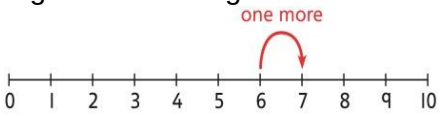
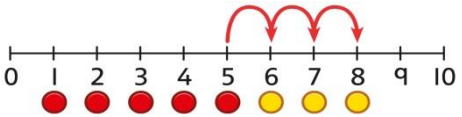
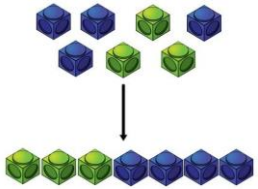
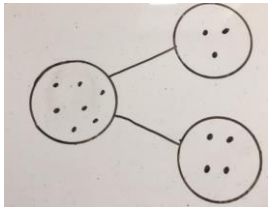
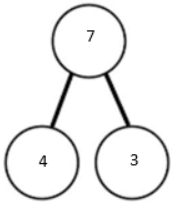
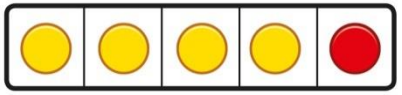
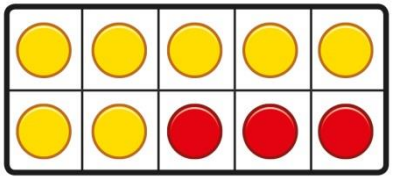
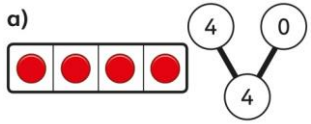
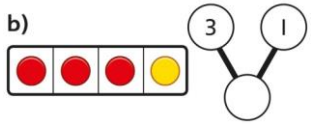
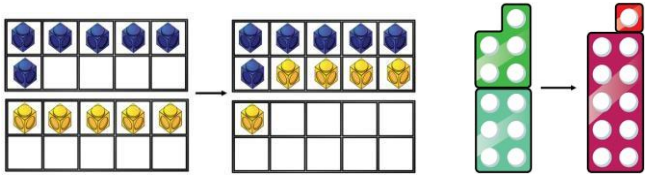
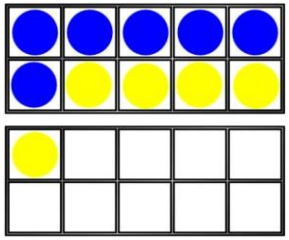
SAST Calculation Policy

Addition

Addition - Key Language Sum, add, total, parts and wholes, plus, add, bonds, more, across 10		
Concrete	**Pictorial**	**Abstract**
Counting and adding more Children add one more person or object to a group to find one more.	**Counting and adding more** Children add one more cube or counter to a group to represent one more.  *One more than 4 is 5.*	**Counting and adding more** Use a number line to understand how to link counting on with finding one more.  *One more than 6 is 7.* *7 is one more than 6.* Learn to link counting on with adding more than one.  *5 + 3 = 8*
Combining two parts to make a whole (use other resources too e.g. eggs, shells, teddy bears, cars). 	Children to represent the cubes using dots or crosses. They could put each part on a part whole model too. 	4 + 3 = 7 Four is a part, 3 is a part and the whole is seven. 

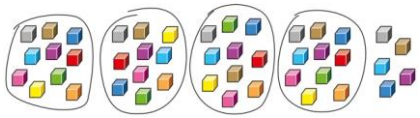
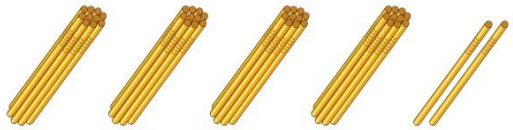
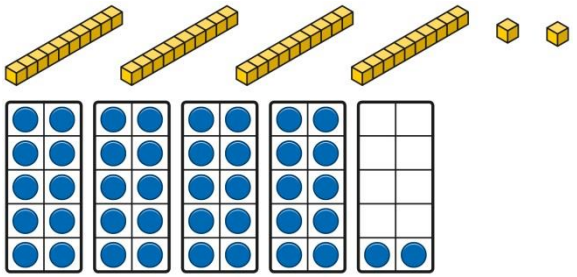
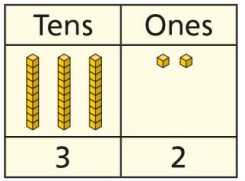
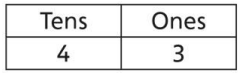
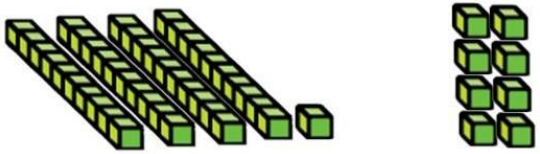
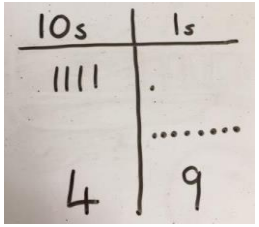
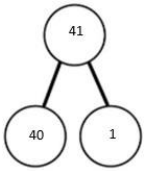
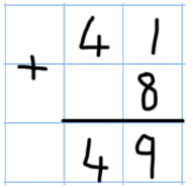
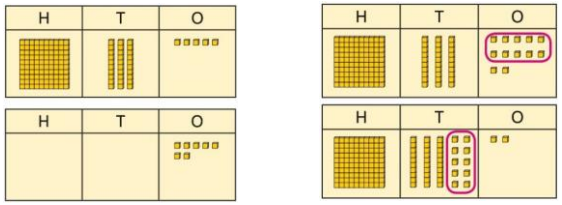
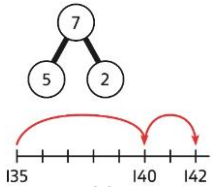
SAST Calculation Policy

Addition

Concrete	Pictorial	Abstract
Knowing and finding number bonds within 10 Break apart a group and put back together to find and form number bonds.  *3 + 4 = 7*  *6 = 2 + 4*	**Knowing and finding number bonds within 10** Use five and ten frames to represent key number bonds. *5 = 4 + 1*  *10 = 7 + 3* 	**Knowing and finding number bonds within 10** Use a part-whole model alongside other representations to find number bonds. Make sure to include examples where one of the parts is zero.  *4 + 0 = 4* *3 + 1 = 4* 
Regrouping to make 10; using ten frames and counters/cubes or using Numicon. 6 + 5 	Children to draw the ten frame and counters/cubes. 	Children to develop an understanding of equality e.g. 6 + □ = 11 6 + 5 = 5 + □ 6 + 5 = □ + 4

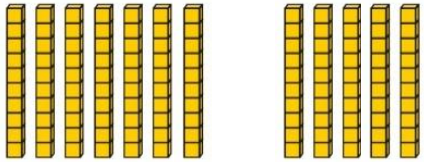
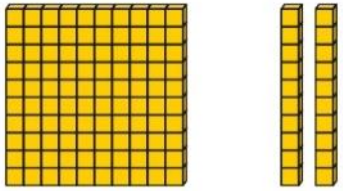
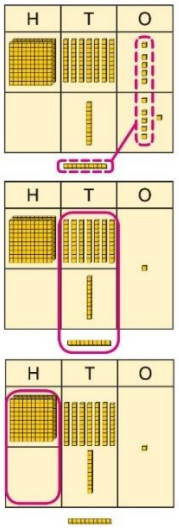
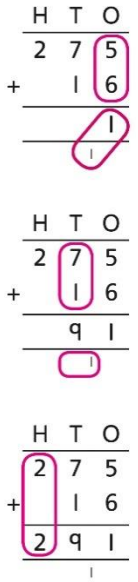
SAST Calculation Policy

Addition

Concrete	Pictorial	Abstract
Group objects into 10s and 1s.  Bundle straws to understand unitising of 10s. 	Understand 10s and 1s equipment, and link with visual representations on ten frames. 	Represent numbers on a place value grid, using equipment or numerals.  
TO + O using base 10. Continue to develop understanding of partitioning and place value. 41 + 8 	Children to represent the base 10 e.g. lines for tens and dot/crosses for ones. 	41 + 8  1 + 8 = 9 40 + 9 = 49 
2 or 3-digit number + 1s with exchange Understand that when the 1s sum to 10 or more, this requires an exchange of 10 ones for 1 ten. Children should explore this using unitised objects or physical apparatus.	Exchange 10 ones for 1 ten where needed. Use a place value grid to support the understanding.  *135 + 7 = 142*	Understand how to bridge by partitioning to the 1s to make the next 10.  *135 + 7 = ?* *135 + 5 + 2 = 142* Ensure that children understand how to add 1s bridging a 100. *198 + 5 = ?* *198 + 2 + 3 = 203*

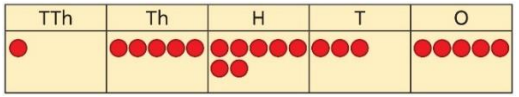
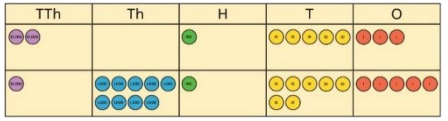
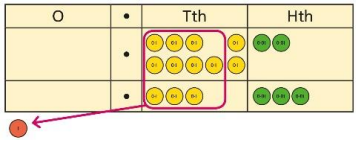
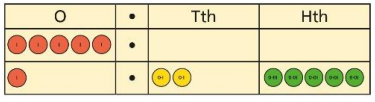
SAST Calculation Policy

Addition

Concrete	Pictorial	Abstract
Use place value equipment to model addition and understand where exchange is required. *Use place value counters to represent* *154 + 72.* *Use this to decide if any exchange is required.*  *There are 5 tens and 7 tens. That is 12 tens so I will exchange.* 	Represent the required exchange on a place value grid using equipment. *275 + 16 = ?*  *275 + 16 = 291* Note: In this example, a mental method may be more efficient. The numbers for the example calculation have been chosen to allow children to visualise the concept and see how the method relates to place value. Children should be encouraged at every stage to select methods that are accurate and efficient.	Children must understand how the method relates to place value at each stage of the calculation.  *275 + 16 = 291*

SAST Calculation Policy

Addition

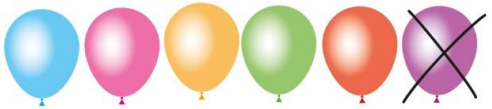
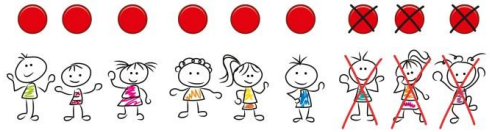
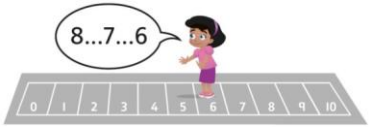
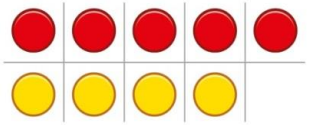
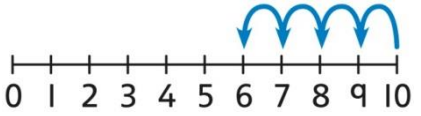
Concrete	Pictorial	Abstract
Column addition with whole numbers Use place value equipment to represent additions. *Add a row of counters onto the place value grid to show 15,735 + 4,012.* 	Represent additions, using place value equipment on a place value grid alongside written methods.  *I need to exchange 10 tens for a 100.* TTh Th H T O 2 0 1 5 3 + 1 9 1 7 5 3 9 3 2 8	Use column addition, including exchanges. TTh Th H T O 1 9 1 7 5 + 1 8 4 1 7 3 7 5 9 2
Adding decimals using column addition Use place value equipment to represent additions. *Show 0·23 + 0·45 using place value counters.*	Use place value equipment on a place value grid to represent additions.  O · Tth Hth 0 · 9 2 + 0 · 3 3 1 · 2 5 Represent exchange where necessary.  O · Tth Hth 5 · 0 0 + 1 · 2 5 6 · 2 5 Include examples where the numbers of decimal places are different.	Add using a column method, ensuring that children understand the link with place value. O · Tth Hth 0 · 2 3 + 0 · 4 5 0 · 6 8 Include exchange where required, alongside an understanding of place value. O · Tth Hth 0 · 9 2 + 0 · 3 3 1 · 2 5 Include additions where the numbers of decimal places are different. O · Tth Hth 3 · 4 0 + 0 · 6 5 · *3.4 + 0.65 = ?*

SAST Calculation Policy

Subtraction

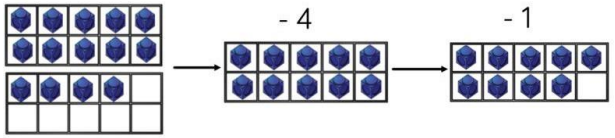
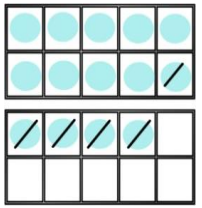
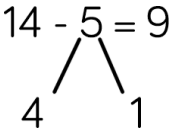
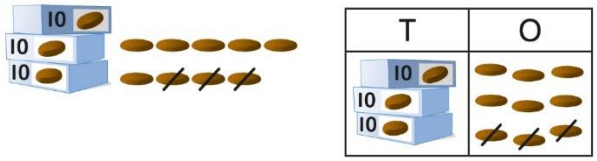
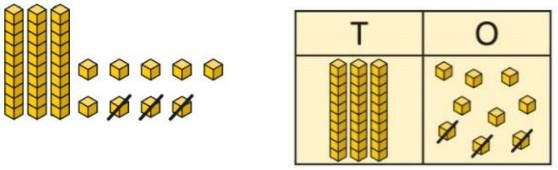
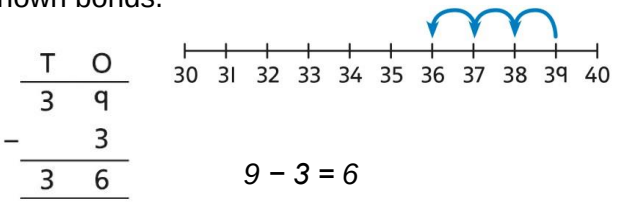
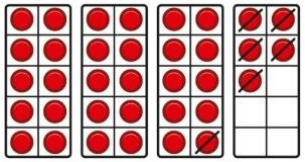
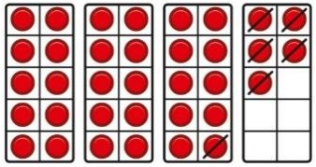
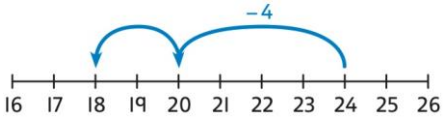
Subtraction - Key Language

Take away, less than, difference, subtract, minus (careful of confusion with directed number), fewer, decrease

Concrete	Pictorial	Abstract
Counting back and taking away Children arrange objects and remove to find how many are left.  *1 less than 6 is 5.* *6 subtract 1 is 5.*	**Counting back and taking away** Children draw and cross out or use counters to represent objects from a problem.  9 − ☐ = ☐ There are ☐ children left.	**Counting back and taking away** Children count back to take away and use a number line or number track to support the method.  *9 − 3 = 6*
Finding the difference Arrange two groups so that the difference between the groups can be worked out. *8 is 2 more than 6.* *6 is 2 less than 8.*  *The difference between 8 and 6 is 2.*	**Finding the difference** Represent objects using sketches or counters to support finding the difference.  *5 − 4 = 1* *The difference between 5 and 4 is 1.*	**Finding the difference** Children understand 'find the difference' as subtraction.  *10 − 4 = 6* *The difference between 10 and 6 is 4.*

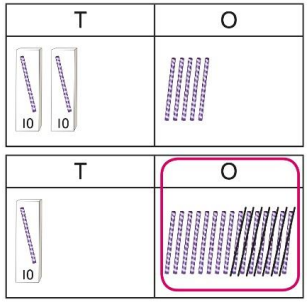
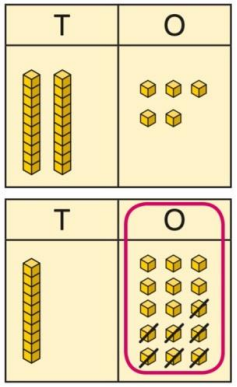
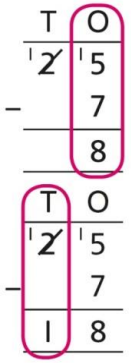
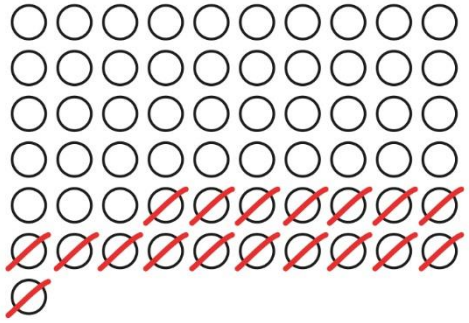
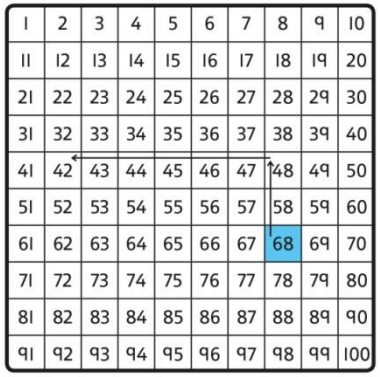
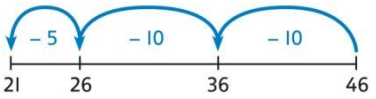
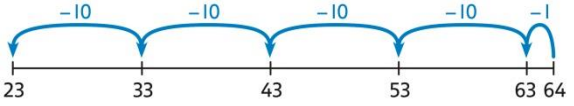
SAST Calculation Policy

Subtraction

Concrete	Pictorial	Abstract
Making 10 using ten frames. 14 - 5 	Children to present the ten frame pictorially and discuss what they did to make 10. 	Children to show how they can make 10 by partitioning the subtrahend.  14 - 4 = 10 10 - 1 = 9
Subtracting a single-digit number Subtract the 1s. This may be done in or out of a place value grid. 	Subtract the 1s. This may be done in or out of a place value grid. 	Subtract the 1s. Understand the link between counting back and subtracting the 1s using known bonds.  *9 − 3 = 6* *39 − 3 = 36*
Bridge 10 by using known bonds.  *35 − 6* *I took away 5 counters, then 1 more.*	Bridge 10 by using known bonds.  *35 − 6* *First, I will subtract 5, then 1.*	Bridge 10 by using known bonds.  *24 − 6 = ?* *24 − 4 − 2 = ?*

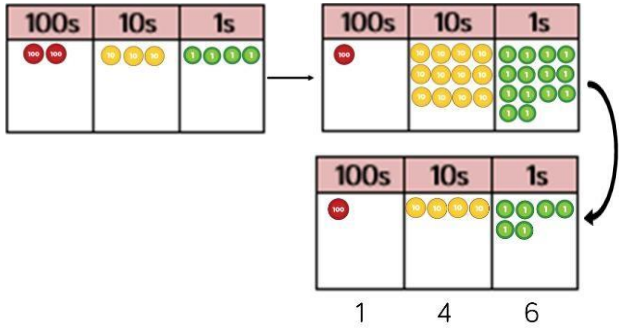
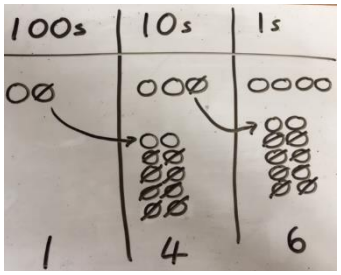
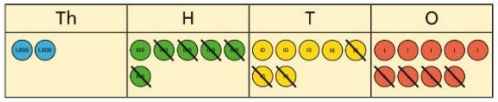
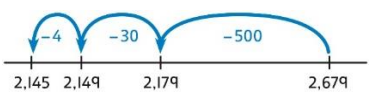
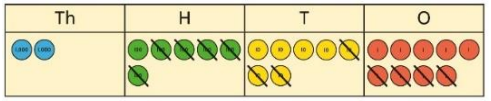
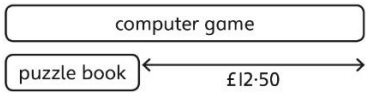
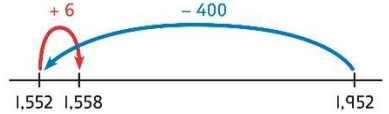
SAST Calculation Policy

Subtraction

Concrete	Pictorial	Abstract
Subtracting a single-digit number using exchange Exchange 1 ten for 10 ones. This may be done in or out of a place value grid. 	Exchange 1 ten for 10 ones. 	Exchange 1 ten for 10 ones.  *25 − 7 = 18*
Subtracting a 2-digit number Subtract by taking away.  *61 − 18* *I took away 1 ten and 8 ones.*	Subtract the 10s and the 1s. This can be represented on a 100 square. 	Subtract the 10s and the 1s. This can be represented on a number line. *64 − 41 = ?*  *64 − 1 = 63* *63 − 40 = 23* *64 − 41 = 23* 

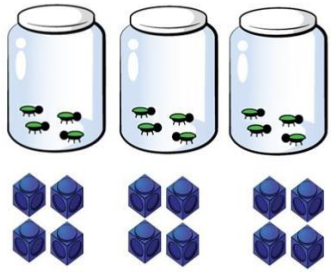
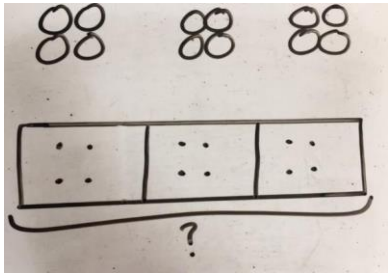
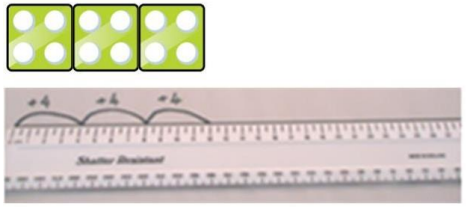
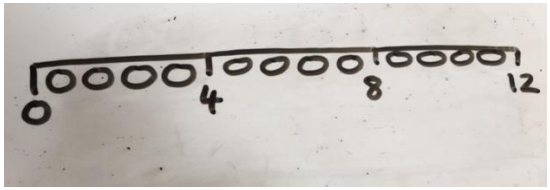
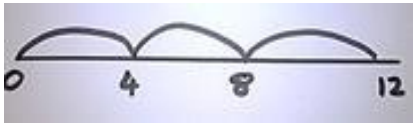
SAST Calculation Policy

Subtraction

Concrete	Pictorial	Abstract
Column method using place value counters. 234 - 88 	Represent the place value counters pictorially; remembering to show what has been exchanged. 	Formal colum method. Children must understand what has happened when they have crossed out digits. TTh Th H T O $^{5}\not{6}$ $^{11}\not{2}$ $^{1}0$ 9 7 − 1 8 5 3 4 4 3 5 6 3 62,097 − 18,534 = 43,563
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.  Th H T O 2 6 7 9 − 5 3 4 2 1 4 5  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. Th H T O 1 $^{8}\not{7}$ $^{14}\not{6}$ $^{1}2$ − 1 5 5 8 3 9 4  Use column subtraction for decimal problems, including in the context of measure. H T O · Tth Hth 3 0 9 · 6 0 − 2 0 6 · 4 0 1 0 3 · 2 0

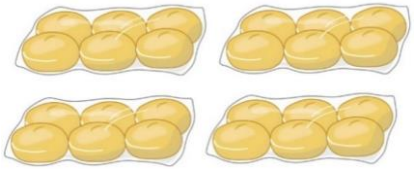
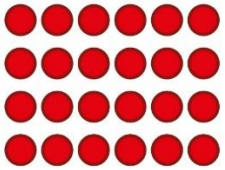
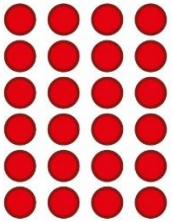
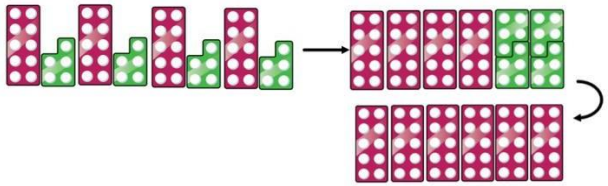
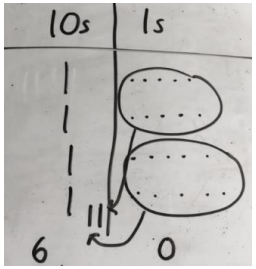
SAST Calculation Policy

Multiplication

Multiplication - Key Language Double, triple, times, multiplied by, product, groups of, lots of, equal groups, multiple		
Concrete	**Pictorial**	**Abstract**
Repeated grouping/ repeated Addition 3 × 4 4 + 4 + 4 There are 3 equal groups, with 4 in each group. 	Children to represent the practical resources in a picture and use a bar model. 	3 × 4 = 12 4 + 4 + 4 = 12
Number lines to show repeated groups- 3 × 4  Cuisenaire rods can be used too.	Represent this pictorially alongside a number line e.g.: 	Abstract number line showing three jumps of four. 3 × 4 = 12 

SAST Calculation Policy

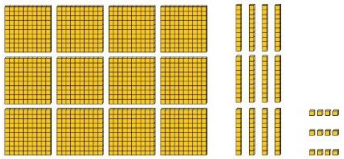
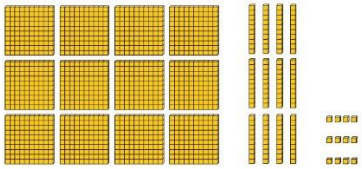
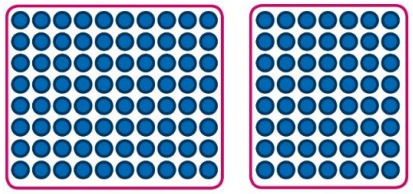
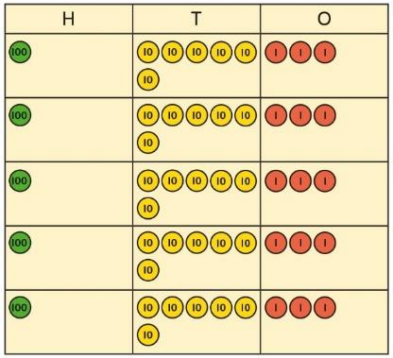
Multiplication

Concrete	Pictorial	Abstract
Understand how to use times-tables facts flexibly.  *There are 6 groups of 4 pens.* *There are 4 groups of 6 bread rolls.*  *I can use 6 × 4 = 24 to work out both totals.*	Understand how times-table facts relate to **commutativity**. *6 × 4 = 24* *4 × 6 = 24*  	Understand how times-table facts relate to commutativity. *I need to work out 4 groups of 7.* *I know that 7 × 4 = 28* *so, I know that* *4 groups of 7 = 28* *and* *7 groups of 4 = 28.*
Partition to multiply using Numicon, base 10 or Cuisenaire rods. 4 × 15 	Children to represent the concrete manipulatives pictorially. 	Children to represent partitioning in a grid $4 \times 10 = 40$ $4 \times 5 = 20$ $40 + 2 = 60$

×	10	5
4	40	20

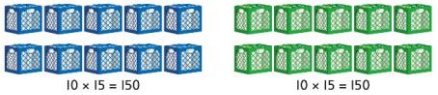
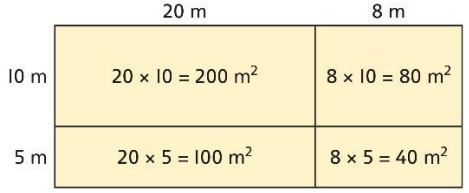
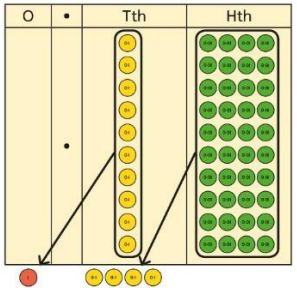
SAST Calculation Policy

Multiplication

Concrete	Pictorial	Abstract
Multiplying by 10, 100, 1000 etc. Use unitising and place value equipment to understand how to multiply by multiples of 1, 10 and 100.  *3 groups of 4 ones is 12 ones.* *3 groups of 4 tens is 12 tens.* *3 groups of 4 hundreds is 12 hundreds.*	Use unitising and place value equipment to understand how to multiply by multiples of 1, 10 and 100.  *3 × 4 = 12* *3 × 40 = 120* *3 × 400 = 1,200*	Use known facts and understanding of place value and commutativity to multiply mentally. *4 × 7 = 28* *4 × 70 = 280* *40 × 7 = 280* *4 × 700 = 2,800* *400 × 7 = 2,800*
Multiplying up to 4-digit numbers by a single digit Explore how to use partitioning to multiply efficiently. *8 × 17 = ?*  8 × 10 = 80 8 × 7 = 56 80 + 56 = 136 *So, 8 × 17 = 136*	Represent multiplications using place value equipment and add the 1s, then 10s, then 100s, then 1,000s.  	Use an area model and then add the parts. 100 × 5 = 500 60 × 5 = 300 3 × 5 = 15 Use a column multiplication, including any required exchanges. 136 × 6 = 816

SAST Calculation Policy

Multiplication

Concrete	Pictorial	Abstract
Multiplying 2-digit numbers by 2-digit numbers (And more) Partition one number into 10s and 1s, then add the parts. *23 × 15 = ?*   3 × 15 = 45 There are 345 bottles of milk in total. H T O 1 5 0 1 5 0 + 4 5 3 4 5 1 *23 × 15 = 345*	Use an area model and add the parts. *28 × 15 = ?*  H T O 2 0 0 1 0 0 8 0 + 4 0 4 2 0 1 *28 × 15 = 420*	Use column multiplication, ensuring understanding of place value at each stage. 3 4 × 2 7 = 2 3 8 (34 × 7) 3 4 × 2 7 = 2 3 8 (34 × 7); 6 8 0 (34 × 20) 3 4 × 2 7 = 2 3 8 (34 × 7); 6 8 0 (34 × 20); 9 1 8 (34 × 27) 1 Use grid multiplication 	×	30	4
20	**600**	**80**
7	**210**	**28** | 6 0 0 2 1 0 8 0 + 2 8 9 1 8 1
Multiplying decimals by 10, 100 and 1,000 Use place value equipment to explore and understand the exchange of 10 tenths, 10 hundredths or 10 thousandths.	Represent multiplication by 10 as exchange on a place value grid.  *0·14 × 10 = 1·4*	Understand how this exchange is represented on a place value chart. *2·5 × 10 = 25* *2·5 × 100 = 250* *2·5 × 1,000 = 2,500* | Th	H	T	O	•	Tth
---	---	---	---	---	---
			2	•	5
		2	5	•	
	2	5	0	•	
2	5	0	0	•		 (arrows show the exchange)

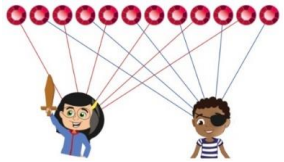
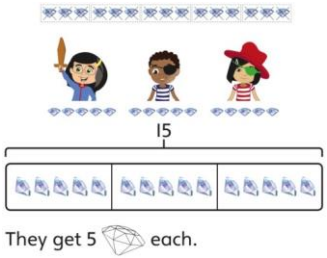
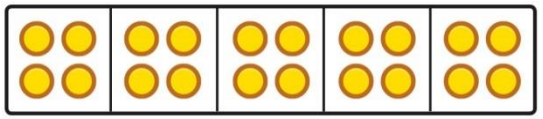
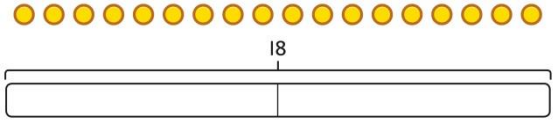
SAST Calculation Policy

Division

Division - Key Language

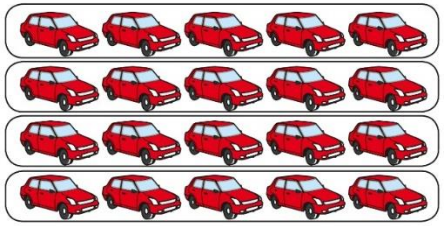
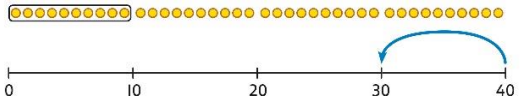
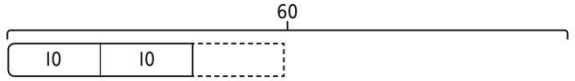
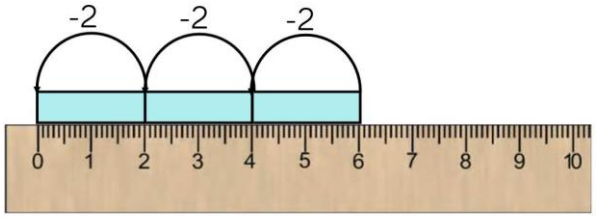
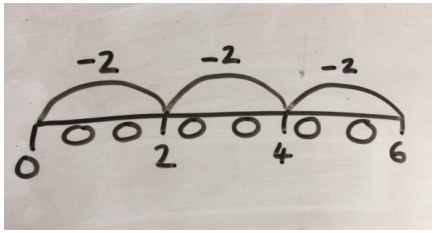
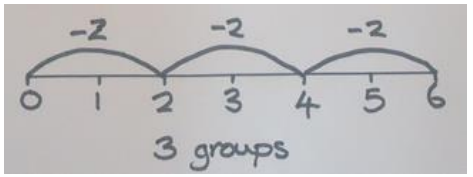
Share, equal group, divide, factor, ratio, half, quarter

(Careful with fraction language e.g. "*what is half of*" or "*find a half of*" not "*divide by half*")

Concrete	Pictorial	Abstract
Start with a whole and share into equal parts, one at a time.  *12 shared equally between 2.* *They get 6 each.* Start to understand how this also relates to grouping. To share equally between 3 people, take a group of 3 and give 1 to each person. Keep going until all the objects have been shared  *15 shared equally between 3.* *They get 5 each.*	Represent the objects shared into equal parts using a bar model.  *20 shared into 5 equal parts.* *There are 4 in each part.*	Use a bar model to support understanding of the division.  *18 ÷ 2 = 9*

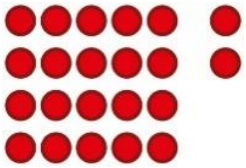
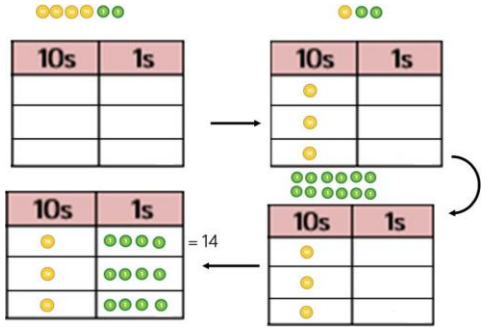
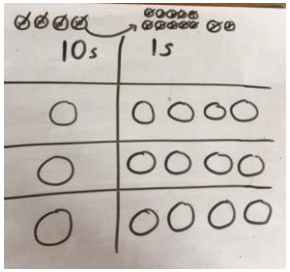
SAST Calculation Policy

Division

Concrete	Pictorial	Abstract
Understand the relationship between multiplication facts and division.  *4 groups of 5 cars is 20 cars in total.* *20 divided by 4 is 5.*	Link equal grouping with repeated subtraction and known times-table facts to support division.  *40 divided by 4 is 10.* Use a bar model to support understanding of the link between times-table knowledge and division.  	Relate times-table knowledge directly to division. 1 × 10 = 10 2 × 10 = 20 **3 × 10 = 30** 4 × 10 = 40 5 × 10 = 50 6 × 10 = 60 7 × 10 = 70 8 × 10 = 80 I used the 10 times-table to help me. 3 × 10 = 30. *I know that 3 groups of 10 makes 30, so I know that 30 divided by 10 is 3.* *3 × 10 = 30 so 30 ÷ 10 = 3*
Repeated subtraction using Cuisenaire rods above a ruler. 6 ÷ 2  3 groups of 2	Children to represent repeated subtraction pictorially.  	Abstract number line to represent the equal groups that have been subtracted. 

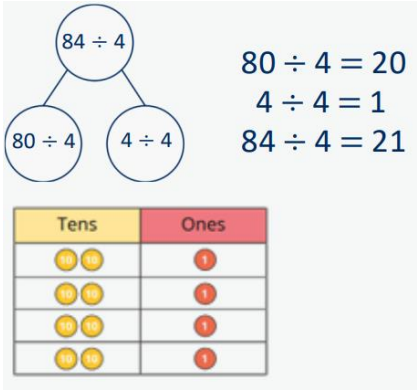
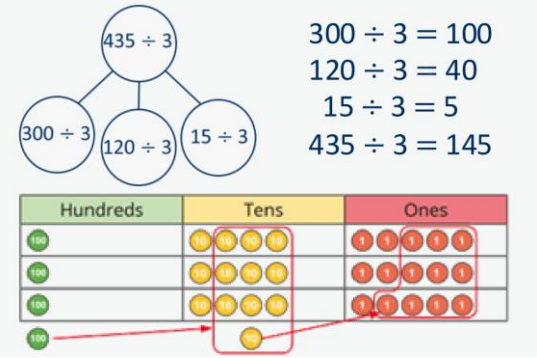
SAST Calculation Policy

Division

Concrete	Pictorial	Abstract
Use equipment to understand that a remainder occurs when a set of objects cannot be divided equally any further.  *There are 13 sticks in total.* *There are 3 groups of 4, with 1 remainder.*	Use images to explain remainders.  *22 ÷ 5 = 4 remainder 2*	Understand that the remainder is what cannot be shared equally from a set. ***22 ÷ 5 = ?*** *3 × 5 = 15* *4 × 5 = 20* *5 × 5 = 25 … this is larger than 22* *So, 22 ÷ 5 = 4 remainder 2*
Sharing using place value counters. 	Children to represent the place value counters pictorially 	Children to be able to make sense of the place value counters and write calculations to show the process. 42 ÷ 3 42 = 30 + 12 30 ÷ 3 = 10 12 ÷ 3 = 4 10 + 4 = 14

SAST Calculation Policy

Division

Concrete	Pictorial	Abstract
Divide a 2 or 3-digit number by a 1-digit number Progress from divisions with no exchange, to divisions with exchange and then divisions with remainders	I can partition … into … tens and … ones. 	I cannot share the hundreds/tens equally, so I need to exchange 1 … for 10 … 
Divide numbers up to 4 digits by a 1-digit number The short division method is introduced for the first time.	There are … groups of … hundreds/tens/ones/ in … I can exchange 1 … for 10 …