

How to use the 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, provided at the start of each term in the Maths Mate Student Pad, then that question requires a Skill Builder.

For example, question 11 in Sheets 1, 2, 3 and 4 is not marked, so Skill 11.1 from Skill Builder 11 needs to be handed to the student.

MATHS MATE 9 Name: Ella Fiore
Worksheet Results Class: 9 J
 Teacher: Mr Jacques

Term 1

	Sheet 1	Sheet 2	Sheet 3	Sheet 4	Skill Builder	Sheet 5	Sheet 6	Sheet 7	Sheet 8	Progress On Track	Median %
	Sheet 1	Sheet 2	Sheet 3	Sheet 4	Skill #'	Sheet 5	Sheet 6	Sheet 7	Sheet 8	Skill #'	
1. [Long x-]	<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"/>	1.4.5	<input type="checkbox"/>
2. [Decimal +,-]	<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	<input type="checkbox"/>
3. [Decimal x-]	<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"/>	3.2	<input type="checkbox"/>
4. [Fraction +,-]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.1,2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4.1,2	<input type="checkbox"/>
5. [Fraction x-]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5.5	<input type="checkbox"/>
6. [Percentages]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.2	<input type="checkbox"/>
7. [Dec. / Frac. / Percentages]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.1,2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7.3	<input type="checkbox"/>
8. [Integers +,-]	<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	<input type="checkbox"/>
9. [Integers x-]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.2	<input type="checkbox"/>
10. [Fractions]	<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"/>	10.2	<input type="checkbox"/>
11. [Exponents]	<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"/>	11.1	<input type="checkbox"/>
12. [Square Roots]	<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	<input type="checkbox"/>
13. [Exploring Number]	<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"/>	13.3	<input type="checkbox"/>
14. [Applied Number]	<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	<input type="checkbox"/>
15. [Set Notation]	<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"/>	15.1	<input type="checkbox"/>
16. [Algebra - Expressions]	<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"/>	16.1	<input type="checkbox"/>
17. [Algebra - Substitution]	<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	<input type="checkbox"/>
18. [Algebra - Expansion]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	18.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	18.1	<input type="checkbox"/>
19. [Algebra - Factorisation]	<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"/>	19.1	<input type="checkbox"/>
20. [Algebra - Equations]	<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"/>	20.2	<input type="checkbox"/>
21. [Algebra - Graphs & Functions]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	21.1,2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	21.3	<input type="checkbox"/>
22. [Shapes]	<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"/>	22.2	<input type="checkbox"/>
23. [Angles]	<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"/>	23.2	<input type="checkbox"/>
24. [Exploring Geometry]	<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	<input type="checkbox"/>
25. [Measuring]	<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	<input type="checkbox"/>
26. [Perimeter / Area]	<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"/>	26.5,8	<input type="checkbox"/>
27. [Surface Area / Volume]	<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"/>	27.11	<input type="checkbox"/>
28. [Pythagoras]	<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	<input type="checkbox"/>
29. [Statistics]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	29.5,6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	29.1,2,3,4	<input type="checkbox"/>
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	<input type="checkbox"/>
31. [Problem Solving 1]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H.8.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H.8.5	<input type="checkbox"/>
32. [Problem Solving 2]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H.8.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	H.8.5	<input type="checkbox"/>
Total Correct	21	23	25	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 358). 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.

Generally too, when a student has several areas of weakness, they should work on the lowest numbered question first.

For example, a student struggling with Q3 and Q11 will need to build skills required for Q3 before they can improve Q11.

11. [Exponents]

Skill 11.1 Observe the exponent. The exponent tells you how many times to multiply the base by itself.

Base 5 Exponent

$5^4 = 5 \times 5 \times 5 \times 5$ (5 multiplied by itself 4 times)

$6^0 = 1$ any number⁰ = 1

$3^1 = 3$ any number¹ = itself

$4^2 = 4 \times 4$ (4 squared)

$2^3 = 2 \times 2 \times 2$ (2 cubed)

Q. $2^5 =$ A. $2^5 = 2 \times 2 \times 2 \times 2 \times 2 = 32$ (2 multiplied by itself 5 times)

a) $3^3 = 3 \times 3 \times 3 = 81$ b) $2^2 = 2 \times 2 \times 2 =$ c) $2^1 =$

d) $5^2 =$ e) $1^3 =$ f) $4^2 =$

g) $7^2 =$ h) $6^1 =$ i) $10^3 =$

j) $3^2 =$ k) $7^2 =$ l) $9^2 =$

m) $8^1 =$ n) $9^0 =$ o) $0^2 =$



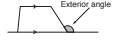
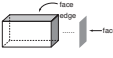
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3. Look up any unknown terms in the Skill Builder glossary

The glossary (pages 359 to 422) 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 "exponent" before attempting to complete Skill 11.1

event	• A set of possible <i>outcomes</i> resulting from a particular <i>experiment</i> . Any subset of a <i>sample space</i> .	A die is rolled - Event = {5, 6} i.e. either a 5 or a 6 may result 
expand	• To <i>multiply</i> out parts of an <i>expression</i> thereby removing the <i>brackets</i> .	Using $a = 1, b = 4, c = 3,$ $a(b + c) = ab + ac$ $1(4 + 3) = 1 \times 4 + 1 \times 3 = 7$
expense <small>(money)</small>	• The cost involved.	You buy 3 CDs at \$15 each. Your expense is \$45.
experiment	• A controlled repeatable process carried out in the study of <i>probability</i> .	Tossing a coin is an experiment. 
exponent	• A number placed to the upper right of another number, showing how many times the <i>base</i> is <i>multiplied</i> by itself.	$7^4 = 7 \times 7 \times 7 \times 7 = 2401$ The exponent is 4. It is read as 'seven to the power of four.'
exponential notation	• Writing quantities in the form of a <i>base</i> number and an <i>exponent</i> . Exponential notation indicates <i>what power</i> is to be used and makes it easier to use <i>multiple factors</i> .	$3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3$ can be more easily written using exponential notation as 3^7 .
expression	• A <i>sequence</i> of numbers and/or <i>pronumerals</i> (letters) connected by <i>operation</i> signs.	$42 - 3 - 10$ $x + 2y$ $2a^2 - 2$ } are examples of expressions
exterior angle	• An <i>angle</i> that is the <i>supplement</i> of an <i>interior angle</i> of any <i>polygon</i> .	
faces of a solid	• <i>Polygons</i> that join on their <i>edges</i> to form a <i>solid</i> .	A rectangular prism has 6 rectangular faces. 
factor	• When <i>whole numbers</i> , other than zero, are multiplied together, each number is a factor of the <i>product</i> . OR A whole number that divides exactly into another number. See <i>divisibility tests</i> .	Because $1 \times 12 = 12$ $2 \times 6 = 12$ and $3 \times 4 = 12,$ 1, 2, 3, 4, 6 and 12 are all factors of 12.

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Maths Mate 9/10 Skill Builder Glossary

4. Complete the relevant Skill Builders

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 Skill Builders from the Skill Builder answer sheets

(from page 433)

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

MATHS MATE 9 Worksheet Results		Name: Ella Fiore	
Term 1		Class: 9 J	
		Teacher: Mr Jacques	
	Skill Builder Sheet	Skill Builder Sheet	Progress Amount
	Sheet 1	Sheet 2	Sheet 3
	Skill #s	Skill #s	Skill #s
NUMBER	1. [Long \times, \div]	<input type="radio"/> 1.1	<input type="radio"/> 1.4.5
	2. [Decimal \times, \div]	<input type="radio"/> 2.1	<input type="radio"/> 2.1
	3. [Decimal \times, \div]	<input type="radio"/> 3.1	<input type="radio"/> 3.2
	4. [Fraction \times, \div]	<input type="radio"/> 4.1.2	<input type="radio"/> 4.1.2
	5. [Fraction \times, \div]	<input type="radio"/> 5.1	<input type="radio"/> 5.5
	6. [Percentages]	<input type="radio"/> 6.1	<input type="radio"/> 6.2
	7. [Dec. / Frac. / Percentages]	<input type="radio"/> 7.1.2	<input type="radio"/> 7.3
	8. [Integers \times, \div]	<input type="radio"/> 8.1	<input type="radio"/> 8.2
	9. [Integers \times, \div]	<input type="radio"/> 9.1	<input type="radio"/> 9.2
	10. [Rates / Ratios]	<input type="radio"/> 10.1	<input type="radio"/> 10.2
	11. [Exponents]	<input type="radio"/> 11.1	<input type="radio"/> 11.1
	12. [Square Roots]	<input type="radio"/> 12.1	<input type="radio"/> 12.2
	13. [Exploring Number]	<input type="radio"/> 13.1	<input type="radio"/> 13.3
	14. [Applied Number]	<input type="radio"/> 14.1	<input type="radio"/> 14.2
ALGEBRA	15. [Set Notation]	<input type="radio"/> 15.1	<input type="radio"/> 15.1
	16. [Algebra - Expressions]	<input type="radio"/> 16.1	<input type="radio"/> 16.1
	17. [Algebra - Substitution]	<input type="radio"/> 17.1	<input type="radio"/> 17.2
	18. [Algebra - Expansion]	<input type="radio"/> 18.1	<input type="radio"/> 18.1
	19. [Algebra - Factorisation]	<input type="radio"/> 19.1	<input type="radio"/> 19.1
	20. [Algebra - Equations]	<input type="radio"/> 20.1	<input type="radio"/> 20.2
	21. [Algebra - Graphs & Functions]	<input type="radio"/> 21.1.2	<input type="radio"/> 21.3
SHAPE	22. [Shapes]	<input type="radio"/> 22.1	<input type="radio"/> 22.2
	23. [Angles]	<input type="radio"/> 23.1	<input type="radio"/> 23.2
	24. [Exploring Geometry]	<input type="radio"/> 24.1	<input type="radio"/> 24.2
	MEASUREMENT	25. [Measuring]	<input type="radio"/> 25.1
26. [Perimeter / Area]		<input type="radio"/> 26.1	<input type="radio"/> 26.5.8
27. [Surface Area / Volume]		<input type="radio"/> 27.1	<input type="radio"/> 27.11
28. [Pythagoras]		<input type="radio"/> 28.1	<input type="radio"/> 28.2
29. [Statistics]		<input type="radio"/> 29.5.6	<input type="radio"/> 29.1.2.3.4
30. [Probability]		<input type="radio"/> 30.1	<input type="radio"/> 30.2
PROBLEM SOLVING		31. [Problem Solving 1]	<input type="radio"/> 31.5.5
	32. [Problem Solving 2]	<input type="radio"/> 32.5.5	<input type="radio"/> 32.5.5
Total Correct		21	23

page 1

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 homework sheets.