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### Introduction and discussion

**Teacher (T):** Who knows their postcode? *(Ps give examples)*

**Teacher (T):** Do any of you have identical postcodes?  
**Teacher (T):** (If answer to previous question was 'No'): Is it possible for 2 households to have the same postcode?

**Teacher (T):** All postcodes in the UK have a similar format, with areas, district, sectors and units. You can see an illustration on the slide.

**Teacher (T):** Why have postcodes been designed like this? They could be just a series of numbers or letters. *(Easy to remember)*

**Teacher (T):** And why are they each made up of four categories? *(So that there are sufficient codes available for each group of about 10-20 households)*

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### Number of possible codes

**Teacher (T):** Let's see if there are enough codes for groups of 10-20 households. How shall we start?

**Teacher (T):** How many areas are possible with this design? *(26 × 26 = 676)*

**Teacher (T):** Why do you say that? *(26 possible letters for the first letter and 26 for the second one)*

**Teacher (T):** What if we do not allow repetition of letters? *(There will be 26 fewer)*

**Teacher (T):** So how many will there be? *(650)*

**Teacher (T):** Is there another way of getting this answer? *(26 × 25)*

**Teacher (T):** Explain why it works. *(26 choices for first letter, but then only 25 choices for second letter)*

**Teacher (T):** Actually, in practice, some repetitions are allowed. Now we can go on to the next question: how many districts, sections and units can there be?

**Teacher (T):** Who can give the answers? *(99 districts, 10 sectors, 650 units)*

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### Notes

**Interactive discussion on why we need postcodes; how they are used and suggestions for how they are designed.**

This is a good discussion question; if 'No', T asks Ps if it is possible, if 'Yes', T asks Ps to explain why.

**T shows OS 7.1 on OHP or gives a copy to each P.**

Some Ps might not agree that this is an easy format to remember. (T could suggest a simple experiment to test whether a combination of letters and numbers is easier to remember than just letters or just numbers.)

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**T gives Ps time to think of the overall strategy. If possible, T takes up the suggested methods.**

If Ps are struggling with this, it might be helpful to consider a single problem or even to begin by writing them all out:

- AA BA ... ZA
- AB BB ... ZB
- AC BC ... ZC
- ... ... ... ...
- AZ BZ ... ZZ

Some Ps might need a simpler approach to this.

Volunteer Ps give answers verbally.

**T must ensure that Ps have understood the strategy before they calculate the answers.**
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| T: So how many possible units are there in total? How can we calculate this? T (writes on board, as directed by P(s)): 
\[650 \times 99 \times 10 \times 650 \approx 418 \text{ million}\] | | Review answers interactively; agree/disagree; T should sort out any problems/misunderstandings. |
| 30 mins | | |
| **Allocating codes** | | Interactive discussion to see if the results are feasible; Ps work in pairs on the calculations. |
| T: The Post Office actually uses about 120 areas, 2900 districts, 9000 sectors and 2 million units. T: Does this figure for the number of areas sound realistic compared with the possible number that are available? (Yes – 650 areas are available) T: What about districts, sectors and units? T: Now answer the questions in Exercise 2 in your Text. T: Who can give us answers to parts (a), (b) and (c)? (a) \[\frac{2900}{120} = 24 \text{ districts per area (up to 99 available)}\] (b) \[\frac{9000}{2900} = 3.1 \text{ sectors per district (up to 9 available)}\] (c) \[\frac{2 \times 10^6}{9000} = 222 \text{ units per sector (up to 650 available)}\] T: And for part (d)? (About 12) Who would like to write their calculation on the board? P (on board): \[
\frac{\text{no. of units}}{\text{no. of households}} = \frac{24 \times 10^6}{2 \times 10^6} = \frac{24}{2} = 12 \text{ households/unit}
\] T: Well done. Does everyone else agree with this? T: Why did the Post Office choose this number of households per unit? T: If you had to devise a replacement system, what design would you use? | |
| **Homework** | | Other Ps agree/disagree and T sorts out any misunderstandings. Whole class discussion on technology, noting that this system was introduced in 1966. |
| Either Activity 2 or complete the question about a replacement system of postcodes, set at the end of the lesson. | | |