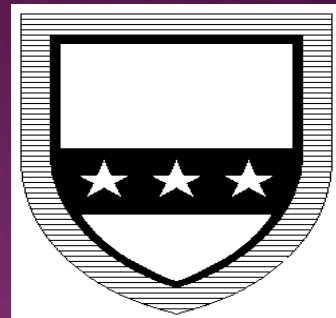


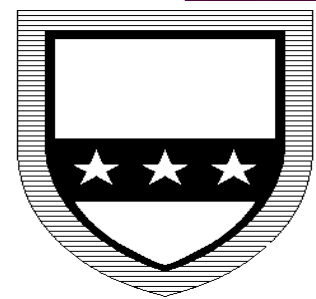


MATHEMATICS WORKSHOP

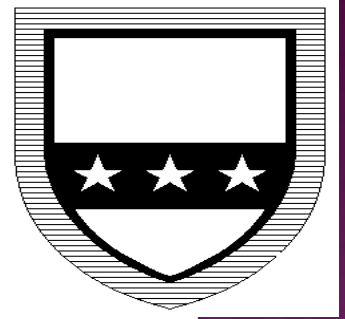
Poulton Lancelyn Primary School

Welcome to the Year 4 workshop

NATIONAL CURRICULUM CHANGES

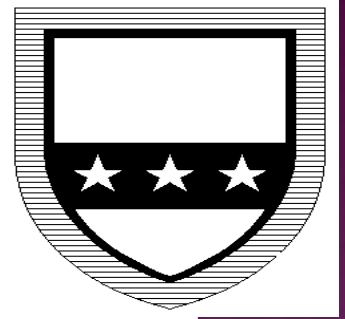


- ◉ New Curriculum introduced from September 2014 for all pupils.
- ◉ Children must be mathematically fluent.
- ◉ Expectations have changed. Coverage and skills have been “pushed down.”
- ◉ No longer using levels. Emerging, Expected, exceeding.



SCHOOL CHANGES

- ◉ Maths calculation policy (on the website)
- ◉ 2 maths sessions per day - main (45 mins) and fluency (15 mins)
- ◉ More focus on number to develop number fluency
- ◉ Focus on developing mastery in maths
- ◉ Focus for Year 4 on rapid recall of all times tables - includes a test in the Summer.



WRITTEN MATHEMATICS

- ◉ Detailed breakdown for each year group in calculation policy (on website)
- ◉ Summary document highlights key stages.
- ◉ Mathematics session in each year group will outline the calculation methods used within that group.

CLASSROOM ENVIRONMENT



M a t h s

We are learning about...

Fractions

714 212835

We already know...

Don't add denominators
Add the numerators
The parts have to be equal
Equivalent = worth the same
Denominator = total number of pieces

Key vocabulary...

equal
equivalent
numerator
denominator

Examples...

equal
equivalent
numerator
denominator

greater than

less than

Angles

Angles less than 90 are ACUTE angles

Angles equal to 90 are RIGHT angles

Angles more than 90 are OBTUSE angles

Angles equal to 180 are STRAIGHT LINES

Angles more than 180 are REFLEX angles

What Time Is It?

9:40 5:10 3:30

5:35 6:05 11:15

4:10 12:35 4:45

8:05 2:45 12:00

60 seconds = 1 minute
60 minutes = 1 hour
24 hours = 1 day
28/30/31 days = 1 month
12 months = 1 year
365 days = 1 year
52 weeks = 1 year
10 years = 1 decade
100 cents = 1 pound

2487
+ 1906
3393

calculate

Pictorial

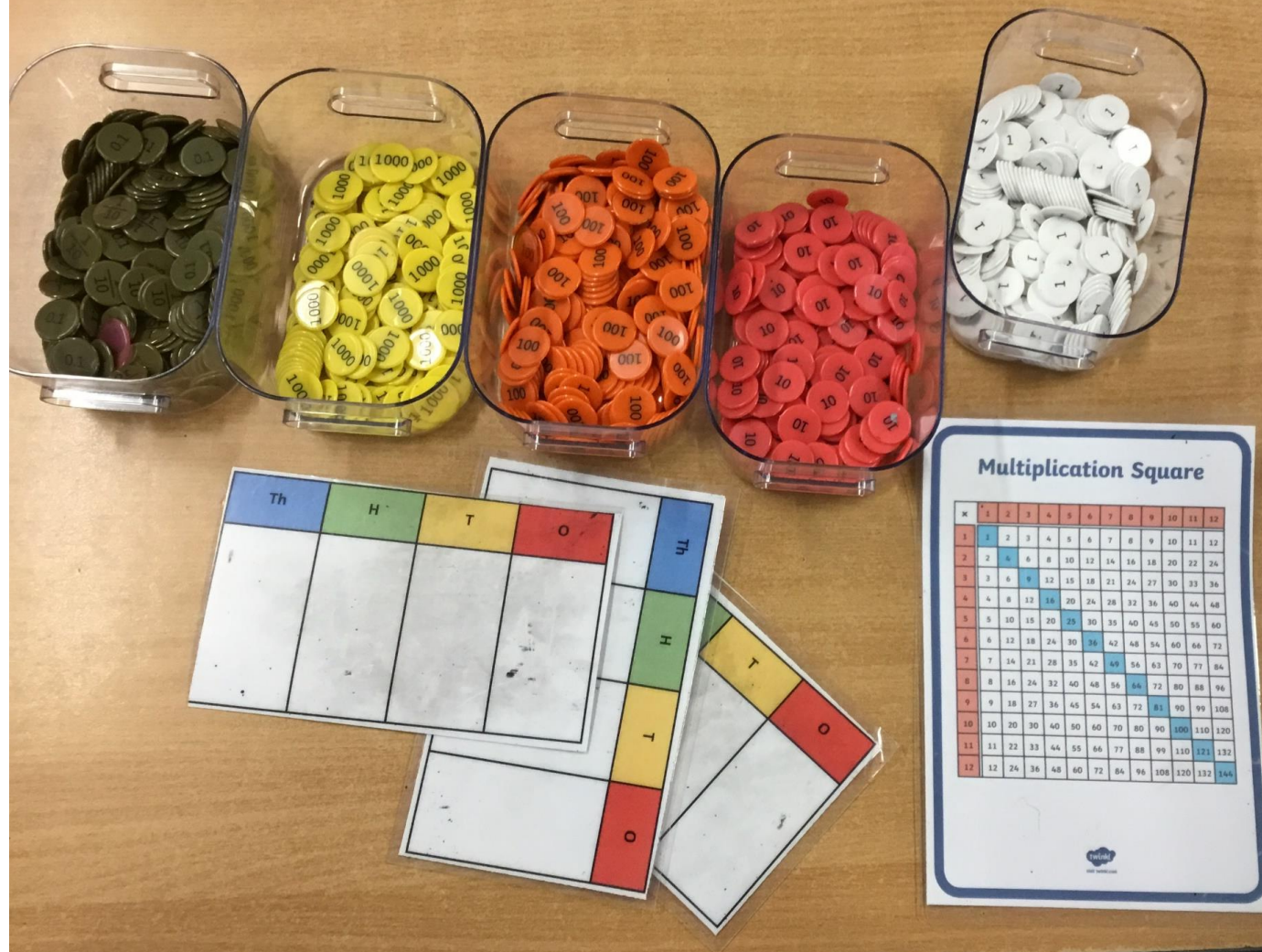
2487 1906

5813
- 2831

calculate

Pictorial

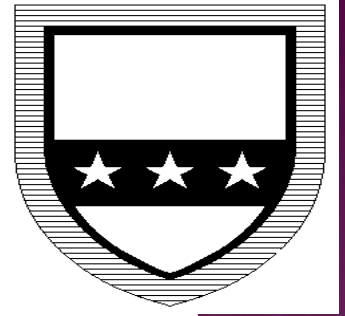
RESOURCES



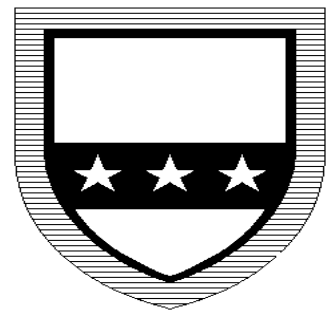
YEAR 4 - LTP (ON SCHOOL WEBSITE)

	W1 - Number	W2 - Statistics	W3 - Number	W4 - Fractions	W5 - Geometry	W6 - Measure	
Sp2	Solve number and practical problems that involve all of the above and with increasingly large positive numbers	Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and others graphs	Round decimals with one decimal place to the nearest whole number Compare numbers with the same number of decimal places up to two decimal places Solve simple measure and money problems involving fractions and decimals to two decimal places.	Recognise and write decimal equivalents of any number of tenths or hundredths Recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$	Describe movements between positions as translations of a given unit to the left/right and up/down Plot specified points and draw sides to complete a given polygon.	Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.	
	W1 - Number	W2 - Measure	W3 - Measure	W4 - Fractions	W5 - Geometry		
Su1	Count backwards through zero to include negative numbers Round any number to the nearest 10, 100 or 1000	Read, write and convert time between analogue and digital 12- and 24-hour clocks Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.	Convert between different units of measure [for example, kilometre to metre; hour to minute]	Round decimals with one decimal place to the nearest whole number Compare numbers with the same number of decimal places up to two decimal places Solve simple measure and money problems involving fractions and decimals to two decimal places.	Identify lines of symmetry in 2-D shapes presented in different orientations Complete a simple symmetric figure with respect to a specific line of symmetry.		
	W1 - Geometry	W2 - Operations	W3 - Operations	W4 - Measure	W5 - Fractions	W6 - Geometry	W7 - statistics
Su 2	Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes Identify acute and obtuse angles and compare and order angles up to two right angles by size	Multiply and divide two-digit and three-digit numbers by a one-digit number using formal written layout	Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.	Read, write and convert time between analogue and digital 12- and 24-hour clocks Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.	Recognise and write decimal equivalents of any number of tenths or hundredths Recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$ Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number	Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes Identify acute and obtuse angles and compare and order angles up to two right angles by size	Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.

TIMES TABLES

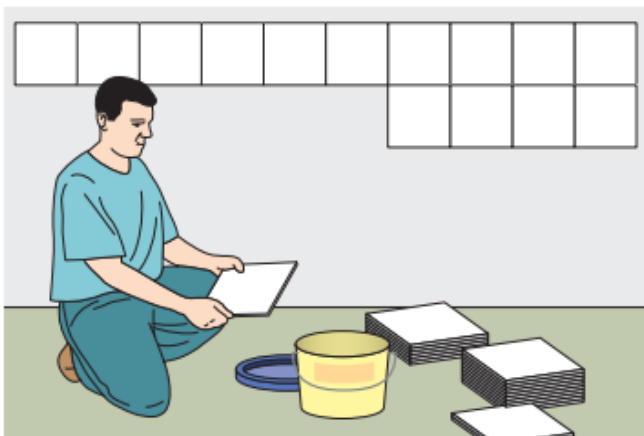


- ◉ In Year 4 we continue to practise all times tables as well as focus on $\times 12$ $\times 7$ $\times 9$ and $\times 11$
- ◉ 2019 - new times tables test for Year 4 pupils. Expected to know 12×12 .
- ◉ It focuses on the fluent recall of multiplication facts. This is included in the national curriculum (2014) statutory programme of study for mathematics at key stage 1 (KS1) and KS2.



USING AND APPLYING

- ◉ We regularly use reasoning and problem solving questions within lessons to allow children to apply their understanding of the four operations. Children are encouraged to explain and prove their understanding verbally and their beginning to record their thought processes.

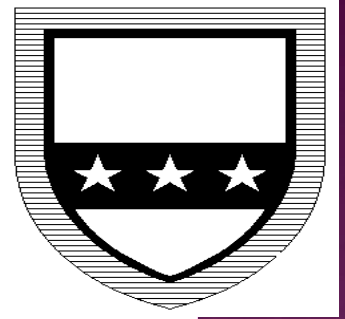


Roger is laying tiles.

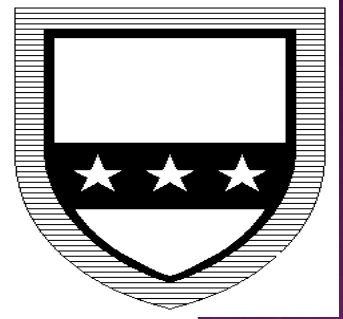
He has 84 tiles altogether.

How many complete rows of tiles can he make?

HOME HELP



- ◉ Technology (Mathletics, Maths Frame, Top Marks)
- ◉ Times tables - Hit The Button, TT Rockstars
- ◉ Time
- ◉ Money
- ◉ Number bonds - to 10, 20, 100



IMPORTANCE OF READING

- Real life problems involve being able to read.
- Trend of poor readers = poor mathematicians.

The following problems can be solved by using the calculation $8 \div 2$. True or false?

- There are 2 bags of bread rolls that have 8 rolls in each bag. How many rolls are there altogether?
- A boat holds 2 people. How many boats are needed for 8 people?
- I have 8 pencils and give 2 pencils to each person. How many people receive pencils?
- I have 8 pencils and give 2 away. How many do I have left?

ADDITION

Year 4 Addition

Steps to success

Year 4	Using mental strategy where appropriate	Addition of three digit + 3-digit and four digit + four digit	Addition of numbers to 2 decimal places
Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	1460 + 499 1460 + 500 – 1 = 1959 2560 + 3570 6000 + 130 = 7130 2524 + 3176 5600 + 100 (number bond) = 5700	Move from expanded addition to the compact column method, adding units first, and ‘carrying’ numbers underneath the calculation. Also include money and measures contexts. $\begin{array}{r} 576 \\ 369 \\ \hline 945 \\ 11 \end{array}$ $\begin{array}{r} 7268 \\ 5179 \\ \hline 12447 \\ 1 \quad 1 \quad 1 \end{array}$	$\begin{array}{r} 4.45 \\ 3.55 \\ \hline 8.00 \\ 1 \quad 1 \end{array}$ $\begin{array}{r} 57.89 \\ 46.67 \\ \hline 104.56 \\ 1 \quad 1 \quad 1 \quad 1 \end{array}$

We will now demonstrate the column addition method

SUBTRACTION

Year 4 Subtraction

Steps to success

Year 4

Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate

Subtraction up to four digits

$$£50 - £28.25 = £21.75$$



$$\begin{array}{r} 2754 - 1562 = 1192 \\ \hline 2000 + \cancel{700} + 50 + 4 \\ - 1000 + 500 + 60 + 2 \\ \hline 1000 + 100 + 90 + 2 \end{array}$$

As introduced in Y3, but moving towards more complex numbers and values. Use **place value counters** to reinforce 'exchanging'

$$\begin{array}{r} 2754 \\ - 1562 \\ \hline 1192 \end{array}$$

To introduce the compact method, ask children to perform a subtraction calculation with the familiar partitioned column subtraction then display the compact version for the calculation they have done. Ask pupils to consider how it relates to the method they know, what is similar and what is different, to develop an understanding of it

Everton are playing a football match. There are 2573 fans watching. They are losing 5-1 at half time, so 1229 people leave! How many are left supporting Everton?

MULTIPLICATION

Year 4 Multiplication

Steps to success

Year 4

Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers

Multiply and divide two-digit and three-digit numbers by a one-digit number using formal written layout

Recall multiplication and division facts for multiplication tables up to 12×12 (facts for 6,7,9,11,12 are new)

Multiply single digits by 60,70, and 90

Mental Multiplying by 10 and 100

Th	H	T	U
		2	4
2	4	0	0

Eg, 24×100

Partitioning

$$267 \times 2$$

$$200 \times 2 = 400$$

$$60 \times 2 = 120$$

$$7 \times 2 = 14$$

$$400 + 120 + 14 = 534$$

$$67 \times 9$$

x	60	7
9	540	63

$$437 \times 6$$

x	400	30	7
6	2400	180	42

$$2400 + 180 + 42 = 2622$$

Partitioning grid multiplication leading to formal compact methods

$$67 \times 9 =$$

$$\begin{array}{r} 67 \\ \times 9 \\ \hline 603 \end{array}$$

$$540 + 63 = 603$$

Children should be able to:

Approximate before they calculate, and make this a regular part of their calculating, going back to the approximation to check the reasonableness of their answer. e.g:

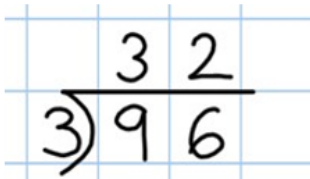
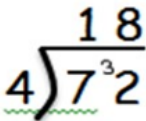
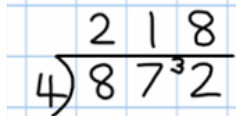
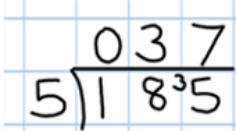
$$346 \times 9 \text{ is approximately } 350 \times 10 = 3500||$$

Record an approximation to check the final answer against.

We will now demonstrate our column multiplication method

DIVISION

Year 4 Division Steps to success

Year 4 Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers Divide two-digit and three-digit numbers by a one-digit number using formal written layout	Division facts for multiplication tables up to 12×12 Use facts for numbers up to 10 times the divisor Eg $75 \div 9$ This is between $72 \div 9 = 8$ and $81 \div 9 = 9$ So 8 remainder 3	Short division: Limit numbers to NO remainders in the answer OR carried (each digit must be a multiple of the divisor)  Remind children of correct place value, that 96 is equal to 90 and 6, but in short division, pose: - How many 3's in 9? = 3, and record it above the 9 tens. - How many 3's in 6? = 2, and record it above the 6 units. Once children are secure with division as grouping and demonstrate this using number lines, arrays etc., short division for larger 2-digit numbers should be introduced, initially with carefully selected examples requiring no calculating of remainders at all. Start by introducing the layout of short division by comparing it to an array.	Short division: Limit numbers to NO remainders in the final answer, but with remainders occurring within the calculation. Once children demonstrate a full understanding of remainders, and also the short division method taught, they can be taught how to use the method when remainders occur within the calculation (e.g. $96 \div 4$), and be taught to 'carry' the remainder onto the next digit. If needed, children should use the number line to work out individual division facts that occur which they are not yet able to recall mentally. 	Pupils move onto dividing numbers with up to 3-digits by a single digit, however problems and calculations provided should not result in a final answer with remainder at this stage.   When the answer for the first column is zero ($1 \div 5$, as in example), children could initially write a zero above to acknowledge its place, and must always 'carry' the number (1) over to the next digit as a remainder
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We work through division and then introduce remainders also. We will now demonstrate this.

ACTIVITIES

- ◉ Hit the button times tables challenge
- ◉ Gecko maths - how do you solve it?

