New neighbours

Children use digit cards to make two-digit numbers between neighbouring multiples of 10.

Skills practised:

- Using place value in two-digit numbers
- Ordering two-digit numbers

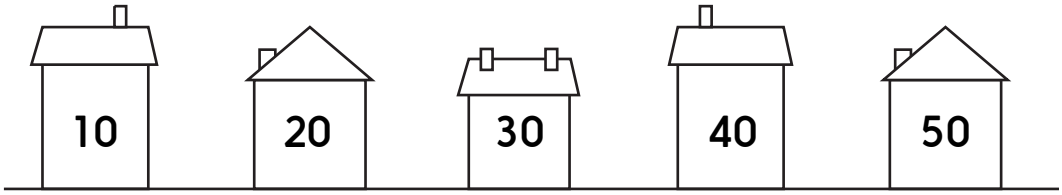
***Conjecture**: It is possible to use the digits 1 to 9 to create two-digit numbers so that there is one number between each pair of neighbouring multiples of 10 from 10 to 50 (or 10 to 100).*

What to do:

Children work individually or in pairs.
Year 1 children need a set of 1 to 9 digit cards and a large strip of paper with the numbers 10, 20, 30, 40 and 50 with spaces between for a pair of digit cards.
Year 2 children need two sets of 1 to 9 digit cards and a large strip of paper with the numbers 10, 20, 30... 100 with spaces between for a pair of digit cards.
You will need streets of numbers to show when explaining the investigations (see resources with child sheets).

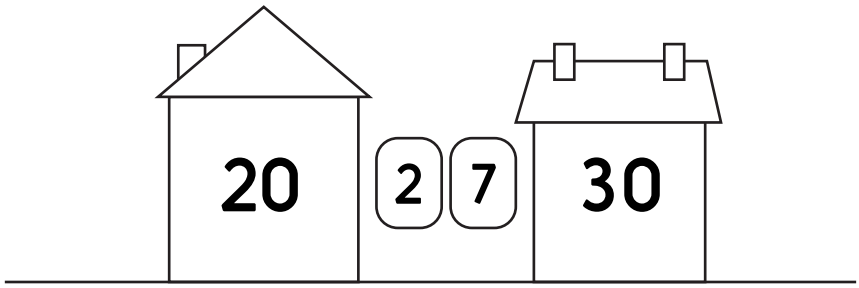
Year 1

1. Show the 'street' of numbers 10, 20, 30, 40 and 50 living in houses.



2. *Some new numbers are moving into the street! There is going to be a new number between every pair of numbers already living on the street, e.g. a number between 10 and 20, a number between 20 and 30 and on on.*

3. Ask children to use the digit cards to create the new numbers. They can only use a digit card once. For example, they could use two cards to create the number 27 and this could go between 20 and 30.



4. Can they use the digit cards to create four numbers so that every house has a new neighbour? There should be one new number between every pair of neighbouring houses.

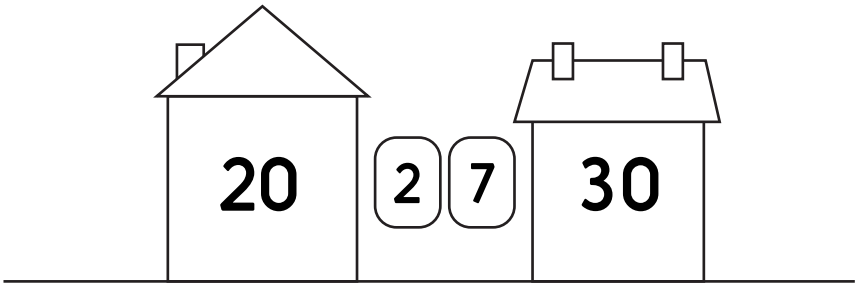
HINT: Let children play around with this first, but if they are stuck ask them to think which digit in the new two-digit numbers is the most important when working out where they will live on the street. For example, if they make the number 23 to go between 20 and 30, then they won't be able to make a number between 30 and 40.

CHALLENGE: Can children create a 10 to 100 street, and use two sets of 1-9 digit cards to make a new number between every neighbouring pair of multiples of 10?

Year 2

1. Show the 'street' of numbers 10, 20, 30... and 100 living in houses.

2. *Some new numbers are moving into the street! There is going to be a new number between every pair of numbers already living on the street, e.g. a number between 10 and 20, a number between 20 and 30 and on.*
3. Ask children to use the 1 to 9 digit cards to create the new numbers. For example, they could use two cards to create the number 27 and this could go between 20 and 30.



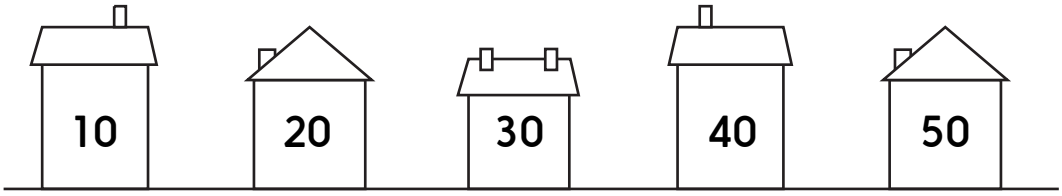
4. Can they use the digit cards to create nine numbers so that every house has a new neighbour? There should be one new number between every pair of neighbouring houses.

HINT: Let children play around with this first, but if they are stuck ask them to think which digit in the new 2-digit numbers is the most important when working out where they will live on the street. For example, if they make the number 25 to go between 20 and 30, and 35 to go between 30 and 40, then they won't be able to make a number between 50 and 60.

CHALLENGE: Can children create nine numbers with five that round UP to the nearest 10 and four that round DOWN? Can they make the first new neighbour round up, the next round down, the next round up, the next round down, and so on?

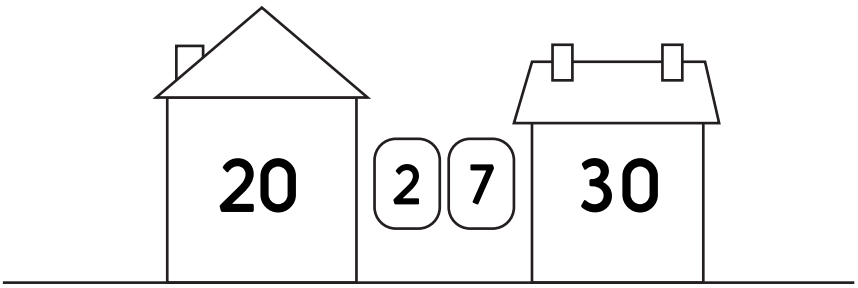
Aim:	**Minimum number of calculations expected**
– To use trial and improvement	N/A

New neighbours



1. Some new numbers are moving into the street!
There is going to be a new number between every pair of numbers already living on the street.

2. Use the digit cards to make the new numbers.
You can only use a digit card once. For example, you could use two cards to create the number 27 and this could go between 20 and 30.

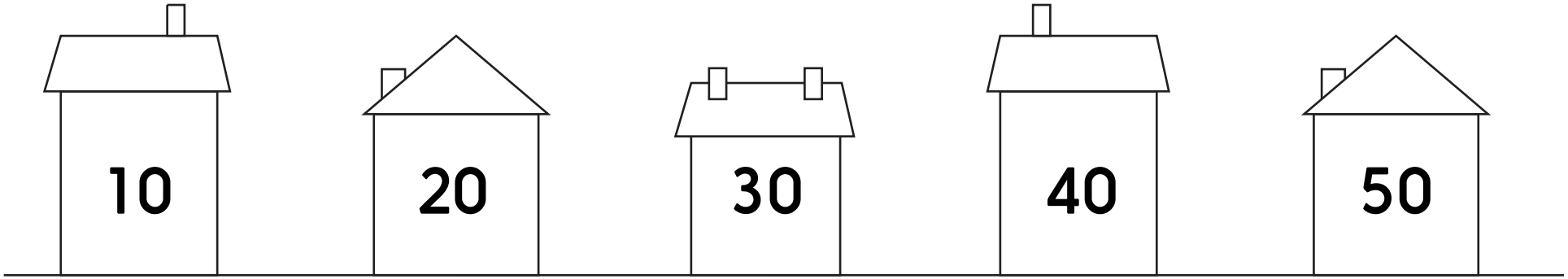


3. Can you use the digit cards to create four numbers so that every house has a new neighbour?
There should be one new number between every pair of neighbouring houses.

Challenge

Can you make a 10 to 100 street? Use two sets of 1-9 digit cards to make a new number between every neighbouring pair of multiples of 10.

New neighbours



New neighbours

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2. Use the digit cards to make the new numbers.
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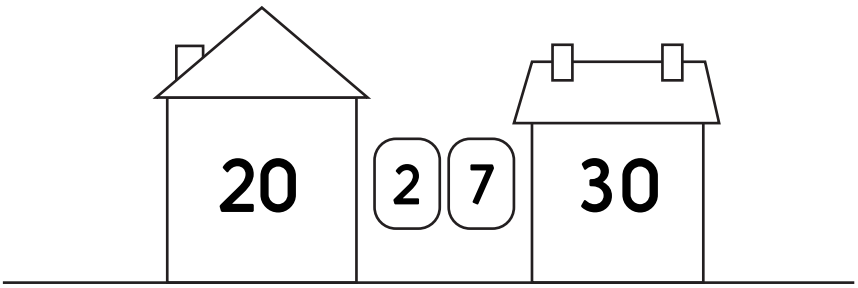

3. Can you use the digit cards to create nine numbers so that every house has a new neighbour?
   There should be one new number between every pair of neighbouring houses.

Challenge

Can you create nine numbers with five that round UP to the nearest 10 and four that round DOWN? Can you make the first new neighbour round up, the next round down, the next round up, the next round down, and so on?

New neighbours