St Anselm's Multiplicative Facts Progression Map

Intent

At St Anselm's we believe that it is important that children are given the opportunity to see, explore, and understand the mathematical structures and patterns of times tables for deep, embedded learning. We want our children to know their times tables fluently and be able to apply these facts (and their inverse - up to 12x12). Being fluent in times tables facts means that working memory is freed up and leaves space to explore new mathematical ideas and solve more complex problems.

Year 1 Count in multiples of 2, 5 and 10.	**Year 2** Know facts for 1x, 2x, 5x and 10x table – commutative and inverse. Count in multiples of 3.
Year 3 Know facts for 3x, 4x and 8x tables - commutative and inverse.	**Year 4** Know facts for 6x, 7x, 9x, 11x and 12x – commutative and inverse.
Year 5 Know facts for all times tables 12x12 – commutative and inverse. Squared numbers and square roots. Multiply and divide by powers of 10.	**Year 6** Cubed numbers and cube roots.

St Anselm's Multiplicative Facts Progression Map

<table>
<tr><th colspan="3">Year 1</th></tr>
<tr><th>Autumn</th><th>Spring</th><th>Summer</th></tr>
<tr><td>Counting in 2s, forwards and backwards.

2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24</td><td>Counting in 10s, forwards and backwards.

5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60</td><td>Counting in 5s, forwards and backwards.

10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120</td></tr>
<tr><th colspan="3">Year 2</th></tr>
<tr><th>Autumn</th><th>Spring</th><th>Summer</th></tr>
<tr><td>Count in 2s, 5s and 10s forwards and backwards.

2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24

5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60

10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120

Begin learning 2x table facts (commutative)

1x2=2
2x2=4
3x2=6
4x2=8
5x2=10
6x2=12
7x2=14
8x2=16
9x2=18
10x2=20
11x2=22
12x2=24

2x1=2
2x2=4
2x3=6
2x4=8
2x5=10
2x6=12
2x7=14
2x8=16
2x9=18
2x10=20
2x11=22
2x12=24</td><td>Begin learning 10x and 5x table facts (commutative)

1x10=10
2x10=20
3x10=30
4x10=40
5x10=50
6x10=60
7x10=70
8x10=80
9x10=990
10x10=100
11x10=110
12x10=120

10x1=10
10x2=20
10x3=30
10x4=40
10x5=50
10x6=60
10x7=70
10x8=80
10x9=90
10x10=100
10x11=110
10x12=120

1x5=5
2x5=10
3x5=15
4x5=20
5x5=25
6x5=30
7x5=35
8x5=40
9x5=45
10x5=50
11x5=55
12x5=60

5x1=5
5x2=10
5x3=15
5x4=20
5x5=25
5x6=30
5x7=35
5x8=40
5x9=45
5x10=50
5x11=55
5x12=60

Learn the division facts for 2x, 5x and 10x tables.

2÷2=1
4÷2=2
6÷2=3
8÷2=4
10÷2=5
12÷2=6
14÷2=7
16÷2=8
18÷2=9
20÷2=10
22÷2=11
24÷2=12

2÷1=2
4÷2=2
6÷3=2
8÷4=2
10÷5=2
12÷6=2
14÷7=2
16÷8=2
18÷9=2
20÷10=2
22÷11=2
24÷12=2</td><td>Count in 3s forwards and backwards.

3, 6, 9, 12, 18, 21, 24, 27, 30, 33, 36

Consolidate times tables facts, commutative and invers for 2x, 5x and 10x tables.</td></tr>
</table>

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	10÷10=1 20÷10=2 30÷10=3 40÷10=4 50÷10=5 60÷10=6 70÷10=7 80÷10=8 90÷10=9 100÷10=10 110÷10=11 120÷10=12 10÷1=10 20÷2=10 30÷3=10 40÷4=10 50÷5=10 60÷6=10 70÷7=10 80÷8=10 90÷9=10 100÷10=10 110÷11=10 120÷12=10 5÷1=5 10÷2=5 15÷3=5 20÷4=5 25÷5=5 30÷6=5 35÷7=5 40÷8=5 45÷9=5 50÷10=5 55÷11=5 60÷12=5 5÷5=1 10÷5=2 15÷5=3 20÷5=4 25÷5=5 30÷5=6 35÷5=7 40÷5=8 45÷5=9 50÷5=10 55÷5=11 60÷5=12	

Year 3		
Autumn	**Spring**	**Summer**
Begin learning 3x table facts (commutative and inverse) 1x3=3 2x3=6 3x3=9 4x3=12 5x3=15 6x3=18 7x3=21 8x3=24 9x3=27 10x3=30 11x3=33 12x3=36 3x1=3 3x2=6 3x3=9 3x4=12 3x5=15 3x6=18 3x7=21 3x8=24 3x9=27 3x10=30 3x11=33 3x12=36 3÷3=1 6÷3=2 9÷3=3 12÷3=4 15÷3=5 18÷3=6 21÷3=7 24÷3=8 27÷3=9 30÷3=10 33÷3=11 36÷3=12 3÷1=3 6÷2=3 9÷3=3 12÷4=3 15÷5=3 18÷6=3 21÷7=3 24÷8=3 27÷9=3 30÷10=3 33÷11=3 36÷12=3	Begin learning 4x table facts (commutative and inverse) 1x4=4 2x4=8 3x4=12 4x4=16 5x4=20 6x4=24 7x4=28 8x4=32 9x4=36 10x4=40 11x4=44 12x4=48 4x1=4 4x2=8 4x3=12 4x4=16 4x5=20 4x6=24 4x7=28 4x8=32 4x9=36 4x10=40 4x11=44 4x12=48 4÷4=1 8÷4=2 12÷4=3 16÷4=4 20÷4=5 24÷4=6 28÷4=7 32÷4=8 36÷4=9 40÷4=10 44÷4=11 48÷4=12 4÷1=4 8÷2=4 12÷3=4 16÷4=4 20÷5=4 24÷6=4 28÷7=4 32÷8=4 36÷9=4 40÷10=4 44÷11=4 48÷12=4	Begin learning 8x table facts (commutative and inverse) *Although children will revise and test all facts in each of these times tables, these are the only new facts to learn if children have achieved fluency of multiplication facts in previous years.* 8x8=64 9x8=72 11x8=88 12x8=96 8x9=72 8x11=88 8x12=96 64÷8=8 72÷8=9 88÷8=11 96÷8=12 72÷9=8 88÷11=8 96÷12=8

St Anselm's Multiplicative Facts Progression Map

<table>
<tr><th colspan="3">Year 4</th></tr>
<tr><th>Autumn</th><th>Spring</th><th>Summer</th></tr>
<tr>
<td>Begin learning 7x and 9x table facts (commutative and inverse)

Although children will revise and test all facts in each of these times tables, these are the only new facts to learn if children have achieved fluency of multiplication facts in previous years.

7x7=49
8x7=56
9x7=63
11x7=77
12x7=84

42÷7=6
49÷7=7
56÷7=8
63÷7=9
77÷7=11
84÷7=12

7x8=56
7x9=63
7x11=77
7x12=84

56÷8=7
63÷9=7
77÷11=7
84÷12=7

9x9=81
11x9=99
12x9=108

72÷8=9
81÷9=9
99÷9=11
108÷9=12

9x11=99
9x12=108

99÷11=9
108÷12=9</td>
<td>Begin learning 11x and 12x table facts (commutative and inverse)

Although children will revise and test all facts in each of these times tables, these are the only new facts to learn if children have achieved fluency of multiplication facts in previous years.

11x11=121
11x12=132

12x11=132
12x12=144

121÷11=11
132÷11=12

132÷12=11
144÷12=12</td>
<td>Children revise all facts taught from Year 2 – 4.

All multiplication and division facts mixed up to 12x12</td>
</tr>
<tr><th colspan="3">Year 5</th></tr>
<tr><th>Autumn</th><th>Spring</th><th>Summer</th></tr>
<tr>
<td>All multiplication and division facts mixed up to 12x12

Multiplying single digit numbers by 10, 100 and 1000.

Dividing up to 4 digit numbers by 10, 100, 1000.</td>
<td>Revision of all x tables;
mixed up, using related multiples of 10/100/1000

Eg.
20x4
4x600
70x50

Children should already know facts when shown as 2x2 or 9÷3 etc. Focus on language and symbol for squared and square root
Include;
$13^2 14^2 15^2$</td>
<td>Revision of all x tables;
mixed up, using decimals eg. tenths, hundredths, thousandths

Eg.
3x0.7
0.08x2
0.4x0.6</td>
</tr>
</table>

St Anselm's Multiplicative Facts Progression Map

Year 6		
Autumn	Spring	Summer
Cube numbers and cube roots $1^3 = 1$ $2^3 = 8$ $3^3 = 27$ $4^3 = 64$ $5^3 = 125$ $6^3 = 216$ $7^3 = 343$ $8^3 = 512$ $9^3 = 729$ $10^3 = 1000$	Consolidation and revision	Revision

Ideas for implementation:

<u>Building up skills:</u>

Step 1 – 'Root facts'
Step 2 – 'Root facts' mixed up so no longer relying on patterns
Step 3 - Introduce tougher time restraints to encourage rapid recall (where appropriate)
Step 4 – 'Root facts' and inverses
Step 5 – 'Root facts' and any linked facts such as multiples of 10 or 100
Step 6 – Missing number problems