

| Selecting mental methods for larger numbers where appropriate | Represent 7-digit numbers on a place value grid, and use this to support thinking and mental methods. $2,411,301+500,000=?$ <br> This would be 5 more counters in the HTh place. <br> So, the total is $2,911,301$. $2,411,301+500,000=2,911,301$ | Use a bar model to support thinking in addition problems. <br> I added 100 thousands then subtracted 1 thousand. <br> 257 thousands + 100 thousands $=357$ thousands $\begin{aligned} & 257,000+100,000=357,000 \\ & 357,000-1,000=356,000 \end{aligned}$ <br> So, $257,000+99,000=356,000$ | Use place value and unitising to support mental calculations with larger numbers. $\begin{aligned} & 195,000+6,000=? \\ & 195+5+1=201 \end{aligned}$ <br> 195 thousands +6 thousands $=201$ thousands <br> So, $195,000+6,000=201,000$ |
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| Understanding order of operations in calculations | Use equipment to model different interpretations of a calculation with more than one operation. Explore different results. | Model calculations using a bar model to demonstrate the correct order of operations in multi-step calculations. | Understand the correct order of operations in calculations without brackets. <br> Understand how brackets affect the order of operations in a calculation. $\begin{aligned} & 4+6 \times 16 \\ & 4+96=100 \\ & (4+6) \times 16 \\ & 10 \times 16=160 \end{aligned}$ |


| Year 6 Subtraction | Concrete | Pictorial | Abstract |
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| Comparing and selecting efficient methods | Use counters on a place value grid to represent subtractions of larger numbers. | Compare subtraction methods alongside place value representations. <br> Use a bar model to represent calculations, including 'find the difference' with two bars as comparison. | Compare and select methods. Use column subtraction when mental methods are not efficient. Use two different methods for one calculation as a checking strategy. <br> Use column subtraction for decimal problems, including in the context of measure. |
| Subtracting mentally with larger numbers |  | Use a bar model to show how unitising can support mental calculations. $950,000-150,000$ <br> That is 950 thousands - 150 thousands $\square$ $\square$ <br> So, the difference is 800 thousands. $950,000-150,000=800,000$ | Subtract efficiently from powers of 10 . $10,000-500=?$ |



## Calculation Policy - Year 6

St Mary's

| Using knowledge of factors and partitions to compare methods for multiplications | Use equipment to understand square numbers and cube numbers. $\begin{aligned} & 5 \times 5=5^{2}=25 \\ & 5 \times 5 \times 5=5^{3}=25 \times 5=125 \end{aligned}$ | Compare methods visually using an area model. Understand that multiple approaches will produce the same answer if completed accurately. <br> Represent and compare methods using a bar model. | Use a known fact to generate families of related facts. <br> Use factors to calculate efficiently. $\begin{aligned} & 15 \times 16 \\ = & 3 \times 5 \times 2 \times 8 \\ = & 3 \times 8 \times 2 \times 5 \\ = & 24 \times 10 \\ = & 240 \end{aligned}$ |
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| Multiplying by 10, 100 and 1,000 | Use place value equipment to explore exchange in decimal multiplication. <br> Represent 0.3. <br> Multiply by 10 . <br> Exchange each group of ten tenths. $0.3 \times 10=?$ <br> 0.3 is 3 tenths. <br> $10 \times 3$ tenths are 30 tenths. <br> 30 tenths are equivalent to 3 ones. | Understand how the exchange affects decimal numbers on a place value grid. $0.3 \times 10=3$ | Use knowledge of multiplying by 10, 100 and 1,000 to multiply by multiples of 10,100 and 1,000. $\begin{aligned} 8 \times 100 & =800 \\ 8 \times 300 & =800 \times 3 \\ & =2,400 \\ 2.5 \times 10 & =25 \\ 2.5 \times 20 & =2.5 \times 10 \times 2 \\ & =50 \end{aligned}$ |




Calculation Policy - Year 6

| Dividing by a 2-digit number using factors | Understand that division by factors can be used when dividing by a number that is not prime. | Use factors and repeated division. $1,260 \div 14=?$ $\square$ $\square$ $\square$ $1,260 \div 2=630$ $\begin{aligned} & 630 \div 7=90 \\ & 1,260 \div 14=90 \end{aligned}$ | Use factors and repeated division where appropriate. $2,100 \div 12=?$ <br> $2.100 \longrightarrow \div 2$ <br> 2,100 $\longrightarrow \div 6$ <br> $2,100 \longrightarrow \div 3 \longrightarrow+4$ <br> $2,100 \longrightarrow \div 4 \longrightarrow$ <br> 4 <br> $2,100 \rightarrow \div \div \div \div$ |
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| Dividing by a 2-digit number using long division | Use equipment to build numbers from groups. <br> 182 divided into groups of 13. <br> There are 14 groups. | Use an area model alongside written division to model the process. $377 \div 13=?$ <br> 13 $\square$ <br> 13 $\square$ <br> 13 $377 \div 13=29$ | Use long division where factors are not useful (for example, when dividing by a 2-digit prime number). <br> Write the required multiples to support the division process. $377 \div 13=?$ <br> $1 3 \longdiv { 3 7 7 }$ <br> $-$130 <br> 247 <br> $-$1 3 0 <br> 1 10  <br> $-1 \quad 7 \frac{9}{29}$ <br> $377 \div 13=29$ <br> A slightly different layout may be used, with the division completed above rather than at the side. |


|  | Calculation Policy - Year 6 |  |  |
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|  |  |  | $\begin{array}{r} 3 \\ \hline 21 \\ \hline 7 \end{array} 988$ $\begin{array}{r}  \\ 3 \\ 21 \\ 27 \\ \hline \end{array}$ <br> Divisions with a remainder explored in problem-solving contexts. |
| Dividing by 10, 100 and 1,000 | Use place value equipment to explore division as exchange. <br> Exchange each 0.1 for ten 0.01 s . <br> Divide 20 counters by 10 . <br> 0.2 is 2 tenths. <br> 2 tenths is equivalent to 20 hundredths. 20 hundredths divided by 10 is 2 hundredths. | Represent division to show the relationship with multiplication. Understand the effect of dividing by 10,100 and 1,000 on the digits on a place value grid. <br> Understand how to divide using division by 10,100 and 1,000. $12 \div 20=?$ $\square$ $\square$ <br> ? | Use knowledge of factors to divide by multiples of 10, 100 and 1,000. $\begin{aligned} & 40 \div 50=\square \\ & 40 \rightarrow \square \div 10 \rightarrow+\square ?+5 \\ & 40 \rightarrow \square+\square \\ & 40 \div 5=8 \\ & 8 \div 10=0.8 \end{aligned}$ <br> So, $40 \div 50=0.8$ |


| Dividing decimals | Use place value equipment to explore division of decimals. <br> 8 tenths divided into 4 groups. 2 tenths in each group. | Use a bar model to represent divisions. |  |  |  | Use short division to divide decimals with up to 2 decimal places. |
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|  |  | 0.8 |  |  |  |  |
|  |  | ? | ? | ? | $?$ |  |
|  |  | $4 \times 2=$ |  | 8 |  |  |
|  |  | So, $4 \times$ | $=0.8$ |  | $4=0.2$ |  |
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