Vocabulary

Number	Addition & Subtraction	Multiplication & Division	Fractions	Measurement	Geometry	Statistics
integer	altogether	multiply	equivalent	standard/ metric unit	parallel/ perpendicular	represent
ones/ tens/ hundreds	tens boundary	dividing	numerator	perimeter/ area	reflect/ translate	survey
tens/ hundreds/ thousands/ millions	hundreds boundary	factor	denominator	millimetre/ centimetre/ kilometre/ yard/mile	two/three dimensional	most/least popular
sequence	left over	product	hundredths	centigrade	square based	Carroll diagram
positive/ negative	inverse	remainder	decimal place	noon	NE/SE/SW/ NW	Venn diagram
consecutive	equivalent	column/row	proportion	width/ breadth	polygon	axis
above/ below zero	the same as	squared	equal parts of a whole	leap year/ millennium	obtuse/ acute/right angle	frequency
predict	difference	cubed	mixed number	Roman numerals	oblong/ rectilinear	data

Order for learning the times tables

Step 1 Fire just 1 x 6, 2 x 6, 5 x 6, 10 x 6 at them first.
This will build up on their most secure existing table facts

Step 2 Add in 3 x 6, 4 x 6 when step 1 is frequently recalled correctly and instantly

Step 3 Build up with 6 x 6, 7 x 6, 8 x 6
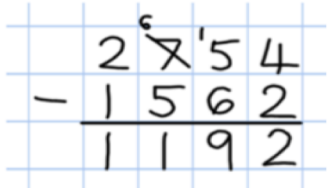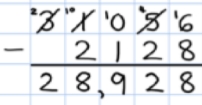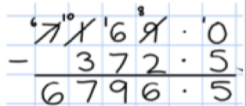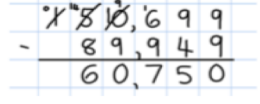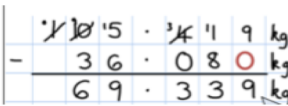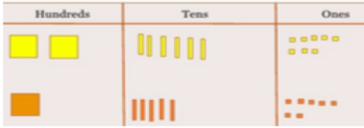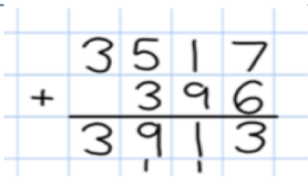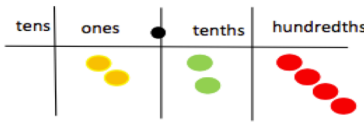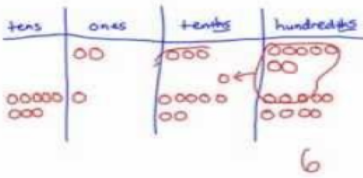
Step 4 When looking at 9 x 6, 11 x 6 and 12 x 6, children should look at finding 10 x 6 and adjust
When they're ready, add in related division facts.
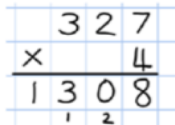
CPA approach to: **Subtraction**

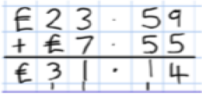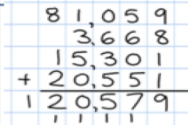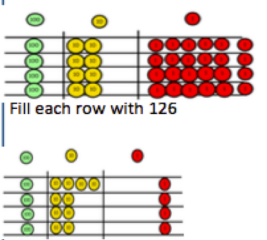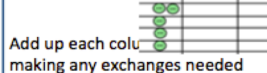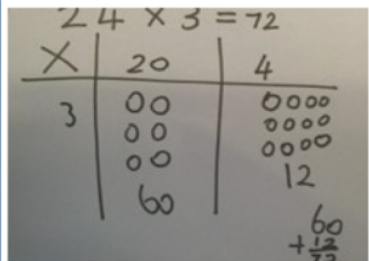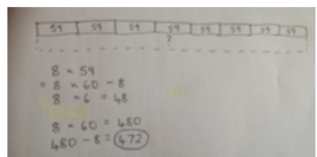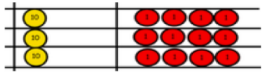| Objective & Strategy	Concrete	Pictorial	Abstract
Subtracting tens and ones Year 4 subtract with up to 4 digits. *Introduce decimal subtraction through context of money*	234 - 179 Model process of exchange using Numicon, base ten and then move to PV counters.	Children to draw pv counters and show their exchange—see Y3	$$\begin{array}{r} 2\,\overset{6}{\cancel{7}}\,\overset{1}{5}\,4 \\ -\,1\,5\,6\,2 \\ \hline 1\,1\,9\,2 \end{array}$$ Use the phrase 'take and make' for exchange
Year 5- Subtract with at least 4 digits, including money and measures. *Subtract with decimal values, including mixtures of integers and decimals and aligning the decimal*	As Year 4	Children to draw pv counters and show their exchange—see Y3	$$\begin{array}{r} \overset{2}{\cancel{3}}\,\overset{10}{\cancel{1}}\,0\,\overset{15}{\cancel{5}}\,6 \\ -\quad 2\,1\,2\,8 \\ \hline 2\,8,9\,2\,8 \end{array}$$ Use zeros for placeholders. $$\begin{array}{r} \overset{6}{\cancel{7}}\,\overset{10}{\cancel{1}}\,6\,\overset{8}{\cancel{9}}\cdot\overset{10}{\cancel{0}} \\ -\quad 3\,7\,2\cdot 5 \\ \hline 6\,7\,9\,6\cdot 5 \end{array}$$
Year 6—Subtract with increasingly large and more complex numbers and decimal values.			$$\begin{array}{r} \overset{6}{\cancel{7}}\,\overset{15}{\cancel{8}}\,\overset{9}{\cancel{0}},6\,9\,9 \\ -\quad 8\,9,9\,4\,9 \\ \hline 6\,0,7\,5\,0 \end{array}$$ $$\begin{array}{r} \overset{6}{\cancel{7}}\,\overset{10}{\cancel{0}}\,5\cdot\overset{13}{\cancel{4}}\,\overset{11}{\cancel{1}}\,9\ kg \\ -\quad\quad 3\,6\cdot 0\,8\,0\ kg \\ \hline 6\,9\cdot 3\,3\,9\ kg \end{array}$$
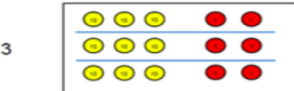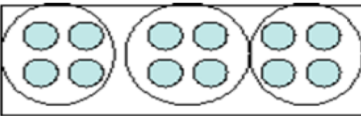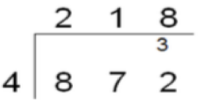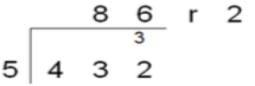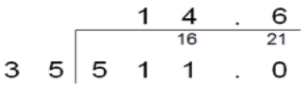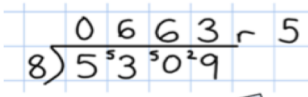
CPA approach to: **Addition**

Objective & Strategy	Concrete	Pictorial	Abstract
Y4—add numbers with up to 4 digits	Children continue to use dienes or pv counters to add, exchanging ten ones for a ten and ten tens for a hundred and ten hundreds for a thousand. 	 Draw representations using pv grid.	$$\begin{array}{r} 3\,5\,1\,7 \\ +\quad 3\,9\,6 \\ \hline 3\,9\,1\,3 \end{array}$$ Continue from previous work to carry hundreds as well as tens. Relate to money and measures.
Y5—add numbers with more than 4 digits. Add decimals with 2 decimal places, including money.	As year 4 Introduce decimal place value counters and model exchange for addition.	2.37 + 81.79 	$$\begin{array}{r} 72.8 \\ +\,54.6 \\ \hline 127.4 \\ {\scriptstyle 1\ 1} \end{array}$$ $$\begin{array}{r} £2\,3\cdot 5\,9 \\ +\,£\,7\cdot 5\,5 \\ \hline £3\,1\cdot 1\,4 \end{array}$$
Y6—add several numbers of increasing complexity Including adding money, measure and decimals with different numbers of decimal points.	As Y5	As Y5	$$\begin{array}{r} 8\,1,0\,5\,9 \\ 3,6\,6\,8 \\ 1\,5,3\,0\,1 \\ +\,2\,0,5\,5\,1 \\ \hline 1\,2\,0,5\,7\,9 \end{array}$$ Insert zeros for place holders. $$\begin{array}{r} 2\,3\cdot 3\,6\,1 \\ 9\cdot 0\,8\,0 \\ 5\,9\cdot 7\,7\,0 \\ +\quad 1\cdot 3\,0\,0 \\ \hline 9\,3\cdot 5\,1\,1 \end{array}$$

CPA approach to: **Multiplication**

Objective & Strategy	Concrete	Pictorial	Abstract
Grid method recap from year 3 for 2 digits x 1 digit Move to multiplying 3 digit numbers by 1 digit. (year 4 expectation)	Use place value counters to show how we are finding groups of a number. We are multiplying by 4 so we need 4 rows Calculations 4 x 126 Fill each row with 126 Add up each colu___ ___ ___es making any exchanges needed	Children can represent their work with place value counters in a way that they understand. They can draw the counters using colours to show different amounts or just use the circles in the different columns to show their thinking as shown below. 	Start with multiplying by one digit numbers and showing the clear addition alongside the grid. 	×	30	5
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7	210	35	 210 + 35 = 245
Column multiplication	Children can continue to be supported by place value counters at the stage of multiplication. This initially done where there is no regrouping. 321 x 2 = 642 It is important at this stage that they always multiply the ones first. The corresponding long multiplication is modelled alongside		×	300	20	7
4	1200	80	28	 The grid method my be used to show how this relates to a formal written method. Bar modelling and number lines can support learners when solving problems with multiplication alongside the formal written methods.	327 x 4 ——— 28 80 1200 1308 This may lead to a compact method.

CPA approach to: **Division**

Objective & Strategy	Concrete	Pictorial	Abstract
Divide at least 3 digit numbers by 1 digit. Short Division	96 ÷ 3 Use place value counters to divide using the bus stop method alongside Calculations 42 ÷ 3 42 ÷ 3= Start with the biggest place value, we are sharing 40 into three groups. We can put 1 ten in each group and we have 1 ten left over. We exchange this ten for ten ones and then share the ones equally among the groups. We look how much in 1 group so the answer is 14.	Students can continue to use drawn diagrams with dots or circles to help them divide numbers into equal groups. Encourage them to move towards counting in multiples to divide more efficiently.	Begin with divisions that divide equally with no remainder. $4 \overline{)872} = 218$ r 3 Move onto divisions with a remainder. $5 \overline{)432} = 86$ r 2 Finally move into decimal places to divide the total accurately. $3 \overline{)511.0} = 14.6$ $8 \overline{)5309} = 0663$ r 5