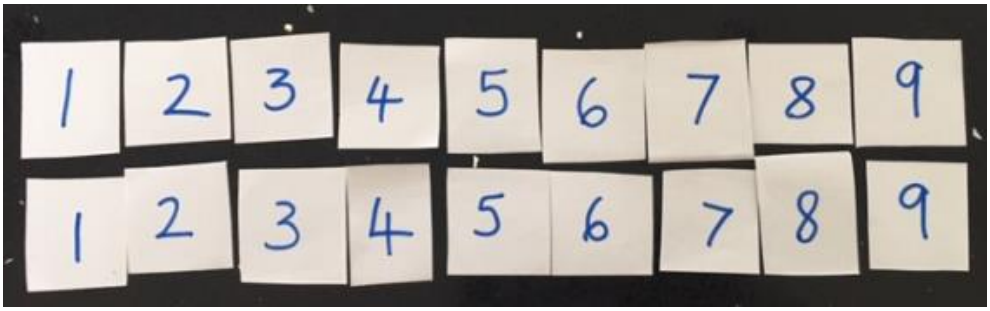
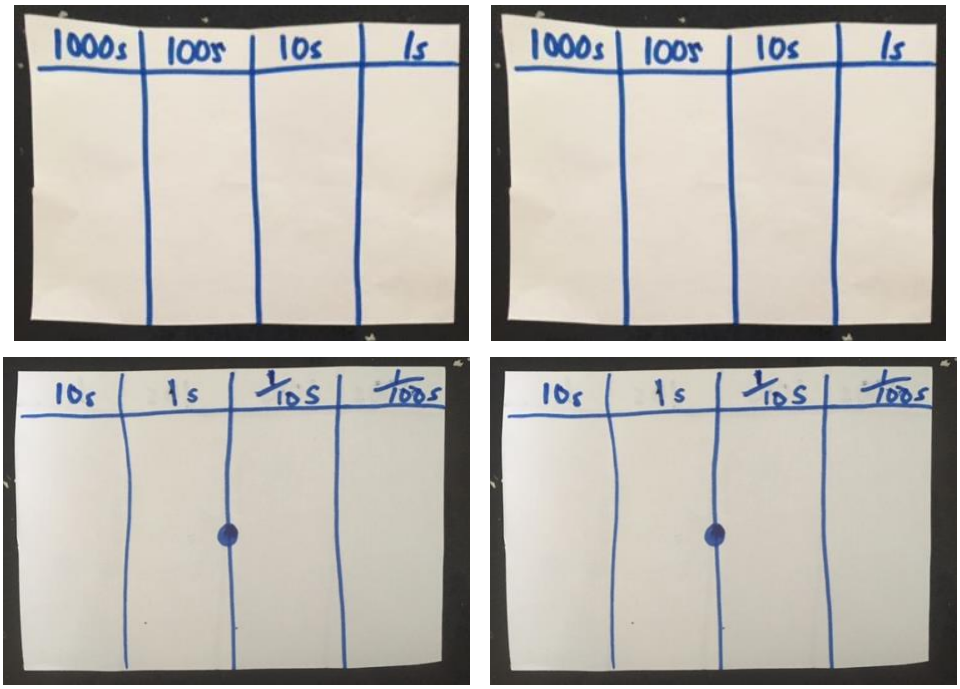
Nice and Nasty Week – Place Value Y5/6

You will need:


- Someone to play the games with each day; this could be a toy person (such as Dr Watson, a Momiji doll or a Lego worker) or an imaginary character (such as Harry Potter). Choose someone you know won't cheat!
- A piece of paper cut into eighteen pieces to make two sets of numbers from 1 to 9 (or use playing cards ace to nine from two suits).



- Two pieces of A4 paper each cut in half and made into two place value game boards: whole numbers and decimals (see below).



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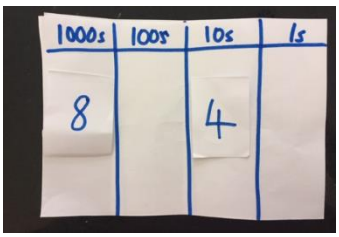
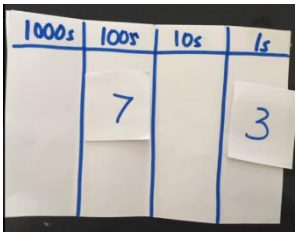
Day 1

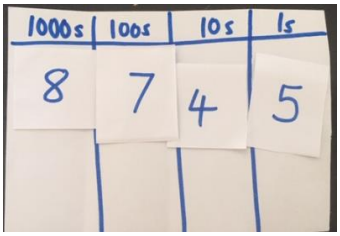
Aim of the game: To make the **largest** four-digit number

- Each player needs a set of digit cards 1 to 9 and a place value game board.
- Each player shuffles their set of cards and places them face down in a pile in front of them. Players take it in turns to turn over their top card and decide where to place it on their game board (if you are playing against a character you must play for them as well). For example:
    - Stefanie turns over a four and puts it her tens column.
    - David then turns over a seven and puts it in his hundreds column.
    - Stefanie turns over an eight and puts it in her thousands column.
    - David turns over a three and puts it in his ones column.

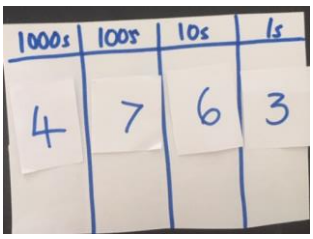




- Continue to take turns until there are four cards on each game board, making four-digit numbers. The player with the largest number wins 10 points.



Stefanie



David

    - For example, 8745 is bigger than 4763 so Stefanie wins 10 points.
- Play again and again until someone reaches 50 points; they are the overall winner.
- How are you deciding where to put each number?
- Where's the best place to put a 5?
- What's the largest number you can make? Explain why.
- Would it make a difference if you were to write the number in the column and put the card back into the pack each time and re-shuffle? Explain why.
- Repeat the game using the decimal boards. What's the largest number you could make now?

Notes for adults working with groups of children

- Children may need support to read the numbers aloud. For example, 45.67 is 'Forty-five point six seven' **NOT** 'Forty-five point sixty-seven'.

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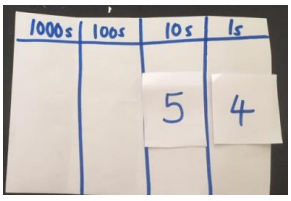
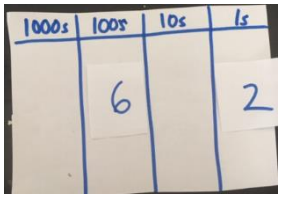
Day 2

- Today you are going to play the nasty version of the game you played yesterday.
- Take it in turns in the same way but this time when you turn over a card you can choose to put it on your opponent's board. For example
    - Stefanie and David have turned over two cards each so far. Stefanie has placed her cards so her number is currently 54. David's number so far is 602.

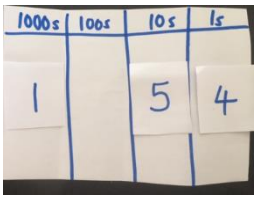


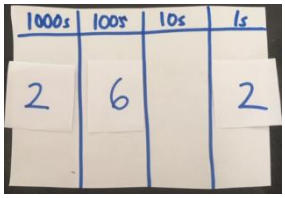
Stefanie



David

    - On Stefanie's third go she turns over a 2 and chooses to put it on David's board so he has two thousand, six hundred and two.
    - It's David's turn, what numbers would he like to turn over? Explain why.
    - David turns over a 1 and places it on Stefanie's board so she has 1054.
    - They continue playing until their boards are full but they didn't need to in order to know who would win. Explain why.





- You score 10 points for a win. The first player to get to 50 points is the overall winner.
- Repeat the game using the decimal boards

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Day 3

- Today choose whether you want to play the nice or nasty version of the game; this time the aim is to make the **smallest** number.
- How are you deciding where to put each number?
- Where's the best place to put a 5?
- What's the smallest number you can make? Explain why.
- Do you need to have completed all four columns on the game boards to know who has won? Is this always the case? Explain what you notice.
- Repeat the game using the decimal boards.

Notes for adults working with groups of children

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Day 4

- Today choose whether you want to play the nice or nasty version of the game; this time the aim is to be the **closest to the target number 5000**. For example:
    - Stefanie makes the number 3751 and David makes 6512.
    - Stefanie wins because she is 1249 away from 5000 and David is 1512 away from 5000.
    - Stefanie is the closest to 500.
- How are you deciding where to put each number?
- What's the closest you can get to 5000? Explain why.
- Repeat the game using the decimal boards with a target of 50.

Notes for adults working with groups of children

- Children may need support to read the numbers aloud. For example, 45.67 is 'Forty-five point six seven' **NOT** 'Forty-five point sixty-seven'.
- Children might need support with working out the difference between their number and the target number 5000. They might also assume that numbers under 5000 aren't as close as numbers over 5000. A 0 to 10000 number line marked in one thousands might be a useful image to support visualising the relative distances between the numbers and 5000.

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Day 5

- Today you can choose to play a nice or nasty game and can choose the aim of the game This could be making:
    - the biggest number
    - the smallest number
    - the target number 5000/50
    - a target number of your choice
- Is there a winning strategy for each of these games?
- Try playing variations such as:
    - Add a zero card to your cards.
    - Put both sets of 1 to 9 cards together to make one pile for both players to use
    - A variation of your choice
- How does varying the game change the largest and smallest numbers you can make?
- How does varying the game change your strategy?

Notes for adults working with groups of children

- Children may need support to read the numbers aloud. For example, 45.67 is 'Forty-five point six seven' **NOT** 'Forty-five point sixty-seven'.
- Children might need support with working out the difference between their number and the target number 5000. They might also assume that numbers under 5000 aren't as close as numbers over 5000. A 0 to 10000 number line marked in one thousands might be a useful image to support visualising the relative distances between the numbers and 5000.
- Encourage the children to think of their own variations of the game and try these out, reflecting on how the thinking is different when the rules or the aim change.

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