

Dicey decisions

Activity 1

Focus of activity: Understanding place value in 4-digit and 5-digit numbers; Comparing 4-digit numbers and 5-digit numbers.

Working together: conceptual understanding

- Show the place value chart (see child instructions). Make the 4-digit number 6432, by ringing one number in each of the last four columns in the place value chart but don't tell children the whole number. *Now put the number together and write the number onto your whiteboards.*
- Repeat but this time only ring a number in each of three columns to make a 4-digit number, e.g. 5034. Ask children to write the whole number. Point out how we write 0 in the 100s place to show that there are no 100s.
- Make the 5-digit number 23,432, by ringing one number in each column in the place value chart but don't tell children the whole number. *How many digits are in the number this time? Put the parts together and write the number onto your whiteboards.*
- Say that large numbers can be difficult to read so we use a comma to help. Write 23,432 with the comma. Explain that the digits before the comma tell us how many 1000s there are, and the digits after the comma tell us the numbers of 100s, 10s and 1s. *The comma helps us to read the number; the digits before the comma tell us how many 1000s, so we can say the word thousand when we get to the comma.* Say the number: *twenty-three thousand, four hundred and thirty-two.*
- Repeat for 32,678, ringing one number in each column. Children write the whole number. *Where should you write the comma?*
- Write 23,432 and 32,678. *Which is the bigger number? How do you know? Which digit is most important when comparing pairs of 5-digit numbers?* Record $32,678 > 23,432$. *32,678 is greater than 23,432.* Remind children that the wider side of the greater sign is next to the bigger number. Record $23,432 < 32,678$. *23,432 is less than 32,678.* Remind children that the wider side of the less than sign is next to the bigger number.
- Ask children to write a 5-digit number bigger than 32,678 and a 5-digit number smaller than 23,432.
- Ring a number in each of four columns to make 60,521. Ask children to write the whole number. Point out how we write 0 in the 1000s place to show that there are no 1000s.
- Repeat for 75,032, 84,005 and 70,403.
- Repeat for 55,555. *The value of a digit depends on its place in a number.*

Up for a challenge?

Write 54,238, 58,347 and 54,199. Ask children to write the three numbers in order. Explain that if the first digit is the same, they need to look at the next digit and if the next digit is the same, look at the digit after that.

Now it's the children's turn:

- Children take it in turns to roll a 0 to 9 dice and write the number anywhere they like in their 4-digit number. They repeat until all digit boxes are filled. The winner is the player with the larger number. They compare and record the two numbers using $>$ and $<$ signs. They play the game first with 4-digit numbers, then with 5-digit numbers.
- Go round the group and mark their comparisons as they write them, e.g. initially after three examples. Make sure they know which way to write greater than and less than signs.

S-t-r-e-t-c-h:

If children cope well, ask them to write three numbers between 50,000 and 60,000 and to write them in order from least to greatest.

Things to remember

Remember that the first digit is the most important when comparing a pair of numbers. Ask a child to read one of the 5-digit numbers they made. The rest of the group all write it down. Did they all write it correctly, including where to place the comma? Ask them all to write a number bigger than this number.

You may want to add something that has emerged from the activity. This may refer to misconceptions or mistakes made.

Resources	Outcomes
<ul style="list-style-type: none">• Mini-whiteboards and pens• Place value chart (see child instructions)• 0 to 9 digit cards	<ol style="list-style-type: none">1. Children know the value of each digit in 4-digit and 5-digit numbers.2. Children can compare 4-digit numbers and 5-digit numbers.3. Children begin to order 5-digit numbers including those where the first digit is the same.

Dicey decisions

Activity 1

Play in pairs

Things you will need:

- A 0 to 9 dice
- A pencil



What to do:

- Decide who is the red player and who is the blue player.
- The blue player rolls the dice and writes the digit anywhere they like in their number. BUT 0 cannot be the first digit in the number.
- The red player rolls the dice and writes the digit anywhere they like in their number. BUT 0 cannot be the first digit in the number.
- Carry on playing until all the digit boxes have been filled.

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- Who wrote the bigger number? That person wins this round.
- Write $>$ or $<$ between the numbers.
- Play again.

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- Now play the same game with pairs of 5-digit numbers.

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- Who won most rounds?

S-t-r-e-t-c-h:

Write three numbers between 50,000 and 60,000. Write them in order from least to greatest.

Learning outcomes:

- I know the value of each digit in 4-digit and 5-digit numbers.
- I can compare 4-digit numbers and 5-digit numbers.
- I am beginning to order 5-digit numbers including those where the first digit is the same.

Dicey decisions

Activity 1

1 0 0 0 0

1 0 0 0

1 0 0

1 0

1

2 0 0 0 0

2 0 0 0

2 0 0

2 0

2

3 0 0 0 0

3 0 0 0

3 0 0

3 0

3

4 0 0 0 0

4 0 0 0

4 0 0

4 0

4

5 0 0 0 0

5 0 0 0

5 0 0

5 0

5

6 0 0 0 0

6 0 0 0

6 0 0

6 0

6

7 0 0 0 0

7 0 0 0

7 0 0

7 0

7

8 0 0 0 0

8 0 0 0

8 0 0

8 0

8

9 0 0 0 0

9 0 0 0

9 0 0

9 0

9

Zoom zoom

Activity 2

Focus of activity: Rounding 5-digit numbers to the nearest 100, 1000 and 10,000.

Working together: conceptual understanding

- Give each child a set of landmarked lines (see child instructions).
- Ask children to mark 52,835 in approximately the correct place on the first line. They then compare where they have positioned the number with their neighbours. Through discussion draw out that the number is closer to 50,000 than 60,000. *When we round 52,835 to the nearest 10,000, it rounds to 50,000.*
- Explain that we now zoom in on the section of the number line between 50,000 and 60,000. Ask children to place 52,835 on the next line, and then to ring the nearest multiple of 1000. *When we round 52,835 to the nearest 1000, it rounds to 53,000.*
- Say that we now zoom in again to the section of the line between 52,000 and 53,000. Once again ask children to place 52,835 on the line. Ask them to ring the nearest multiple of 100. *When we round 52,835 to the nearest 100, it rounds to 52,800.*
- Repeat with 28,425 on the next set of three lines, rounding to the nearest 10,000, 1000, then 100

Up for a challenge?

Write 67,279. *Which multiples of 10,000 lie on either side of this number?* Ask children to sketch a line from 60,000 to 70,000, place 67,279 on it and ring the nearest multiple of 10,000.

Which multiples of 1000 lie on either side of 67,279? Children sketch a line from 67,000 to 68,000, place 67,279 on it and ring the nearest multiple of 1000.

Which multiples of 100 lie on either side of 67,279? Children sketch a line from 67,200 to 67,3000, place 67,279 on it and ring the nearest multiple of 100.

Now it's the children's turn:

- Children place 5-digit numbers on line segments and round to the nearest 10,000, 1000 and 100.
- Go round the group and mark their rounding, e.g. initially after one set of three lines. Do children have a rough idea of where numbers belong on each line?

S-t-r-e-t-c-h:

If children cope well, ask them to round 30,921 to the nearest multiple of 10,000, 1000 and 100.

Things to remember

Sometimes we don't need an exact number and so rounding can be useful. Say that often we don't need to know an exact large number, but just have a rough idea. Sometimes we don't need to calculate with exact big numbers, but can round and then calculate, e.g. if there are 58,346 people in one town and 21,356 in a neighbouring town, it might be good enough to round both numbers to 60,000 and 20,000, and then add to find the approximate total of both towns. This is very quick, and the approximate answer might be enough to help decide what services are needed such as bus service, size of schools, doctor's surgery, etc.

You may want to add something that has emerged from the activity. This may refer to misconceptions or mistakes made.

Resources	Outcomes
<ul style="list-style-type: none">Landmarked lines, preferably printed on A3 paper (see child instructions)	<ol style="list-style-type: none">Children can round 5-digit numbers to the nearest 100, 1000 and 10,000 by placing them on a landmarked line to help.Children are beginning to round 5-digit numbers to the nearest 100, 1000 and 10,000 without the help of a landmarked line.

Zoom, zoom

Activity 2

