	Number and place value	Number facts	Addition and subtraction	Multiplication and division	Fractions, decimals and percentages	Geometry
5	Know that 10 tenths are equivalent to 1 one, and that 1 is 10 times the size of 0.1. Know that 100 hundredths are equivalent to 1 one, and that 1 is 100 times the size of 0.01. Know that 10 hundredths are equivalent to 1 tenth, and that 0.1 is 10 times the size of 0.01. Recognise the place value of each digit in numbers with up to 2 decimal places, and compose and decompose numbers with up to 2 decimal places using standard and non-standard partitioning. Reason about the location of any number with up to 2 decimals places in the linear number system, including identifying the previous and next multiple of 1 and 0.1 and rounding to the nearest of each. Divide 1 into 2, 4, 5 and 10 equal parts, and read scales/ number lines marked in units of 1 with 2, 4, 5 and 10 equal parts. Convert between units of measure, including using common decimals and fractions.	Secure fluency in multiplication table facts, and corresponding division facts, through continued practice. Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 1 tenth or 1 hundredth).		Multiply and divide numbers by 10 and 100; understand this as equivalent to making a number 10 or 100 times the size, or 1 tenth or 1 hundredth times the size. Find factors and multiples of positive whole numbers, including common factors and common multiples, and express a given number as a product of 2 or 3 factors. Multiply any whole number with up to 4 digits by any one-digit number using a formal written method. Divide a number with up to 4 digits by a one-digit number using a formal written method, and interpret remainders appropriately for the context.	Find non-unit fractions of quantities. Find equivalent fractions and understand that they have the same value and the same position in the linear number system. Recall decimal equivalents for 1/2, 1/4, 1/5 and 1/10, and for multiples of these proper fractions.	Compare angles, estimate and measure angles in degrees (°) and draw angles of a given size. Compare areas and calculate the area of rectangles (including squares) using standard units.

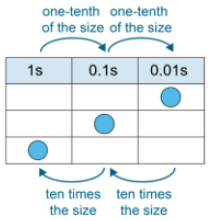
End points for knowledge Year 5

Number and place value

Grouping and exchange model

10 hundredths are equivalent to 1 tenth

Scaling model



0.1 is ten times the size of 0.01
0.01 is one-tenth the size of 0.1

- Practise describing the relationship between 0.1 and 0.01 in these two different ways.

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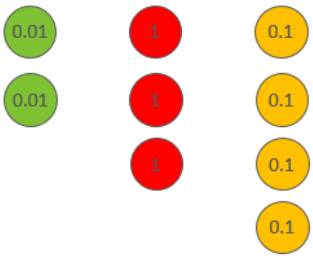
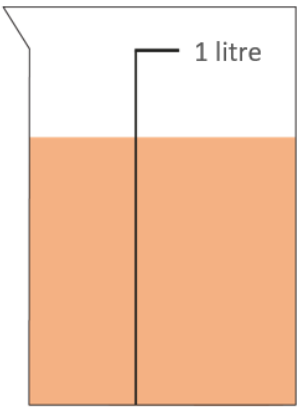


0.02 + 3 + 0.4 = 3.42

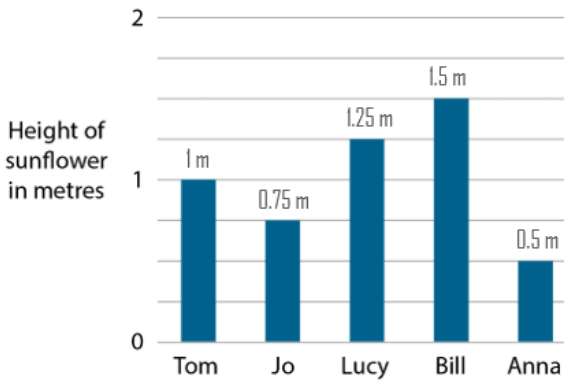
- Say and reveal the value of each column of counters. Write the total value as an addition equation.
- What do you notice? Does it matter that the counters are in a different order?
- What is the value of the 4?

The 4 represents four tenths.

- Repeat for other numbers that have two decimal places, using different arrangements.



- What do you notice? What could you say about how much liquid is in the jug?
- Would 0.3 litres be a reasonable estimate?
- How do you know it is more than 0.5 litres?
- Where would 0.5 litres be on the scale?
- Can you use this to make a reasonable estimate for the amount of liquid?



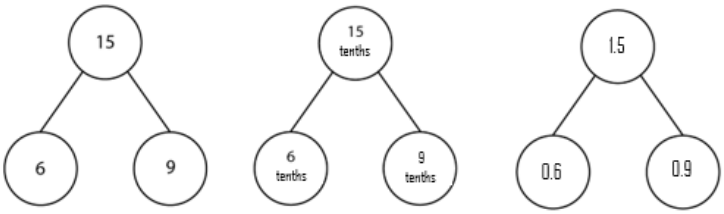
- Where have you seen this kind of representation? What is different this time?
- Could each interval be worth 0.1m? Why not?
- What is the correct value of each interval?
- What is the value of each bar?
- What is the difference in height of Jo and Bill's sunflowers? Can you do this without having to subtract? Explain how.

End points for knowledge Year 5

Number facts

2 × 2							
3 × 2	3 × 3						
4 × 2	4 × 3	4 × 4					
5 × 2	5 × 3	5 × 4	5 × 5				
6 × 2	6 × 3	6 × 4	6 × 5	6 × 6			
7 × 2	7 × 3	7 × 4	7 × 5	7 × 6	7 × 7		
8 × 2	8 × 3	8 × 4	8 × 5	8 × 6	8 × 7	8 × 8	
9 × 2	9 × 3	9 × 4	9 × 5	9 × 6	9 × 7	9 × 8	9 × 9

- We can discount the 1 times table facts, because generally children know these.
- Because each product is repeated we can halve the number of facts we need to learn. We now have 36 as shown in this grid
- Once children can recall these, and apply them to commutative calculations, for example recognise that 5 x 7 has the same product as 7 x 5, they have learnt the essential facts for written multiplication and division.
- Children who have not learnt all times table facts before the MTC should prioritise these in year 5.



- What is the same about these part-part-whole models? What is different?
- How are we using our knowledge of place value here?

6 + 9 = 15
6 tenths + 9 tenths = 15 tenths
15 tenths = 1.5

- Can you write any related facts using these representations and knowledge of place value?
- Repeat with other numbers.

Multiplication and division

0.27 × 10 = 2.7

2.7 ÷ 10 = 0.27

1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09

÷ 10 one-tenth of the size

- What happens to 0.27 when we multiply by 10? What happens when we then divide by 10?
- Can you start with 0.36 on your chart and make it 10 times the size? Now make the solution one-tenth of the size. What do you notice?
- Think of 8.7 and make it one-tenth of the size. Now make it ten times the size.
- Repeat with other numbers using either the Gattegno chart or visualization.

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

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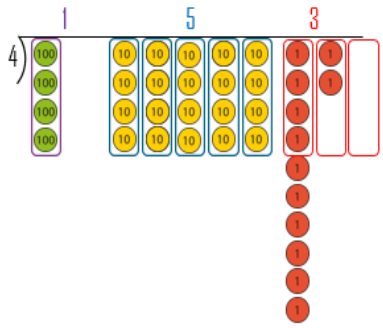
- Use an empty hundred square and shade the multiples of three and five different colours.
- Use the shaded hundred square to identify common multiples of 3 and 5.
- What do you notice about the common multiples?
- What would the next common multiple be? How do you know?

612 ÷ 4 = 153

$$4\overline{)\,6\,{}^{2}1\,{}^{1}2}\quad 1\;5\;3$$



6 hundreds ÷ 4 = 1 hundred r 2 hundreds

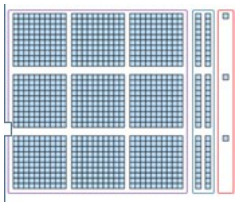
2 hundreds = 20 tens

21 tens ÷ 4 = 5 tens r 1 ten

1 ten = 10 ones

12 ones ÷ 4 = 3 ones

321 × 3 = 963

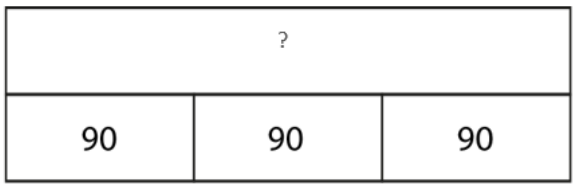


100s	10s	1s	
3	2	1	
		3	
		3	3 × 1 ones = 3 ones
	6	0	3 × 2 tens = 6 tens
9	0	0	3 × 3 hundreds = 9 hundreds
9	6	3	

$$\begin{array}{r} 3\;2\;1 \\ \times \quad\;\; 3 \\ \hline 9\;6\;3 \end{array}$$

Fractions, Decimals and percentages

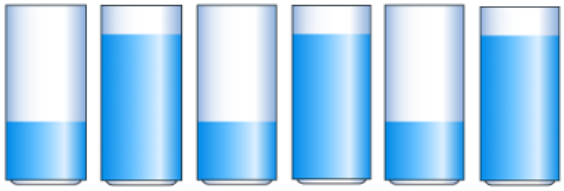
$90 = \frac{1}{3}$ of ?



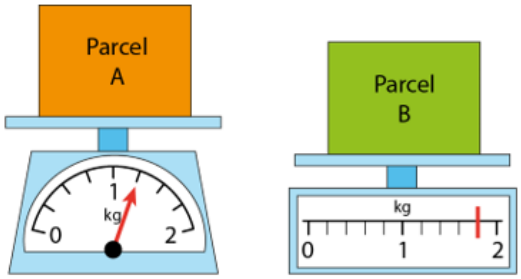
$90 \times 3 = 270$

- Why has 90 been recorded as the value of one of the parts and not the whole?
- Why are we able to record 90 in each of the parts?
- What do you notice about the value of the denominator and the value that 90 has been multiplied by? Why is this the case?
- What is $\frac{2}{3}$ f 90?

$\frac{8}{24}$ $\frac{5}{6}$ $\frac{1}{3}$ $\frac{50}{60}$ $\frac{3}{9}$ $\frac{20}{24}$



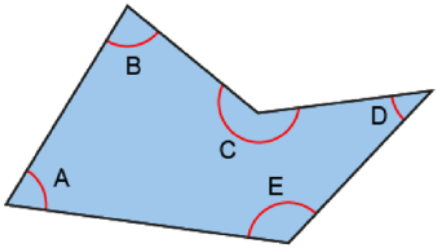
- Which of these fractions are equivalent? How do you know?
- Does each representation of water in the glass match each fraction? How do you know?
- How does each representation help to show which fractions are equivalent to each other?



- What is different about the two scales shown?
- How many intervals are there between zero and one for each scale? So, what interval do we need to count up in for each scale?
- Do we need to start at zero on each scale when we count up? Why/why not?
- What is the mass of Parcel A and Parcel B? Give your answers in fractional and decimal notations.
- Which parcel is heavier? How do you know?

End points for knowledge Year 5

Geometry



- The shape shown has been created by joining five crosses drawn on a piece of paper.
- Can you see, just by looking, the largest and smallest angle in the shape? Are these angles acute, obtuse or reflex?

D is the smallest angle. It is an acute angle.
C is the largest angle. It is a reflex angle.

- How would you classify the other internal angles of the shape?

An acute angle is less than 90°.
An obtuse angle is greater than 90° but less than 180°.
A reflex angle is greater than 180°.

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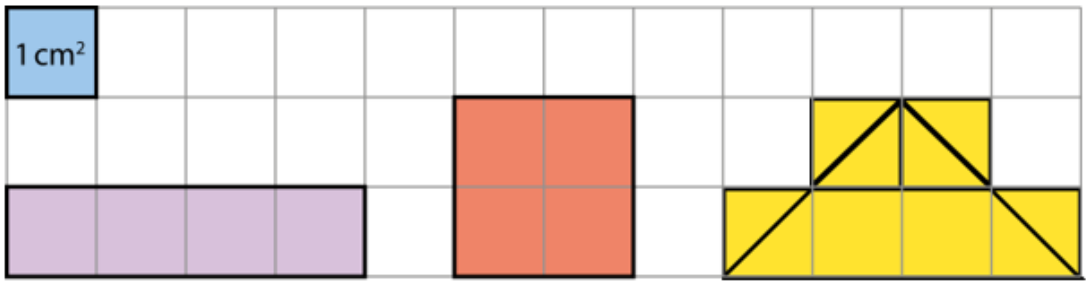

- The purple, red and yellow shapes above are drawn on centimetre squared paper. The blue square shows each square has an area of 1cm^2. How does this help to know that the area of each shape is 4cm^2?

It is possible to count four squares inside the red and purple shapes.
It is possible to count two whole squares and visualize another two made from the four triangles inside the yellow shape.