## Mobile differences

Children use trial and improvement to find the largest and smallest possible differences using numbers selected to given criteria.

## Skills practised:

- Subtracting 5-digit numbers to find a difference
- Choosing an appropriate method to find a difference

**Conjecture**: We can find a difference between two five-digit numbers selected using given criteria of less than 2000.

## What to do:

Children work individually or in pairs.

1	2	3
4	5	6
7	8	9
	0	

- 1. Use the mobile phone digit display.
- 2. Create two five-digit numbers using these two rules:
  - Rule 1. The digits you choose must touch along a side. So you can choose 65214 because each digit touches the next one along a side.
  - Rule 2. You may not use any digit other than 5 more than once. So if 98547 is your first number, then 65214 cannot be your second number as 4 is used twice. (NB. 5 may be used twice, even within the same number, e.g. 52145.)
- 3. Find the difference between your two numbers.
- 4. Repeat this, choosing two different numbers.
- 5. Find the largest possible difference that you can make, using two five-digit numbers generated according to the above rules.

Can you demonstrate that this is the largest possible difference?

6. Find the smallest possible difference. (This is much harder!)

CHALLENGE: Demonstrate that your smallest difference is indeed the smallest.

7. Find the difference nearest to 44,444.

Minimum number of	
calculations expected	
10 - 12	
	calculations expected

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6.	Find t	ne smalle	st possik	ole diff	erenc	e. (This	is muct	n harde	er!)				
	Chall	enge	24										
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7.	Find t	ne differ	ence neo	arest t	o 44,4	44.							
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