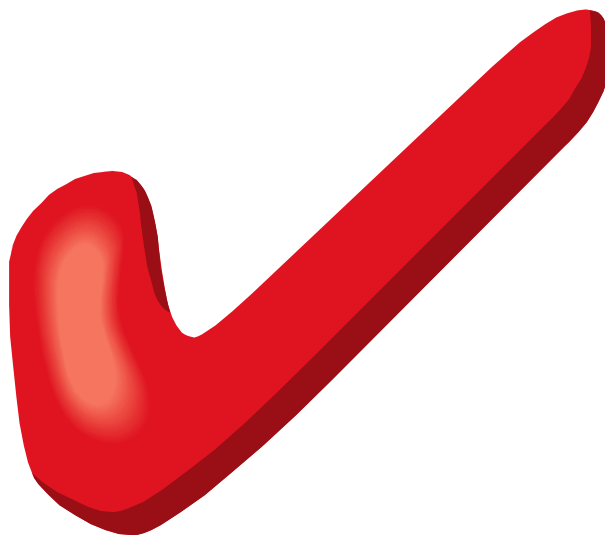
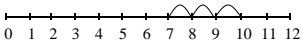

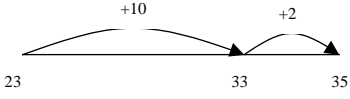
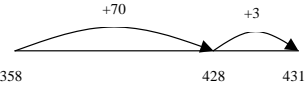




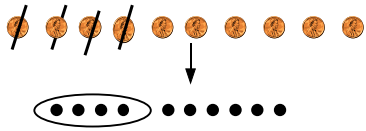
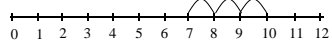
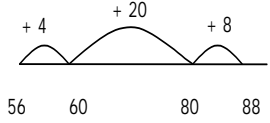
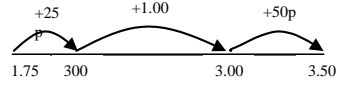
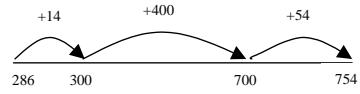
**Penshurst Primary School
Progression in Calculation Policy
2010-2011**



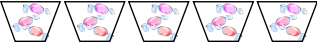

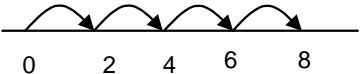
Addition

Level 1	Level 2	Level 3	Level 4	Level 5
<p>WAGOLL</p> <p>Record their addition with objects, pictures or diagrams (numbers to 10)</p> $7 + 3 = 10$  $7 + 3 = 10$ 	<p>WAGOLL</p> <p>Record their mental addition as a number sentence (numbers to 100)</p> $12 + 23 =$ $10 + 20 = 30$ $2 + 3 = \underline{5}$ $\quad \quad \underline{35}$ <p>Or</p> 	<p>WAGOLL</p> <p>Add numbers which bridge 10 and 100</p> $358 + 273 =$ $300 + 200 = 500$ $50 + 70 = 120$ $8 + 3 = \underline{12}$ $\quad \quad \underline{631}$ $358 + 73 = 358 + 70 + 3$ $= 428 + 3$ $= 431$ <p>Or</p>  <p>Add three digit numbers</p> $\begin{array}{r} 587 \\ + 675 \\ \hline 1262 \\ \hline 111 \end{array}$ <p>Add decimals as money</p> $£ 2.50 + £ 1.75 = £ 4.25$ $\begin{array}{r} £ 2.50 \\ + £ 1.75 \\ \hline £ 4.25 \end{array}$	<p>WAGOLL</p> <p>Add numbers 4 digits</p> $\begin{array}{r} 3587 \\ + 675 \\ \hline 4262 \end{array}$ <p>Add decimals to two places</p> $\begin{array}{r} 35.82 \\ + 7.39 \\ \hline 43.21 \\ \hline 111 \end{array}$	<p>WAGOLL</p> <p>Add numbers that do not have the same amount of decimal places</p> $124.9 + 117.25 = 242.15$ $\begin{array}{r} 124.90 \\ + 117.25 \\ \hline 242.15 \end{array}$



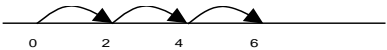
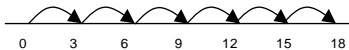
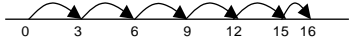


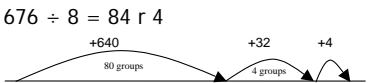
Subtraction

Level 1	Level 2	Level 3	Level 4	Level 5
<p>WAGOLL</p> <p>Record their subtraction with objects, pictures or diagrams (numbers to 10)</p> <p>Sam spent 4p. What was his change from 10p?</p>  <p>The difference between 7 and 10 (Counting up)</p> 	<p>WAGOLL</p> <p>Record their mental subtraction as a number sentence (numbers to 100)</p> $88 - 56 = 32$  <p>Or</p> $88 - 56 =$ $80 - 50 = 30$ $8 - 6 = \underline{2}$ 32 <p>Then</p> $86 - 58 =$ $86 - 50 = 36$ $36 - 8 = 28$	<p>WAGOLL</p> <p>Subtract decimals as money</p> $£3.50 - £1.75 = £1.75$  <p>Subtract three digit numbers</p> $754 - 286 = 468$  <p>Or</p> 754 $\underline{-286}$ $554 - 200$ $\underline{474} - 80$ $468 - 6$	<p>WAGOLL</p> <p>Subtract 4 digits numbers</p> $\begin{array}{r} 6467 \\ -2684 \\ \hline 3783 \end{array}$ <p>Subtract decimals to two places</p> $\begin{array}{r} 6.15 \\ - 2.16 \\ \hline 3.99 \end{array}$	<p>WAGOLL</p> <p>Subtract numbers that do not have the same amount of decimal places</p> $0.5 - 0.31 =$ $\begin{array}{r} 0.50 \\ - 0.31 \\ \hline 0.19 \end{array}$

Multiplication

Level 1	Level 2	Level 3	Level 4	Level 5																																	
<p>WAGOLL</p> <p>Finding totals of objects using images</p> <p>There are 3 sweets in one bag. How many sweets are there in 5 bags?</p> 	<p>WAGOLL</p> <p>Understand multiplying as doubling</p> $7 \times 2 = \square \quad \square = 2 \times 7$ $7 \times \square = 14 \quad 14 = \square \times 7$ $\square \times 2 = 14 \quad 14 = 2 \times \square$  <p>Repeated Addition</p> $4 \times 2 = 8$ $2 + 2 + 2 + 2$  <p>OR</p> $15 \times 2 = 30$ <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>x</td> <td>10</td> <td>5</td> </tr> <tr> <td>2</td> <td>20</td> <td>10</td> </tr> </table>	x	10	5	2	20	10	<p>WAGOLL</p> <p>Multiply a two digit number by 2,3,4,5,6 and 10</p> $23 \times 4 = 92$ $23 \times 4 = (20 \times 4) + (3 \times 4)$ $= (80) + (12)$ $= 92$ <p>Grid method</p> $32 \times 3 = 96$ <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>x</td> <td>30</td> <td>2</td> </tr> <tr> <td>3</td> <td>90</td> <td>6</td> </tr> </table>	x	30	2	3	90	6	<p>WAGOLL</p> <p>Use efficient written methods of short multiplication</p> <p>Grid method</p> <p>72 x 38 is approximately 70 x 40 = 2800</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>x</td> <td>70</td> <td>2</td> </tr> <tr> <td>30</td> <td>2100</td> <td>60</td> </tr> <tr> <td>8</td> <td>560</td> <td>16</td> </tr> </table> <p>or</p> $\begin{array}{r} 87 \\ \times 6 \\ \hline 42 \quad (6 \times 7) \\ 480 \quad (6 \times 80) \\ \hline 522 \end{array}$ <p>Multiply a simple decimal by a single digit</p>	x	70	2	30	2100	60	8	560	16	<p>WAGOLL</p> <p>Understand and use a method of multiplying any three digit number by any two-digit number</p> <p>Grid method</p> <p>372 x 24 is approximately 400 x 20 = 8000</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>x</td> <td>300</td> <td>70</td> <td>2</td> </tr> <tr> <td>20</td> <td>6000</td> <td>1400</td> <td>40</td> </tr> <tr> <td>4</td> <td>1200</td> <td>280</td> <td>8</td> </tr> </table> $\begin{array}{r} 282 \\ \times 24 \\ \hline 1128 \\ 5640 \\ \hline 6768 \end{array}$ <p>Use all four operations with decimals to two places,</p>	x	300	70	2	20	6000	1400	40	4	1200	280	8
x	10	5																																			
2	20	10																																			
x	30	2																																			
3	90	6																																			
x	70	2																																			
30	2100	60																																			
8	560	16																																			
x	300	70	2																																		
20	6000	1400	40																																		
4	1200	280	8																																		

Division

Level 1	Level 2	Level 3	Level 4	Level 5
<p>WAGOLL</p> <p>Sharing objects using images</p> <p>12 children get into teams of 4 to play a game. How many teams are there?</p> 	<p>WAGOLL</p> <p>Understand that dividing is halving</p> $6 \div 2 = \square \quad \square = 6 \div 2$ $6 \div \square = 3 \quad 3 = 6 \div \square$ $\square \div 2 = 3 \quad 3 = \square \div 2$ <p>Sharing – 6 sweets are shared between 2 people. How many do they have each?</p>  <p>6 ÷ 2 can be modeled as:</p> <p>Grouping – There are 6 sweets. How many people can have 2 each? (How many 2's make 6?)</p> 	<p>WAGOLL</p> <p>Divide a two digit number by 2,3,4, 5, 6 and 10 with whole number answers or remainders</p> <p>18 ÷ 3 can be modelled as: 18 shared between 3</p> <p>or</p> <p>Grouping - How many 3's make 18?</p>  <p>Remainders</p> <p>16 ÷ 3 = 5 r1</p> <p>Sharing - 16 shared between 3, how many left over?</p> <p>Grouping – How many 3's make 16, how many left over?</p> <p>e.g.</p>  <p>Remainders</p> $41 \div 4 = 10 \text{ r}1$  <p>OR $41 = (10 \times 4) + 1$</p> <p>72 ÷ 5 lies between $50 \div 5 = 10$ and $100 \div 5 = 20$</p> $\begin{array}{r} 72 \\ - 50 \quad (10 \text{ groups}) \text{ or } (10 \times 5) \\ \hline 22 \\ - 20 \quad (4 \text{ groups}) \text{ or } (4 \times 5) \\ \hline 2 \end{array}$ <p>Answer : 14 remainder 2</p>	<p>WAGOLL</p> <p>Use efficient written methods for division</p> $61 \div 4 = 15 \text{ r} 1$  $256 \div 7 = (30 \times 7) + (6 \times 7) = 36 \text{ r} 4$ $\begin{array}{r} 256 \\ - 70 \quad (10 \text{ groups}) \text{ or } (10 \times 7) \\ \hline 186 \\ - 140 \quad (20 \text{ groups}) \text{ or } (20 \times 7) \\ \hline 46 \\ - 42 \quad (6 \text{ groups}) \text{ or } (6 \times 7) \\ \hline 4 \quad (36 \text{ groups}) \text{ or } (36) \end{array}$ <p>Answer: 36 remainder 4</p>	<p>WAGOLL</p> <p>Understand and use an appropriate non-calculator method for solving problems that involve dividing any three digit number by any two-digit number</p> $676 \div 8 = 84 \text{ r} 4$  <p>Or</p> $977 \div 36 =$ $\begin{array}{r} 977 \\ - 360 \quad (10 \text{ grps}) \\ \hline 617 \\ - 360 \quad (10 \text{ groups}) \\ \hline 257 \\ - 180 \quad (5 \text{ groups}) \\ \hline 77 \\ - 72 \quad (2 \text{ groups}) \\ \hline 5 \end{array}$ <p>Answer: 27 r 5</p> <p>Or $977 \div 36 =$</p> $36 \overline{) 977} \begin{array}{l} 27 \text{ r } 5 \\ \underline{72} \\ 257 \\ \underline{252} \\ 5 \end{array}$