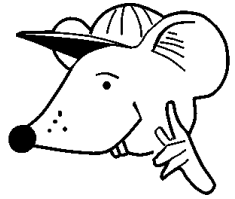# MATHEMATICS

N.S. Yr. 5   P.49

**Develop and refine written methods
for addition, building on mental methods.**

Equipment

Paper, pencil, ruler.
Squared paper helpful.

MathSphere

Concepts

Three methods of addition are recommended. All stress the importance of setting out in columns, with the units lining up underneath the units and so on.

Method A: where the most significant digits (the largest) are added first. This builds on the mental methods of addition already learned.

Examples:

$$
\begin{array}{r}
267 \\
+\ \underline{756} \\
900 \\
110 \\
\underline{13} \\
1\,023
\end{array}
\qquad
\begin{array}{r}
2\,497 \\
+\ \underline{3\,247} \\
5\,000 \\
600 \\
130 \\
\underline{14} \\
\underline{5\,744}
\end{array}
$$

Method B: this is called compensation.

Example:

$$
\begin{array}{r}
765 \\
+\ \underline{175} \\
965 \\
-\ \underline{25} \\
940
\end{array}
\quad
\begin{array}{l}
(765 + 200) \\
(175 - 200)
\end{array}
$$

Method C is usually known as the 'carrying' method. This is a very popular way when using pencil and paper, always starting with the units.

Examples:

$$
\begin{array}{r}
267 \\
+\ \underline{756} \\
\underline{1\,023} \\
{}_{1}\ {}_{1}
\end{array}
\qquad
\begin{array}{r}
2\,497 \\
+\ \underline{3\,247} \\
\underline{5\,744} \\
{}_{1}\ {}_{1}
\end{array}
$$

Concepts

It is important during this kind of work that the children are asked to explain what they are doing and why the method works. Addition sums are sometimes already laid out in the paper and pencil method, but very often they will be presented horizontally:

Eg.   Find the total of: 53,   7 162,   6   and   648

Presented like this many children make a mistake in setting the sum out. An important teaching point here is to make sure that the numbers are set out in careful columns - it can be a good idea to write the thousands number down in reverse order, starting with the units.

$$
\begin{array}{r}
53 \\
7\ 162 \\
6 \\
\underline{648} \\
\underline{7\ 869} \\
{\scriptstyle 1\ \ 1}
\end{array}
$$

In our displays we leave a small gap between the thousands and hundreds to make it easier to read the number in words. This is not usually possible when using squared paper.

<u>Checking answers</u>. On a list of additions such as this check the adding by going in the reverse direction e.g. check by adding from the bottom number up or vice versa.

Children are also expected to add using the decimal point in the context of money and length. To do this they must be aware of the need to line up the decimal points under each other.

	£	3 •	4	5
+		2 •	1	7
		5 •	6	2
			1	

When using squared paper we recommend that the decimal point is placed on the line, not in a separate square, and half way up the line.

Add these numbers. Check your results by adding the columns in reverse order.

1. 153	**2.** 637	**3.** 240	**4.** 339	**5.** 227
+ <u>148</u>	+ <u>438</u>	+ <u>383</u>	+ <u>506</u>	+ <u>380</u>

6. 683	**7.** 455	**8.** 527	**9.** 296	**10.** 469
+ <u>594</u>	+ <u>263</u>	+ <u>181</u>	+ <u>162</u>	+ <u>326</u>

Add these numbers. Remember to set them out in the same way as those above.

11. $357 + 546 =$ **12.** $196 + 493 =$

13. $663 + 197 =$ **14.** $766 + 151 =$

15. $216 + 748 =$ **16.** $236 + 293 =$

Calculate the answers to the following problems:

17. What is the total of 653 and 256 ?

18. What is the sum of 708 and 295 ?

19. Karen and Kelvin each bought a jar of sweets. Karen had 247 in her jar. Kelvin had 256 in his. How many did they have together?

20. Find the total of 374 and 628

Add these numbers. Check your results by adding the columns in reverse order.

1. 353   **2.** 748   **3.** 351   **4.** 447   **5.** 283
+ <u>259</u>   + <u>549</u>   + <u>474</u>   + <u>613</u>   + <u>492</u>

6. 794   **7.** 563   **8.** 638   **9.** 383   **10.** 758
+ <u>483</u>   + <u>374</u>   + <u>295</u>   + <u>209</u>   + <u>407</u>

Add these numbers. Remember to set them out in the same way as those above.

11. $468 + 634 =$ **12.** $207 + 508 =$

13. $774 + 288 =$ **14.** $875 + 282 =$

15. $325 + 277 =$ **16.** $661 + 309 =$

Calculate the answers to the following problems:

17. What is the total of 467 and 714 ?

18. What is the sum of 619 and 166 ?

19. Hassan and Paul went ten pin bowling. Hassan scored 129 and
Paul scored 133. What was their total score?

20. Find the total of 428 and 538.

Take particular care that you line up the units when adding these totals together:

1.	305	**2.**	122	**3.**	1 638	**4.**	1 212	**5.**	499
	1 739		4 166		35		500		8 183
+	466	+	5	+	166	+	606	+	224

6.	433	**7.**	152	**8.**	72
	4 123		182		510
+	75	+	3 176	+	3 208

Not too difficult, I hope!

Using the same method now try adding these:

9. $56 + 457 + 2\ 100 =$ **10.** $3\ 200 + 154 + 98 =$

11. $262 + 1\ 600 + 559 =$ **12.** $38 + 232 + 1\ 444 =$

Work out the answers to the following questions by using pencil and paper methods:

13. Mark and Jenny collected pennies in a jar. After six months Mark had 483 pennies and Jenny had 296 pennies. How many pennies did they have between them?

14. Find the sum of 408 and 1 566.

15. What is 185 plus 1 066 ?

Add these totals together:

1.   402   **2.**   233   **3.** 1 544   **4.** 1 888   **5.**   368
     1 538   4 616   62   374   8 271
+   277   +   4   +   191   +   104   +   155

6.   824   **7.**   352   **8.**   74
     4 165   293   842
+   21   + 3 841   + 3 483

Keep the units in line and watch out for the thousands!

Using the same method now try adding these:

9. 65 + 756 + 2 200 =   **10.** 3 500 + 461 + 39 =

11. 177 + 1 400 + 666 =   **12.** 17 + 364 + 1 454 =

Work out the answers to the following questions by using pencil and paper methods:

13.   Sonny collects stickers. He had 563 stickers and then his friend gave him another 275. How many stickers does he now have?

14.   Find the sum of 263 and 1 488.

15.   What is 241 plus 1 789 ?

Square addition

Below is a square with 9 numbers in it. Make addition sums by adding each set of three numbers across, down and diagonally.

Altogether you should have 8 sums, each with three numbers in.

91	**135**	**256**
87	**109**	**46**
53	**79**	**48**

1. Which set of three numbers gave you the biggest answer?

2. How could you re-arrange the numbers to give you an even bigger answer?

Square addition

Below is a square with 9 numbers in it. Make addition sums by adding each set of three numbers across, down and diagonally.

Altogether you should have 8 sums, each with three numbers in.

86	**357**	**108**
49	**222**	**57**
88	**57**	**173**

1.   Which set of three numbers gave you the smallest answer?

2.   How could you re-arrange the numbers to give you an even smaller answer?

Addition of decimals

	£	3 •	4	3
+		4 •	2	7
		7 •	7	0
			1	

When adding decimals on paper it is very important that the decimal points line up under each other.

Try adding these:

1) 63.5   **2)**   89.6   **3)** 7.88   **4)** 9.73   **5)** 72.8
+   58.6   +   42.6   +   6.56   +   4.44   +   38.6

Now try these:

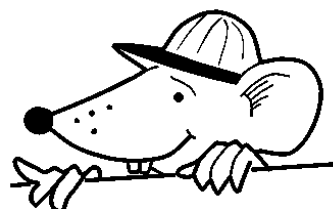**6)** $0.5 + 7 + 7.7 =$

7) $0.8 + 36.4 + 8.9 =$

8) $42.6 + 63.5 + 29.0 =$

9) $0.54 + 3.27 + 1.83 =$

10) $4 + 7.99 + 6.32 =$

Get those decimal points lined up nice and straight!

Addition of decimals

	£	4 • 3	7
+		5 • 5	6
		9 • 9	3
		1	

When adding decimals on paper it is very important that the decimal points line up under each other.

Try adding these:

1) 74.6   **2)** 78.5   **3)** 6.93   **3)** 8.44   **5)** 61.9
+ 46.2   + 31.8   + 5.77   + 6.38   + 40.5

Now try these:

6) $0.6 + 9 + 4.4 =$

7) $0.8 + 56.7 + 8.5 =$

8) $53.1 + 72.5 + 19.4 =$

9) $0.82 + 3.66 + 1.49 =$

10) $8.8 + 2.09 + 76 =$

Whizzing through these now, eh?

Addition - mini investigation

Take the digits   1   2   3   4   5   6   7   8   9

Arrange them into three sets of three eg   1   2   3
                                                4   5   6
                                                7   8   9

Now add the three columns   123
                                      456
                                 +   789
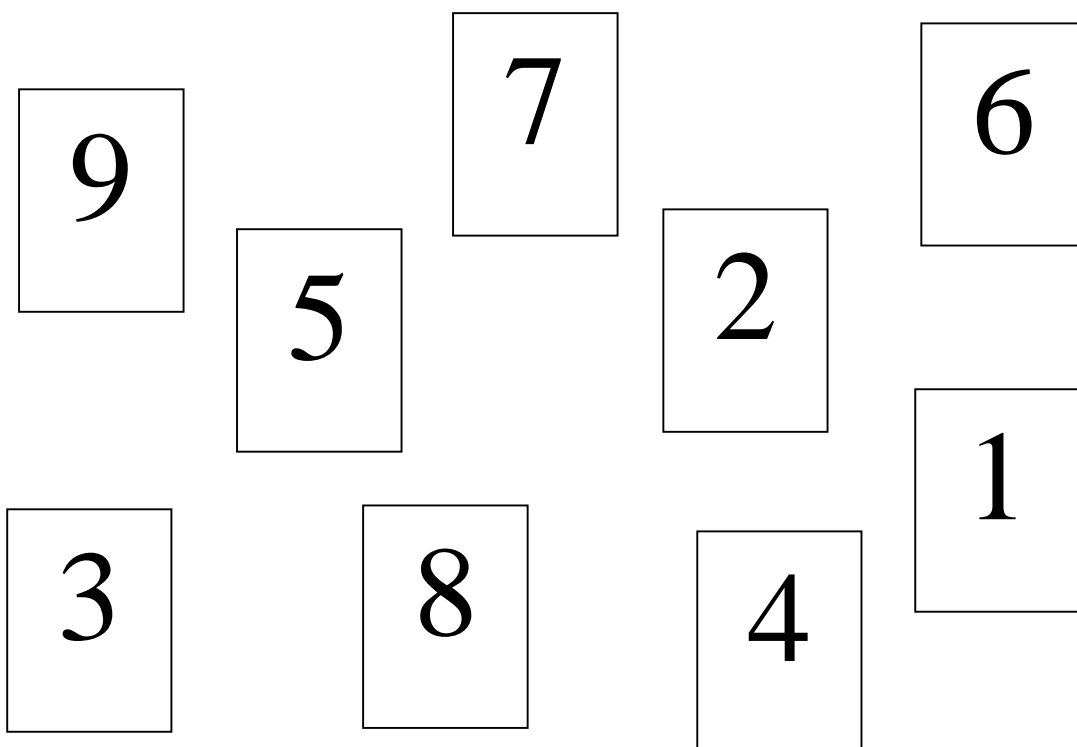   1 368

Now try your own hundreds, tens and units sum, only using each digit once.

Arrange the digits to get the largest possible answer.

Arrange the digits to get the smallest possible answer.

How do you know it is the smallest possible answer?

Investigate further yourself.

7   6   9   5   2   1   3   8   4

ANSWERS

Page 4
1) 301   **2)** 1 075   **3)** 623   **4)** 845   **5)** 607
6) 1 277   **7)** 718   **8)** 708   **9)** 458   **10)** 795
11) 903   **12)** 689   **13)** 860   **14)** 917   **15)** 964
16) 529   **17)** 909   **18)** 1 003   **19)** 503   **20)** 1 002

Page 5
1) 612   **2)** 1 297   **3)** 825   **4)** 1 060   **5)** 775
6) 1 277   **7)** 937   **8)** 933   **9)** 592   **10)** 1 165
11) 1 102   **12)** 715   **13)** 1 062   **14)** 1 157   **15)** 602
16) 970   **17)** 1 181   **18)** 785   **19)** 262   **20)** 966

Page 6
1) 2 510   **2)** 4 293   **3)** 1 839   **4)** 2 318   **5)** 8 906
6) 4 631   **7)** 3 510   **8)** 3 790   **9)** 2 613   **10)** 3 452
11) 2 421   **12)** 1 714   **13)** 779 pennies   **14)** 1 974   **15)** 1 251

Page 7
1) 2 217   **2)** 4 853   **3)** 1 797   **4)** 2 366   **5)** 8 794
6) 5 010   **7)** 4 486   **8)** 4 399   **9)** 3 021   **10)** 4 000
11) 2 243   **12)** 1 835   **13)** 838   **14)** 1 751   **15)** 2 030

Page 8
Across: 482   242   180 Down: 231   323   350 Diagonal: 248   418
1. 91, 135, 256   **2.** Put the three largest numbers in the same row.

Page 9
Across: 551   328   318 Down: 223   636   338 Diagonal: 481   418
1. 86, 49, 88   **2.** Put the three smallest numbers in the same row.

Page 10
1) 122.1   **2)** 132.2   **3)** 14.44   **4)** 14.17   **5)** 111.4
6) 15.2   **7)** 46.1   **8)** 135.1   **9)** 5.64   **10)** 18.31

Page 11
1) 120.8   **2)** 110.3   **3)** 12.7   **4)** 14.82   **5)** 102.4
6) 14   **7)** 66   **8)** 145   **9)** 5.97   **10)** 86.89

Page 12
Investigate: look for logical thinking - putting the larger digits in the hundreds and
the smaller in the units column when trying to get the highest total etc