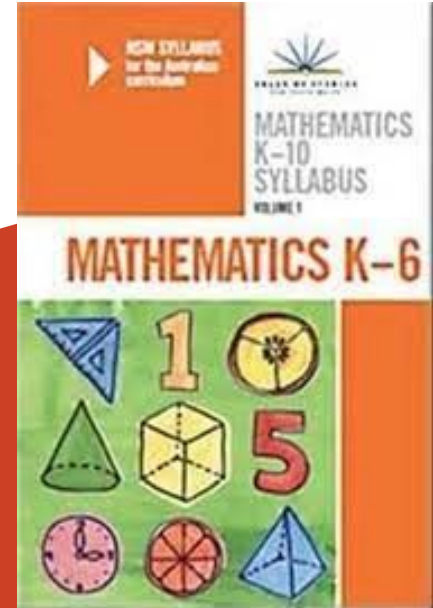
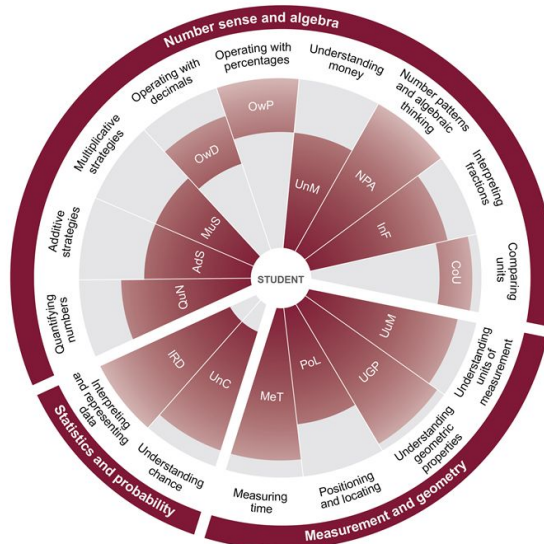


Mathematics and Numeracy in Kindergarten

Becoming numerate and using numeracy



Whole Number

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

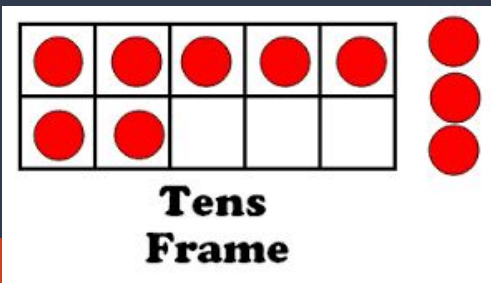
K - 30 forwards and backwards

1 - 100

2 - 1000

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

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Early Number & Counting



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Addition and Subtraction

Figurative

Counting on

Counting back

Flexible to 10

Flexible with two-digit numbers

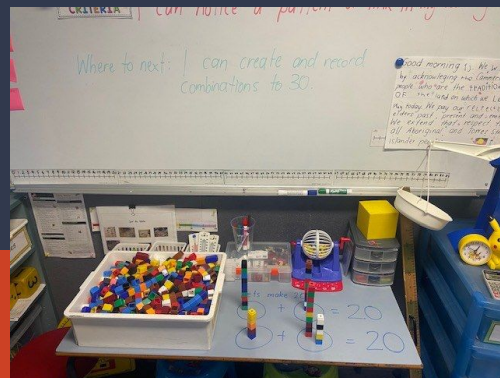
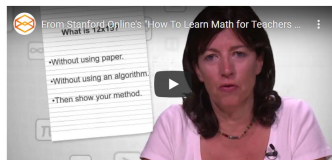
Flexible with three-digit numbers and beyond

[Ten Differentiated Activities](#)

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

Making Sense Series

the progression of addition AND subtraction
the standard addition algorithm

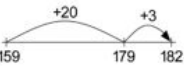
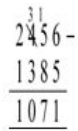


created by Graham Fletcher
@gfletchy
www.gfletchy.com



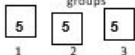
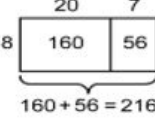
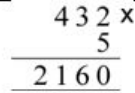
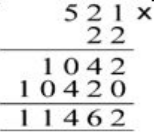
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Addition and Subtraction Strategies

Counts on using ones	Bridging to the decade	Friends of and to ten	Using doubles
Students count 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
Students 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 + 170 = 1000 + 170 = 1170	<i>"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."</i> 

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
 3 x 5 = 15	Uses visual markers to show groups  1 2 3 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 2 = 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	Multiplies 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 10
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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[Download the closed caption video](#)

Progression of Division



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~~[Download the closed caption video](#)~~

Fractions and Decimals

Quotative division is When dividing a number into groups of. What 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

Fractions: The Meaning, Equivalence, & Comparison

Making Sense Series

The Progression of Fractions
Meaning, Equivalence, & Comparison

created by Graham Fletcher
@gfletcher
www.gfletcher.com

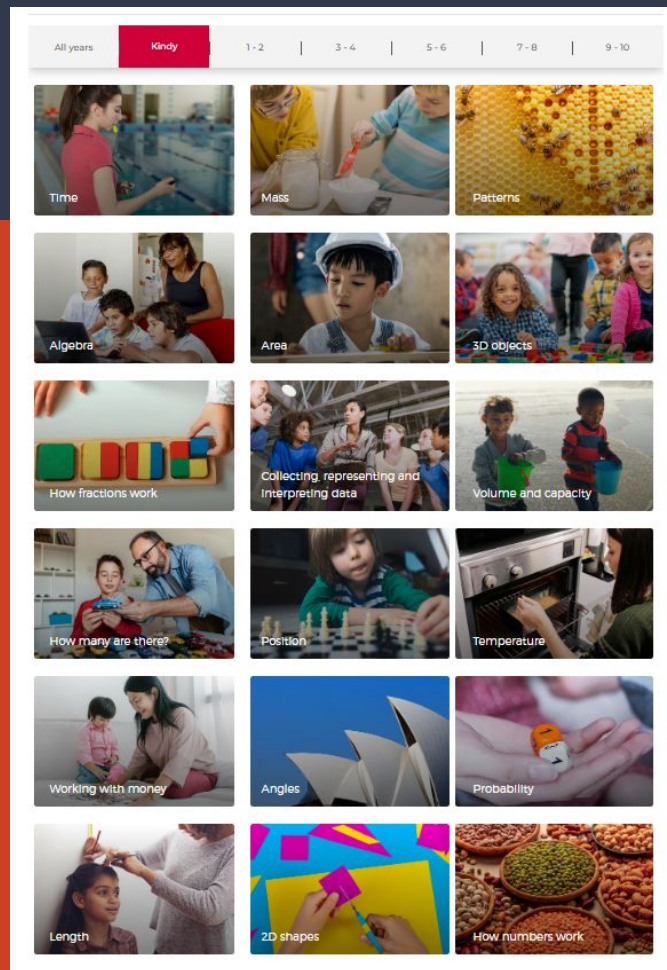
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Applying Numeracy

Everyday maths

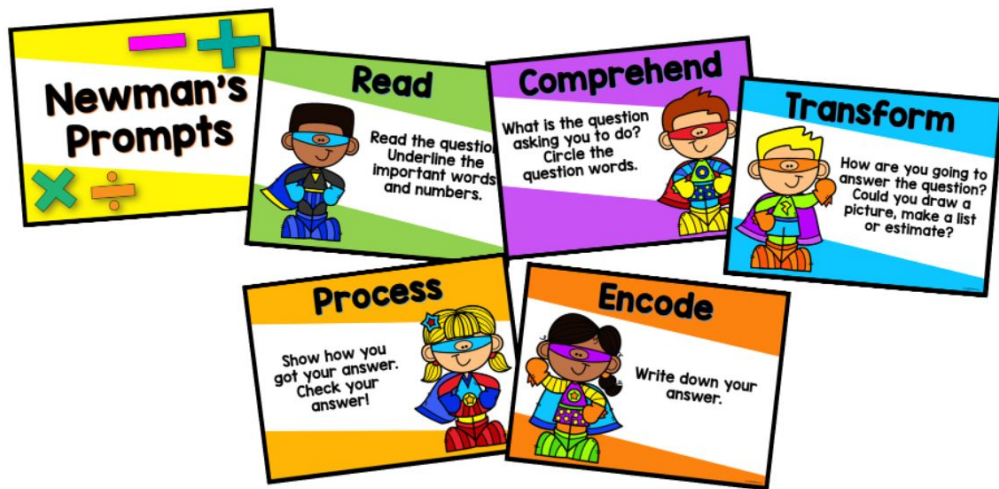
Maths is used every day in almost everything we do. Parents and carers can support their child's mathematical skills and understanding with these fun, practical, and creative activities.



Numeracy in Literature



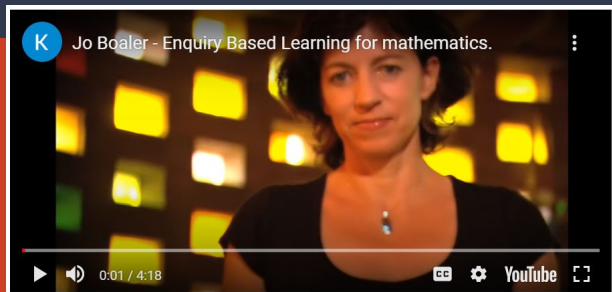
Problem Solving Strategies



10 PROBLEM SOLVING STRATEGIES

1. Guess and check.
2. Make a table or a chart.
3. Draw a picture or a diagram.
4. Act out the problem.
5. Find a pattern or use a rule.
6. Check for relevant or irrelevant information.
7. Find smaller parts of a large problem.
8. Make an organised list.
9. Solve a simpler problem.

Walker Learning Investigations in Maths



Parent Resources

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

nzmaths.
The home of mathematics
education in New Zealand.

Māori content

Parent Resources



Parents' Beliefs about Math Change Their Children's Achievement

We now know that the messages we give students can change their performance dramatically, and that students need to know [...]



6 Ways to Support your Child's Mathematical Development

Available in English and Spanish! Here are 6 ideas for parents/guardians to try, and links to many more resources.



The Stereotypes About Math That Hold Americans Back

Speed doesn't matter, and there's no such thing as a "math person."



Jo on BBC Radio 4's 'The Educators'

Is our attitude towards maths killing the subject for children? Professor Jo Bauler believes a widespread belief in the existence [...]



Learn math without fear, Stanford expert says

Stanford Professor Jo Bauler says that students most effectively learn "math facts" working on problems that they enjoy, rather than [...]



Memorizers are the lowest achievers and other Common Core math...

Mathematics classes of the past decade have valued one type of math learner, one who can memorize well and calculate [...]



100 Percent Is Overrated

People labeled "smart" at a young age don't deal well with being wrong. Life grows stagnant. "Mistakes grow your brain" [...]



Why We Need Common Core Math

A video made especially for parents and teachers on why we need the common core. It shows some great data [...]



Why a Math Revolution?

There is a math crisis in America. By middle school, two-thirds of our students will fall behind grade level in [...]



The Mathematics of Hope: Moving from Performance to Learning

A paper by Jo with some important ideas about mathematics messages and the opening of tasks.



How Math Should be Taught

Jo describes what math classrooms should look like in 2 pages that may be useful to give to parents/administrators.

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Parent Resources

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Faculty of Mathematics

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parents

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- ☒ Games
- ☒ Articles
- ☒ Interactivities

Age

- ☒ All ages
- ☐ 3-5
- ☐ 5-7
- ☐ 7-11
- ☐ 11-14
- ☐ 14-16
- ☐ 16+

Challenge Level

Parents, Children and Maths
Age 5 to 7
Jenny Murray writes about the sessions she leads in schools for parents to work alongside children on mathematical problems, puzzles and games.

What to Expect, When? Parents' Guide 2015
Age 3 to 5
This short article critiques the 'What to Expect, When' guidance, written for parents who want to find out more about their child's learning and development in the first five years.

Maths at Home Support for Parents and Carers
Age 5 to 14

A Maths Afternoon



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4	St. John's School, Sydney, NSW, Australia	9,500
5	St. John's School, Sydney, NSW, Australia	9,000
6	St. John's School, Sydney, NSW, Australia	8,500
7	St. John's School, Sydney, NSW, Australia	8,000
8	St. John's School, Sydney, NSW, Australia	7,500
9	St. John's School, Sydney, NSW, Australia	7,000
10	St. John's School, Sydney, NSW, Australia	6,500

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