

Investigating runs

456**This is a run of three.**

$$4 + 5 + 6 = 15$$

The digits total 15.**2345****This is a run of four.**

$$2 + 3 + 4 + 5 = 14$$

The digits total 14.**6****This is a run of one.**

$$6 = 6$$

The digits total 6.**1 2 4 5****This is NOT a run, because the numbers are not consecutive.**

You can use these digits:

1 2 3 4 5 6 7 8 9

And you can make runs of any length from 1 to 9.

For each run you make, find the total of the digits you've used.

- 1). What totals can you make?
- 2). What totals can you NOT make?
- 3). What totals can you make in more than one way?
- 4). Can you find any rules or patterns?
Can you make any generalisations?
Can you work systematically?