



- 1) Answers may vary. For example:
They have used the same number of counters.
Elena has made a number which is 10 times greater than Felix's number.

- f) 200
g) 10
h) 40
3)
a) 53
b) 5300
c) 53 000
d) 530 000

- 2)
a) 10
b) 100
c) 30
d) 300
e) 20



- 1)
a) It is false. 2570 is 10 times the size of 257.
b) It is true.
c) It is true.
d) It is false. 670 is one-thousandth the size of 670 000.

- 3) The statement is sometimes true. For example: 34 would be 340 000 but 705 would be 7 050 000 which has five zeros altogether.

- 2) Bartek is correct. Jia is incorrect because each number is one-tenth the value of the previous number.



- 1)
a) Many possible answers, for example: 3 and 30, 30 and 300, 300 and 3000, 3000 and 30 000, 30 000 and 300 000, 111 and 1110, 1110 and 11 100, 11 100 and 111 000, 21 and 210, 210 and 2100

- 3)
a) Amrit – 38 000
Abi – 380
Priya – 380 000
Emily – 380
Joseph – 3 800 000
b) Answers will vary.

- b) Various possibilities, for example: 42 and 4200 5100 and 510 000
2) Count backwards 9 steps of 100 000 to 37 840, 3 steps of 10 000 to 7840, 7 steps of 1000 to 840, 8 steps of 100 to 40, 4 steps of 10 to 0.

Accept answers in any order.

Powers of 10



1) Felix and Elena have made numbers on a place value chart.

| Thousands | | | Ones | | |
|-----------|---|---|----------|----------------|---|
| H | T | O | H | T | O |
| | | | ●● ●● | ●● ●● ●● | ● |

| Thousands | | | Ones | | |
|-----------|---|----------|----------------|---|---|
| H | T | O | H | T | O |
| | | ●● ●● | ●● ●● ●● | ● | |

What is the same and what is different about the numbers they have made?

2) Complete the sentences.

- a) There are _____ ones in 10.
- b) There are _____ ones in 100.
- c) There are _____ tens in 300.
- d) There are _____ tens in 3000.
- e) There are _____ hundreds in 2000.
- f) There are _____ hundreds in 20 000.
- g) There are _____ thousands in 10 000.
- h) There are _____ ten thousands in 400 000.

3) The number shown on the Gattegno chart is 530.

| | | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 100 000 | 200 000 | 300 000 | 400 000 | 500 000 | 600 000 | 700 000 | 800 000 | 900 000 |
| 10 000 | 20 000 | 30 000 | 40 000 | 50 000 | 60 000 | 70 000 | 80 000 | 90 000 |
| 1000 | 2000 | 3000 | 4000 | 5000 | 6000 | 7000 | 8000 | 9000 |
| 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 |
| 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

a) What number is one-tenth of the size?

b) What number is 10 times the size?

c) What number is 100 times the size?

d) What number is 1000 times the size?

Powers of 10



1) Decide if each of the statements are true or false. Explain your reasoning.

a) 2570 is 100 times the size of 257.

b) 3840 is one-tenth the size of 38 400.

c) 955 000 is 1000 times the size of 55.

d) 670 is one-hundredth the size of 670 000.

2) Bartek and Jia are discussing this number sequence. Who is correct? How do you know?

5 400 000, 540 000, 54 000, 5400, 540, 54

Bartek



The numbers are one-tenth the size each time.

Jia



Each number is one-hundredth the size of the previous number.

3) Is Drew's statement always, sometimes or never true? Prove it.

Drew



If I make a number 10 000 times the size, only the last four digits of the number will be a zero.

Powers of 10



- 1) Elias uses 6 counters to represent the numbers 210 000 and 30 000 on a place value chart.

| Thousands | | | Ones | | |
|-----------|-------|---|------|---|---|
| H | T | O | H | T | O |
| ● ● | ● | | | | |
| | ● ● ● | | | | |

- a) Use six counters to make two new numbers where one is one-tenth of the size of the other. Can you find ten possibilities?

- b) Use six counters to make two new numbers where one is 100 times the size of the other. How many possibilities can you find?

- 2) Starting with the number 937 840, how can you count backwards using different powers of 10 to reach 0?

- 3) a) Amrit is thinking of a number. Use the clues to identify the number Amrit and each of her classmates have.

Amrit



10 times my number is 380 000.

Priya



My number is 1000 times the size of Abi's.

Emily



My number is one-thousandth the size of Priya's number.

Abi



My number is one-hundredth the size of Amrit's.

Joseph



My number is 10 000 times the size of Emily's.

- b) Choose a number and write clues using powers of 10 to help identify what your number is.

10



Powers of 10

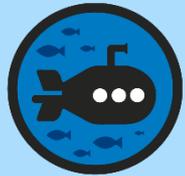


Diving into Mastery Guidance for Educators

Each activity sheet is split into three sections, diving, deeper and deepest, which are represented by the following icons:



Diving



Deeper



Deepest

These carefully designed activities take your children through a learning journey, initially ensuring they are fluent with the key concept being taught; then applying this to a range of reasoning and problem-solving activities.

These sheets might not necessarily be used in a linear way. Some children might begin at the 'Deeper' section and in fact, others may 'dive straight in' to the 'Deepest' section if they have already mastered the skill and are applying this to show their depth of understanding.

National Curriculum Aim

- Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000

10





Zeke and Priya have made these numbers on a place value chart. What is the same and what is different about the numbers they have made?

| Thousands | | | Ones | | |
|-----------|---|---|----------|------------------|----------|
| H | T | O | H | T | O |
| | | | ●●● ● | ●●●● ●●● ● | ●●● ● |

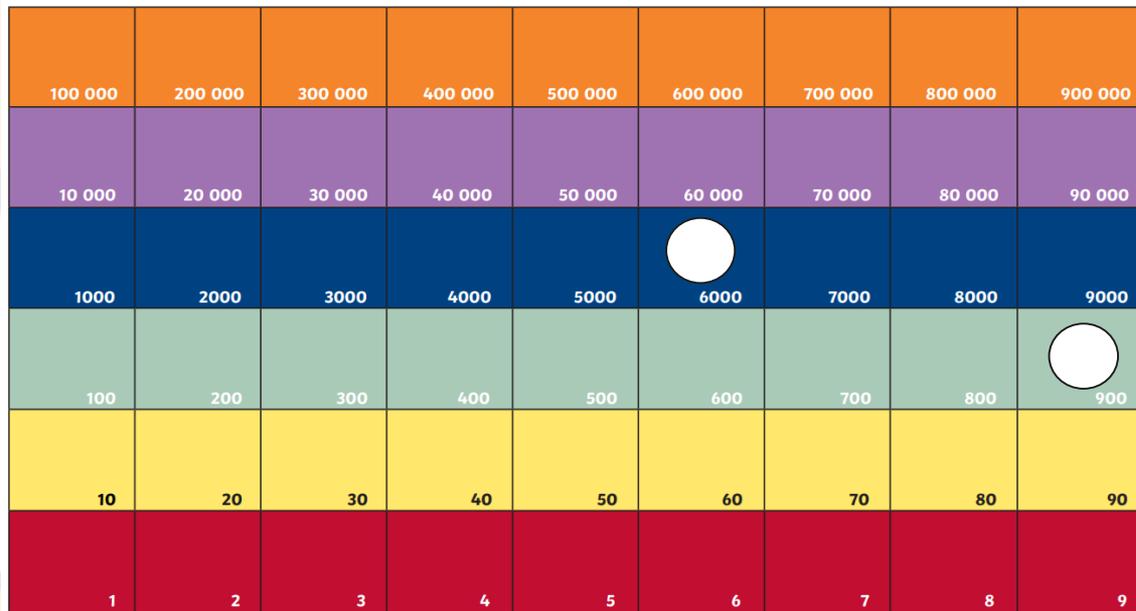
Zeke

| Thousands | | | Ones | | |
|-----------|---|----------|------------------|----------|---|
| H | T | O | H | T | O |
| | | ●●● ● | ●●●● ●●● ● | ●●● ● | |

Priya



The number shown on the Gattegno chart is 6900.



What number is one-tenth of the size?

What number is 10 times the size?

What number is 100 times the size?

What number is one-hundredth of the size?



Decide which of these statements are true and which are false.
Explain your reasoning.

2300 is 100 times the size of 23.

384 is one-tenth the size of 38 400.

923 000 is 1000 times the size of 923.

5 870 000 is 1000 times the size of 587.



Drew and Emily are discussing this number sequence.
Who is correct? How do you know?

6 300 000, 630 000, 63 000, 6300, 630, 63

Drew



The numbers are
one-hundredth the
size each time.

Emily



Each number is
one-tenth the size of
the previous number.



Elias uses eight counters to represent the numbers 211 000 and 1300 on a place value chart.

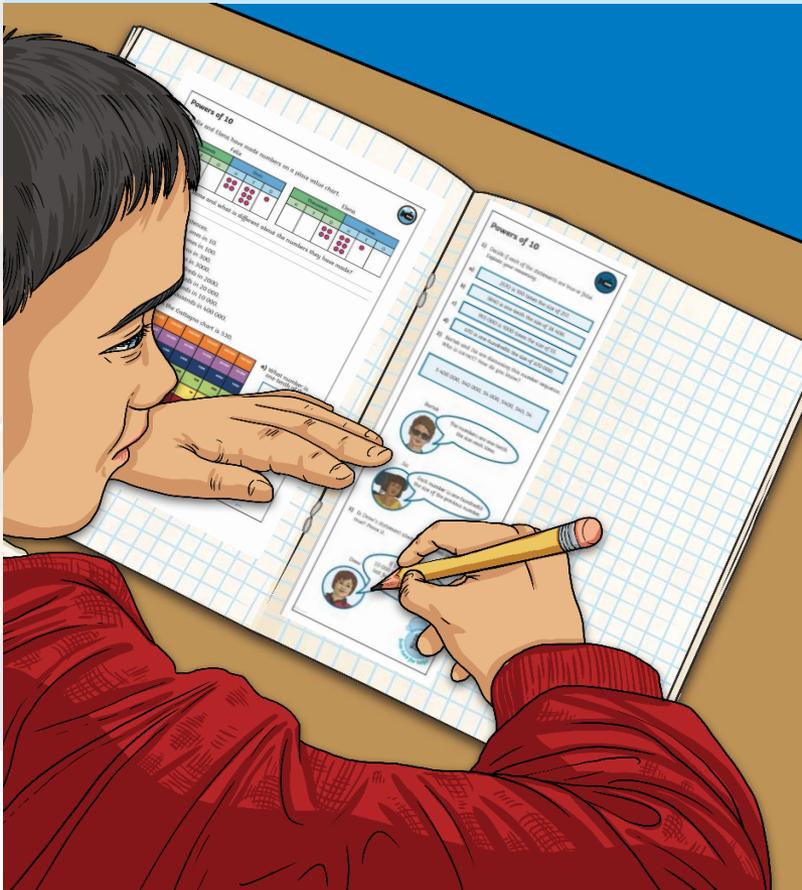
| Thousands | | | Ones | | |
|-----------|---|---|-------|---|---|
| H | T | O | H | T | O |
| ● ● | ● | ● | | | |
| | | ● | ● ● ● | | |

Use the eight counters to make two new numbers where one is one-tenth of the size of the other. Can you find five possibilities?

Powers of 10



Dive in by completing your own activity!



Powers of 10

1) Felix and Elena have made numbers on a place value chart.

| Felix | | | | Elena | | | | |
|-----------|---|---|------|-----------|---|---|------|---|
| Thousands | | | Ones | Thousands | | | Ones | |
| H | T | O | H | T | O | H | T | O |
| | | | ●●●● | | | | ●●●● | ● |

What is the same and what is different about the numbers they have made?

2) Complete the sentences.

- There are _____ ones in 10.
- There are _____ ones in 100.
- There are _____ tens in 300.
- There are _____ tens in 3000.
- There are _____ hundreds in 2000.
- There are _____ hundreds in 20 000.
- There are _____ thousands in 10 000.
- There are _____ ten thousands in 400 000.

3) The number shown on the Gattegno chart is 530.



a) What number is one-tenth of the size?

b) What number is 10 times the size?

c) What number is 100 times the size?

d) What number is 1000 times the size?

Need Planning to Complement this Resource?

National Curriculum Aim

Count forwards and backwards in steps of powers of 10 for any given number up to 1 000 000

For more planning resources to support this aim, [click here](#).

This screenshot shows a lesson plan for 'Representing Whole Numbers'. It includes a title 'At the Fair', a sub-title 'Representing Whole Numbers', and a main title 'Representing Numbers'. The content features a large number '1 000 000' and a coconut illustration. Below the main content, there are sections for 'Number and Place Value: Representing Whole Numbers' and 'Rolling Powers of Ten'. A blue banner at the bottom reads 'Updated Mastery Content'.

This screenshot shows a lesson plan for 'Counting in Powers of Ten'. It includes a title 'Powers of 10', a sub-title 'Counting in Powers of Ten', and a main title 'Adding and Subtracting'. The content features a large number '1 000 000' and a table with columns for 'Million', 'Thousand', 'Hundred', 'Ten', and 'One'. Below the main content, there are sections for 'Number and Place Value: Counting in Powers of Ten' and 'Counting Mazes'. A blue banner at the bottom reads 'Updated Mastery Content'.

10 =

Powers of 10



1) Felix and Elena have made numbers on a place value chart.

Felix

| Thousands | | | Ones | | |
|-----------|---|---|----------|------------------|---|
| H | T | O | H | T | O |
| | | | ●● ●● | ●●● ●●● ●● | ● |

Elena

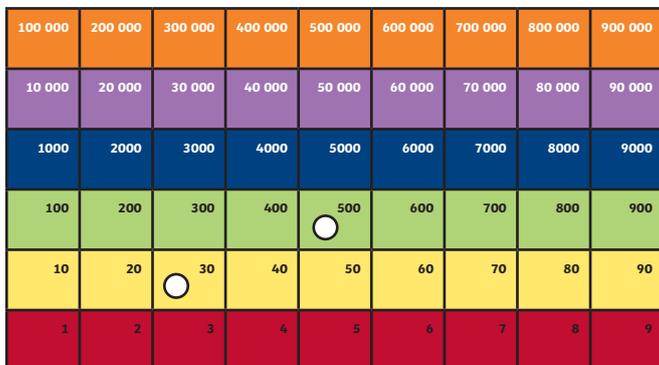
| Thousands | | | Ones | | |
|-----------|---|----------|----------------|---|---|
| H | T | O | H | T | O |
| | | ●● ●● | ●● ●● ●● | ● | |

What is the same and what is different about the numbers they have made?

2) Complete the sentences.

- There are _____ ones in 10.
- There are _____ ones in 100.
- There are _____ tens in 300.
- There are _____ tens in 3000.
- There are _____ hundreds in 2000.
- There are _____ hundreds in 20 000.
- There are _____ thousands in 10 000.
- There are _____ ten thousands in 400 000.

3) The number shown on the Gattegno chart is 530.



- What number is one-tenth of the size?
- What number is 10 times the size?
- What number is one 100 times the size?
- What number is 1000 times the size?

Powers of 10



1) Felix and Elena have made numbers on a place value chart.

Felix

| Thousands | | | Ones | | |
|-----------|---|---|----------|------------------|---|
| H | T | O | H | T | O |
| | | | ●● ●● | ●●● ●●● ●● | ● |

Elena

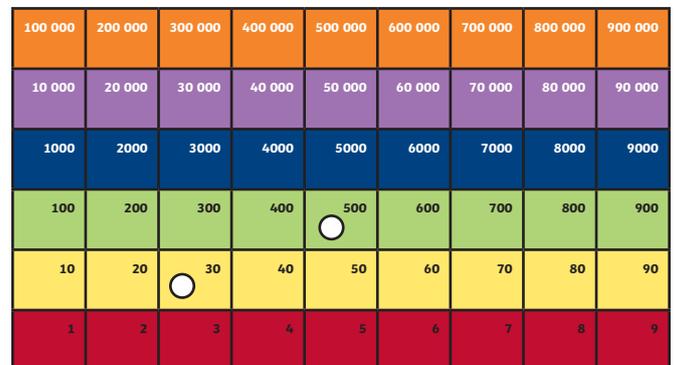
| Thousands | | | Ones | | |
|-----------|---|----------|----------------|---|---|
| H | T | O | H | T | O |
| | | ●● ●● | ●● ●● ●● | ● | |

What is the same and what is different about the numbers they have made?

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3) The number shown on the Gattegno chart is 530.



- What number is one-tenth of the size?
- What number is 10 times the size?
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- What number is 1000 times the size?

Powers of 10



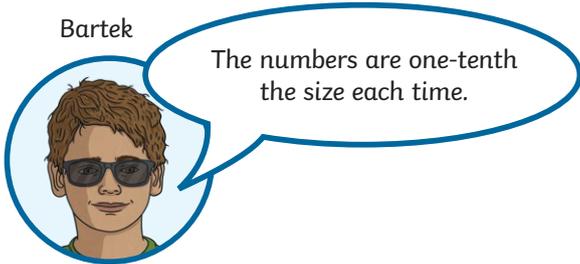
- 1) Decide if each of the statements are true or false. Explain your reasoning.

- a) 2570 is 100 times the size of 257.
- b) 3840 is one-tenth the size of 38 400.
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- d) 670 is one-hundredth the size of 670 000.

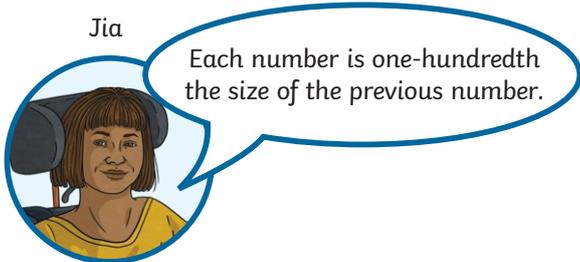
- 2) Bartek and Jia are discussing this number sequence. Who is correct? How do you know?

5 400 000, 540 000, 54 000, 5400, 540, 54

Bartek

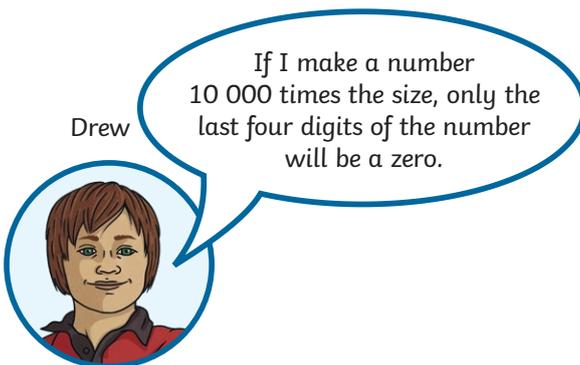


Jia



- 3) Is Drew's statement always, sometimes or never true? Prove it.

Drew



Powers of 10



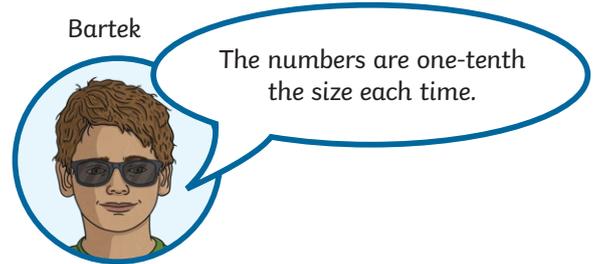
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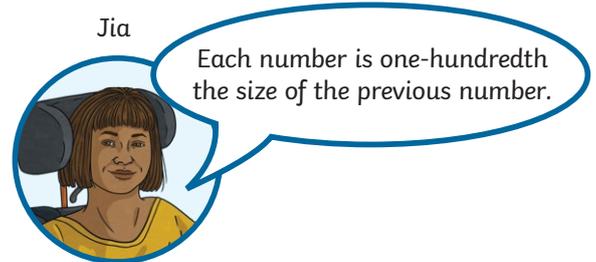
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Bartek

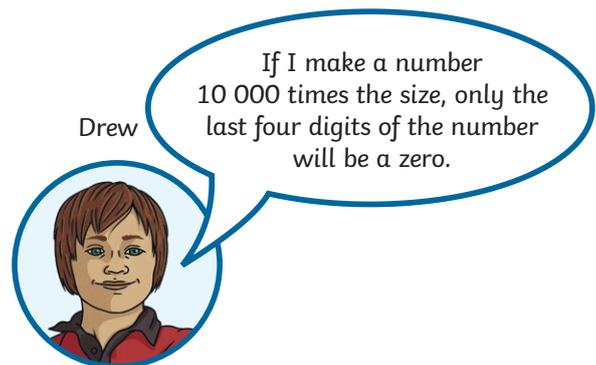


Jia



- 3) Is Drew's statement always, sometimes or never true? Prove it.

Drew



Powers of 10



- 1) Elias uses 6 counters to represent the numbers 210 000 and 30 000 on a place value chart

| Thousands | | | Ones | | |
|-----------|-------|---|------|---|---|
| H | T | O | H | T | O |
| ● ● | ● | | | | |
| | ● ● ● | | | | |

- a) Use six counters to make two new numbers where one is one-tenth the size of the other. Can you find ten possibilities?
- b) Use six counters to make two new numbers where one is 100 times the size of the other. How many possibilities can you find?
- 2) Starting with the number 937 840, how can you count backwards using different powers of 10 to reach 0?
- 3) a) Amrit is thinking of a number. Use the clues to identify the number Amrit and each of her classmates have.

Amrit

10 times my number is 380 000.

Priya

My number is 1000 times the size of Abi's.

Abi

My number is one-hundredth the size of Amrit's.

Emily

My number is one-thousandth the size of Priya's number.

Joseph

My number is 10 000 times the size of Emily's.

- b) Choose a number and write clues using powers of 10 to help identify what your number is.

Powers of 10



- 1) Elias uses 6 counters to represent the numbers 210 000 and 30 000 on a place value chart

| Thousands | | | Ones | | |
|-----------|-------|---|------|---|---|
| H | T | O | H | T | O |
| ● ● | ● | | | | |
| | ● ● ● | | | | |

- a) Use six counters to make two new numbers where one is one-tenth the size of the other. Can you find ten possibilities?
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