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.

2)

a) 10

b) 100

c) 30

d) 300

e) 20

f) 200

g) 10

h) 40

3)

a) 53

b) 5300

c) 53 000

d) 530 000

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.

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

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.

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

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.

3)

a) Amrit – 38 000
Abi – 380
Priya – 380 000
Emily – 380
Joseph – 3 800 000

b) Answers will vary.

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.

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.

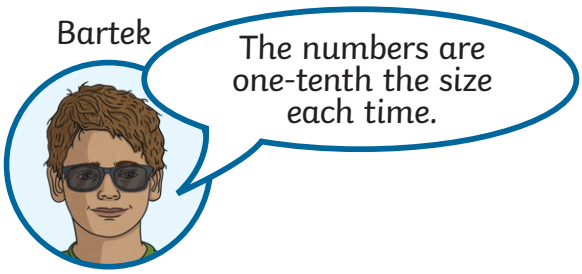
b) 3840 is one-tenth the size of 38 400.

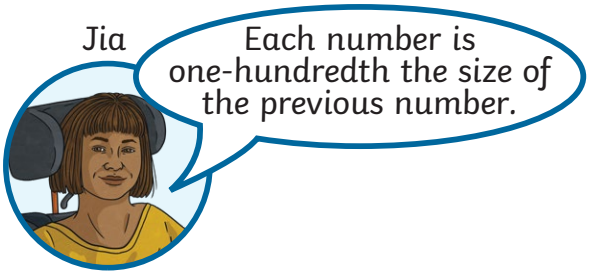
c) 955 000 is 1000 times the size of 55.

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

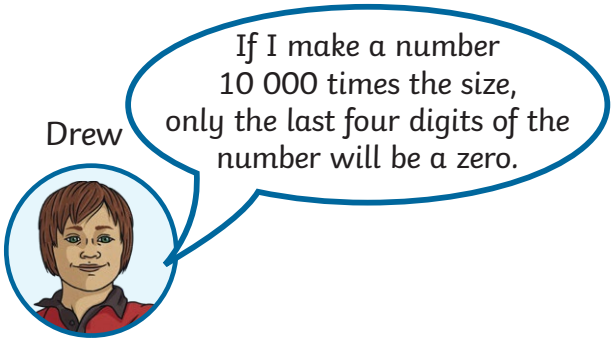
2) Bartek and Jia are discussing this number sequence. Who is correct? How do you know?

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





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



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
●●	●				
	●●●				

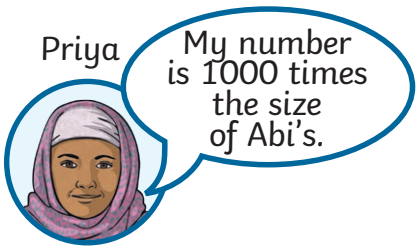
a) Use six counters to make two new numbers where one is one-tenth of the size of the other. Can you find ten possibilities?

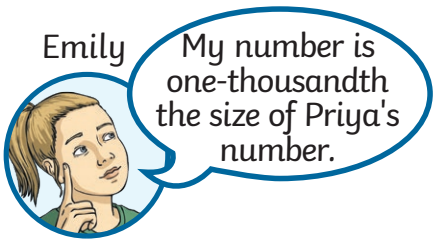
b) Use six counters to make two new numbers where one is 100 times the size of the other. How many possibilities can you find?

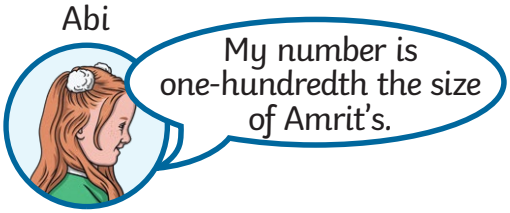
2) Starting with the number 937 840, how can you count backwards using different powers of 10 to reach 0?

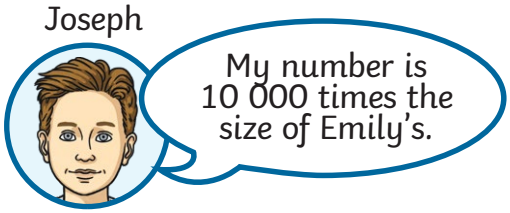
3)

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









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

Diving into Mastery

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

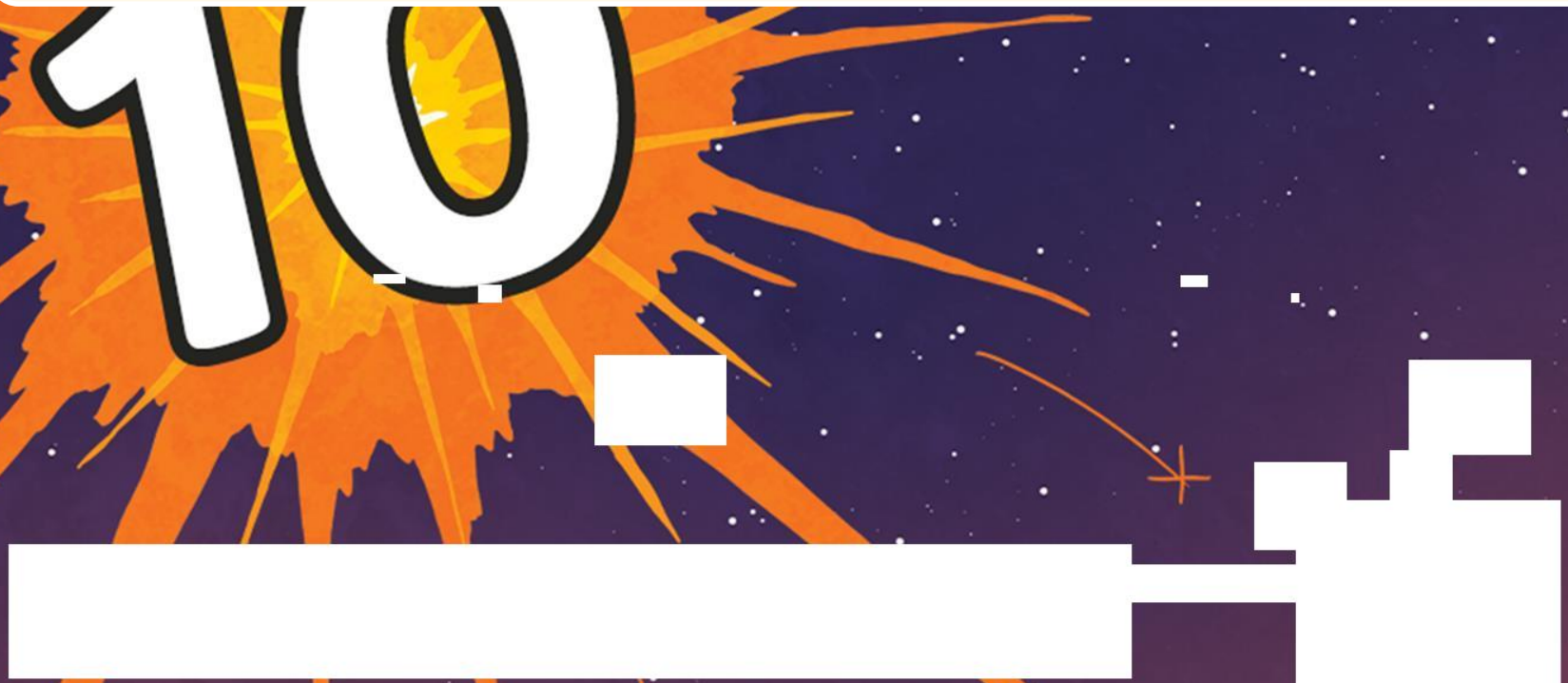
Deepest

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



Powers of 10 | **Diving**

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
			●● ●	●● ●● ●	●● ●

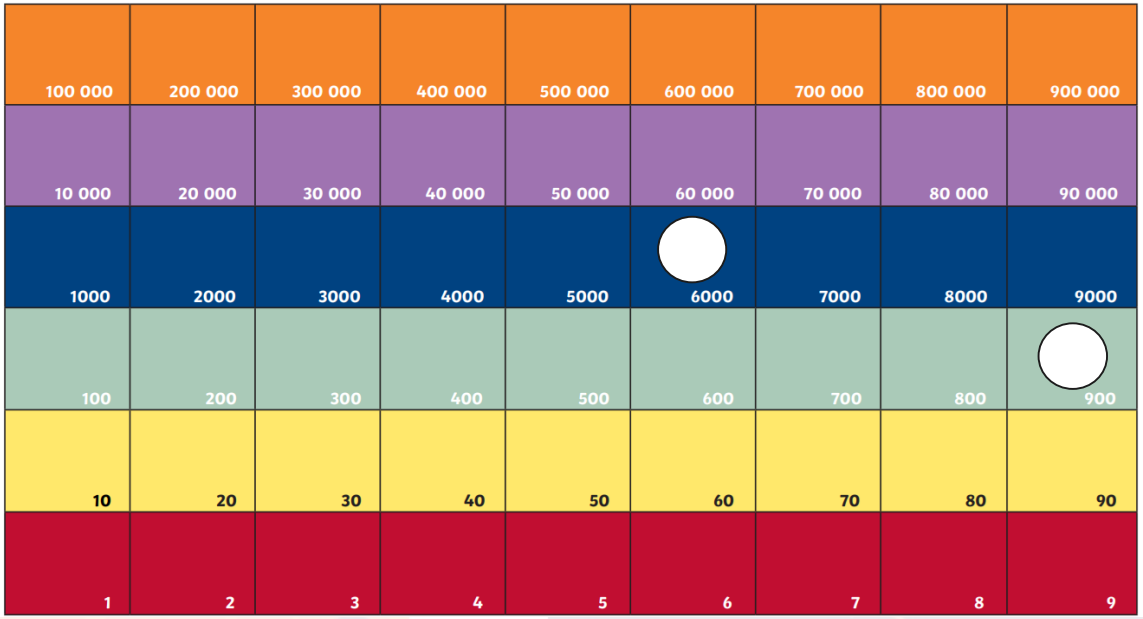
Zeke

Thousands			Ones		
H	T	O	H	T	O
		●● ●	●● ●● ●	●● ●	

Priya

Powers of 10 **Diving**

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?

Powers of 10 | **Deeper**

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.

Powers of 10 | **Deeper**

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.

Powers of 10 | **Deepest**

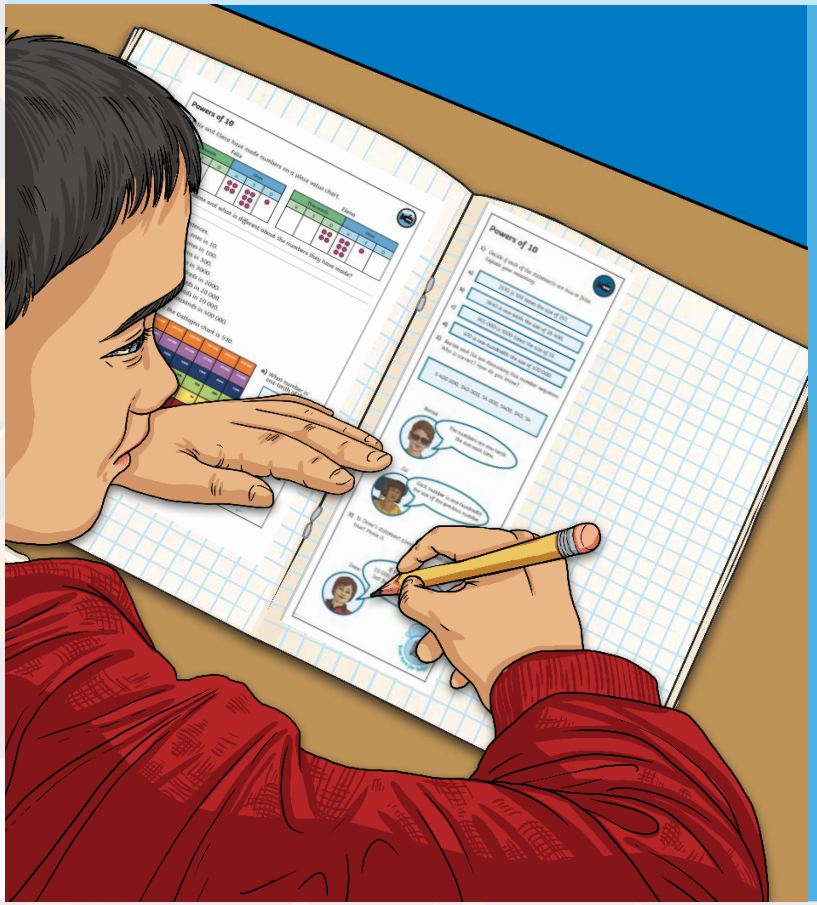
Elias uses eight counters to represent the numbers 211 000 and 1300 on a place value chart.

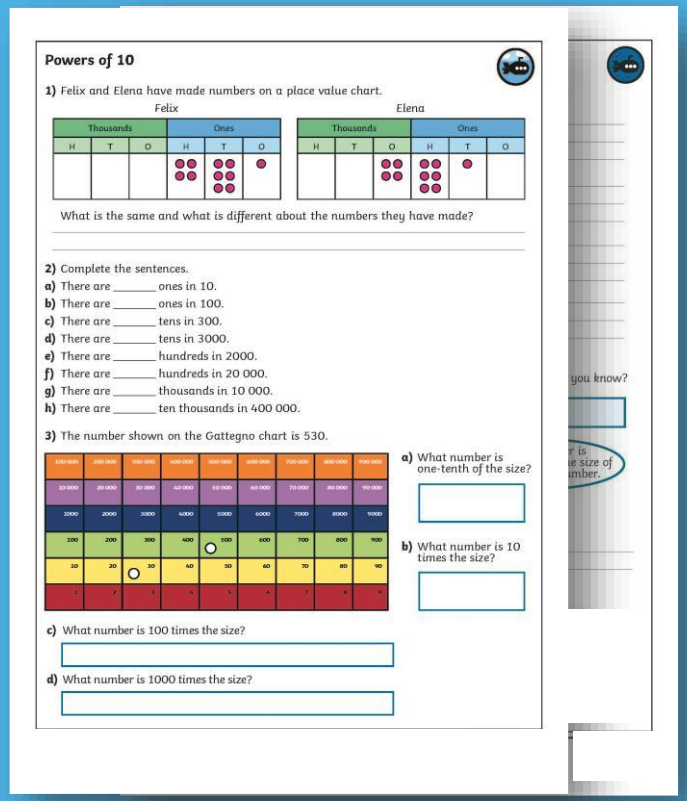
Thousands			Ones		
H	T	O	H	T	O
●●	●	●			
		●	●● ●		

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

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.

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
2000	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?

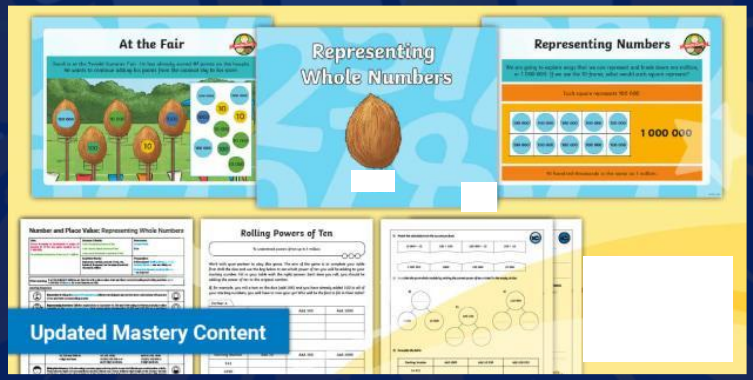
d) What number is 1000 times the size?

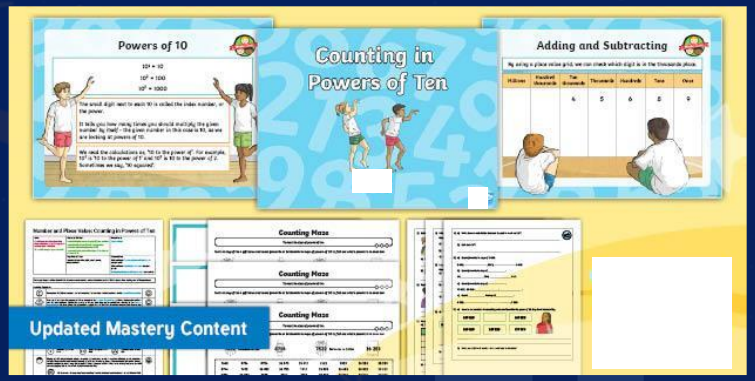
Need Planning to Complement this Resource?

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.





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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Powers of 10

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H	T	O	H	T	O
			●● ●●	●● ●● ●●	●

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Thousands			Ones		
H	T	O	H	T	O
		●● ●●	●● ●● ●●	●	

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

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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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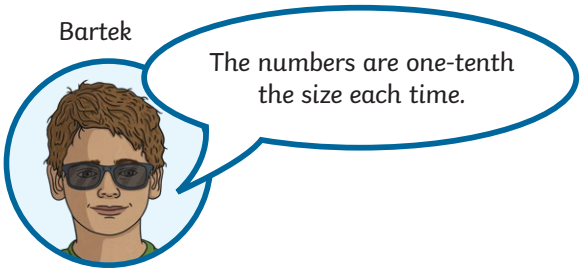

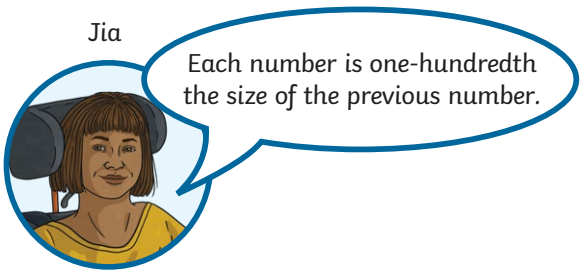

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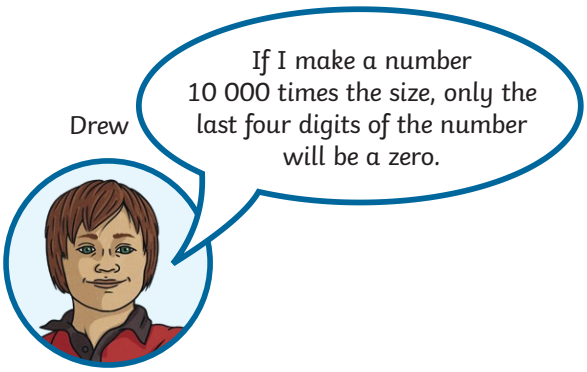

Powers of 10

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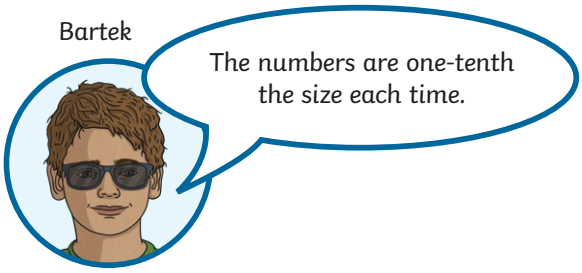

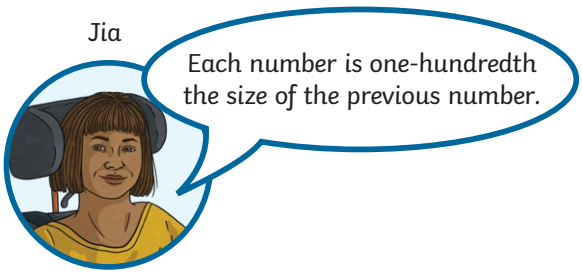

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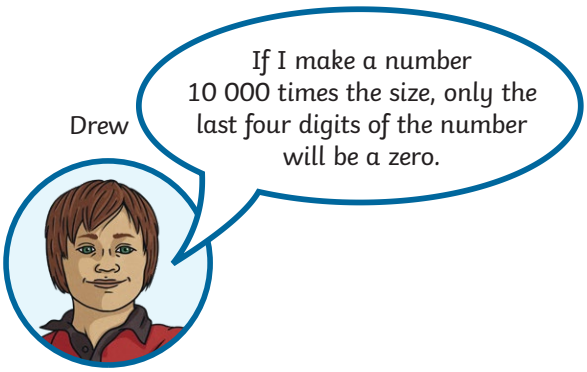


Powers of 10

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
●●	●				
	● ●●				

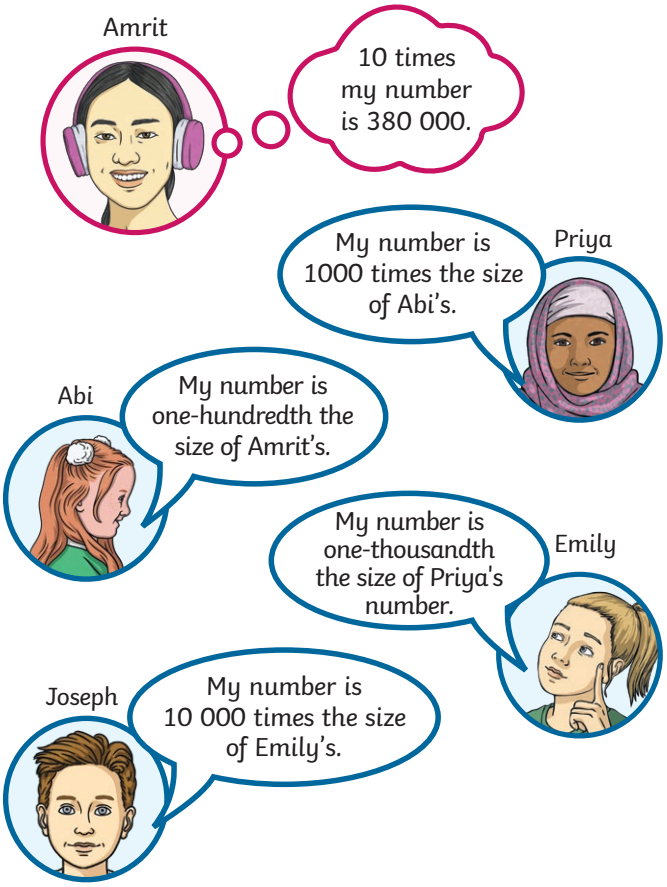
a) Use six counters to make two new numbers where one is one-tenth the size of the other. Can you find ten possibilities?

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.



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

Powers of 10

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H	T	O	H	T	O
●●	●				
	● ●●				

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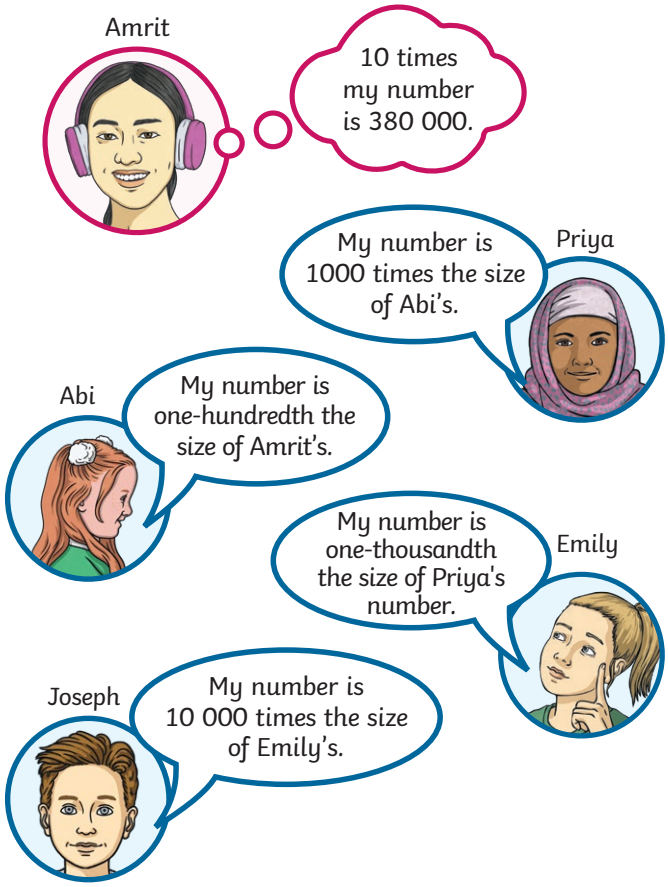

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