# Pyramid sums

*Children place three numbers in the bottom row of an addition pyramid and see that it is possible to end up with different numbers at the top.*

## Skills practised:

- Adding pairs of single-digit numbers using known facts and counting on
- Adding pairs of numbers up to 20 by counting on

*Conjecture: Moving the same three numbers around in the bottom row of an addition pyramid changes the number at the top.*

## What to do:

*Children work individually or in pairs*
*Children will need sheet of pyramids to record their working (see resource attached to child sheet).*

1.  Ask children to write the numbers 4, 5 and 6 in the bottom row of the pyramid, in that order.

```
        ┌───┐
        │   │
    ┌───┼───┼───┐
    │   │   │   │
┌───┼───┼───┼───┤
│ 4 │ 5 │ 6 │
└───┴───┴───┘
```
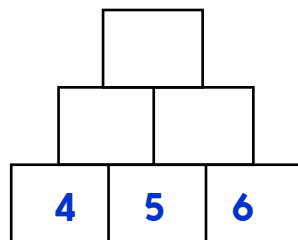
2.  Explain that they need to add 4 and 5, and write the answer in the square above.
    Then they add 5 and 6 and write the answer in the square above.
3.  Next they add these two answers to give the number at the top of the pyramid
    (i.e. 9 and 11 to give 20).
4.  Ask children to put the numbers 4, 5 and 6 in the bottom row of a new pyramid BUT this time in a different order. They add the numbers in the same way and find out if they get a different number at the top.
5.  Repeat to find different top numbers using 4, 5 and 6 in different orders in the bottom row.

How many different top numbers can they find?
What is the biggest top number that they can find? What number needs to be in the middle of the bottom row to make this happen? Why?
What is the smallest top number that they can find? What number needs to be in the middle of the bottom row to make this happen? Why?

**CHALLENGE**: Children could add an extra row to their pyramid and use numbers 1, 2, 3 and 4 in that bottom row.
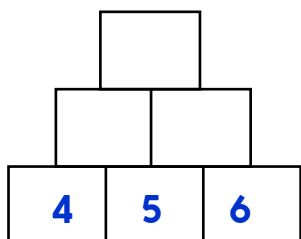
## Aims:

–  To investigate if different possible answers can be found
–  To realise the effect of placing numbers in different places

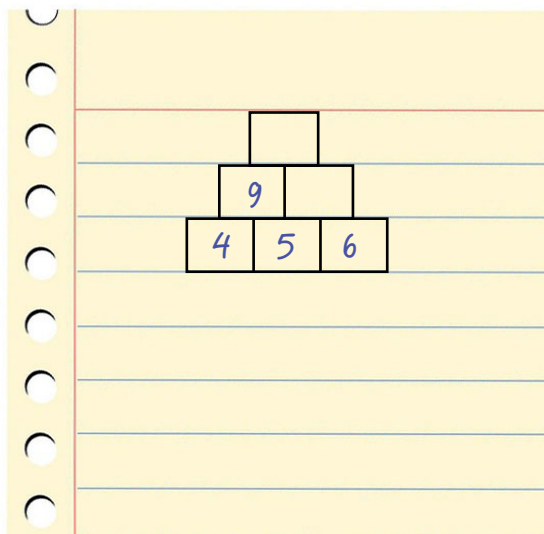## Minimum number of calculations expected

12

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1. Write the numbers 4, 5 and 6 in the bottom row of the pyramid, in that order.

2. Add 4 and 5, and write the answer in the square above. Then add 5 and 6 and write the answer in the square above.

3. Next add these two answers to give the number at the top of the pyramid.

4. Put the numbers 4, 5 and 6 in the bottom row of a new pyramid BUT this time in a different order. Add the numbers in the same way and find out if you get a different number at the top.

5. Repeat to find different top numbers using, 4, 5 and 6 in different orders in the bottom row.

   How many different top numbers can you find?
   What is the biggest top number that you can find? What number needs to be in the middle of the bottom row to make this happen? Why?
   What is the smallest top number that you can find? What number needs to be in the middle of the bottom row to make this happen? Why?

### Challenge

Add an extra row to your pyramid and use numbers 1, 2, 3 and 4 in that bottom row.

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