

## Solutions from Bomere Heath Primary School

Shauna & Bethany

First we found all the combinations for adding and subtracting four consecutive numbers. Then we found out the answer for them we did this two times then we looked for patterns such as

1)+++ =2 middle numbers added together then x2.

2)--- =last number x2 in the negatives.

3)++ =-4.

4)++ =first number times 2.

5)++ =3rd number x2.

6)++ =0.

7)++ =-2.

8)++ = 2nd number x2.

9)= All even.

and that's what we found out:)

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Robyn and Aimee

We have found out that all of the answers are even. There are 8 different ways to know that you have the right answers and there are also only 8 solutions.

++ is always -4.

-- is always 0.

+- is always -2.

--- is always double the last number.

++ is always double the first number.

-- is always double the third number.

++ is always double the second number.

+++ is always add the second and third number together and then double your answer.

we hope this will help you!

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Rachel & Noah

We added and took away digits and calculated the answers. In some selected sums we found a pattern. One of the patterns were in the plus, plus, plus sum you add the two middle digits together and then double it, for example 10 plus 11 plus 12 plus 13. The answer was 46 - 11 plus 12 is 23 and then double it 46 and that's the answer.

In the plus subtract plus sum you take the second number and times it by two. We have done this with a number of sums to check our calculations are right.

The minus, minus, plus sum always results in the answer being zero.

Also the answer to plus, minus, minus is always minus 4.

Minus, minus, minus is the last number of the sum doubled and made in to the negative numbers are example is 4 minus 5 minus 6 minus 7 and of course the answer was minus 14.

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Callen

Firstly we wrote our four random consecutive numbers, for example we wrote 8, 9, 10, 11. Next we wrote every combination only using + and -. So we ended up with  $8+9+10+11$  and  $8-9-10-11$  etc. (we found 8 different possibilities) and then we added or took away all of them depending what the combination was. After that we searched for patterns and finished like this  $8+9+10+11=38$   $9+10=19$  then we doubled it and ended up with the answer 38.

Our 8 results were Our 8 patterns were

$$8+9+10+11=38 \quad 9+10=19 \text{ then double } 19 = 38$$

$$8-9-10-11=-22 \quad \text{double } 11 = 22$$

$$8+9-10+11=18 \quad \text{double } 9 = 18$$

$$8-9+10-11=-2 \quad \text{this sum always ends in } -2 \text{ even if there are different numbers.}$$

$$8-9-10+11=0 \quad \text{this sum always ends in } 0$$

$$8+9+10-11=16 \quad \text{double } 8 = 16$$

$$8+9-10-11=-4 \quad \text{this sum always ends in } -4$$

$$8-9+10+11=20 \quad \text{double } 10 = 20$$

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Ozora, Faith & Annalise

First we chose 7, 8, 9 and 10 as our consecutive numbers and wrote out ways of plus and minus. Then we tried again with 4, 5, 6, 7 and 3, 4, 5, 6. Then we worked out the answers. We saw some patterns in the answers, and wrote them down. These are the patterns that we found:

\* +,+,+ you add the two middle numbers together then double them and you will get the answer.

\* -,+,- is always minus two.

\* -,-,- double the fourth number and you will get your answer.

\* -,-,+ is always zero \* +,-,+ you double the second number and you will get your answer.

\* +,-,- is always minus four.

\* +,+,- you double the first number and you will get your answer.

\* -,+,+ double the third number and you will get your answer.

We hope that this information was helpful for you. We really enjoyed doing this maths work :)

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Ryan, Guy, Archie

I have found lots and lots of patterns with consecutive numbers 1, 2, 3, 4

$$1+2+3+4=10 \text{ double the two numbers in the middle then } \times \text{ the answer by } 2$$

$$1+2+3-4=2 \text{ double the first number}$$

$$1+2-3-4=-4 \text{ always } = -4$$

$$1-2-3-4=-8 \text{ last number doubled than put a } - \text{ in front of answer}$$

$$1+2-3+4=4 \text{ it's the second number doubled}$$

$$1-2+3-4=-2 \text{ it's always } -2$$

$$1-2-3+4=0 \text{ it's always } 0$$

$$1-2+3+4=6 \text{ it's the third number doubled}$$

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Archie and Jodie

Firstly we wrote down four consecutive numbers, in our case 3, 4, 5, 6 then we found all the different combinations eg:  $3+4+5+6$ ,  $3-4-5-6$ ,  $3+4+5-6$ ,  $3+4-5-6$

After that we found out all the answers for them

Next we did the same process but with 22, 23, 24, 25 and found out all the combinations eg:  $22+23-24+25$ ,  $22-23+24+25$ ,  $22-23-24+25$ ,  $22-23+24-25$

Then we some patterns like with  $+++$  if you add the two middle numbers together then double it you get the answer.

And with  $-+-$  the answer is always  $-2$ .

And with  $--+$  the answer is always  $0$ .

And with  $+-+$  you double the second number to get the answer.

And with  $+- -$  the answer is always  $-4$ .

And with  $-++$  you double the third number to get the answer.

And with  $++-$  you double the first number to get the answer.

And with  $---$  you double the end number to get the answer.

We hope you like our solution and hope it helps you if you do this challenge

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Lily and Kyle

First we chose the numbers 18, 19, 20, 21 then to check for patterns we chose another four numbers which were 3, 4, 5, 6 then we started to see a pattern.

\*  $-,-,-$  always = double the last number

\*  $-,-,+$  always =  $0$  \*  $+,-,-$  always =  $-4$

\*  $-,+,-$  always =  $-2$  \*  $+,+,+$  always = the 2 middle numbers added together then doubled

\*  $+,+,-$  always = double the first number

\*  $+,-,+$  always = double the first number then  $+ 2$

\*  $-,+,+$  always = double the third number

Finally to confirm our results we chose the numbers 1, 2, 3, 4 and on all three the patterns were the same.

We hope you like our solution and enjoyed doing this problem as much as we did. Thank you

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Amelia and Lucy

We started with four consecutive numbers 4, 5, 6, 7 and we found out this information there is loads more but these are the ones that caught our eyes. Examples:

$++-$  is always double the first number

$+- -$  is always  $-4$

So there are our patterns. We are very determined to find more.

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Alex and Chris

I found out with consecutive numbers there is always a pattern on each sum for example  $2+3+4+5=14$  and I learnt that you need to add the second and third numbers together so  $3+4=7$  and then you double it so  $7 \times 2=14$

\* +- you always double the first number.

\* +++ you always add the second and third number and add it together and then double it.

\* +-+ you always double the second number.

\* -+- you always get minus two.

\* +-- you always get minus four.

\* --+ you always get zero.

\* -++ you always get the third number and double it.

\* --- you always double the last number.

Thank you for viewing.

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Sean

First I found out a lot of combinations with these numbers 8, 9, 10, 11

$8+9+10+11=38$ ,  $8-9-10-11=-22$ ,  $8+9-10+11=18$ ,  $8-9+10-11=-2$ ,  $8-9-10+11=0$ ,  $8+9+10-11=16$ ,  $8-9+10+11=20$ ,  $8+9-10-11=-4$

When you have minus, minus and minus at the end you times the last number by 2 then put it in negative.

There is another pattern when you have minus, plus and minus always equals -2.

Minus minus plus always equals 0.

Plus, minus, minus always equals -4.

Finally minus, plus, plus is the third number x2.

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Sam and Charlie

First we figured out all the combinations for four numbers they are 6, 7, 8, 9.

There are eight combinations, they are  $6+7+8+9=30$ ,  $6-7-8-9=-2$ ,  $6+7+8-9=12$ ,  $6-7-8+=0$ ,  $6+7-8+9=11$ ,  $6+7-8-9=-4$ ,  $6-7+8+9=16$ ,  $6-7+8-9=-2$

There are eight patterns we only found two they are:

-, -, - always is double the last number with a minus

minus minus plus the answer is always a 0.