

Progression in Maths

Dear Parents,

As you are aware from previous correspondence, the curriculum that we teach in schools has been updated and changed with effect from September 2014. This has huge implications on the expectations for pupils in mathematics in each year group. As I explained recently with the teaching of grammar, expectations have been raised dramatically for pupils in primary education and because of this we have written a new progression of learning for mathematics which is being presented here in this document.

The document details what each year group will be learning and is split into sections:

- Addition and Subtraction
- Multiplication
- Division
- Fractions

I hope that this document helps you as a parent to understand the high expectations that are being placed on your children throughout their time at primary school.

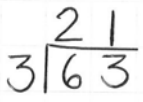
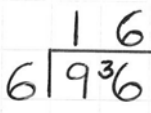
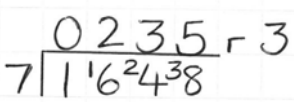
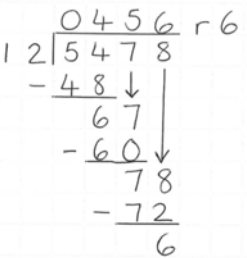
If you have any further queries about the teaching of mathematics at Greenacres, please do not hesitate to contact me or your child's class teacher.

Yours sincerely,

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Vice Principal
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Addition and Subtraction	
Y1	<ul style="list-style-type: none"> One digit and two digit numbers to 20, e.g. $9 + 7 = 16$; $16 - 7 = 9$; $7 = 16 - 9$.
Y2	<ul style="list-style-type: none"> Mentally add/ subtract one-digit numbers from two-digit numbers (TU +/- U). Mentally add/ subtract tens from two-digit numbers (TU +/- tens, e.g. $36 - 20 = 16$). Mentally add/ subtract two-digit numbers from two-digit numbers (TU +/- TU). Mentally add/ subtract three one-digit numbers (U +/- U +/- U, e.g. $9 + 3 - 2$).
Y3	<ul style="list-style-type: none"> Up to HTU +/- HTU (e.g. $392 + 154$) using the formal written method. <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> $\begin{array}{r} 392 \\ + 154 \\ \hline 546 \\ \times \end{array}$ </div> <div style="text-align: center;"> $\begin{array}{r} 85611 \\ - 547 \\ \hline 314 \end{array}$ </div> </div> <ul style="list-style-type: none"> Adding and subtracting fractions with the same denominator within one whole. <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$ </div> <div style="text-align: center;"> $\frac{5}{8} - \frac{2}{8} = \frac{3}{8}$ </div> </div>
Y4	<ul style="list-style-type: none"> Up to ThHTU +/- ThHTU (e.g. $1295 + 3082$) using the formal written method. <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> $\begin{array}{r} 2176 \\ + 1457 \\ \hline 3633 \\ \times \times \end{array}$ </div> <div style="text-align: center;"> $\begin{array}{r} 77812 \\ - 3148 \\ \hline 4654 \end{array}$ </div> </div> <ul style="list-style-type: none"> Mentally add/ subtract numbers with one decimal place (U.t +/- U.t, e.g. $4.3 + 9.2 = 13.5$). Know and use decimal numbers that add up to 1 (e.g. 0.3 and 0.7). Adding and subtracting fractions with the same denominator. <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> $\frac{6}{7} + \frac{5}{7} = \frac{11}{7}$ </div> <div style="text-align: center;"> $\frac{12}{7} - \frac{6}{7} = \frac{6}{7}$ </div> </div>
Y5	<ul style="list-style-type: none"> Adding and subtracting whole numbers with more than 4 digits using the formal written method. <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> $\begin{array}{r} 21894 \\ + 19321 \\ \hline 41215 \\ \times \times \times \end{array}$ </div> <div style="text-align: center;"> $\begin{array}{r} 891461013 \\ - 65129 \\ \hline 29574 \end{array}$ </div> </div> <ul style="list-style-type: none"> Adding and subtracting fractions with the same denominator and multiples. <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> $\frac{1}{4} + \frac{2}{8} = \frac{2}{8} + \frac{2}{8} = \frac{4}{8}$ </div> <div style="text-align: center;"> $\frac{5}{6} - \frac{1}{3} = \frac{5}{6} - \frac{2}{6} = \frac{3}{6}$ </div> </div>
Y6	<ul style="list-style-type: none"> Adding and subtracting fractions with different denominators and mixed numbers, using the concept of equivalent fractions. <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> $\begin{aligned} 1\frac{2}{3} + 2\frac{1}{4} &= 1\frac{8}{12} + 2\frac{3}{12} \\ &= 3\frac{11}{12} \end{aligned}$ </div> <div style="text-align: center;"> $\begin{aligned} 2\frac{2}{3} - 1\frac{1}{4} &= 2\frac{8}{12} - 1\frac{3}{12} \\ &= 1\frac{5}{12} \end{aligned}$ </div> </div>

Multiplication	
Y1	<ul style="list-style-type: none"> • Doubling numbers and quantities. • Counting in 2s, 5s and 10s.
Y2	<ul style="list-style-type: none"> • Counting in steps of 2, 3, and 5 from 0. • Recall multiplication facts for 2, 5 and 10.
Y3	<ul style="list-style-type: none"> • Counting in steps of 4, 8, 50 and 100 from 0. • Recall multiplication facts for 3, 4 and 8. • Multiply two-digit numbers by one-digit numbers mentally (TU x U) and progress in this year group to the formal written method (short multiplication). $\begin{array}{r} 15 \\ \times 4 \\ \hline 60 \\ 2 \end{array}$
Y4	<ul style="list-style-type: none"> • Counting in steps of 6, 7, 9, 25 and 1000. • Recall multiplication facts up to 12 x 12. • Multiply three one-digit numbers (U x U x U). • Multiply by 0 and 1 and explain the effect. • Multiply TU x U and HTU x U using the formal written method (short multiplication). $\begin{array}{r} 324 \\ \times 6 \\ \hline 1944 \\ \times 2 \end{array}$
Y5	<ul style="list-style-type: none"> • Find factor pairs of a number, e.g. 4 and 5 are factor pairs of 20. • Multiply up to ThHTU x U and ThHTU x TU using the formal written method (short and long multiplication). $\begin{array}{r} 9132 \\ \times 15 \\ \hline 45660 \quad (\times 5) \\ + 91320 \quad (\times 10) \\ \hline 136980 \end{array}$ <ul style="list-style-type: none"> • Know the prime numbers (a number which has two factors is only divisible by itself and 1) up to 19, i.e. 2, 3, 5, 7, 11, 13, 17, 19. • Multiply whole number and decimals by 10, 100 and 1000. • Multiply a proper fraction and mixed number fractions by a whole number. $\frac{2}{7} \times 3 = \frac{6}{7}$ $1 \frac{2}{7} \times 3 = \frac{9}{7} \times 3 = \frac{27}{7} = 3 \frac{6}{7}$
Y6	<ul style="list-style-type: none"> • Multiply multi-digit numbers (up to 4 digits) by TU (see long division example in Y5). • Multiply numbers with two decimal places by one-digit numbers (U.th x U) using the formal written method (short multiplication). $\begin{array}{r} 6.72 \\ \times 3 \\ \hline 20.16 \\ 2 \end{array}$ <ul style="list-style-type: none"> • Multiply simple pairs of proper fractions. $\frac{2}{3} \times \frac{3}{4} = \frac{6}{12} = \frac{1}{2}$

Division	
Y1	<ul style="list-style-type: none"> Finding simple fractions of objects, numbers and quantities, e.g. $\frac{1}{2}$ of ..., $\frac{1}{4}$ of ...
Y2	<ul style="list-style-type: none"> Recall division facts for 2, 5 and 10 multiplication tables. Finding a fraction of a length, shape, set of objects or quantity, e.g. $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$.
Y3	<ul style="list-style-type: none"> Recall division facts for 3, 4 and 8 multiplication tables. Use mental methods and know division facts to calculate $TU \div U$. Use written method (short division) to calculate $TU \div U$.  <ul style="list-style-type: none"> Recognise and use unit fractions and non-unit fractions with small denominators (a unit fraction has a numerator of 1, e.g. $\frac{1}{4}$, $\frac{1}{8}$, and a non-unit fraction has a numerator which is greater than 1, e.g. $\frac{3}{4}$, $\frac{5}{8}$, $\frac{6}{7}$).
Y4	<ul style="list-style-type: none"> Recall division facts for up to 12 x 12 multiplication tables. Dividing by 1 and explaining the effect. Use mental methods and known division facts to calculate $HTU \div U$. Use written method (short division) to calculate $TU \div U$ without remainders.  <ul style="list-style-type: none"> $U \div 10$; $U \div 100$; $TU \div 10$; $TU \div 100$.
Y5	<ul style="list-style-type: none"> Find factors of a number. Divide numbers mentally using known facts. Divide up to $ThHTU \div U$ using a short division written method with and without remainders.  <ul style="list-style-type: none"> Divide whole number and decimals by 10, 100 and 1000.
Y6	<ul style="list-style-type: none"> Divide up to $ThHTU \div TU$ using a long division written method with and without remainders.  <ul style="list-style-type: none"> Use a written method where the answer has up to two decimal places. Divide a proper fraction by a whole number. <p>$\frac{2}{3} \div 3$ is the same as $\frac{2}{3} \times \frac{1}{3} = \frac{2}{9}$</p> <p>$\frac{2}{5} \div 4$ is the same as $\frac{2}{5} \times \frac{1}{4} = \frac{2}{20} = \frac{1}{10}$</p>

Fractions	
Y1	<ul style="list-style-type: none"> Finding simple fractions of objects, numbers and quantities, e.g. $\frac{1}{2}$ of ..., $\frac{1}{4}$ of ...
Y2	<ul style="list-style-type: none"> Finding a fraction of a length, shape, set of objects or quantity, e.g. $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$.
Y3	<ul style="list-style-type: none"> Adding and subtracting fractions with the same denominator within one whole. $\frac{5}{7} + \frac{1}{7} = \frac{6}{7} \quad \frac{5}{8} - \frac{2}{8} = \frac{3}{8}$ <ul style="list-style-type: none"> Recognise and use unit fractions and non-unit fractions with small denominators (a unit fraction has a numerator of 1, e.g. $\frac{1}{4}$, $\frac{1}{2}$, and a non-unit fraction has a numerator which is greater than 1, e.g. $\frac{3}{4}$, $\frac{5}{8}$, $\frac{6}{7}$).
Y4	<ul style="list-style-type: none"> Adding and subtracting fractions with the same denominator. $\frac{6}{7} + \frac{5}{7} = \frac{11}{7} \quad \frac{12}{7} - \frac{6}{7} = \frac{6}{7}$
Y5	<ul style="list-style-type: none"> Adding and subtracting fractions with the same denominators and multiples. $\frac{1}{4} + \frac{2}{8} = \frac{2}{8} + \frac{2}{8} = \frac{4}{8} \quad \frac{5}{6} - \frac{1}{3} = \frac{5}{6} - \frac{2}{6} = \frac{3}{6} = \frac{1}{2}$ <ul style="list-style-type: none"> Multiply a proper fraction and mixed number fractions by a whole number. $\frac{2}{7} \times 3 = \frac{6}{7}$ $1 \frac{2}{7} \times 3 = \frac{9}{7} \times 3 = \frac{27}{7} = 3 \frac{6}{7}$
Y6	<ul style="list-style-type: none"> Adding and subtracting fractions with different denominators and mixed numbers, using the concept of equivalent fractions. $1 \frac{2}{3} + 2 \frac{1}{4} = 1 \frac{8}{12} + 2 \frac{3}{12}$ $= 3 \frac{11}{12} = \frac{47}{12}$ <ul style="list-style-type: none"> Multiply simple pairs of proper fractions. $\frac{2}{3} \times \frac{3}{4} = \frac{6}{12} = \frac{1}{2}$ <ul style="list-style-type: none"> Divide a proper fraction by a whole number. $\frac{2}{3} \div 3 \text{ is the same as } \frac{2}{3} \times \frac{1}{3} = \frac{2}{9}$ $\frac{2}{5} \div 4 \text{ is the same as } \frac{2}{5} \times \frac{1}{4} = \frac{2}{20}$