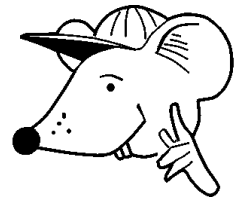


MATHEMATICS



N.S. Yr. 4 P.48

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

Equipment

Paper, pencil, ruler.
Squared paper helpful.

MathSphere

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Concepts

In year 4 children are expected to build on their mental methods of addition to use pencil and paper methods.

To begin with they are expected to add HTU and TU, developing to HTU + HTU. Any difficulties which arise are usually to do with crossing the tens or hundreds boundary i.e. when the numbers in a column come to more than 9. Methods A and B are both partial mental methods, whilst method C is the widely accepted written method.

Method A: where the most significant digits (the largest) are added first. This builds on the mental methods of addition already learned. On the examples below this means adding hundreds and writing the answer down, then adding the tens and putting the answer below etc.

Examples:	$\begin{array}{r} 545 \\ + \quad 87 \\ \hline 500 \\ 120 \\ \hline 12 \\ \hline 632 \end{array}$	$\begin{array}{r} 437 \\ + \quad 78 \\ \hline 400 \\ 100 \\ \hline 15 \\ \hline 515 \end{array}$
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Method B: this is called compensation. It involves adding too much in the form of whole hundreds and then taking off the extra.

Example:	$\begin{array}{r} 639 \\ + \quad 64 \\ \hline 739 \\ - \quad 36 \\ \hline 703 \end{array}$	$\begin{array}{l} (639 + 100) \\ (64 - 100) \end{array}$
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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:	$\begin{array}{r} 545 \\ + \quad 87 \\ \hline 12 \\ 120 \\ \hline 500 \\ \hline 632 \end{array}$	leading to	$\begin{array}{r} 545 \\ + \quad 87 \\ \hline 632 \\ \hline 11 \end{array}$
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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 for the pencil and paper method, but very often they will be presented horizontally:

Eg. Find the total of: 16, 25, 103 and 72

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 and squared paper helps this.

$$\begin{array}{r} 16 \\ 25 \\ 103 \\ \underline{72} \\ 216 \\ \text{1 1} \end{array}$$

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.

Checking answers. 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
+		0	•	4	8
		3	•	9	3
				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.

$$\begin{array}{r} 1. \ 147 \\ + \ 56 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \ 163 \\ + \ 48 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \ 154 \\ + \ 29 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \ 184 \\ + \ 35 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \ 176 \\ + \ 43 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \ 306 \\ + \ 75 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \ 193 \\ + \ 27 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \ 241 \\ + \ 65 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \ 189 \\ + \ 38 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \ 345 \\ + \ 26 \\ \hline \end{array}$$

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

$$11. \ 327 + 57 =$$

$$12. \ 639 + 76 =$$

$$13. \ 427 + 48 =$$

$$14. \ 382 + 44 =$$

$$15. \ 527 + 64 =$$

$$16. \ 495 + 84 =$$

Add 76 to each of these numbers, using pencil and paper methods:

$$17. \ 426$$

$$18. \ 619$$

$$19. \ 547$$

$$20. \ 718$$

Getting on well with these, I hope!



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

$$\begin{array}{r} 1. \ 326 \\ + \ 61 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \ 368 \\ + \ 53 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \ 337 \\ + \ 49 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \ 355 \\ + \ 38 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \ 394 \\ + \ 73 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \ 218 \\ + \ 86 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \ 264 \\ + \ 74 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \ 285 \\ + \ 92 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \ 228 \\ + \ 57 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \ 257 \\ + \ 62 \\ \hline \end{array}$$

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

$$11. \ 538 + 67 =$$

$$12. \ 728 + 83 =$$

$$13. \ 597 + 29 =$$

$$14. \ 833 + 48 =$$

$$15. \ 617 + 77 =$$

$$16. \ 906 + 78 =$$

Add 87 to each of these numbers, using pencil and paper methods:

$$17. \ 537$$

$$18. \ 706$$

$$19. \ 658$$

$$20. \ 829$$

Keep those units in line
and you can't go wrong!



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

1.	126	2.	135	3.	147	4.	152	5.	168
	45		41		33		52		35
+	<u>164</u>	+	<u>225</u>	+	<u>271</u>	+	<u>206</u>	+	<u>222</u>

6.	543	7.	264	8.	184
	47		18		53
+	<u>127</u>	+	<u>186</u>	+	<u>246</u>



Look out for pairs of numbers that add up to 10 - it makes life easier!

Using the same method now try adding up these:

9. $65 + 68 + 225 =$

10. $43 + 56 + 87 =$

11. $326 + 77 + 84 =$

12. $62 + 44 + 138 =$

Investigate: using pencil and paper addition methods and trial and improvement, find three consecutive numbers that add up to:

13. 138

14. 237

15. 213

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

$$\begin{array}{r} 1. \quad 237 \\ \quad 56 \\ + \underline{154} \end{array}$$

$$\begin{array}{r} 2. \quad 247 \\ \quad 63 \\ + \underline{114} \end{array}$$

$$\begin{array}{r} 3. \quad 281 \\ \quad 44 \\ + \underline{169} \end{array}$$

$$\begin{array}{r} 4. \quad 265 \\ \quad 71 \\ + \underline{175} \end{array}$$

$$\begin{array}{r} 5. \quad 282 \\ \quad 48 \\ + \underline{174} \end{array}$$

$$\begin{array}{r} 6. \quad 316 \\ \quad 62 \\ + \underline{144} \end{array}$$

$$\begin{array}{r} 7. \quad 158 \\ \quad 79 \\ + \underline{142} \end{array}$$

$$\begin{array}{r} 8. \quad 293 \\ \quad 48 \\ + \underline{177} \end{array}$$



Keep on looking for pairs of numbers that add up to 10 .

Using the same method now try adding up these:

$$9. \quad 48 + 79 + 122 =$$

$$10. \quad 151 + 78 + 92 =$$

$$11. \quad 334 + 69 + 41 =$$

$$12. \quad 85 + 32 + 256 =$$

Investigate: using pencil and paper addition methods and trial and improvement, find three consecutive numbers that add up to:

$$13. \quad 39$$

$$14. \quad 267$$

$$15. \quad 159$$

Addition of decimals

	£	2	•	4	4
+		4	•	1	7
		6	•	6	1
				1	

When adding decimals on paper it is very important that the decimal points line up under each other. Always put the decimal point half way up the line between the pounds and pence if you are using squared paper.

Try adding these:

$$\begin{array}{rclclcl}
 1) & £\ 3.51 & 2) & £\ 5.32 & 3) & £\ 4.25 & 4) & £\ 1.66 & 5) & £\ 2.85 \\
 & +\ £\ 4.22 & & +\ £\ 2.28 & & +\ £\ 3.60 & & +\ £\ 2.54 & & +\ £\ 8.60
 \end{array}$$

Now try these, setting them out like the ones above:

6) £8.35 + £6.46 =

7) £2.77 + £8.12 =

8) £7.52 + £1.93 =

9) £5.38 + £2.87 =

10) £6.39 + £2.53 =

Keep everything nicely in line and don't forget the decimal point.



Addition of decimals

	£	1	•	2	5
+		6	•	3	6
		7	•	6	1
				1	

When adding decimals on paper it is very important that the decimal points line up under each other. Always put the decimal point half way up the line between the pounds and pence if you are using squared paper.

Try adding these:

$$\begin{array}{rclclcl}
 \text{1) } £4.62 & \text{2) } £6.47 & \text{3) } £5.95 & \text{4) } £7.34 & \text{5) } £3.88 \\
 + £3.15 & + £3.25 & + £1.67 & + £2.46 & + £6.54
 \end{array}$$

Now try these, setting them out like the ones above:

6) £2.96 + £7.57 =

7) £1.66 + £9.32 =

8) £8.63 + £2.09 =

9) £6.43 + £7.77 =

10) £3.86 + £1.94 =

Which would you rather have £2.35 or £235 ?
Exactly - so remember that decimal point - it makes a lot of difference.





Try these - all sorts of addition to do on paper.

If you get all these correct you really have done well!

1. $\begin{array}{r} 267 \\ + 183 \\ \hline \end{array}$ 2. $\begin{array}{r} 396 \\ + 154 \\ \hline \end{array}$ 3. $\begin{array}{r} 418 \\ + 367 \\ \hline \end{array}$ 4. $\begin{array}{r} 693 \\ + 245 \\ \hline \end{array}$ 5. $\begin{array}{r} 528 \\ + 417 \\ \hline \end{array}$

6. $154 + 431 + 242 =$ 7. $275 + 381 + 476 =$

8. $317 + 428 + 122 =$ 9. $188 + 277 + 366 =$

10. $\begin{array}{r} 27 \\ 13 \\ 42 \\ + 34 \\ \hline \end{array}$ 11. $\begin{array}{r} 17 \\ 23 \\ 61 \\ + 44 \\ \hline \end{array}$ 12. $\begin{array}{r} 15 \\ 52 \\ 19 \\ + 25 \\ \hline \end{array}$ 13. $\begin{array}{r} 43 \\ 24 \\ 16 \\ + 35 \\ \hline \end{array}$ 14. $\begin{array}{r} 59 \\ 38 \\ 24 \\ + 21 \\ \hline \end{array}$

15. $£3.54 + £2.26 + £1.17$ 16. $£1.72 + £1.81 + £7.06$

17. $\begin{array}{r} 73.2 \text{ km} \\ 12.5 \text{ km} \\ + 22.3 \text{ km} \\ \hline \end{array}$ 18. $\begin{array}{r} 45.5 \text{ km} \\ 38.2 \text{ km} \\ + 16.6 \text{ km} \\ \hline \end{array}$

19. $\begin{array}{r} 2\ 154 \\ + 1\ 673 \\ \hline \end{array}$ 20. $\begin{array}{r} 1\ 628 \\ + 3\ 253 \\ \hline \end{array}$



All sorts of addition here. Set them all out in columns.
Good luck!

1.
$$\begin{array}{r} 376 \\ + 292 \\ \hline \end{array}$$
 2.
$$\begin{array}{r} 407 \\ + 265 \\ \hline \end{array}$$
 3.
$$\begin{array}{r} 529 \\ + 472 \\ \hline \end{array}$$
 4.
$$\begin{array}{r} 704 \\ + 356 \\ \hline \end{array}$$
 5.
$$\begin{array}{r} 639 \\ + 528 \\ \hline \end{array}$$

6. $265 + 407 + 353 =$ 7. $384 + 492 + 505 =$

8. $428 + 519 + 662 =$ 9. $299 + 106 + 182 =$

10.
$$\begin{array}{r} 38 \\ 24 \\ 53 \\ + 12 \\ \hline \end{array}$$
 11.
$$\begin{array}{r} 28 \\ 34 \\ 72 \\ + 14 \\ \hline \end{array}$$
 12.
$$\begin{array}{r} 26 \\ 63 \\ 20 \\ + 51 \\ \hline \end{array}$$
 13.
$$\begin{array}{r} 54 \\ 35 \\ 17 \\ + 46 \\ \hline \end{array}$$
 14.
$$\begin{array}{r} 70 \\ 49 \\ 21 \\ + 17 \\ \hline \end{array}$$

15. $£2.23 + £4.16 + £1.37$ 16. $£1.42 + £1.85 + £7.25$

17.
$$\begin{array}{r} 54.2 \text{ km} \\ 21.5 \text{ km} \\ + 11.3 \text{ km} \\ \hline \end{array}$$
 18.
$$\begin{array}{r} 56.9 \text{ km} \\ 29.1 \text{ km} \\ + 12.6 \text{ km} \\ \hline \end{array}$$

19.
$$\begin{array}{r} 3\,264 \\ + 1\,354 \\ \hline \end{array}$$
 20.
$$\begin{array}{r} 1\,423 \\ + 3\,711 \\ \hline \end{array}$$

ANSWERS**Page 4**

- 1) 203 2) 211 3) 183 4) 219 5) 219 6) 381 7) 220
 8) 306 9) 227 10) 371 11) 384 12) 715 13) 475 14) 426
 15) 591 16) 579 17) 502 18) 695 19) 623 20) 794

Page 5

- 1) 387 2) 421 3) 386 4) 393 5) 467 6) 304 7) 338
 8) 377 9) 285 10) 319 11) 605 12) 811 13) 626 14) 881
 15) 694 16) 984 17) 624 18) 793 19) 745 20) 916

Page 6

- 1) 335 2) 401 3) 451 4) 410 5) 425 6) 717 7) 468
 8) 483 9) 358 10) 186 11) 487 12) 244 13) $45 + 46 + 47$
 14) $78 + 79 + 80$ 15) $70 + 71 + 72$

Page 7

- 1) 447 2) 424 3) 494 4) 511 5) 504 6) 522 7) 379
 8) 518 9) 249 10) 321 11) 444 12) 373 13) $12 + 13 + 14$
 14) $88 + 89 + 90$ 15) $52 + 53 + 54$

Page 8

- 1) £7.73 2) £7.60 3) £7.85 4) £4.20 5) £11.45
 6) £14.81 7) £10.89 8) £9.45 9) £8.25 10) £8.92

Page 9

- 1) £7.77 2) £9.72 3) £7.62 4) £9.80 5) £10.42
 6) £10.53 7) £10.98 8) £10.72 9) £14.20 10) £5.80

Page 10

- 1) 450 2) 550 3) 785 4) 938 5) 945 6) 827 7) 1 132
 8) 867 9) 831 10) 116 11) 145 12) 111 13) 118 14) 142
 15) £6.97 16) £10.59 17) 108 km 18) 100.3 km 19) 3 827 20) 4 881

Page 11

- 1) 668 2) 672 3) 1 001 4) 1 060 5) 1 167 6) 1 025 7) 1 381
 8) 1 609 9) 587 10) 127 11) 148 12) 160 13) 152 14) 157
 15) £7.76 16) £10.52 17) 87 km 18) 98.6 km 19) 4 618 20) 5 134

