Maths Mastery

September 2017 - White Rose Maths

Reception

Early Learning Goals in Reception
There are two Early Learning Goals for Maths. This is what most children in Reception are expected to be able to do by the end of their first year at school.
Number:
Children count reliably with numbers from one to 20, place them in order and say which number is one more or one less than a given number. Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer. They solve problems, including doubling, halving and sharing.
Shape, Space and Measure:
Children use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems. They recognise, create and describe patterns. They explore characteristics of everyday objects and shapes and use mathematical language to describe them.

Fluency

In Reception, we are aiming to teach so that children have a deep understanding of number.

Representing Numbers

We want to develop children's number sense so that they understand the number rather than just recognising the numeral. Children need to understand that numbers can be represented in many ways, not just as a written numeral. We use many different objects and pictures to show that numbers can be represented in lots of ways.

Some ways to represent five

Children sometimes need lots of practise to recognise numbers in different forms. We play matching games and encourage children to recognise and make different amounts in our indoor and outdoor areas.

Counting

When counting, children need to understand that
☐ That we need to say one number for each object counted.
☐ The final number we say is how many altogether. Some children continue to count after they have reached the final object as they don't connect the numbers they are saying to the objects in front of them.
☐ That we can count objects in any order and the total stays the same.

Year 1

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number: Place Value (within 10)				Number: Addition and Subtraction (within 10)				Geometry: Shape	Number: Place Value (within 20)		Consolidation
Spring	Number: Addition and Subtraction (within 20)				Number: Place Value (within 50) (Multiples of 2, 5 and 10 to be included)			Measurement: Length and Height		Measurement: Weight and Volume		Consolidation
Summer	Number: Multiplication and Division (Reinforce multiples of 2, 5 and 10 to be included)			Number: Fractions		Geometry: position and direction	Number: Place Value (within 100)		Measurement: money	Time		Consolidation

Year 2

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number: Place value			Number: Addition and Subtraction					Measurement: Money		Number: Multiplication and Division	
Spring	Number: Multiplication and Division		Statistics		Geometry: Properties of Shape			Number: Fractions			Measurement: length and height	Consolidation
Summer	Position and direction			Problem solving and efficient methods	Measurement: Time			Measurement: Mass, Capacity and Temperature			Investigations	

Concrete Pictoral Abstract

When children are introduced to a new concept they should have the opportunity to explore it through concrete resources, pictoral representations and an abstract apporach.

Concrete

Pictoral

Abstract

\ + | |

10 + 20

Resources

Number Lines

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

-20 -19 -18 -17 -16 -15 -14 -13 -12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1
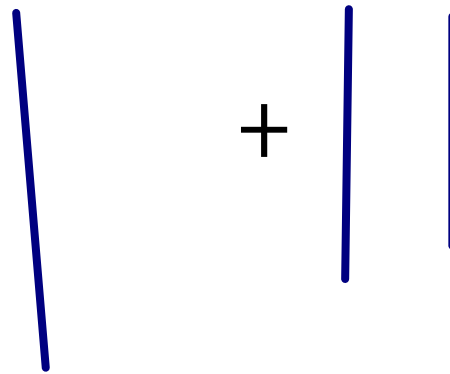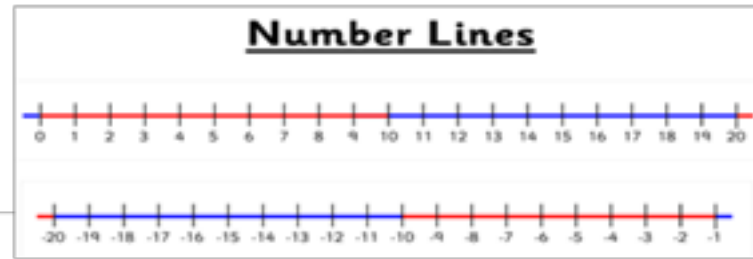
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

100   10   1
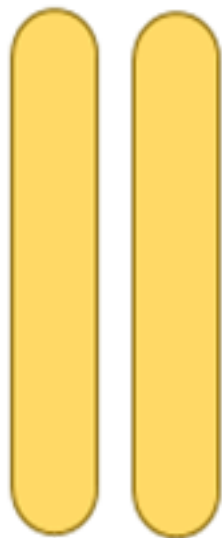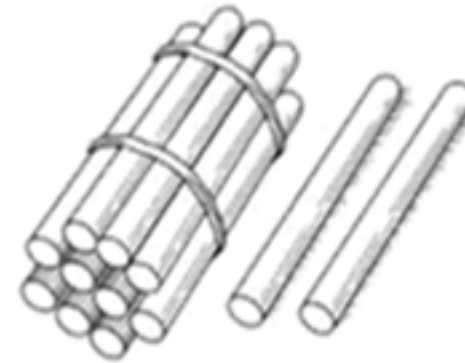
Models:

Part whole model

bar model

ten frame

number line

place value grid

Part Whole
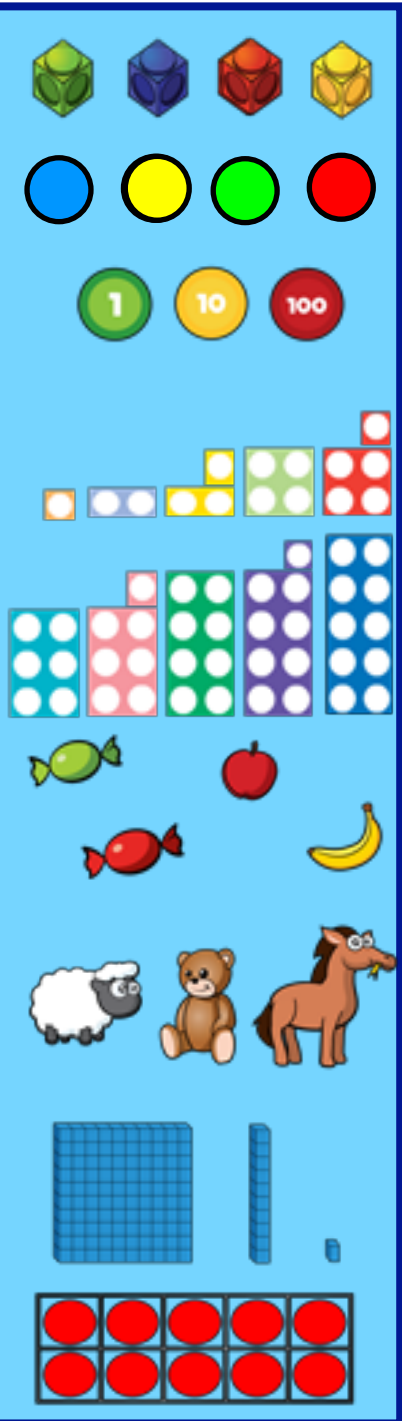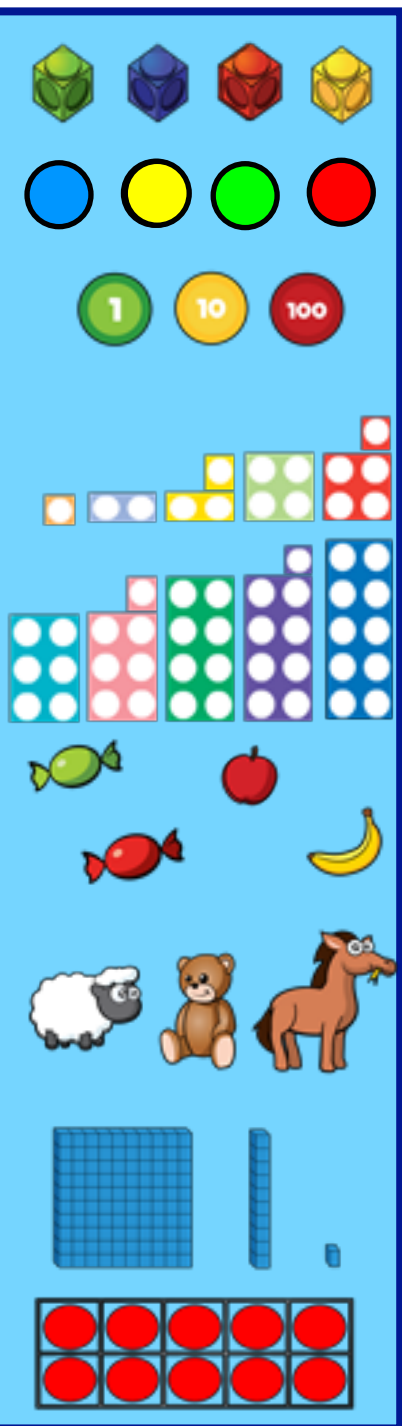
Calculation

Bar Model
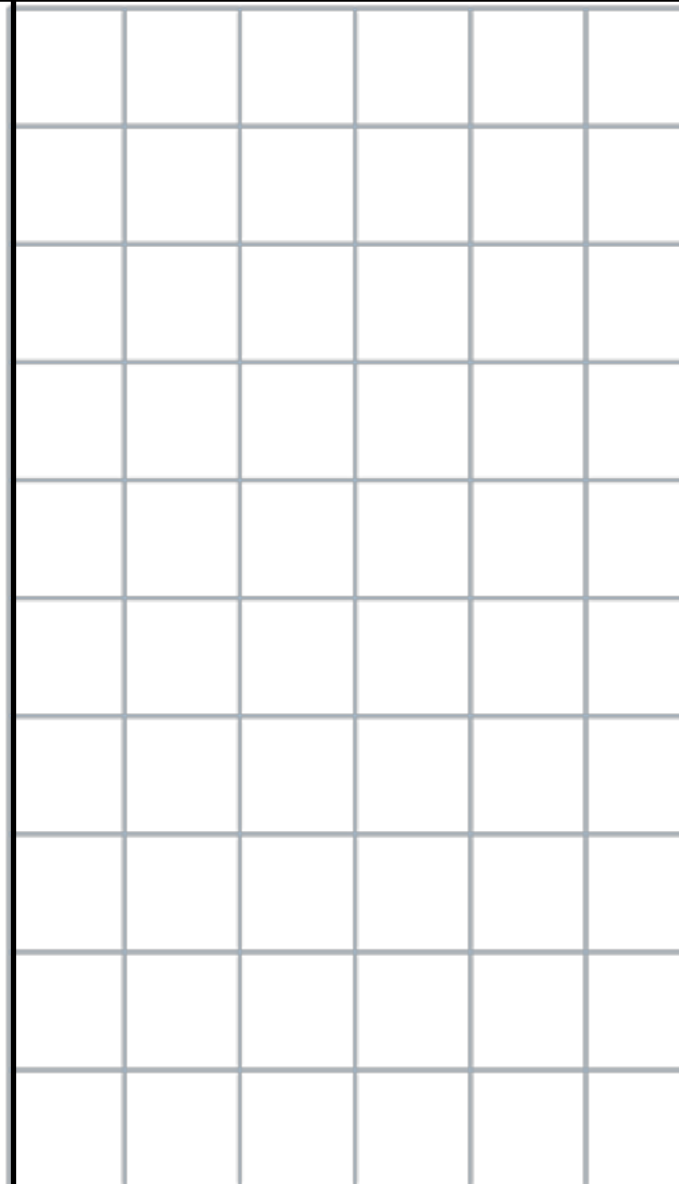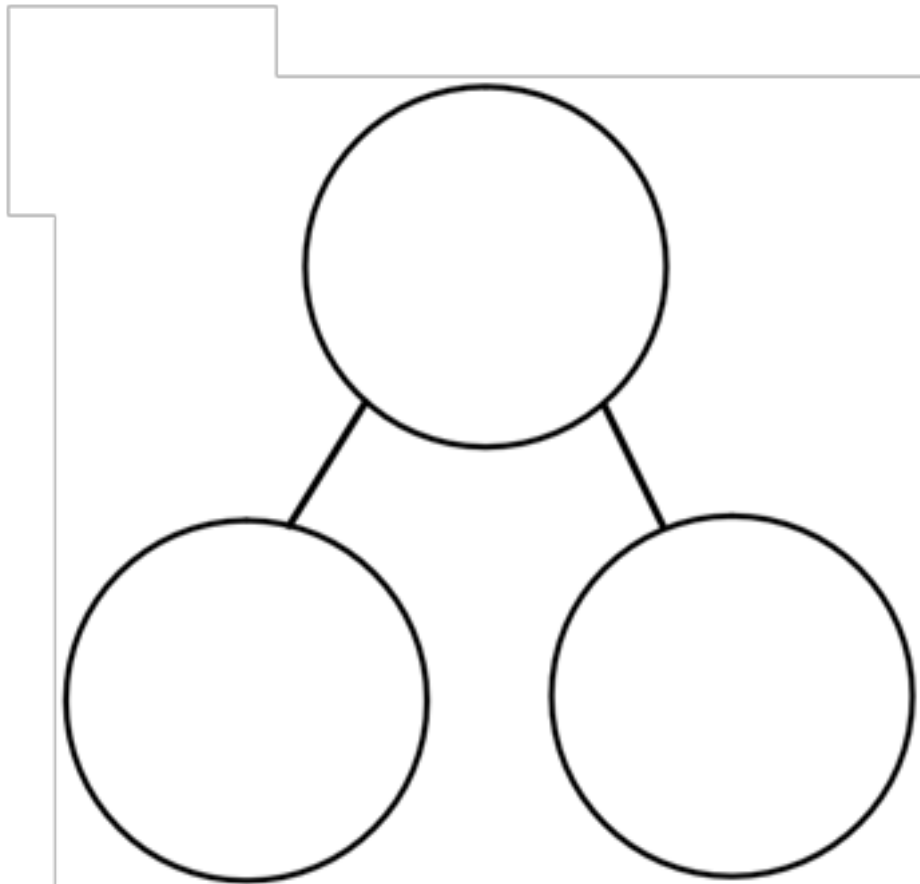
Calculation
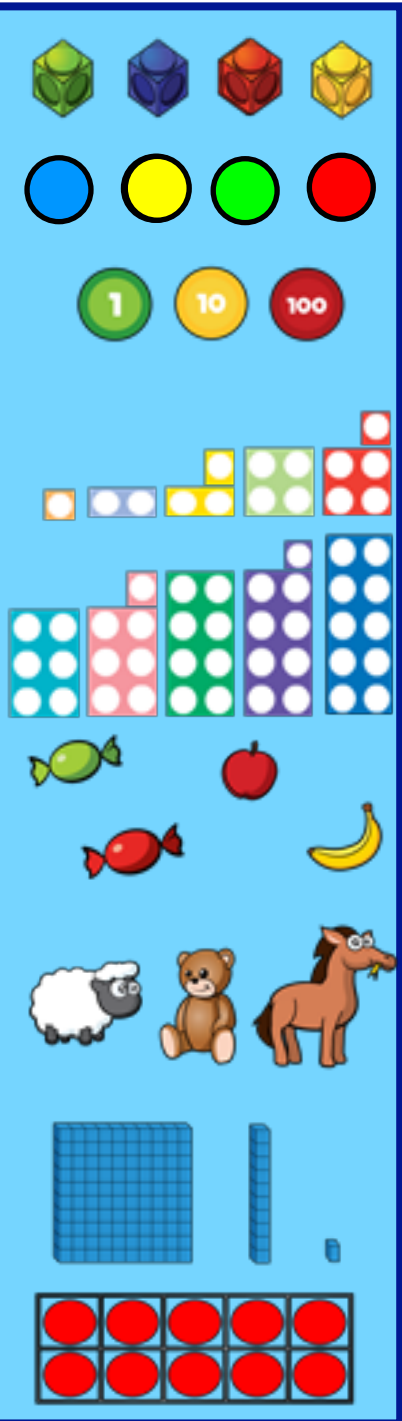
Ten Frame

Calculation
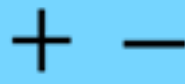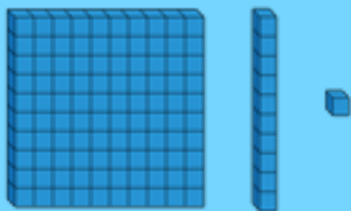

$$\square + \square = \square$$

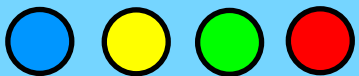$$\square + \square = \square$$

$$\square = \square + \square$$
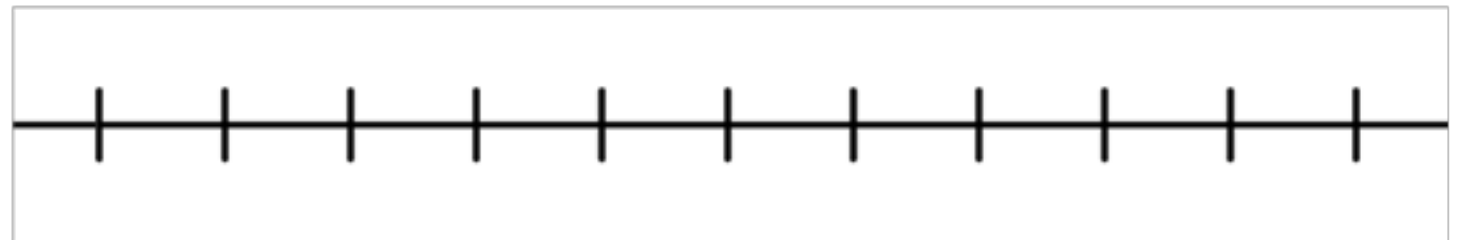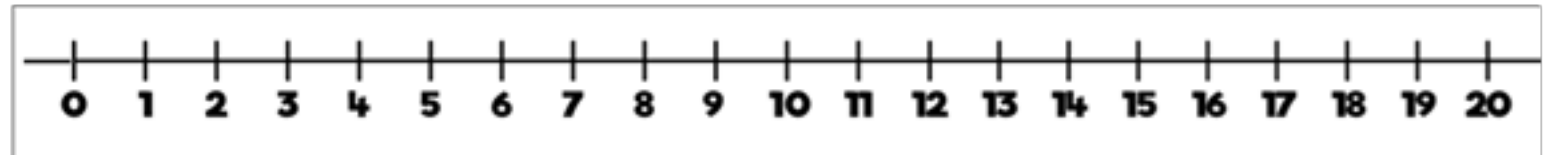
$$\square = \square + \square$$

Number Tracks

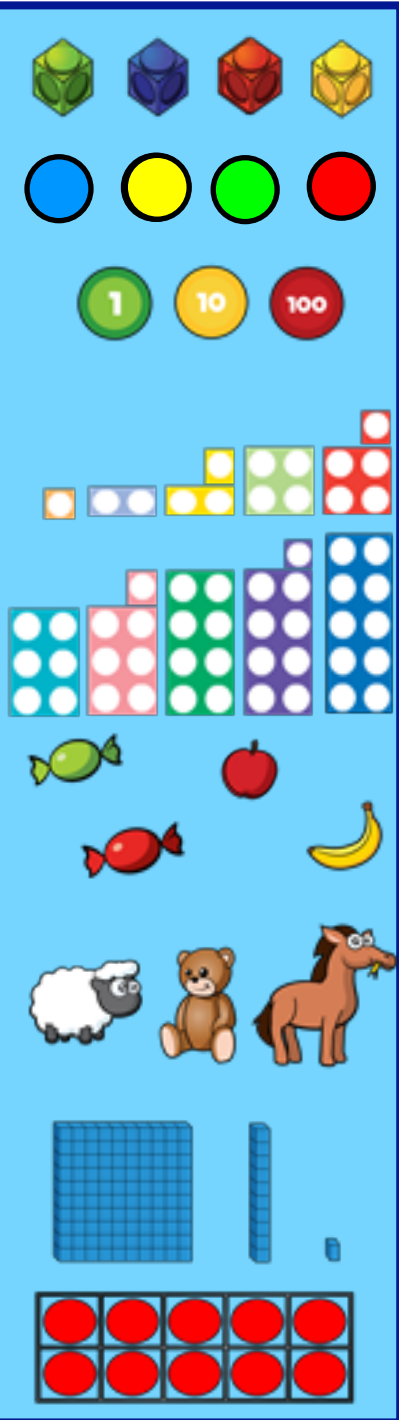|									

Place Value Grid		Calculation
Tens	**Ones**	

Number Line

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

Reasoning Challenge - Year 1 examples

There are 6 animals.

How many different ways can you sort the animals?
Complete a part-whole model for each way.
Can you partition the animals into more than 2 groups?

Work in groups of up to 8 children.

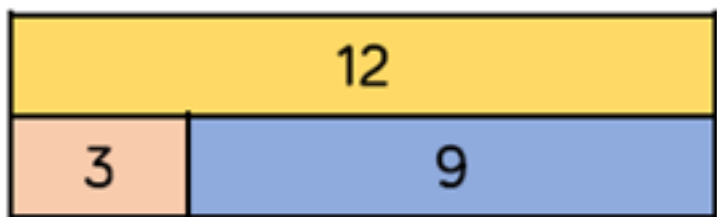Can you split yourselves into different groups?

Think of different ways to group yourselves: hair colour, eye colour, gender, shoe size etc.

Complete a part-whole model for each way.

Can you partition into more than 2 groups?
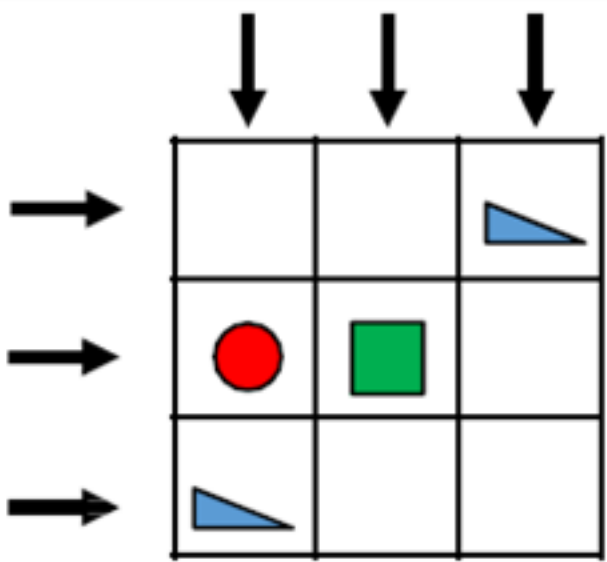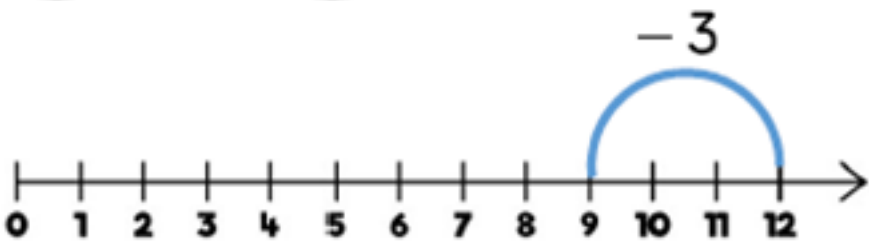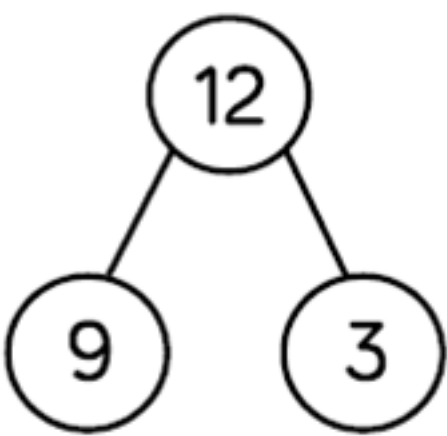
Reasoning Challenge - Year 2 examples

Which of the representations are equivalent to the bar model?

12

3	9

$12 = 9 + 3$

There are 9 cars in a car park, 3 cars leave.

(Number bond: 12 splitting into 9 and 3)

$9 - 3 = 12$

(Number line 0 to 12 with a jump labelled -3)

(3×3 grid with arrows pointing down on all columns and arrows pointing right on all rows. Top row right cell: blue triangle. Middle row: red circle, green square. Bottom row left cell: blue triangle)

Squares are worth 10
Triangles are worth 20
Circles are worth 30

Can you complete the grid above so that all horizontal and vertical lines equal 60?

Can children create another pattern on an empty grid where each line equals 60?
How many possible ways are there to solve this?

Questions