



Mathematics and Numeracy Handbook

2016

Year 7 Maths Teachers

7A	John Fraser	Additional Teacher for Intervention: Rose Thomson
7B	Stephen Coleman	
7C	Miranda Weir	
7D	Rob Stevens	
7E	Anna Rogers	Additional Teacher for Intervention: John Fraser
7F	Miranda Weir	
7G	Rose Thomson	
7H	Stephen Coleman	
7I- CEAP	Megha Verma	

Mathematics and Numeracy Leader: Rose Thomson

Maths Sequence 2016



YEAR 7	YEAR 7 CEAP
Semester 1 Number Patterns and Algebra Geometric Reasoning and Shapes Statistics and Probability Number, Place Value & Money	Semester 1 Number and Place Value Geometric Reasoning Statistics and Probability Patterns and Algebra
Semester 2 Real Numbers (Fractions, Decimals, Percentages & Ratio) Measurement Linear and Non-linear Relationships Shapes, Location and Transformation	Semester 2 Percentages, Ratio & Money Measurement Linear and Non-linear Relationships

Literacy and Numeracy Interventions Programs 2016

Every student in Year 7 at Craigieburn Secondary College will have a learning program that will focus on building their skills and knowledge for Literacy and Numeracy Fluency.

We will support and challenge students at their appropriate level to sustain engagement and attain academic growth.

Semester One: We will take 2 groups of students to provide a Mathematics intervention program.

Semester Two: We will use groupings for all classes for 4 half sessions a week to provide targeted instruction, activities and assessment.

Research supports our goal:

'...to accelerate the student's learning to a point where they can better participate and benefit from whole class teaching.'

(Australian Council for Educational Research, 2011)

What will the programs look like?

Classroom practices and policies that effectively support students' literacy and numeracy learning include:

- explicit teaching of literacies and numeracies
- programs and strategies that address the identified literacy and numeracy learning needs of individual students (including individual learning plans for students well below expected level)
- identifying the specific literacy and numeracy learning needs of the students and matching support specifically to those needs



- providing structured, sequenced sessions so students have regular opportunities to work on specific literacy or numeracy needs over time, establishing an effective working relationship and fostering confidence and self-esteem
- purposeful activities that engage students' interest
- opportunities for students to work in a variety of whole class and small groups with tasks differentiated
- regular and detailed monitoring of students' progress using a variety of observation and assessment strategies together with regular and frequent feedback to students
- clear communication established and maintained between all teachers of each class at the year level
- information communication technologies used to provide students with fresh opportunities to develop and demonstrate skills
- establishing effective links between home and school, and maintaining regular communication with parents.

Parents can help their child's learning every day, by supporting and encouraging them and being excited by their learning. Being positive about literacy and numeracy is really important.

Areas of Support for Maths Students

LMS- Year 7 Maths Page	Enrol into the Year 7 Maths class to access resources and assignments posted by your teacher
LMS- Mathematics Help Page: http://lms.craigieburnsc.vic.edu.au/course/view.php?id=193	Contains access to procedures in Mathematics as taught in the classroom, covering topics from Year 7 to 12. Helpful for parents and students to refer to when working at home and you get stuck on how to answer a question.
Homework Club	<p>***** Homework Help is available after school on Mondays *****</p> <p>See school notices for more information</p>
Using your Maths ebook: www.jacplus.com.au/ AssessOn Quizzes ‘Spy Class’	<p>Access your textbook online</p> <p>for tasks set by your teacher, such as revision quizzes. It also contains the full version of the textbook.</p> <p>Spy Class is a game-based, problem solving addition to your maths textbook. Look for it on your bookshelf once you have logged into your Jacplus account.</p>
Mathletics http://www.mathletics.com.au/	<p>Your teacher will set tasks for your individualized learning path. Mathletics can be accessed at school and at home for further Maths practice.</p> <p>Year 7-10 students at CSC have their own account; please see your teacher for details.</p>



Mathematics Help Page

(found under 'Student Links')

← → ↻ lms.craigieburnsc.vic.edu.au/course/view.php?id=193

CSC My classes ▾ College Links ▾ **Student Links ▾** Help ▾ Calendars ▾ Class Search ▾ This course ▾

Mathematics Help

News forum

Number and Algebra

Statistics and Probability

Measurement and Geometry

VCE General Mathematics Unit 1 and 2

VCE Mathematical Methods Unit 1 and 2

VCE Further Mathematics Unit 3 and 4

VCE Mathematical Methods Unit 3 and 4

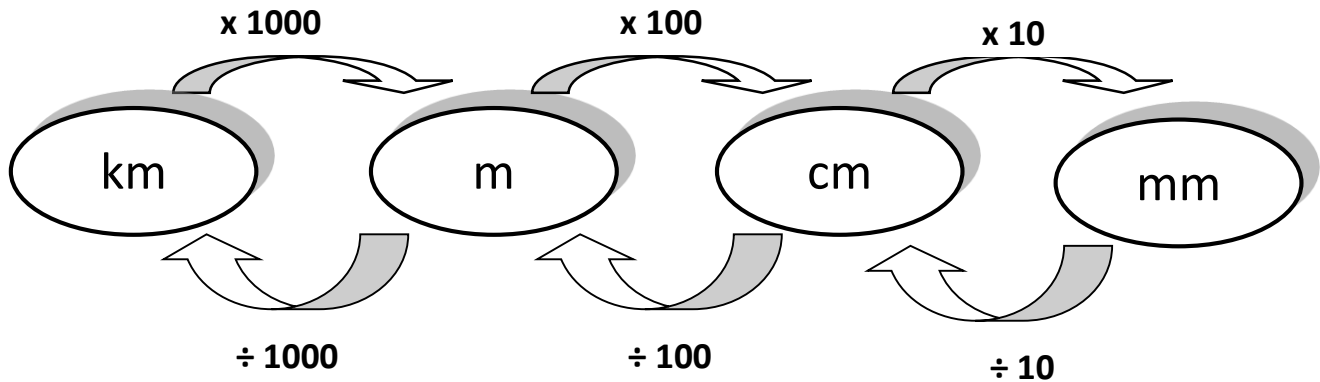
Useful Resources & Links

Includes help pages for topics from Year 7 to 12 Mathematics plus a 'Useful Links' section.






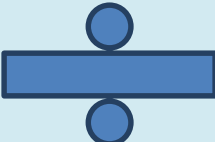
Metric Units of Length Conversion

Before students can work confidently in calculating length they need to be able to work confidently with metric units. This chart is to be used to make length conversions from one unit to another



Arithmetic Operations- Vocabulary

What are the different words to represent the four arithmetic operations?

 <p> Add Addition More Plus Increase Sum Total Altogether Score, Double, near double How many more to make...?, </p>	 <p> Subtract Take away Minus Decrease Leave How many are left/left over?, Difference between Half, halve How many more/fewer is..than...?, How much more/less is...? </p>
 <p> Lots of Groups of Product Multiply, multiplied by, multiple of Times, once, twice, three times, four times, five times...ten times Repeated addition, array </p>	 <p> Divide, Divided by, divided into, divisible by, remainder Factor Quotient Share </p>



Vocabulary used when describing Problems

<http://www.sssoftware.com/docs/wnadoc/language.html>

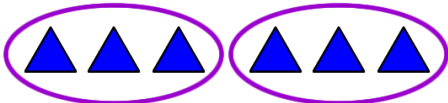
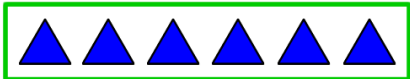
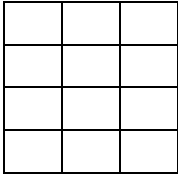
	Addition +	Subtraction -	Multiplication ×	Division ÷
Question Phrases to use when forming Addition/Subtraction/Multiplication/Division problems	<ul style="list-style-type: none"> What does that add up to? How many are there altogether? How many are there in all? If we put this together with that, how many will there be? What is the total? How much is there altogether? 	<ul style="list-style-type: none"> How many are left? How many are left over? How many more than...? How many less than...? How many more are needed? How many do you have to take away to get....? How many fewer? How much less? 	<ul style="list-style-type: none"> How many altogether? How many in all? If we multiply this number times that number, how many will there be? What is the total? How much altogether? 	<ul style="list-style-type: none"> When used to put a number into a number of sets, the question is: <ul style="list-style-type: none"> How many in each set? When used to put into sets of the same size, the question is: <ul style="list-style-type: none"> How many sets? How to distribute this group evenly? What part of the whole goes to each? How many pieces of the set go to each? How many times does this number go into this number?
Phrases representing ways of saying Addition/Subtraction/Multiplication/Division problems	<ul style="list-style-type: none"> 2 plus 2 equals 4 3 and then 5 more is.. increase 8 by 1 9 and 3 1 in addition to 2 have 7, also have 6 add 3 to 0 7 grew by 4 expand 2 by 8 more lengthen this length by 5 the sum of 9 and 7 is.. 	<ul style="list-style-type: none"> 4 minus 3 equals... 7 less 2 equals... 8 take away 6 equals... 9 decreased by 1 Reduce 4 by... Subtract 7 from 9 Deduct 2 from 3 Remove 2 from 5 	<ul style="list-style-type: none"> 2 times 3 equals 4 multiplied by 7 equals the product of 8 and 1 is repeat this set of 5, three times duplicate these 4 items, three times this set of 9, reproduced 6 times 6 occurrences of those 2 events, yields... 	<ul style="list-style-type: none"> 9 divided by 3 divide 8 by 4 4 goes into 8 separate into parts distribute this set of items give out an equal number to each break this apart into sections what part of the group partition this area into even sizes deal out these items



Mental Computation Strategies

Adding	Subtracting	Multiplying	Dividing
Eg. $39+11$	Eg. $39-11$	$\times 2$: double	Divide by 2 – halve it
Counting on...start at 39, add 10 then 1	Counting back...start at 39, subtract 10 then 1	$\times 4$: Double then double again	Divide by 4 – halve it then halve it again
Separating ... $(30+10) + (9+1)$	Separating ... $(30-10) + (9-1)$	$\times 5$: multiply by 10 then halve eg. 8×23 is 8 twenties 160 and 8 threes 24, so 184	Divide by 5 – divide by 10 then double it

Multiplication Strategies

Multiplication Strategies	
Groups of	<p>Let's see what's really going on when we multiply two numbers.</p> <p style="text-align: center;">2 x 3 =</p> <p>This means that you have two groups of 3!</p> <div style="text-align: center;">  </div> <p>Put the two groups together... How many triangles do you have?</p> <div style="text-align: center;">  </div>
Arrays	<div style="text-align: center;">  </div> <ul style="list-style-type: none"> • 4 rows and 3 columns= 12 squares • Other combinations that equal 12? • Factors of 12?



Using Multiples	X	1	2	3	4	5	6	7	8	9	10	11	12
	1	1	2	3	4	5	6	7	8	9	10	11	12
	2	2	4	6	8	10	12	14	16	18	20	22	24
	3	3	6	9	12	15	18	21	24	27	30	33	36
	4	4	8	12	16	20	24	28	32	36	40	44	48
	5	5	10	15	20	25	30	35	40	45	50	55	60
	6	6	12	18	24	30	36	42	48	54	60	66	72
	7	7	14	21	28	35	42	49	56	63	70	77	84
	8	8	16	24	32	40	48	56	64	72	80	88	96
	9	9	18	27	36	45	54	63	72	81	90	99	108
	10	10	20	30	40	50	60	70	80	90	100	110	120
	11	11	22	33	44	55	66	77	88	99	110	121	132
	12	12	24	36	48	60	72	84	96	108	120	132	144
Doubling	x2- double x4- double then double again x8 – double then double again then double again												

Number Patterns	<ul style="list-style-type: none"> • 4×6 is equal to $6 + 6 + 6 + 6$ (i.e. I can add if needed, but it takes too long) • $4 \times 6 = 3 \times 6 + 6$ (i.e. I can work out an unknown result by building on a known near result) • $4 \times 6 = 6 \times 4$ (i.e. if I know one I already know the other) • $4 \times 6 = 2 \times 12$ (i.e. I can convert one I don't know to one I do know) • known characteristics, such as 4×6 will be an even number (so it is not 25)
Digit Patterns	9 times tables – all digits add up to 9 (except 99) First digits are ascending Second digits are descending 5 times tables – last digit is either 5 or 0
Using factors of ten	x5 is the same as multiplying by 10 then halving it Mental arithmetic with 2 digit numbers will involve performing multiplication in 2 stages; first multiplying by the factor of ten then the unit digit eg. 63×7 $60 \times 7 = 420$ Then $3 \times 7 = 21$ Answer 441



Problem Solving Strategies (this is a page in the student planner)

1. Understand the problem	<p>Read the problem very carefully. Underline the key words. Put the problem in your own words.</p> <ul style="list-style-type: none"> • What do I know? • What do I want to know? • What can I do?
2. Make a plan	<p>Look at your tool box/strategies. Choose a strategy that will help solve the problem. Plan the steps.</p> <div data-bbox="400 674 1549 1451"> <p>The Math Problem Solving Toolbox</p> <p>Use these tools to prove or disprove problems</p> </div>
3. Do it	<p>Try out your plan and put pen to paper. What rule/formula is needed?</p>
4. Look back	<p>How did you go? Does the answer make sense? Check your accuracy. If you were successful, what did you <u>learn</u>? Compare your strategy to others? Can you extend the problem? If you weren't successful, go back to step 1 and try to work out which step was the problem.</p>



Goal setting for Maths: Some suggestions

These are my classroom goals for term 1:

- Be prepared for every lesson with required equipment
- Take notes in class
- Copy all the steps of maths problems in my notes
- Ask questions when I am confused
- Estimate what the answer to a problem will be before actually doing the problem
- Work on problems until I understand them
- Review information given in questions and what I need to know, before putting them into the calculator
- Check my calculations for errors
- When I get my tests back, I will note the mistakes I made: concept errors, application errors, or careless errors
- Have study partners in my class
- Be enthusiastic about learning all topics
- Catch up on missed work (from absences)
- Complete all set Mathletics activities

These are my study goals for term 1:

- Prepare a study timetable before tests
- Keep up-to-date with homework
- Review my notes and text before beginning the homework
- If I have trouble understanding the textbook, I will find an alternate text (e.g. Maths help page, Mathletics ebooks)
- Ask the teacher about homework problems the next lesson
- Go to homework club on Mondays
- Use flashcards for formulas and vocabulary
- Read my maths textbook before I come to class
- Prepare summaries before each topic test
- Complete AssessOn quizzes set by the teacher
- Complete SpyClass challenges on Jacplus
- Explain the topic to a friend – if you can clearly express the concepts in your own words, you can be sure you understand the topic well
- Know how questions may be answered incorrectly

These are my test goals for term 1:

- Preview the maths test before I begin
- Take the full amount of time allotted for the test
- Read the entire question carefully and identify the key concepts involved
- Identify the mathematics likely to be involved
- Carefully check or rework as many problems as I have time to
- Check how many marks are allocated to each question- have I done enough?
- Check notation, rounding and units in answers
- Attempt all questions