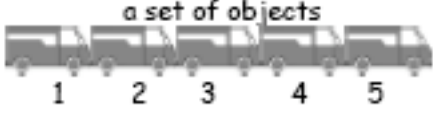



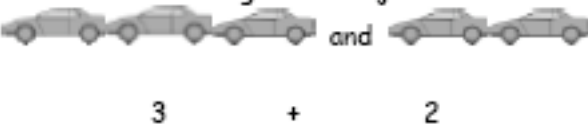
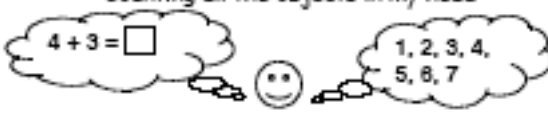






New Zealand Numeracy Strategies

<u>Strategy Stage</u>	<u>Strategy</u>	<u>Strategies</u>
Emergent	• Count	a set of objects 
	• Get	a set of objects, like seven teddies 
One to One Counting	• Join	Groups of objects together 
	• Split	A number of objects into groups 
Counting from one on Materials	• Solve + and - problems up to 10 by	Counting all the objects 
Counting from one by imaging	• Solve + and - problems to 10 by	Counting all the objects in my head 
	• Share objects equally to make 1/2's and 1/4's	Share 12 muffins amongst four $\frac{1}{4}$ of 12 
Advanced Counting	• Solve + and - problems by	Counting on or back from the largest number, in my head. 
	• Solve x problems by	Skip-counting in twos, fives, or tens 
	• Find 1/2 and 1/4 of sets	Share 12 muffins amongst four $\frac{1}{4}$ of 12 

<u>Strategy Stage</u>	<u>Strategy</u>	<u>Strategies</u>
Early Additive Part-whole	• Solve + and - problems in my head by	Using doubles, for example, $8 + 7$ as $8 + 8 -$ Using fives, for example, $8 + 7$ as $5 + 3 + 5$ Using making tens, for example, $8 + 7$ as 10 Using making tens, for example, $19 + 6$ as 20 $29 + 8$ as $30 + 7$ Using place value, for example, $33 + 16$ as $30 + 10 + 3 + 6$
	• Use repeated addition to solve \times problems by	Twos $2 + 2 + 2 + 2 = 4 \times 2$ Threes $3 + 3 + 3 + 3 = 5 \times 3$ Fours $4 + 4 + 4 = 3 \times 4$ Fives $5 + 5 + 5 + 5 = 5 \times 5$ Tens $10 + 10 = 2 \times 10$
	• Find a fraction of a number by	Using repeated addition or subtraction, for example, $\frac{1}{3}$ of 12 as $4 + 4 +$ for example, $12 - 2 - 2 - 2 = 6,$ $6 - 2 - 2 - 2 = 0,$ $\frac{1}{3}$ $\frac{1}{3}$ of 12 is $2 + 2$
Advanced Additive part-whole	• Solve + and - problems by	Using compensation from tidy numbers $725 - 389$ as $725 - 400 + 11 = 336$ Using place value $376 + 431$ as $300 + 400 + 70 + 30 + 6 + 1 = 807$ Using compatible numbers $35 + 37 + 65$ as $(35 + 65) + 37 = 100 + 37 = 137$ Using reversibility $814 - 789 = ??$ as $789 + ?? = 814$ Using equal additions $72 - 37$ as $75 - 40$ (add three to both numbers) Using decomposition $83 - 28$ as renaming 83 so 87 13 - 28
	• Solve \times and \div problems by	Using doubling, for ex, $2 \times 6 = 12$ so $4 \times 6 = 24$ Deriving facts, for ex, $2 \times 6 = 12$ so $3 \times 6 = 12 + 6 = 18$ Using reversibility, for ex, $7 \times 4 = 28$ so $28 \div 4 = 7$ Using proportional adjustment, for example, 3×12 is the same as, $6 \times 6 = 36$ (doubling and halving), or $24 \div 4 = 6$ so $24 \div 8 = 3$
	• Solve problems with fractions	Mentally, using known multiplication and division facts, for example, $\frac{1}{3}$ of 36 as, $3 \times 12 = 36$ so, $\frac{1}{3}$ of 36 = 12

Strategy Stage	Strategy	Strategies
Advanced Multiplicative Part-Whole	• Solve + and - problems by using	<p>Compensation from tidy numbers, e.g., $3.2 + 1.95$ as $3.2 + 2 - 0.05$</p> <p>Place value, e.g., $8.65 - 4.2 = (8 - 4) + (0.6 - 0.2) + 0.05$ or $8.65 - 4 = 4.65$ then $4.65 - 0.2 = 4.45$</p> <p>Reversibility and commutativity, e.g., $6.03 - 5.8 = ??$ as $5.8 + ?? = 6.03$ (reversibility) or $?? + 3.98 = 7.04$ as $3.98 + ?? = 7.04$ (commutativity)</p> <p>Equal additions, e.g., $7.24 - 3.8$ as $7.44 - 4.0 = 3.44$</p> <p>Using negatives, e.g., $6.4 - 2.5$ as $0.4 - 0.5$ is -0.1; $6.0 - 2.0 = 4.0$; $4.0 - 0.1 = 3.9$</p> <p>Decomposition, e.g., $9.25 - 6.83$ as $8.125 - 6.83$</p>
	• Solve \times and \div problems using	<p>Compensation from tidy numbers, e.g., 6×998 as, $(6 \times 1000) - (6 \times 2)$ or $56 \div 4$ using $(60 \div 4) - 1$</p> <p>Place value, e.g., 28×7 as $(20 \times 7) + (8 \times 7)$ or $72 \div 4$ as $(40 \div 4) + (32 \div 4)$</p> <p>Reversibility and commutativity, e.g., $96 \div 6$ as $6 \times ?? = 96$ and 17×6 as 6×17</p> <p>Proportional adjustment, e.g., 4×18 as 8×9 or $81 \div 3$ as $(81 \div 9) \times 3$</p> <p>Written working forms or calculators where the numbers are difficult and/or untidy</p>
	• Solve problems with fractions, decimals, proportions, and ratios, using	<p>Unit fractions, e.g., $4/9 \times 18$ as $(1/9 \times 18) \times 4$</p> <p>Place value, e.g., 3.4×8 as $(3 \times 8) + (0.4 \times 8)$ $= 24 + 3.2 = 27.2$</p> <p>Compensating from tidy numbers or fractions, e.g., $3/8 \times 28$ as $1/2$ of $3/4 \times 28$ or 1.9×3.4 as $(2 \times 3.4) - (0.1 \times 3.4)$</p> <p>Using equivalent fractions and ratios, e.g., 40% of 35 as $2/5$ of 35 = 14</p>

<u>Strategy Stage</u>	<u>Strategy</u>	<u>Strategies</u>
Advanced Proportional Part-Whole	• Solve \times and \div problems with fractions and decimals by	<p>Conversion between fractions and decimals, e.g., 0.75×2.4 as $\frac{3}{4} \times 2.4$</p> <p>Place value, e.g., 0.15×3.6, as $(0.1 \times 3.6) + (0.05 \times 3.6)$</p> <p>Doubling and halving, etc., e.g., $7.2 \div 0.4$ as $(7.2 \div 0.8) \times 2$</p> <p>Commutativity, e.g., 48×0.125 as $0.125 \times 8 = \frac{1}{8}$ of $8 = 1$</p> <p>Multiplying numerators and denominators, e.g., $\frac{3}{4} \times \frac{2}{5}$ as $\frac{3 \times 2}{4 \times 5}$</p>
	• Find	<p>Fractions, decimals, and percentages of given amounts, e.g., 65% of 24 as 50% of 24 is 12, 10% of 24 is 2.4, and 5% is 1.2 so $12 + 2.4 + 1.2 = 15.6$</p>
	• Solve problems with ratios and proportions by	<p>Finding equivalent ratios with a common factor, e.g., 21:28 as ?? :8 as 21:28 is 3:4 so 6:8 e.g., $\frac{18}{27} = \frac{2}{3}$ so $\frac{2}{3} = \frac{10}{15}$</p> <p>Finding a multiplier between the units, e.g., 18 out of 27 as 10 out of 15 by multiplying 15 by $\frac{2}{3}$</p>