Maths workshop

Tuesday 3rd December

altogether

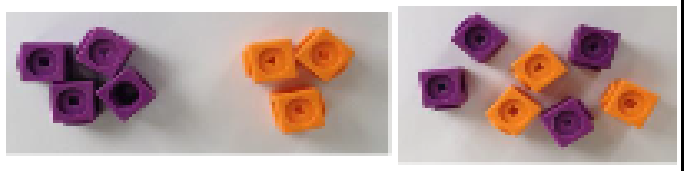
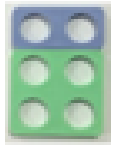
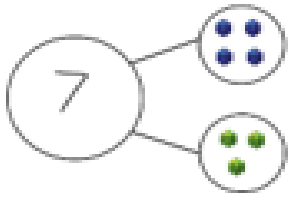
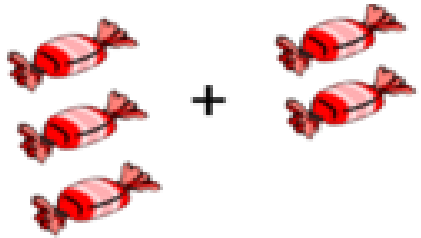
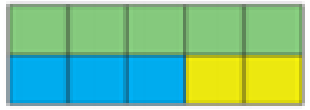
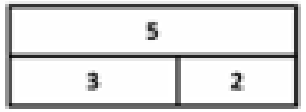
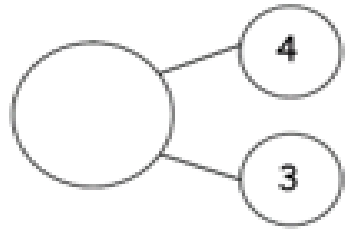
total

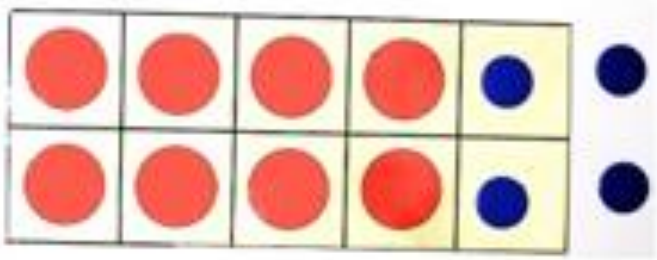
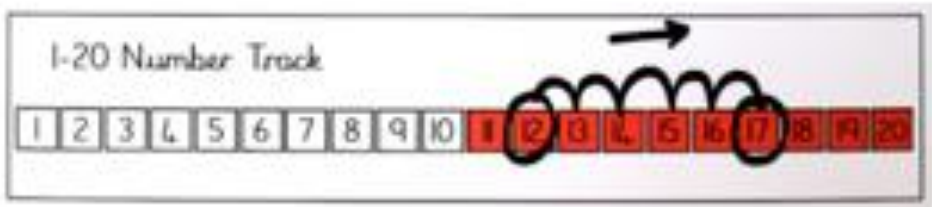
add

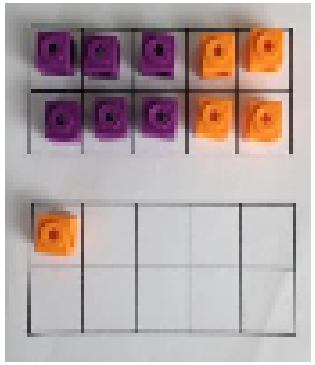
Addition

plus

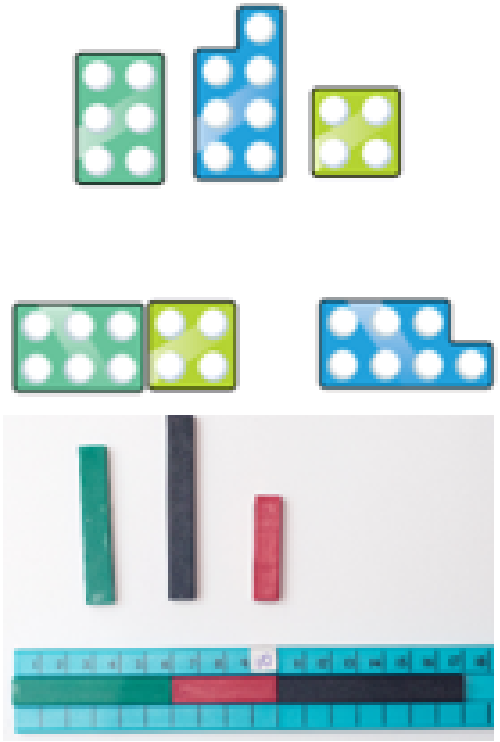
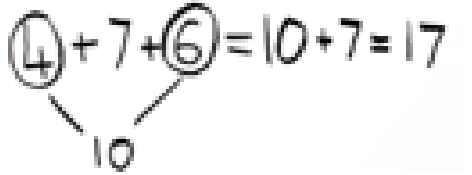
sum

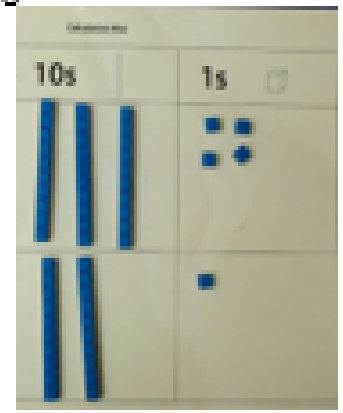
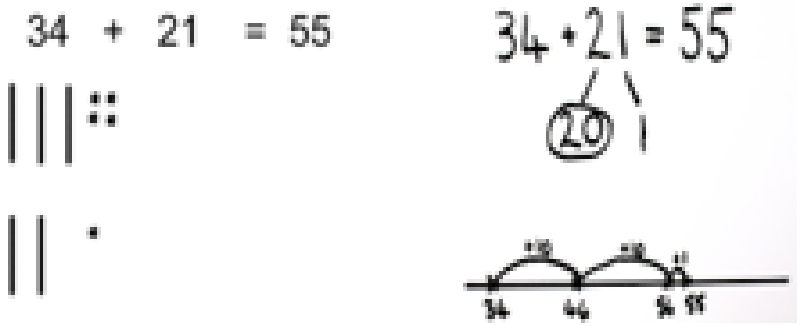
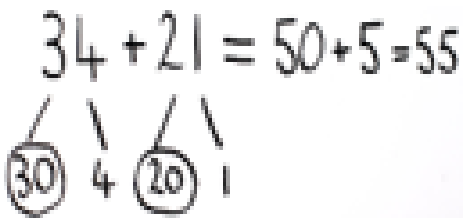
Objective and Strategies	Concrete	Pictorial	Abstract
Combining two parts to make a whole: part-whole model	Use a variety of concrete items, eg. cubes, toys, Cuisenaire rods and Numicon, to add two numbers together, as a group. Placing cubes in a bar formation builds understanding of the bar model.     Place concrete equipment on a part-whole model. **One part is 4, one part is 3, the whole is 7.** 	Use given pictures to add two numbers together, as a group. Pictures can be shown in a bar formation. Children can then progress to drawing their own pictures, or dots, to represent the numbers.   Link work with cubes, to the bar model, by initially shading individual squares, to represent the numbers.  	Use numerical recording, alongside concrete and pictorial representations, to help children progress towards an abstract understanding of numbers. Build on the use of a part-whole model.  4 + 3 = 7 3 + 4 = 7 7 = 3 + 4 7 = 4 + 3 Ensure children explore commutativity and regularly encounter the = symbol at the beginning of calculations, as well as calculations involving 0.

Objective and Strategies	Concrete	Pictorial	Abstract
Starting at the bigger number and counting on	Children represent the larger number, using concrete equipment, and then count on in 1s, while adding the correct number of beads, counters etc. 8 + 4 = 12  12 + 5 = 17 	Children progress to counting on using a number track, then a number line. Placing cubes on a number track, can help to reinforce children's understanding of the number sequence.   12 + 5 = 17 **Circle the larger number. Count on in ones. How many have you got altogether?**	Children can begin to calculate mentally, by placing the larger number in their head and counting on in 1s, using their fingers to keep track of the count. 5 + 12 = 17 **Put the larger number in your head. Count on in ones. How many have you got altogether?**

Objective and Strategies	Concrete	Pictorial	Abstract
Regrouping to make 10.	Children can begin to calculate more efficiently, by partitioning the number to be added. They make a whole group of 10 first, then add the remainder. 6 + 5 = 11  **Start with the larger number. How many more do you need to make 10? How many have you got left to add?**	Children can show their understanding of regrouping using a number line. 	Children regroup mentally, in order to add efficiently. 7 + 4= 11 **Start with the larger number. How many more do you need to make 10? How many have you got left to add?**

*** To do this they have to be secure with their number bonds to 10.**

Objective and Strategies	Concrete	Pictorial	Abstract
Adding three single digits	Children can calculate efficiently, by looking for pairs of numbers that total 10, then adding the third number. 4 + 7 + 6 = 10 + 7 = 17 		 **Add the two numbers that make 10. Then add the remaining number.**

Objective and Strategies	Concrete	Pictorial	Abstract
Adding 2-digit numbers mentally, using equipment or pictorial support	Represent the calculation on a calculation mat, using Base 10. Children total the equipment, starting their count with the 10s and then counting on to the 1s. 	Children can then draw Base 10 and total, as with concrete equipment.  Some children find it helpful to draw a number line, or bar, to visualise their calculation.	Children partition the numbers and recombine, to support them in calculating mentally. 

subtract

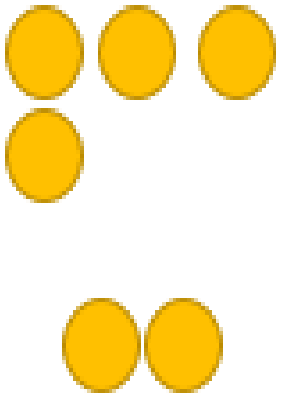
difference

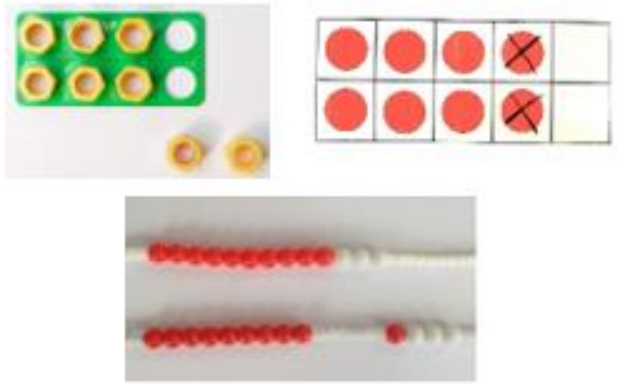
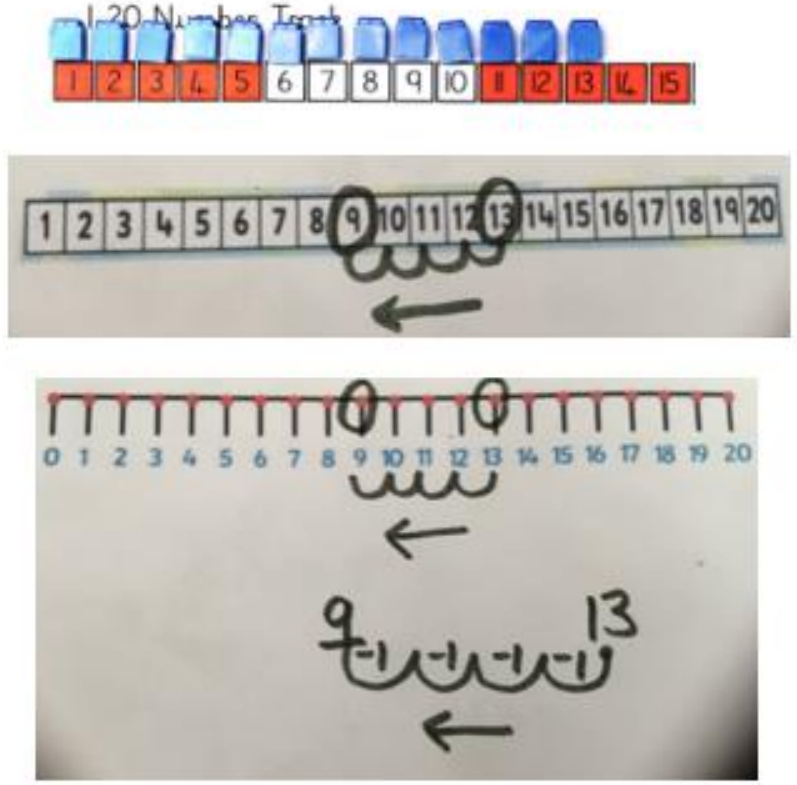
minus

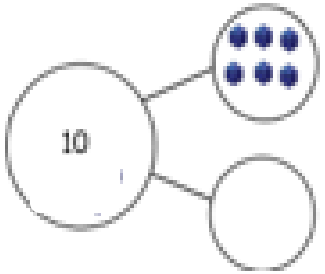
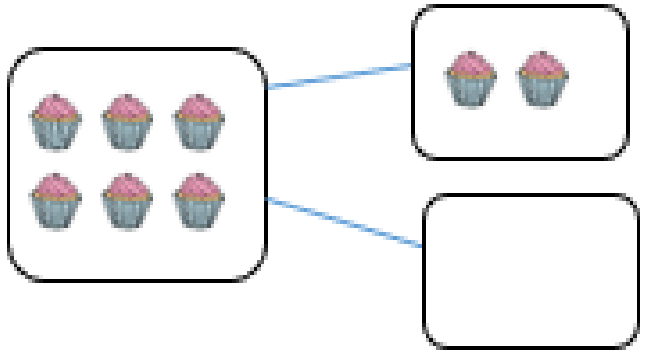
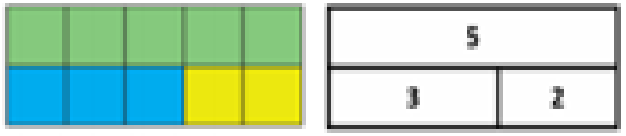
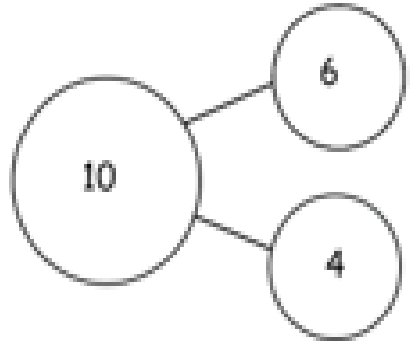
Subtraction

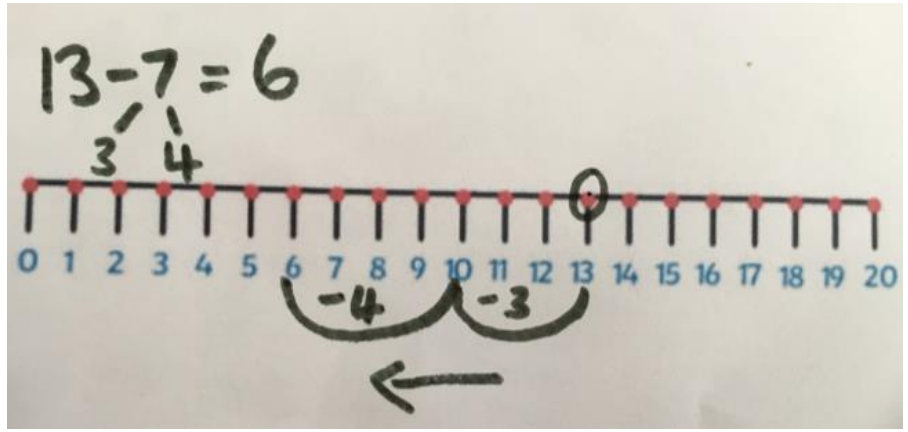
less

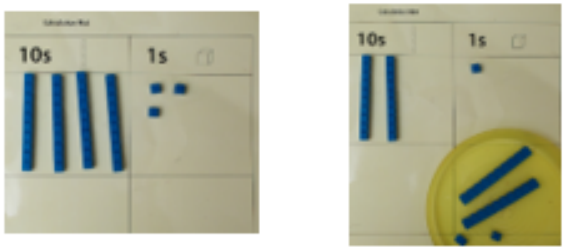
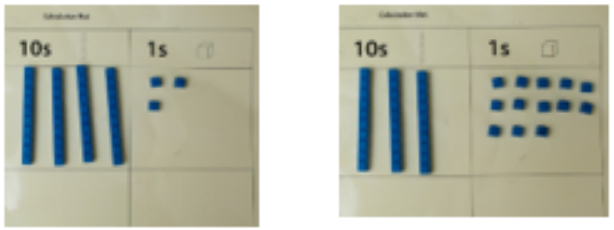
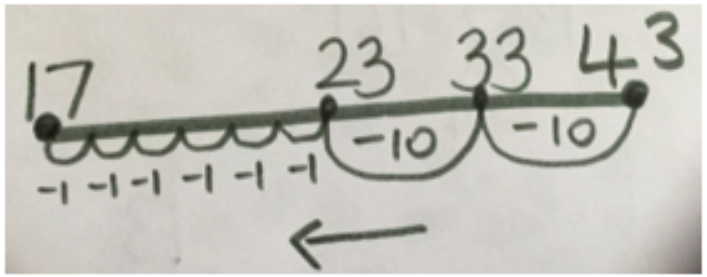
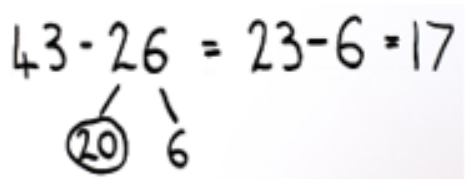
take away

Objective and Strategies	Concrete	Pictorial	Abstract
Taking away ones	Use a variety of concrete items eg. toys, counters, cubes, to model taking a number away from a group.  8 – 2 = 4	Cross out drawn objects to show what has been taken away. 	Use numerical recording, alongside concrete and pictorial representations, to help children progress towards an abstract understanding of numbers. 8 – 2 = 6

Objective and Strategies	Concrete	Pictorial	Abstract
Counting back	Represent the larger number using concrete equipment. Count back in ones, as you remove the correct number of beads / cubes. 	Placing cubes on a number line makes links between different representations. Children can count back using a number track, then number line.  **Circle the larger number. Count back in 1s. How many have you got left?**	Children can begin to calculate mentally, by placing the larger number in their head and counting back in 1s, using their fingers to keep track of the count. 13 – 4 = 9 **Put the larger number in your head. Count back in ones. How many have you got left?**

Objective and Strategies	Concrete	Pictorial	Abstract
Relate subtraction to addition	Use part whole models and cuisenaire rods to help children understand the inverse relationship between addition and subtraction.  **10 is the whole. 6 is one of the parts. What is the other part?** 9-2 	Use a pictorial representation of objects to show the part whole model.  Use the bar model to help children find related addition and subtraction calculations. 	Children can progress to recording numbers within the part whole model.  6 + 4 = 10 4 + 6 = 10 10 – 4 = 6 10 – 6 = 4 10 = 6 + 4 10 = 4 + 6 6 = 10 - 4 4 = 10 - 6

Objective and Strategies	Concrete	Pictorial	Abstract
Regrouping to make 10	As with addition, children can begin to calculate more efficiently, by partitioning the number to be subtracted. They subtract part of the number, to leave a multiple of 10, and then subtract the remainder 14 – 5 = 9 	Children can show their undesrtanding of regrouping, using a number line. 	Children regroup mentally, in order to subtract efficiently. 13 – 7 = 6 **How many do you need to subtract to leave 10? How many have you got left to subtract?**

Objective and Strategies	Concrete	Pictorial	Abstract
Subtracting 2-digit numbers using equipment or pictorial support	Represent the calculation on a calculation mat, using Base 10. Children remove the number to be subtracted. They count the equipment that remains 43 – 22 = 21  Where regrouping is required, children can exchange one 10 for ten 1s, before subtracting. 43 – 26 =  They can now subtract 26.	Children can then draw Base 10 and cross out the number they are subtracting. They count the remaining number, to find out how many are left. 55 - 21 = 34  When regrouping is required, children can cross out one ten, and draw ten 1s in its place, before subtracting. Children can also draw a number line, to support mental calculation.  	Children partition the number to be subtracted, to support them in calculating mentally. 

repeated addition

multiply

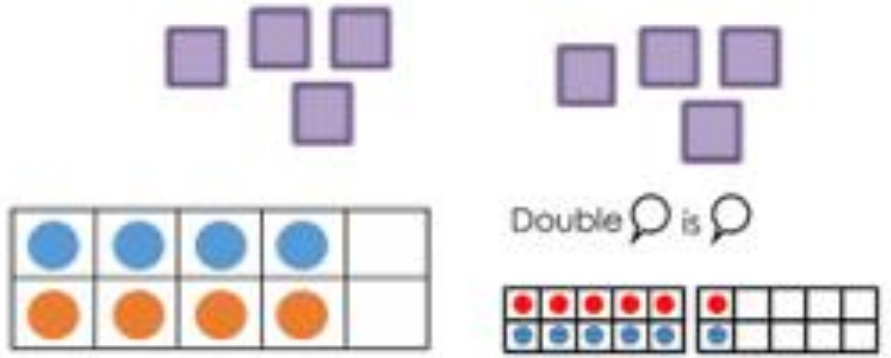
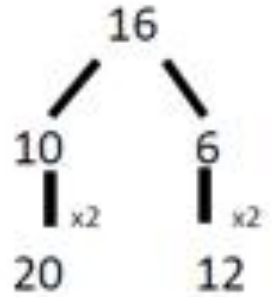
groups of

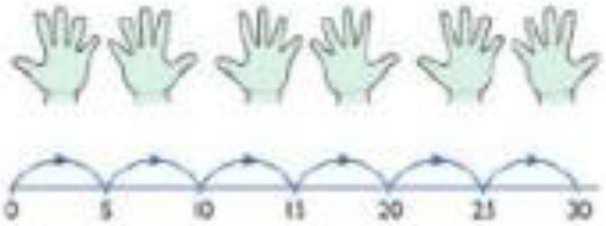
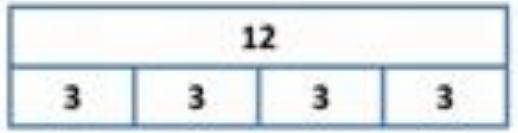
Multiplication

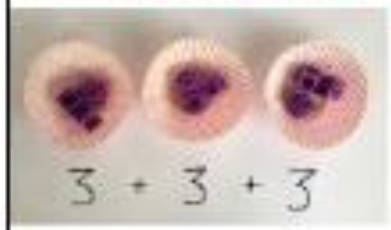
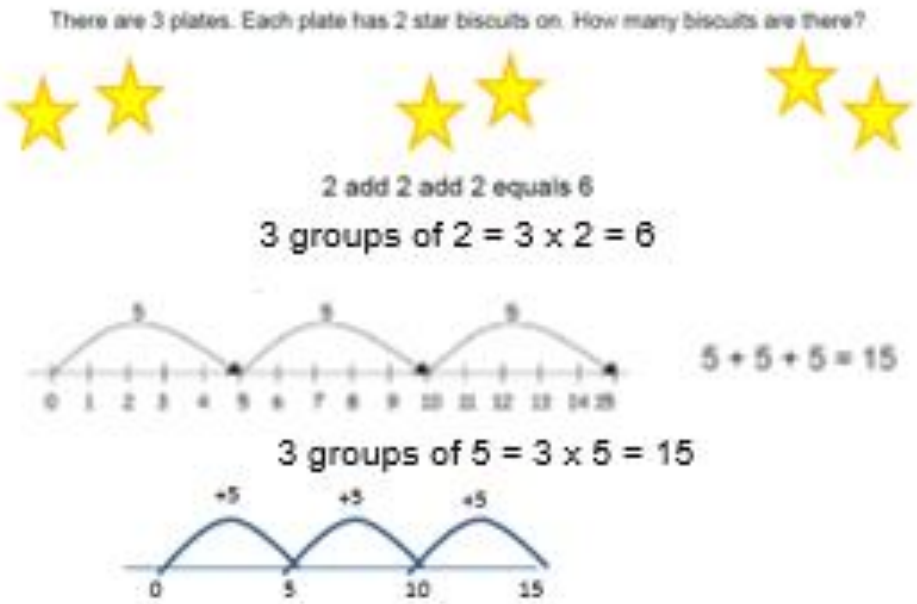
times

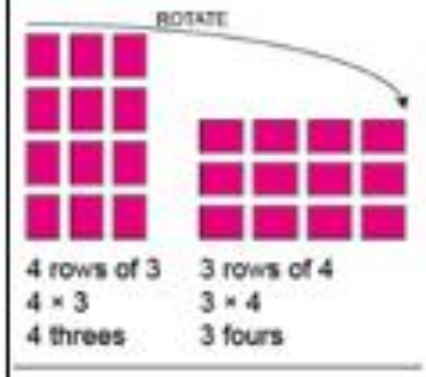
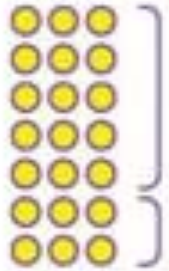
array

double

Objective and Strategies	Concrete	Pictorial	Abstract
Doubling	Use practical activities to show how to double a number.  double 4 is 8  2 x 4 = 8 	Draw pictures to show how to double a number. Double 4 is 8  	 Partition a number and then double each part before recombining it back together.

Objective and Strategies	Concrete	Pictorial	Abstract
Counting in multiples	   Count in multiples supported by concrete objects in equal groups.  Use Cuisenaire rods to support use of model	 Use a number line or pictures to continue support in counting in multiples.  Bar model shows relationship between whole/ parts and makes links to division.  	Count in multiples of a number aloud. Write sequences with multiples of numbers. 2, 4, 6, 8, 10 5, 10, 15, 20, 25, 30

Objective and Strategies	Concrete	Pictorial	Abstract
Repeated addition – linking to multiplication	 5 + 5 + 5 = 15 3 groups of 5 equals 15 3 x 5 = 15   3 + 3 + 3 = 9 3 x 3 = 9 3 groups of 3 = 9 Use Cuisenaire rods to show repeated addition 		Write addition sentences to describe objects and pictures.  5 groups of 2 = 5 x 2 = 10

Objective and Strategies	Concrete	Pictorial	Abstract
Arrays- showing commutative multiplication	Create arrays using counters/ cubes to show multiplication sentences.  	Draw arrays in different rotations to find **commutative** multiplication sentences.   4 x 6 = 24  6 x 4 = 24  7 x 3 = 21 3 x 7 = 21	Use an array to write multiplication sentences and reinforce repeated addition.  5 + 5 + 5 = 15 3 + 3 + 3 + 3 + 3 = 15 5 x 3 = 15 3 x 5 = 15 

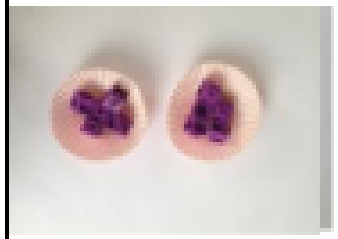
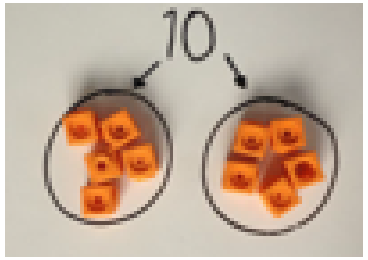
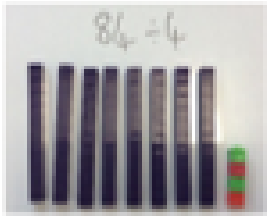
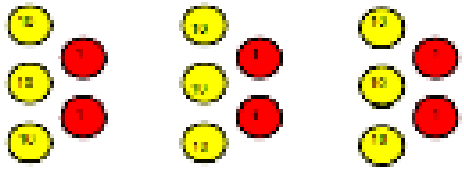
divided by

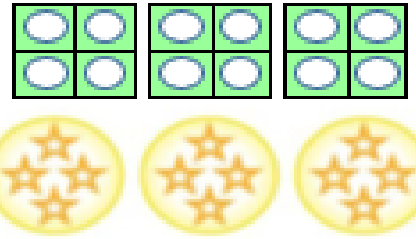
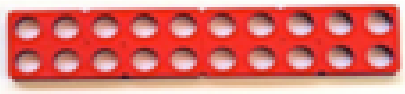
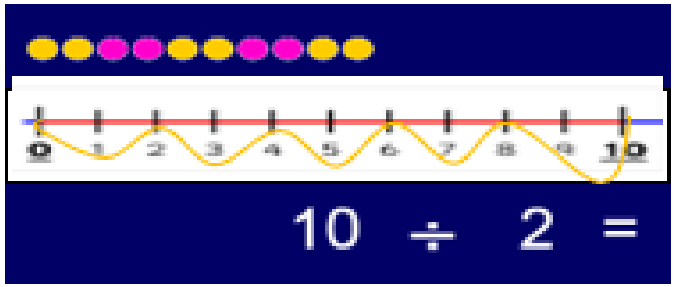
shared by

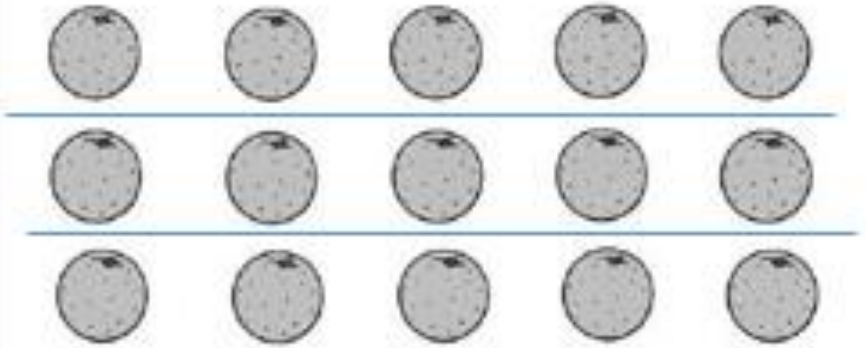
Division

half

equal groups of

Objective and Strategies	Concrete	Pictorial	Abstract
Sharing objects into groups	 I have 10 cubes, can you share them equally in 2 groups?    96 ÷ 3 = 32 	Children use pictures or shapes to share quantities.  8 ÷ 2 = 4	Share 9 buns between three people. 9 ÷ 3 = 3

Objective and Strategies	Concrete	Pictorial	Abstract
Division as grouping	Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding.      20 ÷ 5 = 4	Use a number line to show jumps in groups. The number of jumps equals the number of groups.  Think of the bar as a whole. Split it into the number of groups you are dividing by and work out how many would be within each group. 20 ÷ 4 = 5 20 divided into groups of 4 equals 5  	28 ÷ 7 = 4 Divide 28 into 7 groups. How many are in each group?

Objective and Strategies	Concrete	Pictorial	Abstract
Division within arrays	 Link division to multiplication by creating an array and thinking about the number sentences that can be created. Eg 15 ÷ 3 = 5 5 x 3 = 15 15 ÷ 5 = 3 3 x 5 = 15	 Draw an array and use lines to split the array into groups to make multiplication and division sentences.	Find the inverse of multiplication and division sentences by creating four linking number sentences. 7 x 4 = 28 4 x 7 = 28 28 ÷ 7 = 4 28 ÷ 4 = 7

Working at the expected standard

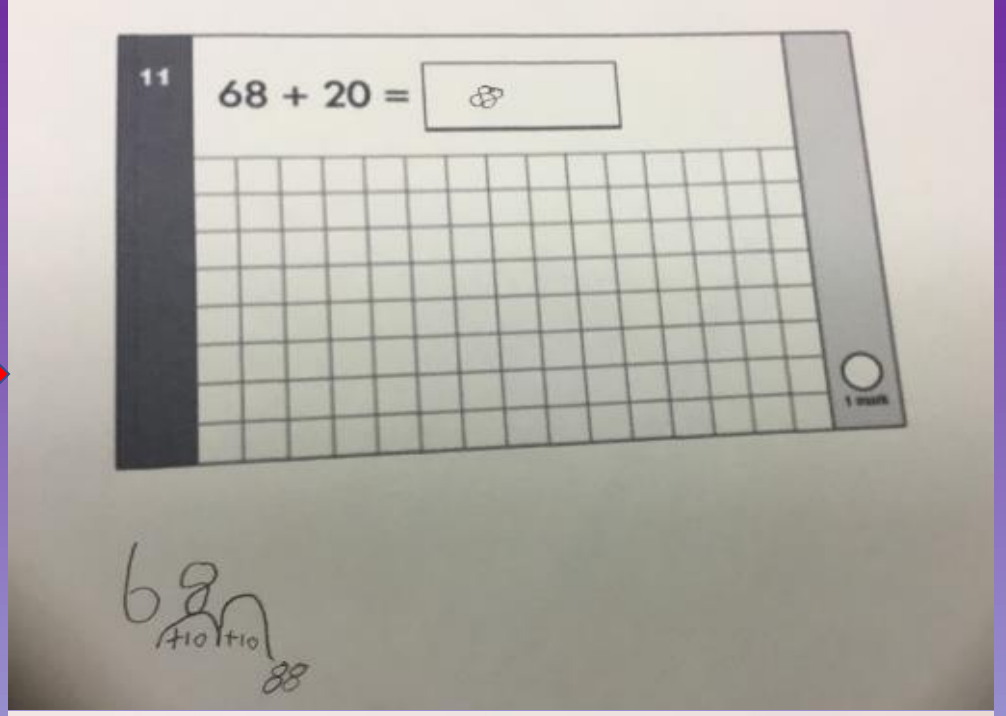
- add and subtract any 2 two-digit numbers using an efficient strategy, explaining their method verbally, in pictures or using apparatus (e.g. 48 + 35; 72 – 17)
- recall all number bonds to and within 10 and use these to reason with and calculate bonds to and within 20, recognising other associated additive relationships (e.g. If 7 + 3 = 10, then 17 + 3 = 20; if 7 – 3 = 4, then 17 – 3 = 14; leading to if 14 + 3 = 17, then 3 + 14 = 17, 17 – 14 = 3 and 17 – 3 = 14)
- recall multiplication and division facts for 2, 5 and 10 and use them to solve simple problems, demonstrating an understanding of commutativity as necessary

Working at greater depth

- use reasoning about numbers and relationships to solve more complex problems and explain their thinking (e.g. 29 + 17 = 15 + 4 + □; 'together Jack and Sam have £14. Jack has £2 more than Sam. How much money does Sam have?' etc.)
- solve unfamiliar word problems that involve more than one step (e.g. 'which has the most biscuits, 4 packets of biscuits with 5 in each packet or 3 packets of biscuits with 10 in each packet?')

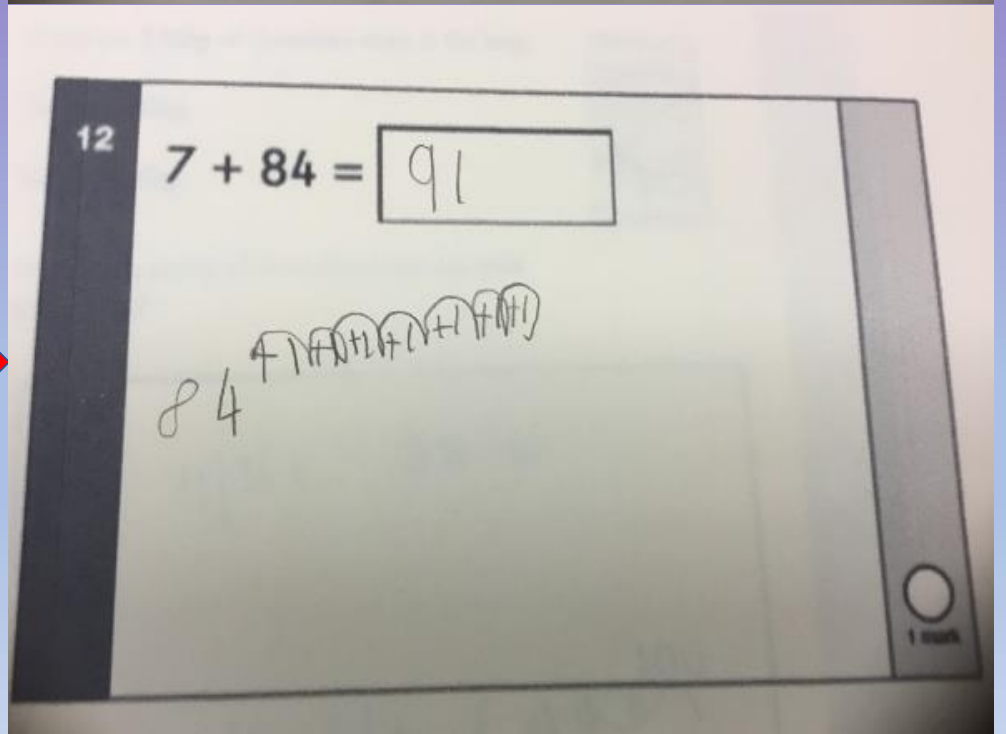
11 68 + 20 = ☐

1 mark



12 7 + 84 = ☐

1 mark



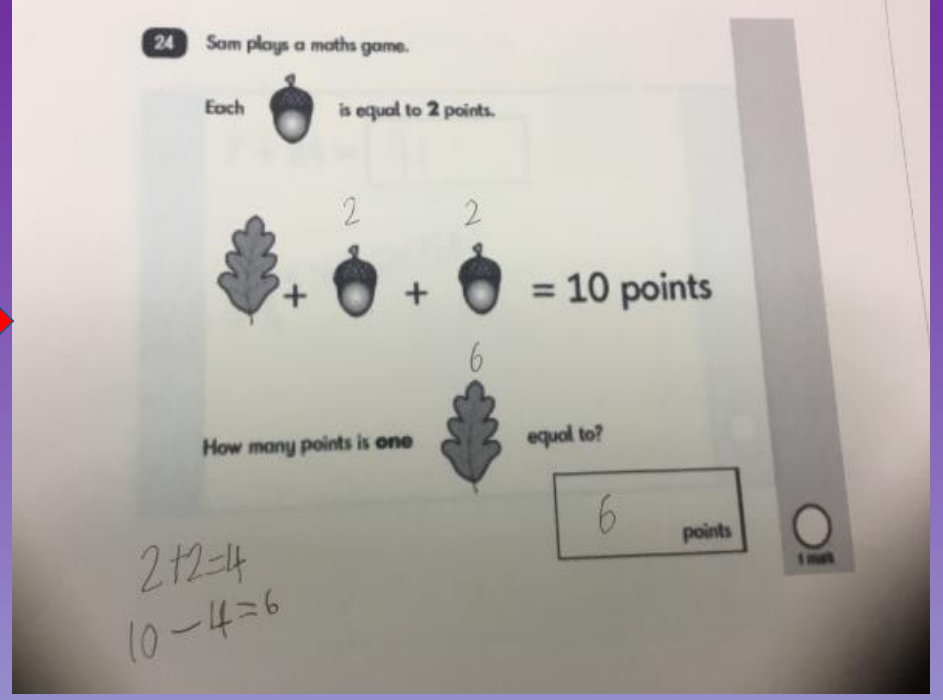
24 Sam plays a maths game.

Each  is equal to **2** points.

How many points is **one**  equal to?

points

1 mark



29 There are **100g** of chocolate chips in the bag.

Sita uses **25g**.

Ben uses **35g**.

How many grams of chocolate chips are **left** in the bag?

Show your working

g

2 marks