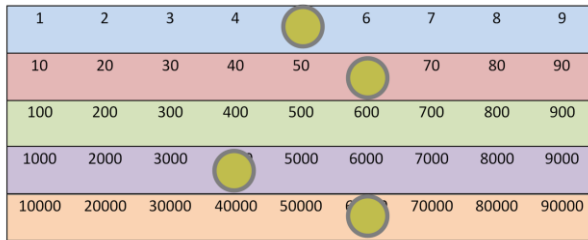**White Rose Maths**

Four operations

Theme 1 – Addition and subtraction

Add More than 4-digits

Reasoning and Problem Solving

Amir is discovering numbers on a Gattegno chart.

He makes this number.

1	2	3	4		6	7	8	9
10	20	30	40	50		70	80	90
100	200	300	400	500	600	700	800	900
1000	2000	3000		5000	6000	7000	8000	9000
10000	20000	30000	40000	50000		70000	80000	90000

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, he moved it from 4,000 to 7,000

Work out the missing numbers.

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

54,937 + 23,592 = 78,529

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Subtract More than 4-digits

Reasoning and Problem Solving

Eva makes a 5-digit number.

Mo makes a 4-digit number.

The difference between their numbers is 3,465

What could their numbers be?

Possible answers:

9,658 and 14,023
12,654 and 8,289
5,635 and 10,000

Etc.

Rosie completes this subtraction incorrectly.

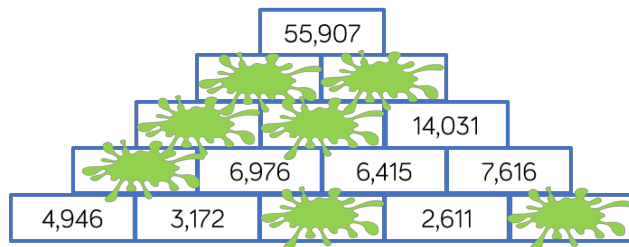$$\begin{array}{r} 28701 \\ -7621 \\ \hline 21180 \end{array}$$

Explain the mistake to Rosie and correct it for her.

Rosie did not write down the exchange she made when she exchanged 1 hundred for 10 tens. This means she still had 7 hundreds subtract 6 hundreds when she should have 6 hundreds subtract 6 hundreds.
The correct answer is 21,080

Inverse Operations

Reasoning and Problem Solving

Complete the pyramid using addition and subtraction.

From left to right:

Bottom row:
3,804, 5,005

Second row:
8,118

Third row:
15,094, 13,391

Fourth row:
28,485, 27,422

Mo, Whitney, Teddy and Eva collect marbles.

Mo: I have 1,648 marbles.

Whitney: I have double the amount of marbles Mo has.

Teddy: I have half the amount of marbles Mo has.

In total they have 8,524 marbles between them.
How many does Eva have?

Eva has 2,756 marbles.

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Multi-step Problems

Reasoning and Problem Solving

A milkman has 250 bottles of milk.

He collects another 160 from the dairy, and delivers 375 during the day.

How many does he have left?

My method:

$375 - 250 = 125$

$125 + 160 = 285$

Tommy

Do you agree with Tommy?
Explain why.

Tommy is wrong. He should have added 250 and 160, then subtracted 375 from the answer.

There are 35 bottles of milk remaining.

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?
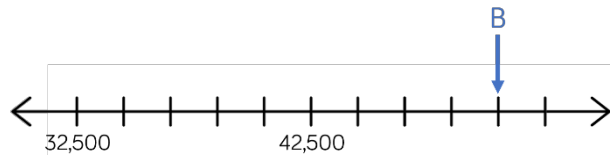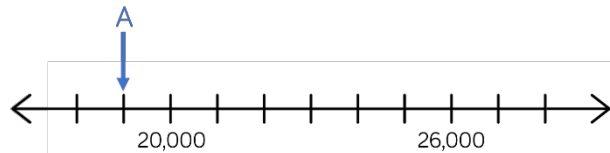
Is there a more efficient method?

£342

Children might add 114 and 27, subtract 27 from 114 and then add their numbers.

A more efficient method is to recognise that the '£27 more' and '£27 less' cancel out so they can just multiply £114 by three.

Add & Subtract Integers

Reasoning and Problem Solving

Find the difference between A and B.

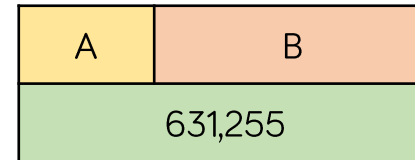

A = 19,000

B = 50,500

The difference is 31,500

Here is a bar model.

A is an odd number which rounds to 100,000 to the nearest ten thousand.
It has a digit total of 30

B is an even number which rounds to 500,000 to the nearest hundred thousand.
It has a digit total of 10

A and B are multiples of 5.

What are possible values of A and B?

Possible answer:

A = 99,255

B = 532,000