Addition

Work through these tasks at your own pace and level:

If you find this part of maths tricky, start here. You can always move up to something spicier!

Most people will want to start here. Fluency at this stage is really important before moving up. If you struggle, work on the lower level first, and come back to this.

This is an extension. If you are happy at the level below, try this out and push yourself to reason with your maths.

Answers can be found at the end of the booklet. If your answers don't match – try the problem again and see if you can work out how to get to the correct answer.

1. Mental addition

If one of the numbers is simple, it can be added mentally. Identify the place value of the digit being added, and add to the correct part of the other number.

e.g.   32,562 + 3,005 = 35,567

If the digits add together to make more than 10, then exchange up into the next column. This can still be done mentally, but don't be afraid to use a column method as well to check your work.

e.g.   781,602 + 50,000 = 831,602

3439 + 10 =	45,567 + 10,000 =	Mo says,
652 + 7 =	326,412 + 3,000 =	When I add hundreds to a number, only the hundreds column will change.
1046 + 5000 =	34,781 + 500 =	
5036 + 40 =	119,344 + 300,000 =	Is Mo correct? Explain your answer.
8755 + 200 =	56,384 + 22,000 =	I'm thinking of a number that is less than 1 million
452 + 6 =	677,914 + 3,005 =	If I add 3 tens to it, the tens digit is 2 and the hundreds digit is 8
2341 + 900 =	78,558 + 20,040 =	If I add 3 hundred thousands to my number, the hundred thousands digit is 3
6781 + 8000 =	53,365 + 5,900 =	If I add 3 thousands to it, the thousands digit is 1 and the ten thousands digit is 0
4365 + 70 =	453,655 + 204,000 =	The number has 3 digits that are the same. What is my number?

2. Mental addition – quick strategies

If one number is close to a round number (e.g. 69,999) you can adjust the numbers to make it easier to calculate mentally.

37,172 + 12,990 = (add 10) 37,172 + 13,000 = 50,172 (subtract 10) 50,172 – 10 = 50,162	Add on the amount to create a rounded number, then subtract that amount from the answer (or you can subtract the right amount, then add it back on)	Or, you can adjust both numbers in the calculation by opposite amounts Then do the calculation as normal	45,521 + 2,995 = (add 5 to one number) (subtract 5 from the other number) 45,516 + 3,000 = 48,516

+12,990   +10   +5   +2,995

37,172   50,162 -10   -5   45,521   48,516

Important note: This method does not work for multiplication or division!

21 + 49 = 674 + 99 = 308 + 95 = 821 + 29 = 313 + 398 = 403 + 29 = 2161 + 304 = 440 + 98 = 2,331 + 999 = 4,023 + 950 = 2,110 + 49 = 3,013 + 195 =	8,412 + 395 = 7,330 + 1980 = 2,491 + 1499 = 26,388 + 9,999 = 341,745 + 209 = 751,121 + 95,000 = 82,221 + 379 = 66,346 + 1,699 = 638,576 + 240,024 = 28,415 + 485 = 703,834 + 29,999 =	Time yourself solving these – how fast can you do them? This is a magic square. The numbers in any row, column or the two diagonals have the same total.

23	10	17	4	11
6	18	5	12	24
19	1	13	25	7
2	16	21	8	20
15	22	9	16	3

Unfortunately, there is something wrong.
One of the numbers is incorrect.
Which number is it? What should it be?

You need a set of digit cards from 1 to 7.

(1) (2) (3) (4) (5) (6) (7)

Arrange your cards with + signs between them.
Use each card once.
How close can you get to a total of 100?
Here is an example.

(5)(2) + (1)(3) + (4)(6) + (7) = 118

Can you get closer to 100?

3. Column addition

Step 1: Place one number on top of the other (usually the biggest number first)

Step 2: Check that the place value of the numbers matches up (ones above the ones etc.)

Step 3: Start from the ones, add them together and put the answer underneath

Step 4: Work your way up the columns

20,532 + 1,437 =

	Tth	Th	H	T	O
	2	0	5	3	2
+		1	4	3	7
	2	1	9	6	9

345 + 353 =

436 + 102 =

2953 + 1025 =

4327 + 3251 =

3464 + 225 =

7332 + 1462 =

5498 + 2301 =

4829 + 3160 =

4362 + 513 =

4538 + 3361 =

53,432 + 23,417 =

67,874 + 22,105 =

532,965 + 242,021 =

634,536 + 152,241 =

452,543 + 36,241 =

346,742 + 31,035 =

463,360 + 520,128 =

654,346 + 224,613 =

54,345 + 814,632 =

564,588 + 235,201 =

In column addition there can't be any blanks in the ones column. True or false?

Jack, Rosie and Eva are playing a computer game. Jack has 3,452 points, Rosie has 4,037 and Eva has 12,510 points.

How many points do Jack and Rosie have altogether?

How many points do Rosie and Eva have altogether?

How many points do Eva and Jack have altogether?

How many points do Jack, Rosie and Eva have altogether?

4. Column addition (exchanges)

Working from the ones first helps when doing exchanges

If the digits add up to 10 or more, place the tens under the next column up

Don't forget to add them on when you add up that next column!

$$834{,}578 + 59{,}251 =$$

	8	3	4	5	7	8
+		5	9	2	5	1
	8	9	3	8	2	9
		1		1		

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234 + 458 =

185 + 375 =

653 + 248 =

3,404 + 236 =

5,433 + 375 =

6,783 + 244 =

4,544 + 5,717 =

6,689 + 2519 =

8,790 + 1,163 =

56,832 + 24,643 =

43,645 + 15,680 =

46,782 + 26,551 =

346,575 + 43,436 =

534,657 + 54,492 =

748,043 + 29,603 =

325,369 + 287,280 =

643,984 + 265,895 =

544,977 + 385,451 =

Amir is discovering numbers on a Gattegno chart.
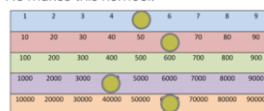
He makes this number.

Amir moves one counter three spaces on a horizontal line to create a new number.

When he adds this to his original number he gets 131,130

Which counter did he move?

Work out the missing numbers.

	?	4	?	3	?
+	2	?	5	?	2
	7	8	5	2	9

5. *Arithmetic Check*

Try to use the most efficient method you can for each calculation – you don't need a written method for all of these

3,874 + 600 =	324,436 + 3,000 =	On Monday, Whitney was paid £114
6,720 + 280 =	589,319 + 34,463 =	On Tuesday, she was paid £27 more than on Monday.
8,458 + 1,443 =	961,948 + 37,236 =	On Wednesday, she was paid £27 less than on Monday.
5,746 + 99 =	398,980 + 520 =	How much was Whitney paid in total?
7,349 + 693 =	364,432 + 28,000 =	How many calculations did you do?
4,643 + 30 =	578,837 + 167,608 =	Is there a more efficient method?
9,585 + 305 =	35,330 + 38,470 =	
8,341 + 89 =	438,389 + 323,735 =	Palmer and Co. is trying to buy a company.
		So far, the highest bid is a combined bid of £234,653 from Smalls Esq. and £349,547 from Jordan Enterprises.
		What does Palmer and Co. need to offer to win?

Answers

1. Mental addition

3439 + 10 = 3449

652 + 7 = 659

1046 + 5000 = 6046

5036 + 40 = 5076

8755 + 200 = 8955

452 + 6 = 458

2341 + 900 = 3241

6781 + 8000 = 14781

4365 + 70 = 4435

45,567 + 10,000 = 55,567

326,412 + 3,000 = 329,412

34,781 + 500 = 35,281

119,344 + 300,000 = 419,344

56,384 + 22,000 = 78,384

677,914 + 3,005 = 680,919

78,558 + 20,040 = 98,598

53,365 + 5,900 = 59,265

453,655 + 204,000 = 657,655

Mo says,

When I add hundreds to a number, only the hundreds column will change.

Is Mo correct? Explain your answer.

Sometimes. If the hundreds digit goes over 10 then the thousands will also change

I'm thinking of a number that is less than 1 million

If I add 3 tens to it, the tens digit is 2 and the hundreds digit is 8

If I add 3 hundred thousands to my number, the hundred thousands digit is 3

If I add 3 thousands to it, the thousands digit is 1 and the ten thousands digit is 0

The number has 3 digits that are the same. What is my number?

98,799

2. Addition - mental techniques

21 + 49 = 70

674 + 99 = 773

308 + 95 = 403

821 + 29 = 850

313 + 398 = 711

403 + 29 = 432

2161 + 304 = 2465

440 + 98 = 538

2,331 + 999 = 3330

4,023 + 950 = 4973

2,110 + 49 = 2159

3,013 + 195 = 3208

8,412 + 395 = 8807

7,330 + 1980 = 9310

2,491 + 1499 = 3990

26,388 + 9,999 = 36387

341,745 + 209 = 341954

751,121 + 95,000 = 846121

82,221 + 379 = 82600

66,346 + 1,699 = 68,045

638,576 + 240,024 = 878600

28,415 + 485 = 28900

703,834 + 29,999 = 733833

Time yourself solving these – how fast can you do them?

This is a magic square. The numbers in any row, column or the two diagonals have the same total.

23	10	17	4	11
6	18	5	12	24
19	1	13	25	7
2	16	21	8	20
15	22	9	16	3

Unfortunately, there is something wrong.
One of the numbers is incorrect.
Which number is it? What should it be?

16 towards the bottom left hand corner should be 14

You need a set of digit cards from 1 to 7.

1 2 3 4 5 6 7

Arrange your cards with + signs between them.
Use each card once.
How close can you get to a total of 100?
Here is an example.

5 2 + 1 3 + 4 6 + 7 = 118

Can you get closer to 100?

There are lots of ways to make exactly 100

3. Column addition

345 + 353 = 698

436 + 102 = 538

2953 + 1025 = 3978

4327 + 3251 = 7578

3464 + 225 = 3689

7332 + 1462 = 8794

5498 + 2301 = 7799

4829 + 3160 = 7989

4362 + 513 = 4875

4538 + 3361 = 7899

53,432 + 23,417 = 76,849

67,874 + 22,105 = 89,979

532,965 + 242,021 = 774,986

634,536 + 152,241 = 786,777

452,543 + 36,241 = 488,784

346,742 + 31,035 = 377,777

463,360 + 520,128 = 983,488

654,346 + 224,613 = 878,959

54,345 + 814,632 = 868,977

564,588 + 235,201 = 799,789

In column addition there can't be any blanks in the ones column. True or false?

True

Jack, Rosie and Eva are playing a computer game. Jack has 3,452 points, Rosie has 4,037 and Eva has 12,510 points.

How many points do Jack and Rosie have altogether?   7,489

How many points do Rosie and Eva have altogether?   16,547

How many points do Eva and Jack have altogether?   15,962

How many points do Jack, Rosie and Eva have altogether?   19,999

4. Column addition - exchanging

234 + 458 = 692

185 + 375 = 560

653 + 248 = 901

3,404 + 236 = 3,640

5,433 + 375 = 5,808

6,783 + 244 = 7,027

4,544 + 5,717 = 10,261

6,689 + 2519 = 9,208

8,790 + 1,163 = 9,953

56,832 + 24,643 = 81,475

43,645 + 15,680 = 59,325

46,782 + 26,551 = 73,333

346,575 + 43,436 = 390,011

534,657 + 54,492 = 589,149

748,043 + 29,603 = 777,646

325,369 + 287,280 = 612,649

643,984 + 265,895 = 909,879

544,977 + 385,451 = 930,428

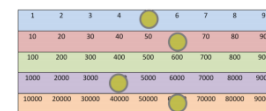Work out the missing numbers.

$$
\begin{array}{r}
? \; 4 \; ? \; 3 \; ? \\
+ \; 2 \; ? \; 5 \; ? \; 2 \\
\hline
7 \; 8 \; 5 \; 2 \; 9
\end{array}
$$

54,937 + 23,592 = 78,529

Amir is discovering numbers on a Gattegno chart.

He makes this number.

Amir moves one counter three spaces on a horizontal line to create a new number.

When he adds this to his original number he gets 131,130

Which counter did he move?

He moved the counter on the thousands row from 4,000 to 7,000

5. *Arithmetic Check*

3,874 + 600 = 4,474

6,720 + 280 = 7,000

8,458 + 1,443 = 9,901

5,746 + 99 = 5,845

7,349 + 693 = 8,042

4,643 + 30 = 4,673

9,585 + 305 = 9,890

8,341 + 89 = 8,430

324,436 + 3,000 = 327,436

589,319 + 34,463 = 623,782

961,948 + 37,236 = 999,184

398,980 + 520 = 399,500

364,432 + 28,000 = 392,432

578,837 + 167,608 = 746,445

35,330 + 38,470 = 73,800

438,389 + 323,735 = 762,124

On Monday, Whitney was paid £114

On Tuesday, she was paid £27 more than on Monday.

On Wednesday, she was paid £27 less than on Monday.

How much was Whitney paid in total?

How many calculations did you do?

Is there a more efficient method?

£27 more and £27 less cancel each other out.

£114+£114+£114 = £342

Palmer and Co. is trying to buy a company.

So far, the highest bid is a combined bid of £234,653 from Smalls Esq. and £349,547 from Jordan Enterprises.

What does Palmer and Co. need to offer to win?

£584201