.2
18. [Multiples / Factors / Primes]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	18.1.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	18.3
19. [Number Patterns]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	19.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	19.2
20. [Expressions]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	20.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	20.1
21. [Substitution]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	21.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	21.2
22. [Equations]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	22.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	22.1
23. [Coordinates]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	23.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	23.1
24. [Units of Measurement / Time]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	24.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	24.2
25. [Perimeter]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	25.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	25.2
26. [Area / Volume]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	26.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	26.2
27. [Shapes]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	27.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	27.2
28. [Exploring Geometry]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	28.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	28.2
29. [Statistics]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	29.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	29.2
30. [Probability]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	30.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	30.2
31. [Problem Solving 1]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	31.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	31.1
32. [Problem Solving 2]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	32.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	32.1
33. [Problem Solving 3]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	33.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	33.1
Total Correct	20	24	22	26						

page 1 © Maths Mate 7 – Record Keeping Sheets

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 312). 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 Q10 and Q12 will need to build skills required for Q10 before they can improve Q12.

21. [Substitution]

Skill 21.1 Substitution in equations (one variable) involving integers

• Substitute the letters with numbers.
• Use the order of operations rules: Add (+) and/or subtract (-) from left to right.

Q. If $a = 5$, find the value of $13 - a$. Skill Grid: 22 33 44
31 22 33 44

A. $13 - a = 13 - 5 = 8$ (Substitute $a = 5$)

a) If $p = 2$, find the value of $3 + p$. $= 3 + 2 = 7$

b) If $f = 3$, find the value of $6 + f$. $= 6 + 3 = 9$

c) If $c = 4$, find the value of $4 + c$. $= 4 + 4 = 8$

d) If $m = 5$, find the value of $m + 3$. $= 5 + 3 = 8$

e) If $g = 7$, find the value of $g + 2$. $= 7 + 2 = 9$

f) If $z = 6$, find the value of $z + 1$. $= 6 + 1 = 7$

g) If $x = 3$, find the value of $x + x$. $= 3 + 3 = 6$

h) If $v = 4$, find the value of $v + v$. $= 4 + 4 = 8$

i) If $q = 7$, find the value of $q + q$. $= 7 + 7 = 14$

j) If $t = 5$, find the value of $t + t + t$. $= 5 + 5 + 5 = 15$

k) If $e = 6$, find the value of $e + e + e$. $= 6 + 6 + 6 = 18$

l) If $p = 8$, find the value of $p + p + p$. $= 8 + 8 + 8 = 24$

m) If $j = 9$, find the value of $j + j - 8$. $= 9 + 9 - 8 = 10$

n) If $k = 7$, find the value of $k + k + 6$. $= 7 + 7 + 6 = 20$

o) If $h = 8$, find the value of $4 + h + h$. $= 4 + 8 + 8 = 20$

p) If $m = 8$, find the value of $m + m - 9$. $= 8 + 8 - 9 = 7$

q) If $s = 6$, find the value of $9 + s + s$. $= 9 + 6 + 6 = 21$

r) If $n = 5$, find the value of $8 + n + n$. $= 8 + 5 + 5 = 18$

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

The glossary (pages 313 to 364) 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 “substitute” before attempting to complete Skill 21.1

square units	• A unit of area equal to the area of a square with side lengths of 1 unit.	$A = \text{side} \times \text{side}$ $A = 3 \times 2 = 6$ Area = 6 square units																				
squared	• Multiplied by itself. A number raised to the second power.	4 squared is written as 4^2 $4^2 = 4 \times 4 = 16$																				
statistics	• Numerical facts systematically collected, organised and analysed.	Data is collected from a sample of the population, organised into a graph and interpreted to summarize some characteristic.																				
stem-and-leaf plot	• A diagram displaying data by place value. The data is in order from lowest to highest.																					
Data set of 13 elements: 13, 18, 18, 19, 20, 21, 21, 22, 22, 22, 29, 30, 31 mode = 22 median (7th element) = 21 range = 31 - 13 = 18 mean = $\frac{286}{13} = 22$																						
<table border="1"> <thead> <tr> <th>stem</th> <th>leaves</th> <th>lowest value = 13</th> <th>highest value = 31</th> <th>range = high - low</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>3 8 8 9</td> <td></td> <td></td> <td>= 31 - 13 = 18</td> </tr> <tr> <td>2</td> <td>0 1 1 2 2 2 9</td> <td>median = 21</td> <td>mode = 22</td> <td></td> </tr> <tr> <td>3</td> <td>0 1</td> <td></td> <td></td> <td>mean = $\frac{286}{13} = 22$</td> </tr> </tbody> </table>			stem	leaves	lowest value = 13	highest value = 31	range = high - low	1	3 8 8 9			= 31 - 13 = 18	2	0 1 1 2 2 2 9	median = 21	mode = 22		3	0 1			mean = $\frac{286}{13} = 22$
stem	leaves	lowest value = 13	highest value = 31	range = high - low																		
1	3 8 8 9			= 31 - 13 = 18																		
2	0 1 1 2 2 2 9	median = 21	mode = 22																			
3	0 1			mean = $\frac{286}{13} = 22$																		
straight angle	• An angle measuring 180° .																					
substitute	• To replace a number or function with another. Often used in algebra when a variable (letter) is replaced by a number.	If $x = 4$, the value of $x + x$ is found by replacing the letter x with 4: $4 + 4 = 8$																				
subtract	• To take away or minus.	If you subtract 10 from 15 you are left with 5: $15 - 10 = 5$																				
sum	• The result when two or more numbers are added.	The sum of 20 and 6 is 26: $20 + 6 = 6 + 20 = 26$																				
supplement of an angle	• An angle that, when added to an adjacent angle, makes a straight angle (or 180° in total).	75° is the supplement of 105° , because $75^\circ + 105^\circ = 180^\circ$ 																				

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 373)

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

17. [Exploring Numbers]	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.