



Mathematics at Pensans School

Intent

At Pensans, our maths curriculum has been developed to ensure that every child has a sound understanding of the intricacies of mathematics. We aim for them to leave our school equipped with required maths skills to thrive in later life.

We ensure our children have access to a high quality curriculum that is both challenging and enjoyable. We provide children with a variety of mathematical opportunities, which will enable them to make the connections between concepts better making sense of the world around them.

Our intent for mathematics is to teach a rich, balanced and progressive curriculum using maths to reason, problem solve and develop fluent conceptual understanding in each area. Teachers and TAs are supported in their roles ensuring confidence in the high quality teaching of skills.

Children are inspired, motivated and engaged in their learning. This leads to high attainment and their own aspirational view of their futures.

Implementation

Subject expertise allows the intentions of our mathematics curriculum to be executed successfully. We implement the following procedures in order to achieve desired outcomes:

Number fluency:

At Pensans, we have a very secure understanding of what 'mastery' is and how it looks in our lessons, books and ultimately in the children themselves. We encourage rapid recall of known facts in all 4 calculations with the building blocks of this starting in the foundation stage with verbal and practical demonstration of skills and understanding. A particular focus on number sense at EYFS and Year 1 builds the solid foundations needed to become successful mathematicians.

Pensans School
"Ninety Nine Club"
Test C



Name: _____

From year 1 onwards, children take part in the 99 Club once per week and can earn wrist bands to celebrate acquiring new number fluency skills throughout the year. These include missing numbers and equals on the opposite sides to ensure depth of understanding of the calculation.

1	2 X 3	
2	7 X 9	
3	9 X 2	
4	42 ÷ 7	
5	3 X 3	
6	9 ÷ 1	
7	6 X 4	
8	10 X 1	
9	24 ÷ 6	
10	27 ÷ 9	
11	24 ÷ 4	
12	9 ÷ 1	
13	72 ÷ 9	
14	30 ÷ 5	
15	15 ÷ 5	
16	10 ÷ 1	
17	10 X 7	
18	90 ÷ 90	
19	6 X 4	
20	6 ÷ 2	
21	30 ÷ 5	
22	6 X 4	
23	36 ÷ 6	
24	4 X 2	
25	5 X 6	
26	4 X 2	
27	7 X 8	
28	18 ÷ 3	
29	2 X 6	
30	20 ÷ 2	
31	21 ÷ 3	
32	6 X 4	
33	27 ÷ 9	

34	8 X 7	
35	16 ÷ 2	
36	6 ÷ 3	
37	6 X 6	
38	48 ÷ 6	
39	42 ÷ 6	
40	70 ÷ 10	
41	9 X 5	
42	9 X 2	
43	10 X 8	
44	10 X 10	
45	45 ÷ 9	
46	7 X 2	
47	10 X 7	
48	50 ÷ 10	
49	30 ÷ 3	
50	20 ÷ 4	
51	14 ÷ 2	
52	9 X 4	
53	4 X 6	
54	9 ÷ 9	
55	10 X 9	
56	8 ÷ 2	
57	5 X 7	
58	9 ÷ 3	
59	5 X 10	
60	3 X 3	
61	2 X 3	
62	5 X 5	
63	6 X 2	
64	24 ÷ 4	
65	72 ÷ 9	
66	14 ÷ 7	

67	20 ÷ 4	
68	2 X 5	
69	100 ÷ 100	
70	45 ÷ 5	
71	70 ÷ 1	
72	8 X 4	
73	7 X 6	
74	12 ÷ 12	
75	72 ÷ 9	
76	35 ÷ 7	
77	5 X 2	
78	4 X 0	
79	15 ÷ 3	
80	9 X 9	
81	40 ÷ 10	
82	6 X 4	
83	9 X 6	
84	8 ÷ 2	
85	24 ÷ 6	
86	8 X 8	
87	10 X 9	
88	2 X 3	
89	2 X 4	
90	4 X 8	
91	2 X 3	
92	56 ÷ 7	
93	7 X 8	
94	4 X 9	
95	9 X 8	
96	10 X 7	
97	8 X 1	
98	4 X 9	
99	32 ÷ 8	

Score of ____/99

Planning, lesson design and books:

When planning our lessons, we follow the model of:

‘Do it, Secure it, Deepen it.’

This model will be presented consistently across the school starting in Year 1 and this structure may take place in a series of lessons.

Teachers use the curriculum mapping tool ‘MathsNav’ developed by Steve Lomax and this clearly defines topic areas within each part of the mathematics curriculum breaking them down into smaller areas of learning. Breaking down the topic area ensures that small steps are taken and that children have mastered the learning before continuing onto the next. Staff look back at the previous year groups expectations as a starting point and assess from here before moving on to plug any gaps and ensure knowledge and skills progression.

Schemes of Work

Counting and Comparing - Fluency, Reasoning and Solving Problems Exemplification (.pdf)

National Curriculum Statements

compare and order numbers from 0 up to 100; use $<$, $>$ and $=$ signs
count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward

Themes

Solve problems comparing the value of numbers
Order numbers according to their value
Investigate number patterns

Suggested Key Learning Points

Compare numbers from 0 to up to 100
Use $<$, $>$ and $=$ symbols to when comparing numbers
Order numbers from lowest to greatest value
Order numbers from greatest to lowest value)
Count on and back in steps of 2 from 0
Count on and back in steps of 3 from 0
Count on and back in steps of 5 from 0
Count on and back in tens from any number

Individual lessons are planned from this framework in the form of a powerpoint presentation which provide a clear progression of skills and calculations are chosen carefully in order to maximise lesson effectiveness. Delivery of lessons take the form of:

'Fluency, Guided Practice, Independent Practice.'

Fluency:

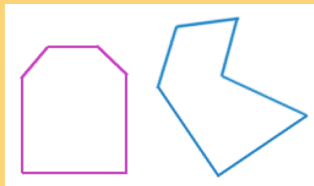
Write your 10 times tables

Write your 2 times tables

Write your 5 times tables

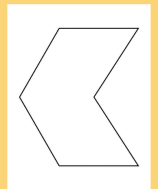
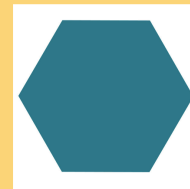
Write your 3 times tables

Teach it:



What do you notice?

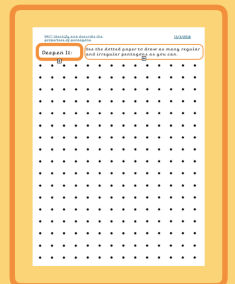
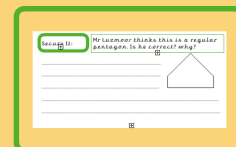
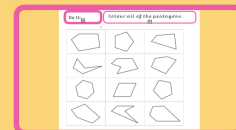
Practise it:



Which of these shapes are hexagons? Why?

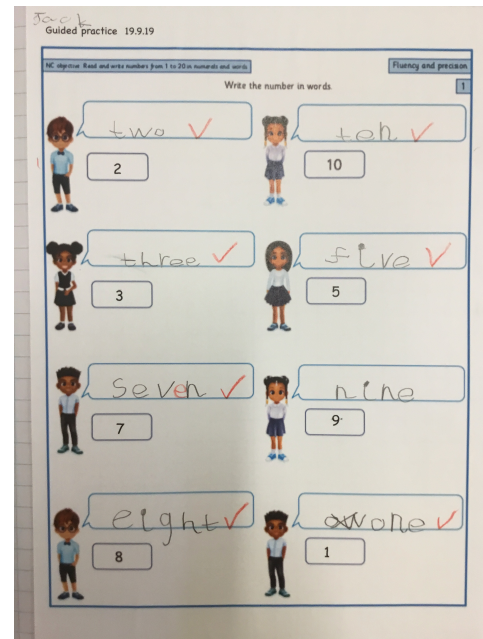
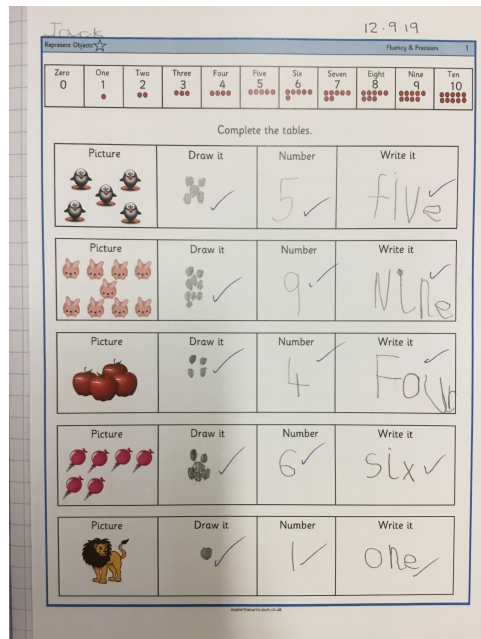
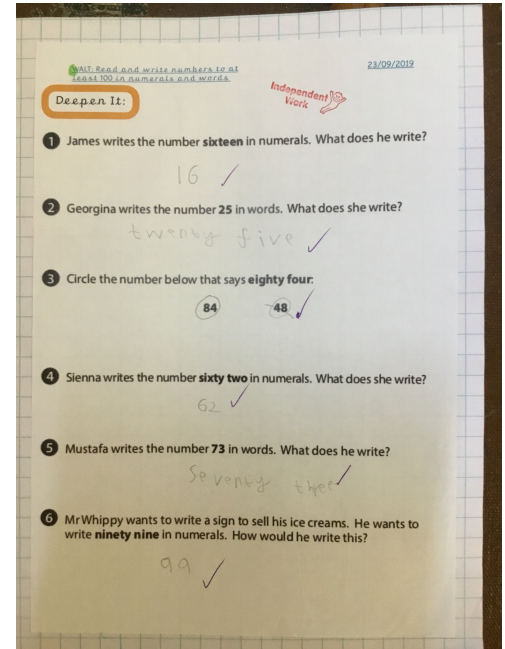
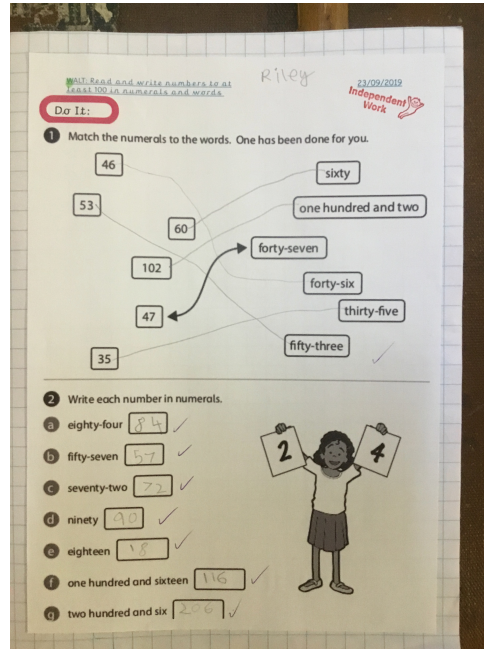
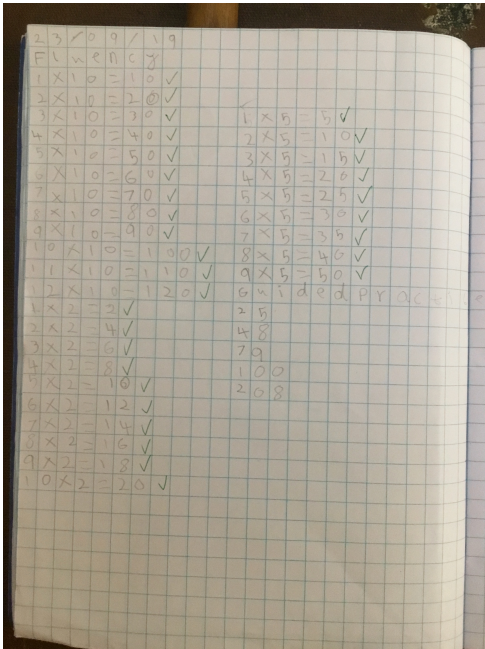
We have a high expectation of presentation within books, all children are expected to write one digit or letter per square in their books. Each lesson will have the short date and a WALT to describe the learning. Where numbers have been reversed or written incorrectly, this will be highlighted within marking (KS1) and children will have to rewrite the number several times to practice. Where a mistake has been made, this will be shown when marked and pupils will complete these corrections before moving onto the next part of the lesson. This instant feedback allows

Do it. Secure it. Deepen it:



children the opportunity to self-correct while the learning is still fresh in their mind.

KS1:



1 6 9 1 4
swamp

6 1 2 1 8 2 4 3 2 3 6 4 2 4 8 5 4 6 8
 6 6 7 2

Ground species


75 76 77 78 79 80 81 82 83 84 15

15 16 17 18 19

40 50
 90 100
 60 70
 80 90 100
 100 110 120 130
 140 150 160 170 180 190 200
 210 220 230 240 250 260 270 280 290 300
 310 320 330 340 350 360 370 380 390 400
 410 420 430 440 450 460 470 480 490 500
 510 520 530 540 550 560 570 580 590 600
 610 620 630 640 650 660 670 680 690 700
 710 720 730 740 750 760 770 780 790 800
 810 820 830 840 850 860 870 880 890 900
 910 920 930 940 950 960 970 980 990 1000
 1010 1020 1030 1040 1050 1060 1070 1080 1090 1100
 1110 1120 1130 1140 1150 1160 1170 1180 1190 1200
 1210 1220 1230 1240 1250 1260 1270 1280 1290 1300
 1310 1320 1330 1340 1350 1360 1370 1380 1390 1400
 1410 1420 1430 1440 1450 1460 1470 1480 1490 1500
 1510 1520 1530 1540 1550 1560 1570 1580 1590 1600
 1610 1620 1630 1640 1650 1660 1670 1680 1690 1700
 1710 1720 1730 1740 1750 1760 1770 1780 1790 1800
 1810 1820 1830 1840 1850 1860 1870 1880 1890 1900
 1910 1920 1930 1940 1950 1960 1970 1980 1990 2000
 2010 2020 2030 2040 2050 2060 2070 2080 2090 2100
 2110 2120 2130 2140 2150 2160 2170 2180 2190 2200
 2210 2220 2230 2240 2250 2260 2270 2280 2290 2300
 2310 2320 2330 2340 2350 2360 2370 2380 2390 2400
 2410 2420 2430 2440 2450 2460 2470 2480 2490 2500
 2510 2520 2530 2540 2550 2560 2570 2580 2590 2600
 2610 2620 2630 2640 2650 2660 2670 2680 2690 2700
 2710 2720 2730 2740 2750 2760 2770 2780 2790 2800
 2810 2820 2830 2840 2850 2860 2870 2880 2890 2900
 2910 2920 2930 2940 2950 2960 2970 2980 2990 3000
 3010 3020 3030 3040 3050 3060 3070 3080 3090 3100
 3110 3120 3130 3140 3150 3160 3170 3180 3190 3200
 3210 3220 3230 3240 3250 3260 3270 3280 3290 3300
 3310 3320 3330 3340 3350 3360 3370 3380 3390 3400
 3410 3420 3430 3440 3450 3460 3470 3480 3490 3500
 3510 3520 3530 3540 3550 3560 3570 3580 3590 3600
 3610 3620 3630 3640 3650 3660 3670 3680 3690 3700
 3710 3720 3730 3740 3750 3760 3770 3780 3790 3800
 3810 3820 3830 3840 3850 3860 3870 3880 3890 3900
 3910 3920 3930 3940 3950 3960 3970 3980 3990 4000
 4010 4020 4030 4040 4050 4060 4070 4080 4090 4100
 4110 4120 4130 4140 4150 4160 4170 4180 4190 4200
 4210 4220 4230 4240 4250 4260 4270 4280 4290 4300
 4310 4320 4330 4340 4350 4360 4370 4380 4390 4400
 4410 4420 4430 4440 4450 4460 4470 4480 4490 4500
 4510 4520 4530 4540 4550 4560 4570 4580 4590 4600
 4610 4620 4630 4640 4650 4660 4670 4680 4690 4700
 4710 4720 4730 4740 4750 4760 4770 4780 4790 4800
 4810 4820 4830 4840 4850 4860 4870 4880 4890 4900
 4910 4920 4930 4940 4950 4960 4970 4980 4990 5000
 5010 5020 5030 5040 5050 5060 5070 5080 5090 5100
 5110 5120 5130 5140 5150 5160 5170 5180 5190 5200
 5210 5220 5230 5240 5250 5260 5270 5280 5290 5300
 5310 5320 5330 5340 5350 5360 5370 5380 5390 5400
 5410 5420 5430 5440 5450 5460 5470 5480 5490 5500
 5510 5520 5530 5540 5550 5560 5570 5580 5590 5600
 5610 5620 5630 5640 5650 5660 5670 5680 5690 5700
 5710 5720 5730 5740 5750 5760 5770 5780 5790 5800
 5810 5820 5830 5840 5850 5860 5870 5880 5890 5900
 5910 5920 5930 5940 5950 5960 5970 5980 5990 6000
 6010 6020 6030 6040 6050 6060 6070 6080 6090 6100
 6110 6120 6130 6140 6150 6160 6170 6180 6190 6200
 6210 6220 6230 6240 6250 6260 6270 6280 6290 6300
 6310 6320 6330 6340 6350 6360 6370 6380 6390 6400
 6410 6420 6430 6440 6450 6460 6470 6480 6490 6500
 6510 6520 6530 6540 6550 6560 6570 6580 6590 6600
 6610 6620 6630 6640 6650 6660 6670 6680 6690 6700
 6710 6720 6730 6740 6750 6760 6770 6780 6790 6800
 6810 6820 6830 6840 6850 6860 6870 6880 6890 6900
 6910 6920 6930 6940 6950 6960 6970 6980 6990 7000
 7010 7020 7030 7040 7050 7060 7070 7080 7090 7100
 7110 7120 7130 7140 7150 7160 7170 7180 7190 7200
 7210 7220 7230 7240 7250 7260 7270 7280 7290 7300
 7310 7320 7330 7340 7350 7360 7370 7380 7390 7400
 7410 7420 7430 7440 7450 7460 7470 7480 749

WALT: recognise hundreds

16/9/19

Do it: 

What number is represented?

100 100 100 100

400

H T O

800

100 100 100 100

800

10 10 10 10 10 10 10 10

100

What is the number?

H T O

214

H T O

420

H T O

625

H T O

305

Do you agree? Explain your answer.

Deepen It:

1) 543 is made of 5 hundreds, 4 tens and 3 ones. It is also made of 54 tens and 3 ones. It is also made of 543 ones. Can you express 627 in the same way?

627 is made of 6 hundreds, 2 tens and 7 ones.

2) What is the same about these numbers and what is different:

412 421

Both numbers are made of the same digits, 4, 1, and 2. The place value of the digits is different.

16919 Place value Guided practice

Wait read and write numbers to 10,000,000 and explain the value of each digit

Y 7618 = 7000 + 600 + 100 + 8

10 4836 = 4000 + 800 + 30 + 6

2 3994 = 3000 + 900 + 90 + 4

3 7162 = 7000 + 100 + 60 + 2

4 8295 = 8000 + 200 + 90 + 5

5 1129 = 1000 + 100 + 20 + 9


600
40
5
05
008
0007

251342

200
50
1
05
004
0002

16.9.19

20 in 20



1. $717 \div 7, 177 =$

2. $888 \div 1, 212 =$

3. $\frac{3}{14} \div \frac{9}{14} =$

4. $654 \div 1 =$

5. $107 - 87 =$

6. $8.9 + 2.01 =$

7. $= 3,070 + 930$

8. $4 \times 48 =$

9. $112 \div 4 =$

10. $589 \times 5 =$

11. $2,001 - 101 =$

12. $\frac{.66}{100} - \frac{.56}{100} =$

13. $- 999 = 1,101$

14. $37 - (9 \times 4) =$

15. $\frac{2}{3} \times \frac{6}{9} =$

16.

F	D	P
38	0.36	36%

17. Find the mean of:
1, 4, 9, 16, 25, 36, 49

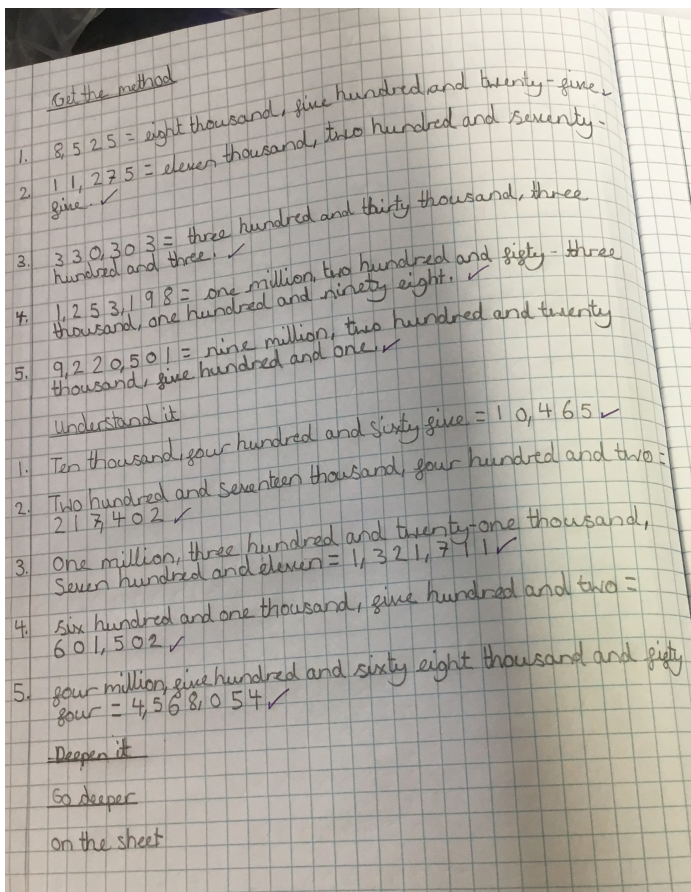
18.

Analogue	Digital/24hr
10.25	10:25

19. Write DCCC in figures

800

20. If $a=1$ $b=4$ $c=9$ $d=16$
 $d-b^2 =$



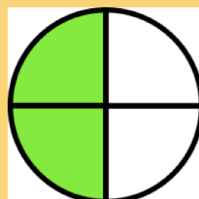
Children's books will show their mathematical journey and tell a story of their learning, building on skills with well planned activities to stretch and challenge all learners.

These activities will be based around fluency, reasoning and problem solving and may take the form of:

What do you see, think and wonder?

Teach it:

$$2/4 \text{ of } 8 = 4$$



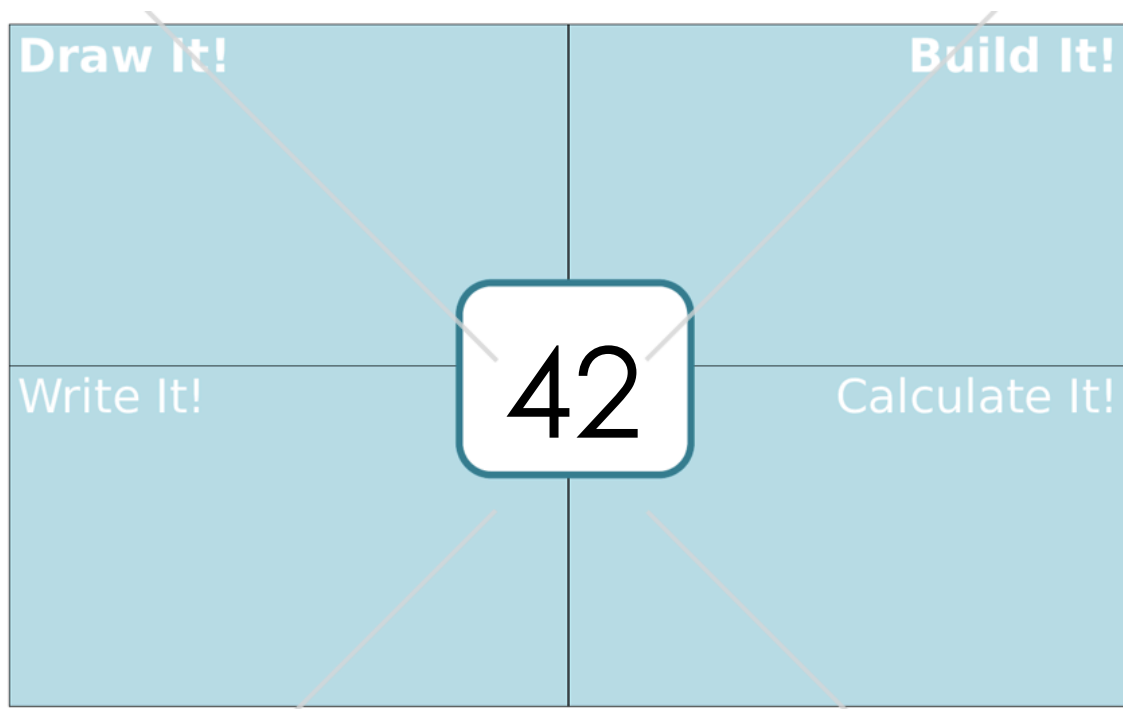
What do you see? What do you think?
What do you notice?

Missing number questions

- | | |
|----------------------------------|-----------------------------------|
| 1) $11 - 3 = \underline{\quad}$ | 14) $8 - \underline{\quad} = 1$ |
| 2) $9 - 6 = \underline{\quad}$ | 15) $9 - \underline{\quad} = 4$ |
| 3) $\underline{\quad} - 2 = 5$ | 16) $\underline{\quad} - 5 = 2$ |
| 4) $\underline{\quad} - 1 = 9$ | 17) $9 - 7 = \underline{\quad}$ |
| 5) $6 - \underline{\quad} = 3$ | 18) $11 - 7 = \underline{\quad}$ |
| 6) $8 - \underline{\quad} = 6$ | 19) $\underline{\quad} - 5 = 5$ |
| 7) $10 - \underline{\quad} = 5$ | 20) $\underline{\quad} - 4 = 8$ |
| 8) $\underline{\quad} - 2 = 5$ | 21) $12 - \underline{\quad} = 10$ |
| 9) $\underline{\quad} - 4 = 1$ | 22) $9 - \underline{\quad} = 1$ |
| 10) $11 - 5 = \underline{\quad}$ | 23) $\underline{\quad} - 4 = 7$ |
| 11) $10 - 7 = \underline{\quad}$ | 24) $12 - 9 = \underline{\quad}$ |
| 12) $\underline{\quad} - 3 = 5$ | 25) $12 - \underline{\quad} = 4$ |
| 13) $11 - 9 = \underline{\quad}$ | 26) $\underline{\quad} - 8 = 3$ |

$7 + \square = 15$	$\square + 8 = 16$
$\square + 6 = 14$	$6 + \square = 15$
$2 + \square = 11$	$\square + 6 = 10$
$\square + 6 = 13$	$5 + \square = 13$
$7 + \square = 14$	$\square + 7 = 16$
$\square + 7 = 16$	$6 + \square = 14$
$3 + \square = 10$	$\square + 6 = 11$
$\square + 7 = 15$	$7 + \square = 13$
$4 + \square = 12$	$\square + 5 = 10$

Draw it, Build it, Write it, Calculate it



20 in 20

16.9.19
20 in 20

1. $717 + 7,177 =$ 8. $4 \times 48 =$ 15. $\frac{2}{3} \times \frac{6}{9} =$

2. $888 + 1,212 =$ 9. $112 \div 4 =$ 16.

F	D	P
38	0.36	38%

3. $\frac{3}{14} + \frac{9}{14} =$ 10. $589 \times 5 =$ 17. Find the mean of:
1, 4, 9, 16, 25, 36, 49

4. $654 \div 1 =$ 11. $2,001 - 101 =$ 18.

Analogue	Digital/24hr
10:25	10:25

5. $107 - 87 =$ 12. $\frac{66}{100} - \frac{56}{100} =$ 19. Write DCCC in figures

6. $8.9 + 2.01 =$ 13. $\square - 999 = 1,101$ 20. If $a=1$ $b=4$ $c=9$ $d=16$

7. $\square = 3,070 + 930$ 14. $37 - (9 \times 4) =$ $d - b^2 =$

Convince me/ Prove it

Secure It:

Mr Luzmoor thinks this shape has a vertical line of symmetry. Is he correct? Prove it.



Context

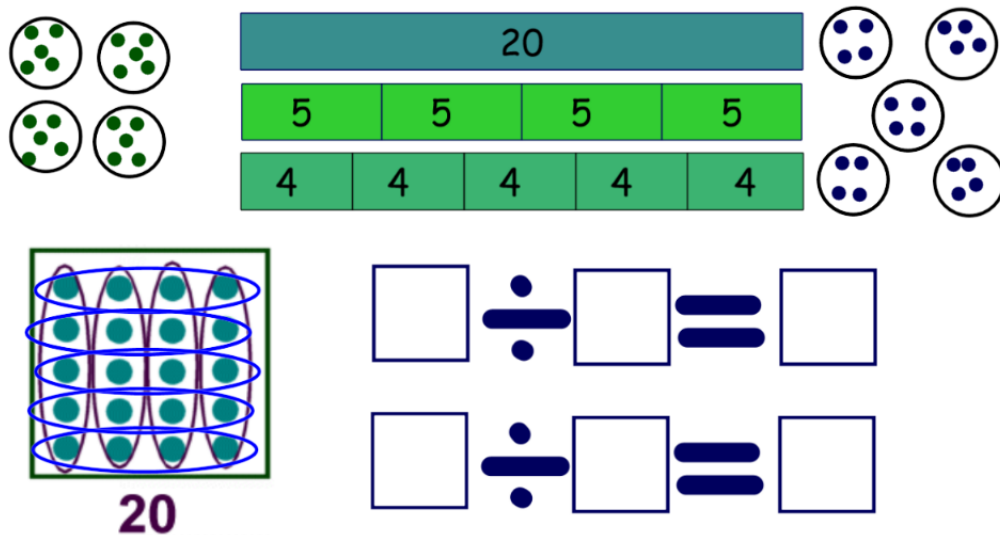
Context

There are 23 children in Indigo class, 27 in Turquoise and 28 in Emerald. Which classes can be split into equal groups? How many would be in each of these groups?

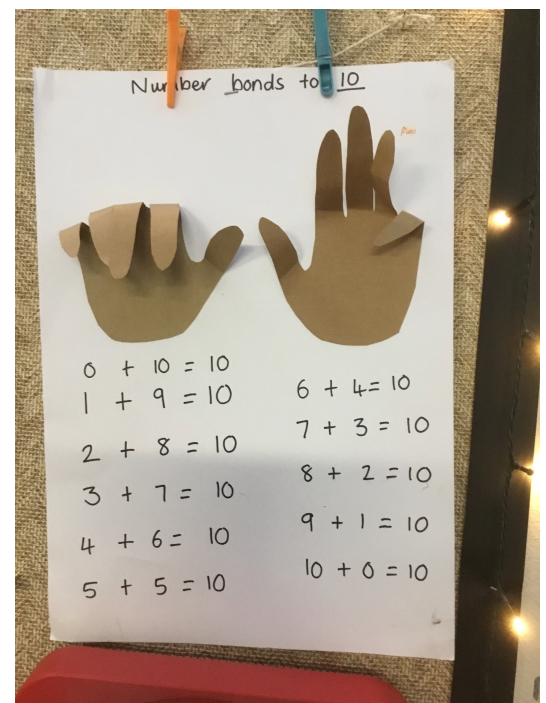
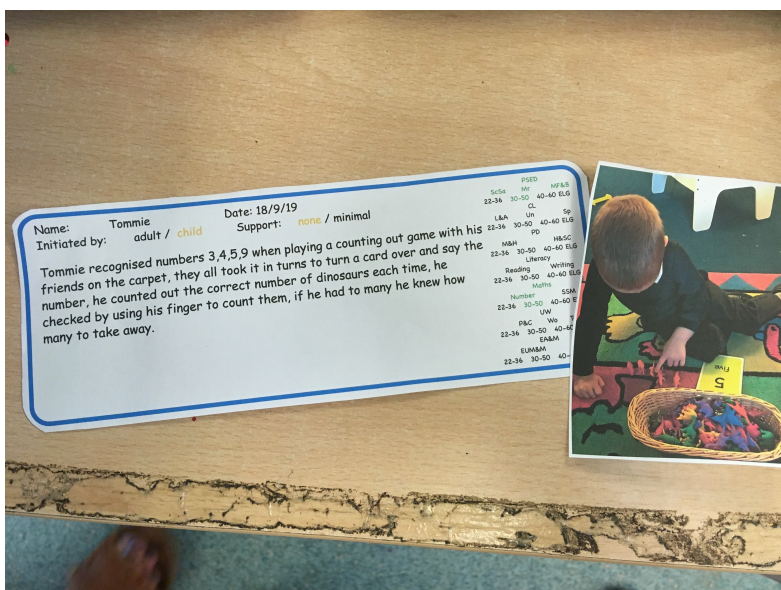
Well planned number questions

eg - $401 - 10$, $93 - 39$, $4001 + 10$

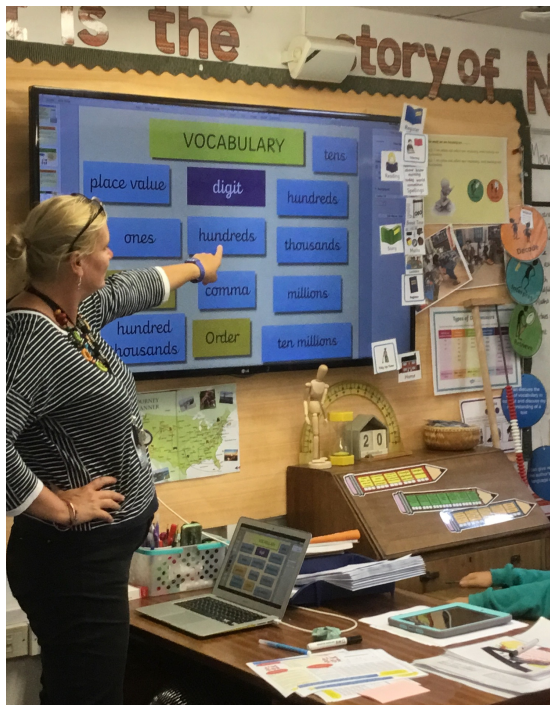
Pictorial representations



Practical hands on activities



Teaching of vocabulary



Words to help you:

sides
corners
shape
regular
irregular
symmetry
vertical

Parent Guides (see appendix 1)

At Pensans School we work very closely with parents in order to develop the confidence of the children in the classroom. A parents guide is sent home yearly to support parents when completing mathematics learning at home.

Fun activities to do at home

Mathletics

Your child has a login and password in the front of their reading journals. They can complete set weekly homework and play games against others in school or around the world.

99 Maths Club

Practice sheets to complete on the school website under School Info tab- See if you and your child can increase your mental arithmetic by competing against each other.

Finding areas and perimeters

Perimeter = distance around the edge of a shape
Area of a rectangle = length x breadth (width)

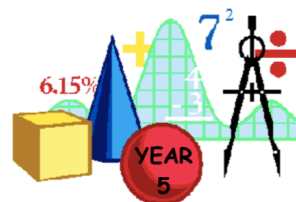
- ♦ Collect 5 or 6 used envelopes of different sizes.
- ♦ Ask your child to estimate the perimeter of each one to the nearest centimetre. Write the estimate on the back.
- ♦ Now measure. Write the estimate next to the measurement.
- ♦ How close did your child get?
- ♦ Now estimate then work out the area of each envelope.
- ♦ Were perimeters or areas easier to estimate? Why?

You could do something similar using an old newspaper, e.g.
♦ Work out which page has the biggest area used for photographs.
♦ Choose a page and work out the total area of news stories or adverts on that page.

Car numbers

- ♦ Choose a car number.
- ♦ You may add or subtract 10, 20, 30, 40, 50, 60, 70, 80 or 90.
- ♦ Try to get as close as possible to 555.
- ♦ Who can get closest during a week?

Maths at Pensans in Year 5



A booklet for parents

This booklet provides information on the maths taught in Year 5 through mastery, including methods of calculation. It also includes End of Year expectations for children in Year 5, as well as ideas and activities to try at home.

[Calculation policy](#) (see appendix 2)

Our calculation policy has been written to ensure clear progression from the foundation stage to Y6, building upon skills. All staff have been involved in its design and each teacher is aware of the mathematical journey the pupils have been on. This is reviewed every year and is also revised with each new member of staff during induction.

Impact

The impact of our mathematics curriculum is that children understand the relevance of what they are learning in relation to real world concepts. We have fostered an environment it is OK to get things wrong. Children recognise that mistakes help us to make connections between concepts and further embed their learning.

Parents also have a key role in this. They are supported by staff to ensure they have the correct knowledge base to support their child at home and continue positive impressions on mathematics.

Interventions – Precision teaching and Number Sense for KS1 and KS2 delivered by skilled teachers and teaching assistants which pin point an exact area of need.

Data

End of Foundation Stage

	At Standard	FSM
2019	62%	50%
2018		
2017		

End of KS1

	At Standard	Pupil Premium
2019	73%	71%
2018	73%	61%
2017	71%	64%

End of KS2

	At Standard	Pupil Premium	Progress
2019	69%	52%	-1.57
2018	78%	78%	-0.34
2017	54%	42%	-3.5

Appendices:

Appendix 1 – Parent guides for Years 1 - 6

Appendix 2 – calculation policy