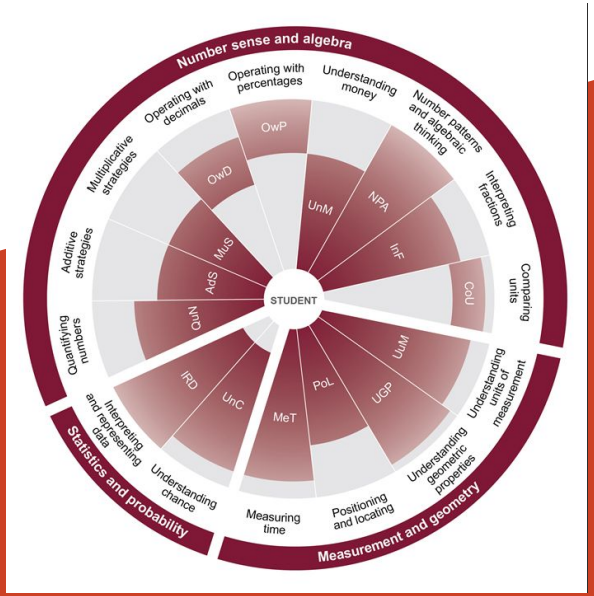
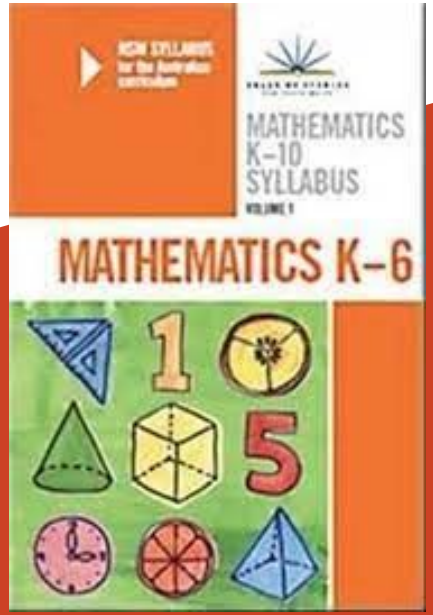
Mathematics and Numeracy in Kindergarten

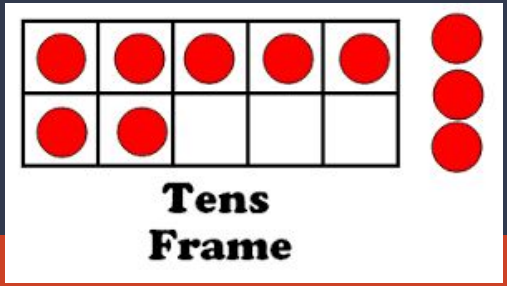
Becoming numerate and using numeracy





Whole Number

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



- Producing number names
- Counting items
- Numeral recognition and identification
- Understanding place value
- Understanding decimal place value

[K - 30 forwards and backwards]

[1 - 100]

[2 - 1000]

Early Number & Counting

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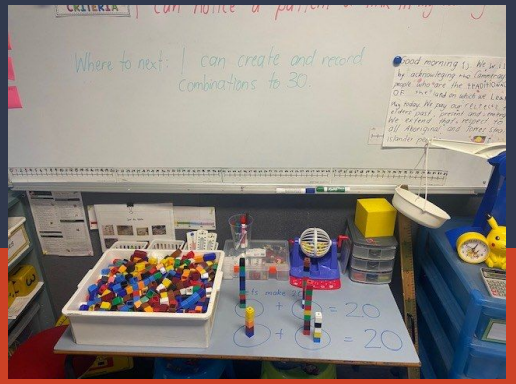
Addition and Subtraction



Figurative

Counting on

Counting back

Flexible to 10

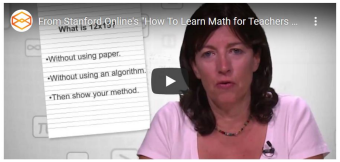
Flexible with two-digit numbers

Flexible with three-digit numbers and beyond

Number Talks (extract from online course)

This teaches the pedagogical strategy called 'Number Talks' with some interesting different methods shared by Stanford students.

The full online course is available at: Stanford Online – How to Learn Math for Teachers



Addition & Subtraction

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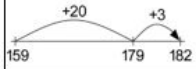
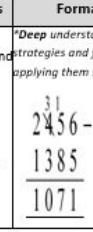
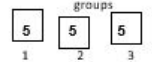
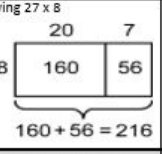
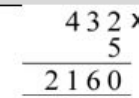
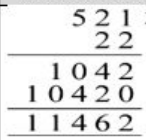
[Ten Differentiated Activities]

Addition and Subtraction Strategies

Counts on using ones	Bridging to the decade	Friends of and to ten	Using doubles
Student counts on by ones for numbers of any size (including two-digit numbers) will use fingers or draw fence posts	Students bridge to ten by breaking up the second number. e.g. 17 + 5; 17 and 3 is 20 then add two more makes 22	Students combine numbers that add to 10 e.g. 4 + 7 + 8 + 6 + 3 + 1; group 4 and 6, 7 and 3 first	Students use known facts like doubles and near doubles e.g. 5 + 6; double 5 then add one more
Counting on	**Counting back**	**Using number facts**	**Jump strategy**
Students count on from the larger number to find the total of two numbers e.g. 14 + 7, "I started with 14 and then count on seven more" 14, 15, 16, 17, 18, 19, 20, 21	Students count back from a number to find the number remaining e.g. 17 - = 14 "I started with 17 then counted back 16, 15, 14 and I got 3"	Students use related addition and subtraction number facts to at least 20 e.g. 15 + 3 =18; so 18 – 15 = 3 these are called 'Turn Around Facts'	Students place the first number on an empty number line and then counts forward or backwards firstly by tens and then by ones to perform a calculation 
Split Strategy	**Compensation strategy**	**Using patterns to extend number facts**	**Bridging the decades**
Students separate the tens from the units and add or subtract each separately before combining to obtain the final answer e.g. 46 + 33 = 40 + 6 + 30 + 3 = 40 + 30 + 6 + 3 = 70 + 9 = 79	Students 'round up' a number that is close to the decade to make the calculation simpler. e.g. 63 + 29; 63 + 30 is 93, subtract 1, to obtain 92	Students see the similarity between calculations of smaller and larger numbers, using an easier sum as a starting place for finding a solution. e.g. 5 – 2 = 3, so 500 – 200 is 300	This strategy is similar to using a split strategy, instead of splitting both numbers, students keep one number whole and bridge to the decade first. e.g. 34 + 26; 34 + 6 = 40, 40 + 20 = 60 It is a reversal of jump but is only used when the 'ones' add to a ten
Forming multiples	**Inverse operations**	**Partitioning numbers**	**Formal algorithm**
Student change the order of addends (numbers) to form multiples of ten or other decades. e.g. 16 + 8 + 4; add 16 and 4 first	Students check solutions by using inverse operations. e.g. 50- 27= 23, so, 23+ 27 = 50	Students can expand numbers into standard and non- standard forms to make addition or subtraction easier. e.g. 500 + 670: 670= 500 + 170, so 500 + 670= 500+ 500 = 1000+ 170= 1170	**Deep understanding of previous strategies and flexible skills in applying them should be gained before students are encouraged to use algorithms. When using algorithms, students should use mental strategies to estimate answer first.* 

Multiplication and Division Strategies

Model equal groups	Perceptual counting and sharing	Rhythmic counting	Skip counting
 'two groups of three'	Uses visual markers to represent items and groups	1, 2, **3**, 4, 5, **6**, 7, 8, **9**...	3, 6, 9, 12... May need visible items
Forms arrays of equal rows	**Figurative- multiple count**	**Uses repeated addition for multiplication**	**Uses repeated subtraction for division**
	Uses visual markers to show groups  3 x 5 = 15	5 groups of 4 is the same as 4+4+4+4+4 Or For 3 x 4 3 + 3 is 6, 6 + 3 is 9, 9 + 3 is 12	25 ÷ 5 = 25- 5= 20 (one) - 5 = 15 (two) - 5 = 10 (three) -5 = 5 (four) -5 = 0 (five)
Uses a double count to coordinate composite units	**Uses doubling and repeated doubling**	**Uses halving and repeated halving for 2, 4 and 8**	**Uses inverse operations**
Counts by the number in each group while counting the number of groups e.g. "How many three in 18?" 3 is 1, 6 is 2, 9 is 3...18 is 6	7 x 8 is double 7 (14), double again (28) then double again (56)	36÷ 4: halve 36 (gives 18) then halve again (equals 9)	25 ÷ 5 is the same as 5 x ? = 25 so the answer is 5
Uses known facts to work out unknown	**Uses relationships between facts**	**Uses place value concepts**	**Factorises the multiple of 10**
5 x 7 = 35 so 6 x 7 is 7 more than 35	Multiples for 6 are double the facts for 3	3 x 20 is the same as 3 x 2 tens = 6 tens= 60	3 x 20 is the same as 3 x 2 x 10= 6 x
Model commutative property	**Multiplying the tens then the units**	**Model and apply associative property**	**Factorising the larger number**
3 groups of 2 is the same as 2 groups of 3	7 x 19 is the same as 7 tens plus 7 nines is 70+ 63= 133	2 x 3 x 5= 2 x 5 x 3= 10 x 3= 30	18 x 5= 9 x 2 x 5= 9 x 10= 90
Stage 3			
Uses an area model	**Uses a formal algorithm**	**Uses extended form (long multiplication)**	**Uses estimation**
Solving 27 x 8  160 + 56 = 216			32 x 253 will be about, but more than 30 x 250
Recognises grouping symbols	**Applies order of operations**		
5 + (2 x 3) = 5 + 6 = 11	32 ÷ (2 x 4) = 32 ÷ 8= 4 (grouping symbols first)		

Multiplication and Division

Progression of Multiplication

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Progression of Division

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Fractions and Decimals

Quotative division is When dividing a number into groups of. Want we want to know = how many groups. Partitive division is When dividing a number into a known number of groups. What we want to know = how many is in each group.

Forming equal groups

Perceptual multiples (skip counting)

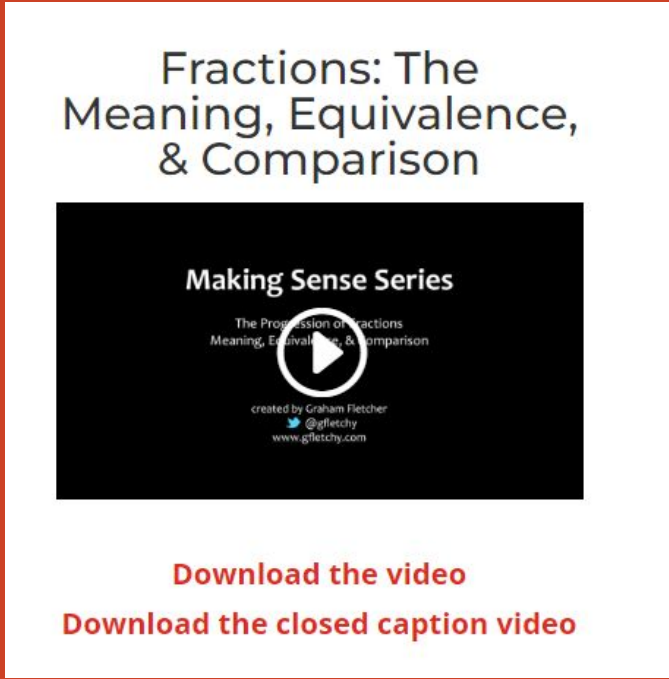
Figurative (imagined units)

Repeated abstract composite units

Coordinating composite units (partitive and quotative)

Flexible for multiplication and division

Flexible number properties

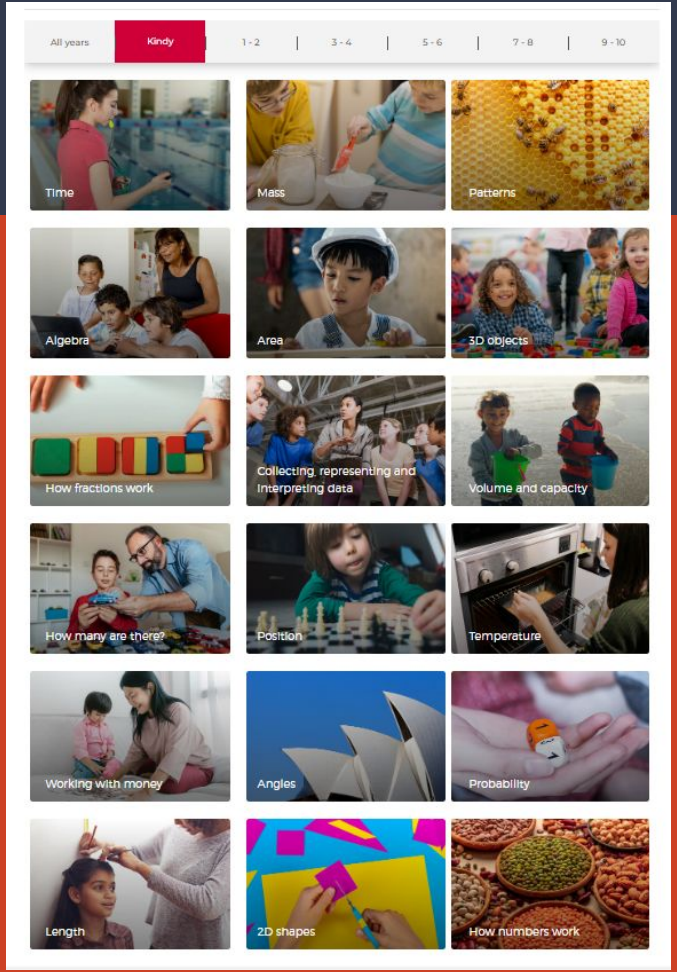


Applying Numeracy

Everyday maths

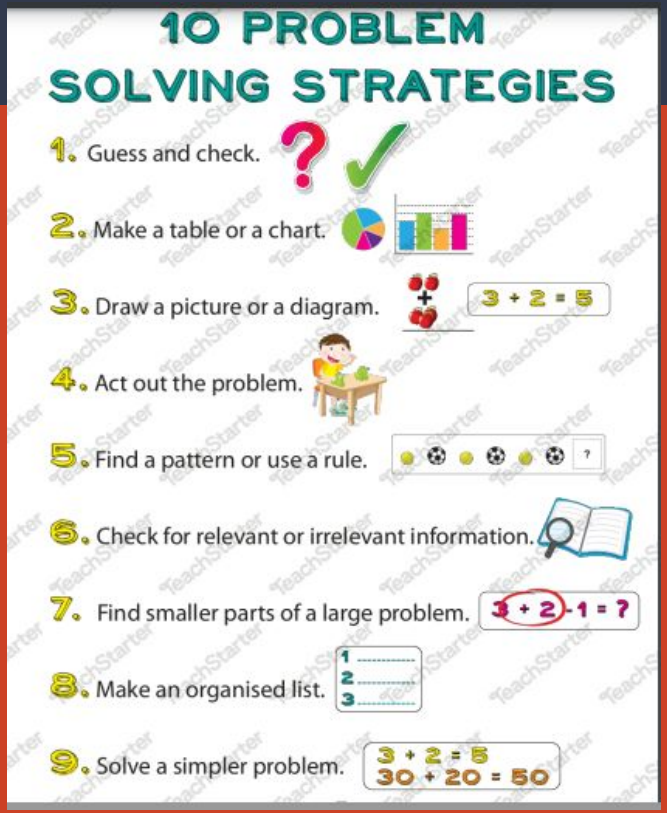
Maths is used every day in almost everything we do. Parents and carers can support their child's mathematical skills and understanding with these fun, practical, and creative activities.

NSW GOVERNMENT

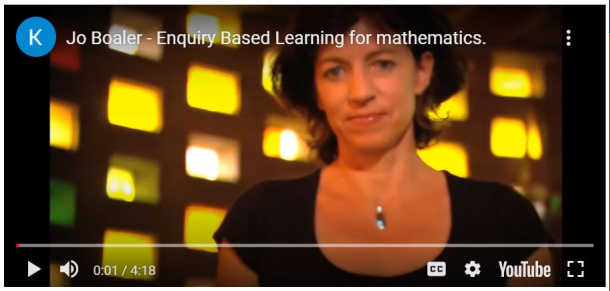


Numeracy in Literature

Problem Solving Strategies



Walker Learning Investigations in Maths



Parent Resources

nzmaths.
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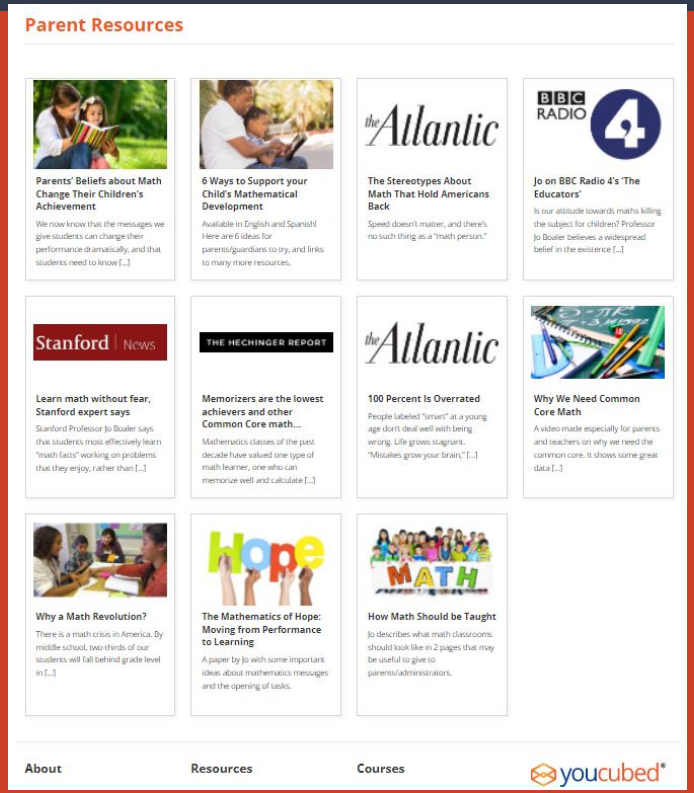
Māori content

Supporting your child with primary mathematics

BY CATTARD2017 | AUGUST 11, 2021

Tips for Parents: Helping Your Child Succeed with Mathematics

BY CATTARD2017 | JANUARY 15, 2018



Parent Resources