NUMBER SENSE AND ALGEBRA – MULTIPLICATIVE STRATEGIES (MuS)

MuS1 – FORMING EQUAL GROUPS

- ☐ I can share collections equally by ones
- ☐ I can make equal groups and count by ones to find the total

MuS2 – PERCEPTUAL MULTIPLES

- ☐ I can share collections equally by groups, e.g. make 3 groups of two – 2, 2, 2
- ☐ I can make equal groups and use skip counting (or known facts) to find the total, e.g. to make 3 groups of two you need 6 items or 2, 4, 6

MuS3 – FIGURATIVE (IMAGINED GROUPS)

- ☐ I can use my fingers (or other method) to help me visualise the items in each group before determining the total
- ☐ I can use my knowledge of one group to work out how many items in total, e.g. if I can see that one packet has five pens, so 3 packets would be 3 groups of five or 15 pens
- ☐ I can count by twos, fives and tens to help me find the total

MuS4 – REPEATED ABSTRACT COMPOSITE UNITS

- ☐ I can use repeated addition to help me find the total, e.g. 3 groups of 5 is 5 + 5 + 5 or 15
- ☐ I can use repeated subtraction to help me share a collection, e.g. how many threes in 10? 10 – 3 = 7, 7 – 3 = 4, 4 – 3 = 1, so there are 3 threes in 10 and one remaining
- ☐ I can use skip counting and may use fingers to keep track of the number of groups while counting
- ☐ I can find the total or count the number of equal groups when items cannot be seen

MuS5 – COORDINATING COMPOSITE UNITS

- ☐ I can mentally calculate the total using the number of groups, e.g. 4 groups of 5 is 20
- ☐ I can mentally calculate the number of groups using the total, e.g. 20 shared between 4 is 5
- ☐ I can represent multiplication problems in various ways, e.g. arrays, repeated addition, factors, etc.
- ☐ I can represent division problems in various ways, e.g. sharing, measurement, grouping division, etc.

MuS6 – FLEXIBLE STRATEGIES FOR MULTIPLICATION & DIVISION

- ☐ I can use my knowledge of multiples (or skip counting) to help me calculate related multiples, e.g. use multiples of 4 to find multiples of 8
- ☐ I can recall single-digit multiplication facts and apply these to problems, e.g. 7 boxes of 6 donuts is 42 donuts
- ☐ I can use known facts to solve other multiplication problems mentally, e.g. 4×8 is the same as $2 \times 2 \times 8$ or double, double 8
- ☐ I can use known multiples and strategies for division to solve problems mentally, e.g. $64 \div 4$ is half of 64, then half of 32 or 16
- ☐ I can explain the idea of a remainder and find what is ‘left over’ when solving division problems

This document has been adapted from the National Numeracy Learning Progression (NSW Syllabuses – May 2018)
http://educationstandards.nsw.edu.au/wps/wcm/connect/7a7c08ac-8c7b-43db-934b-4a71f46a790e/national-numeracy-learning-progression.pdf?MOD=AJPERES&CVID

MuS7 – FLEXIBLE NUMBER PROPERTIES

- ☐ I can explain that multiplication and division are inverse operations and use this to help solve problems, e.g. $I\ know\ that\ 7 \times 3 = 21,\ so\ 21 \div 3 = 7$
- ☐ I can use my knowledge of factors to help me solve multiplication and division problems
- ☐ I can use my knowledge of the distributive property to help me solve multiplication problems, e.g. $7 \times 83 = 7 \times 80 + 7 \times 3$
- ☐ I can use my knowledge of place value to help me solve multiplication problems, e.g. $327 \times 14 = 327 \times 10 + 327 \times 4$
- ☐ I can use estimation and rounding to help me check the reasonableness of solutions

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