



That's Amazing!

- You need to move from 5 to 14
- You can travel in a horizontal, vertical or diagonal movement
- Add the numbers in each box you pass through

5	32	4	29	26
13	6	18	27	3
14	15	10	38	12
22	42	9	16	2
8	19	12	40	14

- The aim is to finish with an odd total.
- There is more than one answer.

This question comes from *reSolve: Maths by Inquiry* "Odds and Evens" Lesson 1 which may be found at <https://www.resolve.edu.au/algebra-odds-and-evens>

Take a look at some of the other resources found there!

Threes and Fives

What numbers can you make by adding threes and fives together?

e.g. $3 + 3 + 3 + 3 = 12$

$$3 + 5 + 5 = 15$$

Can you make all the numbers between 10 and 20?

Are there any numbers you can't make?



Number Patterns

$$1 \times 9 + 2 =$$

$$12 \times 9 + 3 =$$

$$123 \times 9 + 4 =$$

$$1234 \times 9 + 5 =$$

$$1 \times 8 + 1 =$$

$$12 \times 8 + 2 =$$

$$123 \times 8 + 3 =$$

$$1234 \times 8 + 4 =$$

Investigate.

What Sort of Numbers?

What do you notice when you work out the answers to these expressions?



$$1^2 - 1 + 17 =$$

$$2^2 - 2 + 17 =$$

$$3^2 - 3 + 17 =$$

etc.

Consecutives

Consecutive whole numbers come one after the other, for example, 3, 4, 5 or 29, 30, 31.

Which three consecutive numbers add up to 81?

Powers Have Patterns

You can discover some interesting number patterns with calculators.

Complete the table, finding the sums of the digits in the squares of the numbers 1 - 15.

Number	Number ²	Sum of the digits	Sum of the digits (again)	Number	Number ²	Sum of the digits	Sum of the digits (again)
1	1	1		9			
2	4			10			
3	9			11			
4	16	7		12			
5	25			13			
6				14			
7	49	13	4	15			
8	64	10	1				

Write about any patterns you notice.

Consecutive Query

Some numbers can be made by adding two consecutive numbers

$$5 = 2 + 3$$

or three consecutive numbers

$$12 = 3 + 4 + 5$$

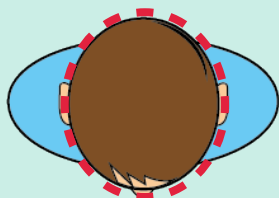
and four, five ... etc.

Are there any numbers that can not be made by adding consecutive numbers?

Investigate and look for patterns.

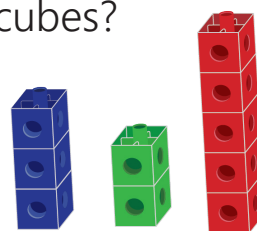
My Head Hurts!

- Measure the distance around your head.
- Multiply this distance by 3
- How close is this to your height?



Three Towers

- Use 11 cubes to make three towers of different heights. Each of your towers must use more than one cube.
- If there were no restrictions on height, how many other ways could you make three towers from your 11 cubes?



Answers

That's Amazing

One answer is 5, 32, 4, 18, 10, 38, 12, 2, 14. Total is an odd number.

Consecutives

$$26 + 27 + 28 = 81$$

Powers Have Patterns

Pattern: 1, 4, 9, 7, 7, 9, 4, 1, 9

Number	Number ²	Sum of the digits	Sum of the digits (again)
1	1	1	1
2	4	4	4
3	9	9	9
4	16	7	7
5	25	7	7
6	36	9	9
7	49	13	4
8	64	10	1

Number	Number ²	Sum of the digits	Sum of the digits (again)
9	81	9	9
10	100	1	1
11	121	4	4
12	144	9	9
13	169	16	7
14	196	16	7
15	225	9	9

Three Towers

If each tower is at least 2 high and all different, the three towers could be either 2, 3, 6 or 2, 4, 5 cubes high.

With no height restrictions, there are also these possibilities: 1, 1, 9; 1, 2, 8; 1, 3, 7; 1, 4, 6; 1, 5, 5; 2, 2, 7; 3, 3, 5; 3, 4, 4.

The Mathematical Association of Western Australia Inc.

ABN: 83 179 618 286
 Street: 12 Cobbler Place, MIRRABOOKA 6061
 Postal: P. O. Box 440, MIRRABOOKA 6941

Phone: 08 9345 0388
 Web: www.mawainc.org.au



www.facebook.com/MAWAinc



@MAWAinc



MAWAinc